A STUDY OF THE INTERPRETATION AND OPERATIONALITY OF EXPECTANCY-VALENCE THEORY IN A WORK SITUATION

by

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Abstract

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Thirty-two models utilizing the variables of Expectancy-Valence theory were tested in four industrial organizations. The study sought to clarify certain conceptual and methodological issues which are inhibiting further development of the theory. The operational definition of the concepts of expectancy and instrumentality was reconciled through a reformulation of the theory in terms of approach and avoidance motivation. The separate measurement of positive and negative instrumentalities provided the operational vehicle for this reformulation. A method was demonstrated of retaining the distinction between first- and second-level outcomes and measuring both positive and negative relationships in terms of subjective probability without the necessity of establishing an artificial distinction between expectancy and instrumentality. The proposed reformulation of the theory was

shown to broaden the base of behavior alternatives available to the individual in a work situation.

The study demonstrated that different predictions are obtained when instrumentality is measured from -1 to +1 than when it is measured from 0 to +1. It was shown that the predictions tend to be stronger when both positive and negative relationships are included. The hypothesis that higher correlation coefficients would result from the inclusion of both positive and negative instrumentalities as compared to positive instrumentalities alone was somewhat supported in the case of job satisfaction, but weakly and not at all statistically supported in the case of effort and performance.

The findings showed various combinations of the variables of the theory to be moderate to strong predictors of total job satisfaction and of satisfaction with work, moderate predictors of satisfaction with supervision, and weak to moderate predictors of effort, performance, work motivation, and satisfaction with pay, promotion and coworkers. There was no clear evidence of superiority of any one or any group of predictor models over the others. There was no significant distinction among the additive, multiplicative, compound or individual variable models. These results confirmed the inconsistent findings of prior studies regarding the strongest predictor model.

Methodologically, it was demonstrated that a questionnaire which is well designed by the researcher will incorporate all the outcomes, both desirable and undesirable, which are relevant to the subjects. This finding tends to refute the criticism that researcher-generated outcomes violate the assumptions of the theory regarding individual choice.

The failure of the theory to predict performance as measured by an objective standard raises serious questions about the validity of perceptual measures of performance which have been used in prior studies.

The results did not reflect any strong moderating variables. Only two demographic factors--type of compensation and time doing similar work--moderated somewhat both satisfaction and effort and performance.

The findings which emerged from the study were inconsistent with respect to the objectives of the study and criteria used. The direction of the differences and their magnitudes varied depending on the model or the sample group tested. The results point strongly to the non-universality of the theory as operationalized by the major variables and unmodified by external factors. Future research should aim to clarify the boundary conditions under which the theory will predict motivation to work. The findings tend to show that the theory can at best explain and predict a limited portion of human behavior and can

thus serve only as a part of a more comprehensive model if we wish to explain a larger part of the variance of an individual's behavior in a work situation.

Additional analyses of the present data and several other avenues of further research were proposed.

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Although a doctoral dissertation requires a major individual effort by the candidate, I cannot conceive of a successful conclusion to this kind of project without the whole-hearted support, advice and guidance of a dedicated group of people interested in the candidate's welfare.

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Leon Reinharth

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CHAPTER I

INTRODUCTION

A. Objectives

The objectives of this study are as follows:

1. To provide a more complete test of Expectancy-Valence theory than has hitherto appeared in the literature.

2. To discuss the weaknesses in the theory resulting from an inadequate clarification of the concepts of expectancy and instrumentality.

3. To propose a reformulation of the theory which reconciles the operational definition of these two variables of the theory.

4. To demonstrate the differences in predictions that result from two possible methods of operationalizing instrumentality.

5. To incorporate both positive and negative relationships between acts and first-level outcomes, acts and second-level outcomes, and between first-level outcomes and second-level outcomes.

6. To include, as one of the behavior alternatives available to the individual, the consequences of not working

hard as well as those of working hard as an essential part of the theory.

7. To test the theory under the moderating influence of various demographic variables including but not limited to time factors and type of compensation.

8. To examine the contradictory findings in the literature on Fear of Failure as to whether negative instrumentality results in increased approach behavior or inhibits such behavior.

B. Background to the Study

Expectancy-valence theory, also called expectancy theory or instrumentality theory, is one of the more widely researched theories of motivation. Although its cognitive assumptions limit its explanations to the rational portion of human behavior, it has nonetheless served as the basis for research in such diverse areas as decision making (Edwards, 1961), learning theory (Rotter, 1954), verbal conditioning (Dulany, 1968), achievement motivation (Atkinson, 1964), social power (Nagel, 1968), attitudes (Peak, 1955; Fishbein, 1967) and organizational behavior (Vroom, 1964).

Such widespread applicability indicates the degree of generality imputed by theorists to the instrumentality idea. The central theme of the theory is the rather simple concept that an individual's behavior is a function of the

degree to which the behavior is instrumental for the attainment of some outcomes and the evaluation of these outcomes (Tolman, 1932; Lewin, 1935). Historically this conception of motivation had its origins in the ancient Greek principle of hedonism which assumes that behavior is directed toward pleasure and away from pain. The individual will choose from alternative courses of action that behavior which he thinks will maximize his pleasure or minimize his pain. The ancient principle was resurrected in the nineteenth century utilitarian philosophy developed by Jeremy Bentham and John Stuart Mill, and appeared in the works of the early psychologists (James, 1890).

Two basic constructs underlie the numerous models which have been developed by researchers to provide empiric content and testability to the theory. Mitchell (1971) has prepared a table which is reproduced to show how various theorists have labeled the two constructs (Table 1).

C. Expectancy Theory in Work Situations

The application of Expectancy Theory to on-the-job behavior was stimulated by the publication of Work and Motivation by Vroom in 1964. Vroom's formulation is based primarily on prior work by Tolman (1932), Lewin (1938), and Peak (1955). These earlier conceptualizations were based on the idea that individuals have certain cognitive expectations that their actions will lead to certain outcomes,

Table 1

LABELS USED FOR THEORETICAL COMPONENTS*

Theorist	Determinants of Impulse to Action
Tolman	Expectancy of goal, demand for goal
Lewin	Potency X valence
Edwards	Subjective probability X utility
Atkinson	Expectancy X (motive X incentive)
Rotter	Expectancy, reinforcement value
Vroom	Expectancy X valence; where valence is (instrumentality X valence)
Peak	Instrumentality X attitude (affect)
Rosenberg	Instrumentality X importance
Dulany	Hypothesis of the distribution of the reinforcer X value of the reinforcer
Fishbein	Probability X attitude

*This table is a modification of one presented by Lawler (1971).

and that individuals have certain preferences among these outcomes. These expectations are defined as subjective or personal beliefs. Vroom's model is described in detail in Chapter II.

As can be seen in Table 1, Vroom expanded the two basic theoretical components to three variables which he labeled expectancy, instrumentality and valence. Industrial and organizational psychologists have built upon the original Vroom model to describe and predict a wide variety of work related variables. In a recent literature review, House and Wahba (1972) have enumerated the following variables which have been dealt with in various studies:

> Job effort and job performance (Georgopoulos, Mahoney and Jones, 1957; Vroom, 1964; Galbraith and Cummings, 1967; Lawler and Porter, 1967, Hackman and Porter, 1968; Graen, 1969; Gavin, 1970; Goodman, Rose and Furcon, 1970; Mitchell and Albright, 1971; Wofford, 1971); job satisfaction (Vroom, 1964; Porter and Lawler, 1968; Graen, 1969; Lawler, 1970; Wofford, 1971); organizational practices (Evans, 1969); managerial motivation (Campbell, Dunnette, Lawler and Weick, 1970); occupational choice (Vroom, 1964; Mitchell and Knudson, 1971); the importance of pay and pay effectiveness (Dunnette, 1967; Lawler, 1971); and leadership behavior and leader effectiveness (Evans, 1969; House, 1971).

In developing their separate models in these studies, the researchers have expanded on Vroom's model in four ways:

1. First-level and second-level outcomes have been distinguished. The first-level outcome refers to the level

of performance resulting from a given amount of effort, whereas the second-level outcome is defined as the reward or penalty obtained as the result of the level of performance or, as tested in some studies, as the result of effort expended.

2. Intrinsic sources of valence have been identified. These include the degree of satisfaction or pleasure the individual receives from the activity or work behavior itself regardless of the outcome, as well as the degree of satisfaction or pleasure the individual derives from the accomplishment of the work goal regardless of extrinsic needs.

3. Expectancy 1 and Expectancy 2 have been introduced as separate variables. Expectancy 1 is defined as the perceived belief that effort will lead to performance or to second-level outcomes. Expectancy 2 is the perceived belief that performance will lead to second-level outcomes.

4. New variables have been introduced as moderators (ability, role perceptions, equity).

D. Purpose of the Study

One of the favorable aspects ascribed by Mitchell and Biglan (1971) to Instrumentality theory is that it provides a systematic framework for the addition of new variables. As we have seen above, Vroom's original model has indeed been expanded and developed. However, such elaborations assume that the basic constructs of the theory are clearly defined,

that these definitions are accepted and used by theorists as the basis for further research, and that the evaluation of future studies can be predicated upon the additional contributions of the researchers without the need for questioning basic assumptions.

Unfortunately, we do not find these assumptions upheld by Expectancy theory. Wahba and House (1972) have exposed the following unresolved logical and methodological issues in the theory:

1. Neglect of the rationality or choice assumptions underlying the theory, and

2. Inadequate theoretical clarification of the concepts of expectancy, valence, instrumentality and their interactions.

They point out that the lack of resolution of these issues is the reason for the inconsistent magnitude of support for the theory from study to study, for the testing in most studies of limited parts of the theory rather than the predictions of the total theory, and for several measurement weaknesses.

This study will deal with one of these issues, the inadequate theoretical clarification of the concepts of expectancy and instrumentality. If the theoretical and operational definition of these two variables of the theory

can be reconciled, future research will be provided with a more solid basis of conceptual clarity for further development of the theory. In addition, such theoretical clarification and elimination of some of the operational shortcomings will enable future researchers to interpret their findings as a function of the power or validity of the theory itself. This would permit theorists to compare Expectancy-Valence with competing theories of motivation in terms of explanatory and predictive power and help set the direction for future research.

CHAPTER II

EXPECTANCY AND INSTRUMENTALITY AS THEORETICAL CONCEPTS

A. The Dictionary Definition

The 1969 edition of Webster's Third New International Dictionary offers the following definitions:

Expectancy

1. (a) the act or action of anticipating
   (b) the state of anticipating
2. the state of being expected
3. (a) something that is expected; the object of expectation or hope
   b) the expected amount based on statistical probability (life expectancy)

Instrumentality

1. a condition of serving as intermediary
2. (a) something by which an end is achieved; means
   (b) something that serves as an intermediary or agent through which one or more functions of a controlling force are carried out.

It is clear that the sole dictionary meaning of expectancy has to do with subjective probability and of instrumentality with means to an end.

B. The Applied Theoretical Definition

Examination of Table 1 shows that ten theorists applied no less than seven labels to what is essentially the same concept, namely, a belief that a prior event will lead to or be followed by a subsequent event.

Theorist	Label of Theoretical Component
Tolman	Expectancy of goal
Lewin	Potency
Edwards	Subjective probability
Atkinson Rotter Vroom	Expectancy
Peak Rosenberg	Instrumentality
Dulany	Hypothesis of the distribution of the reinforcer
Fishbein	Probability

The following points should be noted with reference to the above listing:

1. All the theorists added to the dictionary definition of the concept an additional meaning concerning the instrumentality (dictionary meaning) of the prior event for the subsequent event.

2. All the theorists except Vroom have constructed their conceptual framework around two major components, expectancy (or some other label) and valence (or some other label). Vroom added the third variable of instrumentality which he distinguishes from expectancy but which is part of his definition of valence.

3. Peak and Rosenberg have chosen the term "instrumentality" to describe the concept which the other theorists have called expectancy (or some other label). Peak (1955:161), in describing a Rosenberg study, explains the instrumental relationship as "the judged probability that the object leads to good or bad consequences." This definition is very similar to, if not identical, to that of expectancy presented at the beginning of this section.

Organizational theorists have followed the lead of Vroom in working with three major variables. To the dictionary definition of instrumentality, Vroom has added the concept of cognition. This addition provides an element of belief to the theoretical concept. We can conceive of some work situations where the cognized instrumentality of one event for another will be identical with the objective instrumentality as defined in the dictionary. Under a piecework pay system, for example, each unit of production will be instrumental in providing a specific amount of remuneration to the worker. However, there are many more situations in the work environment where the cognized instrumentality of one event for another is evaluated as a subjective probability.

We therefore have a theoretical definition of expectancy which consists of the concepts of subjective probability and instrumentality or means to an end, and a theoretical definition of instrumentality which consists of the concepts of means to an end and subjective probability. If there is a substantive difference between the two concepts, it can be only in terms of emphasis on one or the other of the two elements of meaning.

C. Vroom's Formulation

Since Vroom's formulation in 1964 may be considered as a definitive watershed event in the application of Expectancy-Valence theory to work situations, it is important to clarify what Vroom said and did not say about the variables in the theory and their interrelationships.

Instrumentality in the theory is a determinant of valence. Vroom specifies the nature of the relationship in his Proposition 1 (Vroom, 1964:17):

The valence* of an outcome to a person is a monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and his conceptions of its instrumentality for the attainment of these other outcomes.

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*Vroom distinguishes the "anticipated satisfaction from an outcome (i.e., its valence) from the actual satisfaction that it provides (i.e., its value)." (1964:15)

In equation form the same proposition reads as follows:

$$V_j = f_j \sum_{k=1}^{n} \left[(V_k \; I_{jk}) \right] \qquad (j = 1.....n)$$

$$f_{j'} > 0; \qquad iI_{jj} = 0$$

where V_j = the valence of outcome j

I_{jk} = the cognized instrumentality ($-1 \leq I_{jk} \leq 1$) of outcome j for the attainment of outcome k.

n = number of outcomes

While Vroom nowhere offers a definition of instrumentality which would facilitate operationalization by future researchers, he does

(a) describe its use by Peak (1955) in attitude theory, and

(b) contrast it with the concept of expectancy.

In explaining Peak's approach, Vroom states:

> If an object is believed by a person to lead to desired consequences or to prevent undesired consequences, the person is predicted to have a positive attitude toward it. If, on the other hand, it is believed by the person to lead to undesired consequences or to prevent desired consequences, the person is predicted to have a negative attitude toward it (1964:16).

Thus, Vroom suggests that "means acquire valence as a consequence of their expected relationship to ends" (1964:16).

Vroom defines an expectancy as a momentary belief concerning the likelihood that a particular act will be followed by a particular outcome. He further states:

> Expectancy is an action-outcome association. It takes values ranging from zero, indicating no subjective belief that an act will be followed by an outcome (or subjective certainty that the act will not be followed by the outcome), to one, indicating certainty that the act will be followed by the outcome. Instrumentality, on the other hand, is an outcome-outcome association. It can take values ranging from -1, indicating a belief that attainment of the second outcome is certain without the first outcome and impossible with it, to +1, indicating that the first outcome is believed to be a necessary and sufficient condition for the attainment of the second outcome (1964:18).

Based on the above statements, we can assign the following properties to the two concepts:

Expectancy

1. a belief
2. an association
3. an action-outcome relationship
4. a subjective probability.

Instrumentality

1. a belief
2. an association
3. an outcome-outcome relationship
4. a relationship of means to ends
5. an object (i.e., an event not under complete behavioral control)

Thus expectancy and instrumentality hold two properties in common, namely, in being a belief and an association, or a cognitive bridge between two events. However, they differ in the fact that the two events joined by expectancy by definition must be an action and an outcome,

whereby for instrumentality they must be by definition an outcome and an outcome. We shall have more to say below about actions and outcomes. For the moment, the point is made that the specific difference is due not to an inherent difference in the meaning of the two terms or to logical necessity, but rather to the researcher's arbitrary definition. Scientific methodology permits and often demands arbitrary definition of terms but only when such definition clearly distinguishes between two concepts and is useful in the logical development of a theory. We shall discuss later whether this arbitrary definition serves to further or to impede the logical development of Expectancy-Valence theory.

A second difference to be noted is that expectancy is both a belief and a subjective probability, whereas instrumentality is a belief but is not a subjective probability. Since, by definition, probability is measured on a scale from 0 to 1 and since instrumentality is measured from -1 to +1, we can conclude that instrumentality is not a subjective probability. A logical difficulty arises, however, from the fact that the theory deals with the perceptions of the individual and the only way of measuring instrumentality is to ask the individual for his subjective estimation of the strength of the relationship between two outcomes. It would therefore seem that this subjective estimation is in some way different from the subjective probability of expectancy.

A third difference stems from Vroom's statement that means acquire valence as a consequence of their expected relationship to ends. It appears reasonable that the first outcome is an instrumental means for the attainment of the second outcome, which is the end. But why must the expected relationship be an instrumentality and not an expectancy? Or conversely, why cannot an action be an instrumental means for the attainment of an outcome, thus converting an expectancy into an instrumentality?

The last difference which emerges from a list of the properties of the two concepts is that instrumentality deals with an object leading to a consequence, whereas expectancy implies that an action or behavior leads to a consequence. This again is an arbitrary definition whose usefulness remains to be determined. If we accept this definition, how do we cope with the idea that "behavior is instrumental for the attainment of outcomes" (Mitchell and Albright, 1971)?

It is obvious that the attempt to present expectancy and instrumentality as two separate and independent variables in Expectancy-Valence theory leads to logical difficulties which must be resolved before the theory can claim dominance over competing concepts in the area of motivation.

D. Acts and Outcomes

Closely allied to the attempted distinction between expectancy and instrumentality is the problem of the acknowledged confusion in the literature between acts and outcomes. Porter and Lawler (1968:20) point out that this attempted distinction between these two concepts is one area where all expectancy theories "get into muddy water." It is suggested that they are referring to the same body of water from which the inconsistencies between expectancy and instrumentality are struggling to emerge.

Vroom (1964) states that the distinction between acts and outcomes is not an absolute one since actions are frequently described in terms of the particular outcomes which they effect. He holds that maintaining a separation is useful in terms of distinguishing between an expectancy and an instrumentality. He therefore defines an action as behavior which "might reasonably be expected to be within the repertoire of the person," whereas an outcome is reserved "for more temporally distant events which are less likely to be under complete behavioral control."

Research testing expectancy theory has coped with this attempted distinction in two ways. Some studies were designed to maintain the distinction in the manner prescribed by the theory (Graen, 1969; Arvey and Dunnette, 1970); others have telescoped expectancy and instrumentality measures into one belief, namely, that effort leads

to job-related outcomes (Hackman and Porter, 1968; Gavin, 1970; and Evans, 1970). In their review of these studies, Mitchell and Albright (1971) point out that each of these two approaches produced conflicting results.

CHAPTER III

OPERATIONALIZATION OF EXPECTANCY AND INSTRUMENTALITY

As mentioned previously, nowhere does Vroom offer a specific definition of the instrumentality variable. However, one of his hypotheses stemming from Proposition 1 deals with the valence of effective performance, and in the course of explaining this prediction, Vroom elaborates as follows:

> If effective performance leads to the attainment of positively valent outcomes or prevents the attainment of negatively valent outcomes then it should be positively valent; if it is irrelevant to the attainment of either positively or negatively valent outcomes, it should have a valence of zero; and if it leads to the attainment of negatively valent outcomes and prevents the attainment of positively valent outcomes, it should be negatively valent (1964:263).

To clarify this statement, let us present it as a series of equations:

$$(1) \qquad +V_p = f_p \left[\sum_{s=1}^{n} (+Vs)(+I_{ps}) \right]$$

$$(2) \qquad +V_p = f_p \left[\sum_{s=1}^{n} (-V_s)(-I_{ps}) \right]$$

$$(3) \qquad 0.V_p = f_p \left[\sum_{s=1}^{n} (+V_s)(0.I_{ps}) \right]$$

$$(4) \qquad 0.V_p = f_p \left[\sum_{s=1}^{n} (-V_s)(0.I_{ps})\right]$$

$$(5) \qquad -V_p = f_p \left[\sum_{s=1}^{n} (-V_s)(+I_{ps})\right]$$

$$(6) \qquad -V_p = f_p \left[\sum_{s=1}^{n} (+V_s)(-I_{ps})\right]$$

where V_p = the valence of effective performance

V_s = the valence of the second level outcome

I_{ps} = the cognized instrumentality ($-1 \leq I_{ps} \leq 1$) of effective performance for the attainment of the second level outcome.

n = number of outcomes

To facilitate an analysis of these equations, the predictions may be stated as separate statements (see Wahba and House, 1972) as follows:

1. Effective performance which leads to the attainment of a positively valent outcome will be positively valent.

2. Effective performance which leads to the avoidance of a negatively valent outcome will be positively valent.

3. Effective performance which is irrelevant to the attainment of a positively valent outcome will have a valence of zero.

4. Effective performance which is irrelevant to the attainment of a negatively valent outcome will have a valence of zero.

5. Effective performance which leads to the attainment of a negatively valent outcome will be negatively valent.

6. Effective performance which leads to the avoidance of a positively valent outcome will be negatively valent.

In considering how these six predictions may be tested, the following considerations should be borne in mind:

1. When instrumentality is positive (equations 1 and 5), it may be measured on a scale from 0 to 1 in a manner similar to the measurement of subjective probability. This fortunate coincidence enables us to avoid methdological difficulties as well as to bypass the logical inconsistencies posed in the previous section.

2. While for the purposes of this study we accept the notion of negative valence (equations 2, 5 and 6), we should not ignore the long-standing dispute among economists and decision theorists over ordinal versus cardinal utility (see Edwards, 1954; Lange, 1933). The dispute concerns the propriety of using an additive interval scale for utilities which have not been proven to be independent of each other on the one hand, and in view of the fact that individuals

may be able to indicate whether they prefer A to B but cannot specify by how much they prefer A over B. Economists have turned to the technique of the indifference curve to cope with this problem and more recently have sought to return to a cardinal utility scale by borrowing from the psychologists the psychophysical Method of Equal Sense Distances, from which an interval scale may be derived (Edwards, 1954). To the degree that the concepts of valence and utility are similar (Lewin, 1938), organization theorists working with Expectancy-Valence theory must be concerned with the resolution of this disagreement since it involves one of the basic variables of the theory. Until the concept of valence, as well as expectancy and instrumentality, is clarified both on the theoretical and operational levels, the future development of the theory will be inhibited.

3. In comparing instrumentality to expectancy when instrumentality is equal to zero (equations 3 and 4), we find that Vroom has created a semantic contradiction. He states that expectancy takes values ranging from zero, indicating no subjective probability that an act will be followed by an outcome (1964:18). This may be interpreted as meaning that the act is irrelevant to the outcome and in this sense is identical to the meaning of zero instrumentality. However, he also says that "zero strength expectancy is indicated by the subjective certainty that the act

will not (Vroom's emphasis) be followed by the outcome" (1964:17). This statement is very similar to Vroom's definition of -1 instrumentality, "indicating a belief that attainment of the second outcome is certain without the first outcome and impossible with it" (1964:18). Thus, depending on which of Vroom's explications is quoted, zero expectancy may be equated either to zero instrumentality or to -1 instrumentality.

4. It is when we consider negative instrumentality (equations 2 and 6) that the logical issues discussed above can no longer be avoided. As Wahba and House (1972) point out, "if instrumentality takes on values from -1 to +1, the predictions with respect to avoidance (negative instrumentality) are different than if instrumentality is allowed to range from zero to one."

CHAPTER IV

PROPOSED REFORMULATION OF THE TWO CONCEPTS

We have seen that instrumentality and expectancy are distinguished by several properties which introduce logical contradictions into Expectancy-Valence Theory without providing compensating benefits. To cope with this problem, we can examine the properties of the two concepts to see if we may develop a joint concept which avoids these difficulties.

It has been previously pointed out that when instrumentality is positive, the logical problems are sidestepped since the scaling of instrumentality becomes equivalent to the scaling of expectancy. If we examine the algebraic properties of the above listed equations which represent predictions of effective performance, we see that equations 2 and 6 (with negative instrumentalities) are equivalent algebraically to equations 1 and 5 (with positive instrumentalities). A rather simple solution to our problem may lie in changing the signs of equations 2 and 6 into the signs of equations 1 and 5. This is certainly a valid mathematical operation and

would resolve our problem by converting the negative instrumentalities into positive ones. What remains to be determined is whether the meaning of our prediction remains constant under this transformation.

Equation 2 states that effective performance which avoids the attainment of a negatively valent outcome will be positively valent. Does this statement have the same meaning as effective performance leading to the attainment of a positively valent outcome? Let us take as an example of a positively valent outcome--social acceptance. We would then label social rejection as a negatively valent outcome. If our mathematical operation is valid, the following two statements should be equal:

1. Effective performance leads to social acceptance.

2. Effective performance avoids social rejection.

In like manner, predictions 5 and 6 should have the same meaning:

5. Effective performance leads to social rejection.

6. Effective performance avoids social acceptance.

For these two sets of statements to have identical meanings, we must assume that the set of social relationships consists of two and only two elements, social

acceptance and social rejection which are mutually exclusive and exhaustive. In other words, one must be either socially accepted or rejected, never both and never neither. There exist, undoubtedly, bi-polar outcomes, and in such cases our mathematical transformation would be acceptable. But it is not difficult to conceive of outcomes that are not bi-polar. For example, the fact that effective performance may lead to avoidance of demotion does not necessarily imply that it will lead to promotion. It may well lead to the maintenance of the status quo.

The algebraic changing of signs to convert negative instrumentalities into positive ones is thus seen to have limited application. Another approach is needed to cope with our logical and methological problem on a more general level.

The key to a new approach stems from conclusions drawn by Edwards (1953) based on experiments by Marks (1951), Irwin (1953), and Edwards (1953). Edwards explains the results in the following manner:

> The main differences that Marks and Irwin found were probabilities attached to desirable and undesirable alternatives. It is perfectly possible that there is one subjective probability function for bets with positive expected values and a different one for bets with negative expected values, just as the negative branch of the Markowitz utility function is likely to be different from the positive branch. The results of my probability preference experiments showed very great differences between the probability preference patterns for positive and for negative expected value bets (1953), but little difference

> between probability preferences at different expected-value levels so long as zero expected value was not crossed (1954). This evidence supports the idea that perhaps only two subjective probability functions are necessary (1954:400).

These findings may explain why we avoid difficulty in equating expectancy with instrumentality when the latter is positive but are blocked from reconciling the two concepts when instrumentality is negative.

The duality of the subjective probability function proposed by Edwards has its counterpart in the duality of individual behavior dispositions proposed by Atkinson and his associates in the development of their theory of achievement motivation (Atkinson, 1964; Atkinson and Feather, 1966; Birney, Burelick and Teevan, 1969).

The theory assumes that all individuals have a general disposition to seek success (the achievement motive) and at the same time a general disposition to avoid failure (motive to avoid failure). This assumption is based on a theoretical conception of level of aspiration as a choice situation previously presented by Escalona (1940), Festinger (1942) and Lewin, Dembo, Festinger and Sears (1944). It is presumed that any situation which presents a challenge to achieve, by arousing an expectancy that action will lead to success, must also pose the threat of failure by arousing an expectancy that action may lead to failure. According to the theory, there is always aroused in an individual at

the time of performance an approach-avoidance or excitation-inhibition conflict which is resolved algebraically, that is, at the sum of two opposing tendencies.

The theory of achievement motivation attempts to account for the determinants of behavior in a limited domain of human activity. It applies only when an individual knows that his performance will be evaluated in terms of some standard of excellence, and that the consequences of his actions will be either a favorable evaluation (success) or an unfavorable evaluation (failure). Thus while under a general theory of behavior approach motivation would be seen as a tendency to maximize anticipated pleasure and avoidance motivation as a tendency to minimize anticipated pain, the more restricted achievement theory defines approach motivation as a disposition to seek success and avoidance motivation as a disposition to avoid failure.

Since the interest of this study is in motivation to work, and since work is performance oriented, the research of Atkinson and his associates may be particularly relevant. A distinction is made between the conceptual foundations of these theorists which is based upon approach-avoidance motivation and separate formulations to measure the tendency to achieve success and the tendency to avoid failure, and their operational applications and predictions deriving from these concepts, where they have encountered the same difficulties and inconsistencies as have expectancy theorists with negative instrumentality.

Thus Atkinson in 1957 interpreted his fear of failure model as meaning that the fearful individual would be motivated to increase his efforts to avoid failure. By 1964, he had changed his position to an opposite interpretation wherein the tendency to avoid failure would inhibit or dampen positive motivation to perform the task. In a critique of Atkinson's formulation, Birney, Burelick and Teevan (1969: 170) found that both of Atkinson's conclusions might be valid in different situations. Likewise, Locke, et al. (1970) cite findings in conflict with the results of Atkinson and Feather. These research disputes will not be pursued since our interest lies in how the conceptual framework of achievement motivation theory can help resolve the conceptual problem which we have raised regarding the variables of expectancy and instrumentality.

Before outlining the new approach, it is necessary to incorporate Expectancy 1 (E1) as well as Expectancy 2 (E2) into our reconciliation with the concept of instrumentality. Because of Vroom's linking of instrumentality with an outcome-outcome association, researchers have concentrated on Expectancy 2 as an operational substitute for instrumentality. (Galbraith and Cummings, 1967; Graen, 1969; Gavin, 1970; Mitchell and Albright, 1971). However, there is no theoretical reason why an action cannot be positively or negatively instrumental in the attainment of an outcome.

Organization researchers working in Expectancy-Valence theory frequently permit their prescriptive biases toward motivation to work to hinder their perception that such motivation is but one alternative available to the individual. There is always explicitly or implicitly available the alternative of not working or of expending less effort. In evaluating two well-known studies, Hill, Bass and Rosen offer the following comment (1970:450-451):

> The assumption that individuals who expect desired outcomes from hard work are likely to exert more effort than those who expect less desired outcomes utilizes only part of the theory. Some individuals might work hard not because they expect desired consequences from extra effort, but rather because they expect more undesirable outcomes from less effort. There are two alternatives considered, "working hard" and "not working hard," and the choice made will be in favor of the one with the highest positive or lowest negative SEU. The Hackman and Porter study and that of Galbraith and Cummings provided us with information on only one alternative and told us nothing of the SEU's associated with not working hard. Thus they were less comprehensive than they might have been.

Thus, among several behavior alternatives, some may be negatively instrumental to the attainment of a positively valent first level outcome. For example, it is entirely possible or even probable in many work situations that not working hard will be negatively instrumental to effective performance. If, in such instances, the usual 0 to 1 subjective probability scale is used to measure Expectancy 1, the same methodological and logical problems arise as enumerated above for Expectancy 2.

The attempted formulation in the literature of the distinction between expectancy and instrumentality in terms of acts and outcomes and of subjective probability versus means to an end is thus seen to have introduced conceptual and methodological problems with no offsetting gains as regards the development of the theory. If we have succeeded in showing that expectancy and instrumentality share in common the properties of subjective belief and means to an end, we can then state that:

a. The concept of expectancy as previously used in the literature has dealt with approach motivation, that is, the likelihood that a person will undertake a specific activity or behavior in anticipation of such behavior leading to a specific desired outcome or set of desired outcomes or avoiding a specific undesired outcome or set of undesired outcomes. This definition is and should be identical with the definition of positive instrumentality, that is, when instrumentality is measured from 0 to +1.

b. The concept of negative instrumentality, which is measured from -1 to 0, relates to avoidance motivation which is the likelihood that a person will avoid undertaking a specific activity or behavior if he believes that such behavior will lead to an undesirable outcome or set of undesirable outcomes, or will not lead to a desired outcome or a set of desired outcomes.

The two basic propositions of the theory proposed by Vroom (1964) may be modified as follows:

Proposition 1

The extrinsic valence of an outcome to a person is a monotonically increasing function of the algebraic sum of the products of the valences of all other desired outcomes and the strength of his expectancies that the outcome will be followed by the attainment of these outcomes less the algebraic sum of the products of all other undesired outcomes and his conceptions of its negative instrumentality for the attainment of these outcomes.

In equation form this proposition reads as follows:

$$V_j = f_j \left[\sum_{k=1}^{n} \left((V_k)\ (E2_{jk}) \right) - \left((V_k)\ (-I2_{jk}) \right) \right] (j = 1.....n$$

$$f_j' > 0: \quad iE_{jj} = 0: \quad iI_{jj} = 0$$

where V_j = the extrinsic valence of outcome j

$E2_{jk}$ = the strength of the expectancy $(0 \leq E2_{jk} \leq 1)$

$-I2_{jk}$ = the cognized negative instrumentality $(-1 \leq -I \leq 0)$

V_k = the valence of outcome k

Proposition 2

The force on a person to perform an act is a monotonically increasing function of the algebraic sum of the product of the valences of all desired outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes less the algebraic sum of the products of the valences of all undesired outcomes and his conceptions of its negative instrumentality for the attainment of these outcomes.

In equation form this proposition reads as follows:

$$F_i = f_i \left[\sum_{j=1}^{n} \left((El_{ij}) (V_j) \right) - \left((-Il_{ij}) (V_j) \right) \right] (i - n + 1....$$

$f_{i'} > 0$; $i \cap j = \phi$, ϕ is the null set

where F_i = the force to perform act i

El_{ij} = the strength of the expectancy ($0 \leq El_{ij} \leq 1$) that act i will be followed by outcome j

$-Il_{ij}$ = the cognized negative instrumentality ($-1 \leq -I \leq 0$) of act i for the attainment of outcome j

V_j = the valence of outcome j

This modification of the two basic propositions provides a firmer base for the development of the theory through the addition of other relevant variables such as intrinsic valences, ability, role perception, and so forth.

The form of the modification directs researchers to examine each new variable as well as the relationship between variables in terms of their possible different effects upon approach and avoidance motivation respectively.

CHAPTER V

DESIGN OF THE STUDY AND SCALES OF MEASUREMENT

A. Hypotheses

The following hypotheses drawn from the three models of Vroom (1964) and stemming from the modification to Expectancy-Valence theory proposed in the previous chapter were tested in this study:

1. Job Satisfaction

It has been proposed that job satisfaction can be predicted from the following expectancy theory model (Vroom, 1964; Graen, 1969):

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

where

V_j = job satisfaction

I_{jk} = instrumentality of the job for the attainment of the k^{th} outcome

V_k = the valence of outcome k

n = the number of outcomes

It has been previously pointed out that in most studies to date, the instrumentality measure has been

operationalized as Expectancy 2 on a scale from 0 to 1. In this study instrumentality will be measured as well on a scale from -1 to +1. Comparing both sets of measures, it is predicted that:

Hypothesis 1: Job satisfaction will be more highly correlated with the degree to which the job facilitates the attainment of valued outcomes and the avoidance of undesirable outcomes than with the degree to which the job only facilitates the attainment of valued outcomes.

2. Job Effort

The job effort model predicts behavior as distinguished from an attitude or a feeling which is predicted by the job satisfaction model. According to the expectancy model, the amount of effort expended is a function of the expectancy that an act will be followed by a certain outcome multiplied by the valence of that outcome.

Symbolically,

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

where

F = the force to perform an act

E_{ij} = the expectancy that act i will be followed by outcome j

V_j = the valence of outcome j

n = the number of outcomes

The reformulated theory states that acts as well as first-level outcomes may be both positively and negatively instrumental to the attainment of other outcomes. It is therefore predicted:

Hypothesis 2: Job effort will be more highly correlated with the degree to which an act is instrumental to the attainment of valued outcomes and to the avoidance of undesirable outcomes than with the degree to which the act is perceived to lead only to the attainment of valued outcomes.

3. Job Performance

The Vroom model postulates performance to be job effort multiplied by ability. Arvey and Dunnette (1970) argue that an additive relationship between ability and expectancy is perhaps a better predictor of performance than a multiplicative one. Since findings on this point are inconsistent and since the addition of the ability variable would present more methodological problems without resolving any conceptual ones, it has been decided for this study to predict performance from the motivational component of expectancy theory without the use of an ability measure. This decision is consistent with the practice of most reported research in this area (Hackman and Porter, 1968; Porter and Lawler, 1968; Lawler, 1968; Graen, 1969).

The effect of the omission of the ability dimension should be borne in mind as the findings on job performance are reviewed. We therefore hypothesize that:

> Hypothesis 3: Job performance will be more highly correlated with the degree to which effective performance is instrumental to the attainment of valued outcomes and to the avoidance of undesirable outcomes than with the degree to which effective performance is seen to lead only to the attainment of valued outcomes.

B. Sample

Questionnaires (see Appendix) were mailed to the sales forces of four industrial organizations. The sales function was selected in order to facilitate the compilation of objective performance data. However, such objective measures could not be obtained from two of the four companies and were received for only a portion of the participants in the other two companies.

The data were analyzed by treating all responses as one sample, by comparing the responses of the participants of each company separately, and analyzing the responses of the participants of each of the two largest divisions in the largest company. The four companies may be profiled as follows:

1. Company A

The organization is a publicly-listed company with annual sales dollar volume in the low nine figure range. It manufactures and distributes consumer products through two operating divisions. One division markets female undergarments and the other markets small household and personal toiletry products. The company describes itself as a packaged consumer goods house. It is the policy of the company to promote its products heavily through all available advertising media. Their product line is thus largely pre-sold before the sales representatives call on their customers. As a result, the management seeks representatives who can be trained to take orders from customers in accordance with a set procedure, who are amenable to relatively close supervision, and who are motivated to perform based on contingent rewards. Great emphasis is placed upon sales training, supervision and planned marketing programs.

The development of distribution to large retailers led to the creation of a separate merchandising function in each of the two divisions. It was found that the sales representatives could not achieve their quotas if they were compelled to render needed services to the large retailers. The structure which was developed to cope with this situation was to have the sales representative write the order and then to send in a merchandiser to help with point-of-sale techniques such as shelf arrangements, training of

retail sales employees, displays, and so forth. These merchandisers in each division are on straight salary, and are trained to be sales service oriented.

The statistical breakdown of the sales employees in this company is as follows:

	Managers	Sales Representatives	Merchandisers	Total
Type of Compensation	Salary	Incentive	Salary	
Division 1				
a. Total	25	201	19	245
b. Responses received	24	124	9	157
c. Valid questionnaires	21	115	7	143
Division 2				
a. Total	15	87	57	159
b. Responses received	13	55	31	99
c. Valid questionnaires	11	50	28	89
Division 3				
a. Total	40	288	76	404
b. Responses received	37	179	40	256
c. Valid questionnaires	32	165	35	232

It should be pointed out that the above statistics refer to the primary questionnaire which contained all the measures except for the Job Description Index. This measure was submitted in a second mailing some 60 days after the first, and 186 valid responses were received from the 232 individuals who returned the valid primary questionnaire.

2. Company B

The organization is an autonomous division of a publicly listed company with annual sales dollar volume of over a billion dollars. The participating division has an annual sales volume in the middle eight figure range. It manufactures and distributes men's clothing accessories to retailers all over the country. It maintains a modest advertising program and relies on the selling skills of its representatives to achieve its sales objectives. Its 90 sales representatives are "moderately but adequately supervised" by six sales managers, according to the vice president of sales.

The statistical breakdown of the sales organization in Company B is as follows:

	Managers	Sales Representatives	Total
Type of Compensation	Salary	Incentive	
a. Total	6	90	96
b. Responses received	3	58	61
c. Valid questionnaires	3	49	52

Forty-five valid JDI questionnaires were received from the 52 respondents on the first mailing.

3. Company C

The organization is a privately-owned company with annual sales dollar volume in the middle eight figure range. It manufactures and nationally distributes children's and women's apparel items. The organization is structured along lines of customer category. Thus it has infants',

girls', boys' and ladies' divisions. Its national road sales force sells the products of all the divisions to small retailers and department stores, while each division maintains a small sales staff of its own at the sales headquarters to sell to and service the chains and discounters. Due to the small size of the sales force, the company was treated as a homogeneous sample.

The company has doubled its volume during the last four years and is experiencing organizational growing pains. The management has a free-wheeling dynamic philosophy and grants its sales representatives far more autonomy than in Company A or B.

The statistical breakdown of Company C is as follows:

	Managers	House Sales	Road Sales	Total
Type of Compensation	Salary	Salary	Incentive	
a. Total	4	18	24	46
b. Responses	3	11	23	37
c. Valid questionnaires	3	11	23	37

Twenty-nine valid JDI questionnaires were received from the original 37 respondents.

4. Company D

The organization is an autonomous American subsidiary of an internationally distributed cosmetics manufacturer headquartered in France. It has an annual sales volume in the lower to middle eight figure range.

The product is heavily promoted in the media and is pre-sold. Due to the worldwide reputation of the product the job of the sales representative has been to fight for the largest possible share of the inadequate company production and then to allocate the available quantity as fairly as possible among his customers. According to the president of the firm (who assumed his duties in 1972), the quality of supervision prior to his incumbency was very poor and quite ineffective. The statistics for Company D are as follows:

	Sales Representatives
Type of Compensation	Salary
a. Total	45
b. Responses received	28
c. Valid questionnaires	27

Permission was not granted to mail out the JDI.

5. Total Sample

The statistics for the total sample involved in this study are as follows:

	Total	Responses Received	Valid Question-naires	% of Total
Company A	494	256	232	57.6
Company B	96	61	52	54.3
Company C	46	46	37	58.8
Company D	45	28	27	60.0
Total	591	382	348	58.8

Permission was not granted to contact the non-respondents.

C. Predictor Measures

1. Outcomes

Expectancy-valence theory is an individual theory of motivation which a sumes outcomes chosen by the individual. Mitchell (1971) points out that practical considerations and control problems usually dictate outcomes selected and controlled by the investigator in contradiction to the requirements of the theory. In order to overcome this difficulty, a comprehensive list of outcomes was compiled from previous studies in the field. Since these studies had largely ignored negative outcomes, the literature in the areas of conflict, fear of failure, and anxiety was reviewed and additional outcomes were added from these sources. To further conform to the requirements of the theory, the questionnaire was designed to permit the subject to add any positive or negative outcomes which were important to him and which did not appear on the submitted list. The use of a pre-selected but open-ended listing of outcomes thus provided a good approximation of the subjects' own outcomes without incurring excessive loss of control.

About 45 percent of the respondents--157 out of 348--took advantage of the opportunity to write in the spaces provided for additional outcomes. The entries were of three kinds: (a) emphasis was placed on one or more of the submitted outcomes; (b) one or more of the submitted outcomes was repeated in different language; and (c) some unique

circumstance in the company was entered as an outcome rather than as an event which implied or led to an outcome. For example, a substantial group of respondents in Company A complained about the need to attend sales meetings on Saturday. The complaint referred to the infringement on what was felt to be personal time and this type of outcome appeared on the pre-selected listing. Thus, it is interesting to note that out of 157 entries, not one additional outcome was added to the original list. It may be surmised that researchers have covered the field of job related outcomes fairly completely, and that a well-designed pre-selected list of outcomes does not violate the requirements of the theory.

2. Valence of Outcomes

The preferences that individuals have toward outcomes, rewards, and events are referred to as the attraction, valence or value of rewards and outcomes. Most previous studies have measured these preferences through some form of importance index for outcome valence (Graen (1969), Porter and Lawler (1968), Georgopoulos, et al. (1957), Evans (1970)). Mobley (1971) indicates several problems related to these outcome measures:

a. It is assumed that all outcomes are relevant to the subject.

b. Previous studies usually failed to consider negative outcomes.

c. The use of importance as the dimension of valence measures the intensity of the preference but not its content, i.e., what the person values. The measure should reflect both content and intensity.

Following the lead of Mobley (1971) and Galbraith and Cummings (1967), a scale of desirability was used to measure the valence of outcomes in this study. For each outcome, the subject was asked to indicate whether it was

Very desirable

Desirable

Does not matter

Undesirable

Very undesirable

These outcome desirability ratings were designed to avoid the problems mentioned by Mobley. The scale submitted to the employees of Companies B, C, and D consisted of 29 items. Before the scale was given to the employees of Company A, five additional items were added. These items all dealt with the level of anxiety the individual felt might be desirable or undesirable on his job. These items were scored independently of the expectancy scale and so did not affect the comparability between Company A and the other companies.

Although the outcomes had been used in previous studies, they had not been combined in the same manner as the Outcome Desirability scale in this study. To test the reliability of the scale, it was administered as part

of the total questionnaire to a group of 20 college seniors enrolled in the evening program of the Newark College of Engineering. The participants held full-time jobs during the day and their work experience ranged from a minimum of five to a maximum of 18 years. The questionnaire was submitted to them twice, the second administration taking place five weeks after the first.

A t test was applied to test the null hypothesis that there was no difference between the means of the individual item scores in the two administrations. The results of the t test are presented in Table 2. The null hypothesis was clearly supported for all items other than Items 11 and 24, and four of the five items dealing with anxiety. Items 11 and 24 showed marginal p values and were retained in the study. However, the four anxiety items were removed from the study, leaving only Item 32 to measure anxiety as a predictor.

3. Importance Rankings of Outcomes

The Outcome Desirability scale assumes equal weighting for all items assigned the same code by the respondent. Although Ghiselli and Brown (1955) concluded that "differential weighting will not give better results than equal weighting of specific scales," it was decided to compare the predictive strength of the unweighted Outcome Desirability scale with that of a weighted scale. The subjects were asked to rank in importance to them those items which they had

TABLE 2

TEST-RETEST RELIABILITY OF OUTCOME DESIRABILITY SCALE
t TEST OF DIFFERENCE IN MEANS BETWEEN TWO ADMINISTRATIONS

Item No.	t Value	p Value	Item No.	t Value	p Value
1	.69	.49	18	-.17	.87
2	-.25	.80	19	.29	.77
3	0	1.00	20	-.70	.49
4	-.77	.45	21	.52	.60
5	1.05	.30	22	.53	.60
6	.94	.36	23	.19	.85
7	-.85	.40	24	1.67	.10
8	1.45	.16	25	.73	.47
9	-.51	.61	26	.35	.73
10	.30	.77	27	.29	.77
11	1.79	.08	28	.99	.33
12	-1.05	.30	29	-.20	.84
13	-.36	.72	30	3.05	.004
14	.39	.70	31	1.88	.07
15	0	1.00	32	1.23	.23
16	.56	.58	33	2.26	.03
17	-.50	.62	34	2.48	.02

Degrees of Freedom: 38

Items lacking reliability: 30, 31, 33, 34

Items with marginal reliability: 11, 24

classified as either Very Desirable or Very Undesirable. A frequency distribution revealed a sharp drop-off in responses beyond the first four items ranked. Utilizing the weighting technique of equal unit intervals reported by Goodman, Rose and Furcon (1970), the scores of each of the first four items were multiplied by 4, 3, 2 and 1 respectively.

4. Expectancy - Instrumentality Measure

A Job Characteristics Questionnaire was used to measure the degree of expectancy of the employee that his effort would lead to good performance or to a second level outcome, and that good performance would lead to second level outcomes. As designed by Evans (1969), the items are worded to elicit a set of responses ranging from "Definitely Not True of My Job" to "Extremely True of My Job."

Thirty-nine items were developed by the author for this scale. Thirty-two of the items were outcomes which matched specific outcomes in the Outcome Desirability scale. The remaining seven items were inserted to test the predictive power of the concept that effort leads to good performance. The test-retest procedure was also conducted for this scale as described above, and the t test was applied to each items, with results shown in Table 3. The null hypothesis was clearly supported for all items except Item 7.

TABLE 3

TEST-RETEST RELIABILITY OF JOB CHARACTERISTICS QUESTIONNAIRE
t TEST OF DIFFERENCE IN MEANS BETWEEN TWO ADMINISTRATIONS

Item No.	t Value	p Value	Item No.	t Value	p Value
1	.28	.78	21	-.19	.85
2	-.43	.67	22	.87	.39
3	0	1.00	23	.10	.92
4	0	1.00	24	-.38	.71
5	.77	.45	25	0	1.00
6	1.26	.21	26	.80	.43
7	2.00	.05	27	-.18	.86
8	.89	.38	28	0	1.00
9	.21	.84	29	.76	.45
10	.54	.59	30	.41	.69
11	.56	.58	31	-.26	.79
12	-.48	.64	32	-.60	.55
13	-1.63	.11	33	-.13	.90
14	.61	.55	34	-.12	.91
15	-.46	.65	35	-.33	.74
16	0	1.00	36	.19	.85
17	-1.10	.28	37	.37	.71
18	.44	.67	38	.94	.35
19	-1.51	.14	39	0	1.00
20	-.118	.86			

Degrees of Freedom: 38

Items lacking reliability: 7

5. Predictor Models

Thirty-seven predictor models were tested, of which 32 utilized the variables of the theory. From a statistical point of view, these formulations cannot be classified as independent models, since the same variables appear in various additive and multiplicative combinations. However, due to the great emphasis in prior research on the specific relationships among the variables, it was felt that a comparison of the predictive power of the various combinations would be a useful component of the design of the study. The models may be grouped into five categories.

a. The Individual Variables of the Theory

The individual variables of the theory were tested to determine whether any might predict satisfaction, effort or performance, as well as or better than the combined models.

The variables tested were:

E1 - the perceived belief that effort will lead to good performance or to second level outcomes.

E2 - the perceived belief that performance will lead to second level outcomes.

V1 - the desirability or undesirability of all the outcomes resulting from effort.

V2 - the desirability or undesirability of all the outcomes resulting from performance.

V1-Extreme - same as V1, but limited to outcomes classified as very desirable or very undesirable.

V2-Extreme - same as V2, but limited to outcomes classified as very desirable or very undesirable.

IVa - intrinsic valence of work goal accomplishment.

IVb - intrinsic valence of behavior.

b. Additive Models

The models tested in this group were:

E1 + V1	V1 + V2
E2 + V2	IVa + IVb
E1 + E2	

c. Multiplicative Models

The models tested in this group were:

E1V1	E1V1-Extreme
E2V2	E2V2-Extreme
E1E2	E1V2
V1V2	Importance Ranking
IVa x IVb	(E1V1 and E2V2)

d. Compound Models

The models tested in this group were:

E1 + (E2V2)	(E1 + V1) + (E2 + V2)
E2 + (E1V1)	(E1 + V1) x (E2 + V2)
E1 (E2V2)	E1V1 + E2V2
E2 (E1V1)	E1V1 x E2V2
IVb + IVa (E2V2)	IVb x IVa (E2V2)

e. Miscellaneous Models

The models tested in this group were:

1. The predictive power of the belief that effort leads to good performance upon satisfaction, effort and performance. (E $\rightarrow$ P)

2. The predictive power of the belief that effort leads to poor performance upon satisfaction, effort and performance. (E $\rightarrow$ - P)

3. The predictive power of the belief that good performance is possible without effort upon satisfaction, effort and performance (E w/o P)

4. The predictive power of feelings of anxiety in the job situation upon satisfaction, effort and perfornance.

5. The predi power of a change in pay upon satisfaction, effort and performance.

D. Criterion Measures

1. Satisfaction

The Job Description Index (JDI) was used in this study to measure job satisfaction. This measure was developed and validated by Smith and her associates at Cornell University (1963) and has been described by Vroom (1964) as "without doubt the most carefully constructed measure of job satisfaction in existence today." The validity of the JDI was established by assessing convergent and discriminant validity by means of the multitrait-multimethod matrix as established by Campbell and Fiske (1959). The results show consistent convergent and discriminant validity. The reliability of the JDI was measured by the split-half correlation method. A high degree of reliability (ranging from .80 for pay to .87 for supervision) was indicated by the split-half correlation coefficients. The JDI includes five dimensions of job satisfaction: work, supervision, pay, promotion and co-workers.

Note on Rating Forms:

The questionnaire included a self-rating form consisting of seven items. The first three items were a self-rating report of job performance developed by Porter and Lawler (1968). The scale deals with three dimensions of performance: quality of performance, productivity of performance, and amount of expenditure of effort on the job. An unspecified but "reasonably high level of reliability" was reported by Price (1972) for this scale. The other four items were a self-rating scale of motivation developed by Patchen (1965). This scale has been used in a number of studies and has shown high validity measured against absence rates, supervisory rating and volume of production. The test-retest reliability coefficient for Patchen's scale is .80 for individuals and .83 for group scores. Three subscales (based upon administrations to separate samples) have been constructed from Patchen's work motivation scale:

Index A - based upon the responses to the first two questions,

Index B - based upon the first four questions, and

Index C - based upon the answers to the first three questions.

The three subscales were utilized in this study.

A t test was applied to the self-rating form completed twice by the evening student group described previously. The results are shown in Table 4. The null hypothesis was clearly supported for all items.

TABLE 4

TEST-RETEST RELIABILITY OF SELF-RATING FORM
t TEST OF DIFFERENCE IN MEANS BETWEEN TWO ADMINISTRATIONS

Item No.	t Value	p Value
1	-.46	.65
2	.32	.75
3	-1.24	.22
4	-.57	.57
5	.99	.33
6	-.49	.63
7	0	1.00

Degrees of Freedom: 38

The supervisor of each respondent was asked to complete a Superior Rating Form for each subordinate. The rating form consisted of six items. The first three items were the Porter and Lawler scale described above, and the last three items were the first, second and fourth items of Patchen's work motivation scale. Patchen's third item could not readily be reworded for response by a superior. The item in question was:

How often does time seem to drag for you?

2. Effort

Four measures were used to measure effort:

a. Item 3 on the Superior Rating Form drawn from Porter and Lawler, and measuring the amount of expenditure of effort on the job. The item reads:

Amount of effort employee expends on job.

b. Item 6 on the Superior Rating Form drawn from Patchen, and comparing the effort of the subordinate with that of his co-workers. The question reads:

Would you say that the employee works harder, less hard, or about the same as other people doing his type of work in your company?

c. The sum of 'a' and 'b'.

d. The sum of the total Superior Rating Form.

A factor analysis was run on the Superior Rating form and showed that all items were measuring one factor strongly (see Table 7). The Superior Rating Form was thus used as a criterion measure both for effort and performance.

3. Performance

Five measures were used to measure performance:

a. Item 1 on the Superior Rating Form drawn from Porter and Lawler, and measuring the quality of performance. The line reads:

Quality of employee's job performance.

b. Item 2 on the Superior Rating Form drawn from Porter and Lawler, and measuring the quantity of performance. The item reads:

Employee's productivity on the job.

c. The sum of 'a' and 'b'.

d. The sum of the Total Superior Rating Form. See comment above.

e. Objective measure of performance where available based on percentage of quota achieved.

E. Demographic Information

Each respondent was asked to supply background information on the following factors:

Sex

Marital status

Age group

Number of dependents

Level of education

Job function

Earnings level

Change in earnings level since last year

Time spent with company

Time spent on present job

Time spent with present superior

Time spent doing similar work

Type of compensation

F. Procedures

1. To measure the reliability of the scales used in this study, the questionnaire was submitted on a Test-Retest basis to a group of college seniors as described previously. A t test was applied to the difference in means between the two administrations and the results given above.

2. The data used in this study were tested for reliability either through Kuder-Richardson Formula 20 with a Spearman-Brown Prophecy Formula Correction or through Coefficient Alpha with a Spearman-Brown Prophecy Formula Correction. The nature of the scale determinedwhich of the two procedures was adopted. The JDI and the Outcome Desirability scales called essentially for a dichotomous type of response. The split-halves technique of K-R20 was thus deemed appropriate for estimating the reliability of these scales. On the other hand, Coefficient Alpha was used in the case of the various expectancy scales and the Superior Ratings where Likert-type measurements were involved. Due to the relatively small number of items in these scales, the Spearman-Brown Correction values are reported to indicate the maximum reliabilities that would be achieved if the scales were lengthened.

The scale reliabilities are presented in Table 6. The only reliabilities that could be called into question are those of the E2 Postive and E1 Negative scales. However, in both cases the Spearman-Brown correction raises the values to an acceptable level.

3. The questionnaires were mailed to the home address of each sales employee in the four participating companies. A covering letter was attached to eqch questionnaire signed by the chief sales executive of the organization. The letter explained the purpose of the questionnaire, emphasized its confidentiality and voluntary nature, and urged the cooperation of the recipients. A second mailing was made of the JDI about 60 days after the first questionnaire was mailed to test the predictability of the theory over time.

4. The method of scoring used was as follows:

a. Outcome Desirability Scale

Rating	Value Applied
Very desirable	3
Desirable	2
Does not matter	1
Undesirable	2
Very undesirable	3

In evaluating the alternative methods of scoring this scale, the crucial problem of operationalizing negative instrumentality was confronted. The use of negative values was considered and rejected because of the complexities resulting from combining valence and expectancy values in both additive and multiplicative relationships. The use of low to high values (1 to 5 or 1 to 7) was considered and rejected because it violated the equal weighting assigned to very desirable and undesirable outcomes. The method finally chosen avoided both complexity and ambiguity. A positive instrumentality or

expectancy was defined as the probability of a positive relationship between the valence and the expectancy. A negative instrumentality was defined as the (positive) probability of a negative relationship between the valence and the expectancy.

Within the framework of these definitions, it was possible to assign algebraically positive values to undesirable outcomes. The algebraically positive sum of the negative relationships relevant to each predictor model was then subtracted from the sum of the items with positive relationships to arrive at a net predictor score. This approach offers a viable means of operationalizing instrumentality on a scale from -1 to +1. Furthermore the technique justifies the labelling of the expectancy variables as E1 and E2 as found in the literature since it employs probability of both positive and negative relationships. There is no danger of misunderstanding with this methodology since positive and negative relationships are clearly identified for the respondent and the researcher.

b. Importance Ranking

As explained previously, the Outcome Desirability value of 3 (Very desirable or Very undesirable) was multiplied by 4, 3, 2, 1 for the first four items ranked respectively.

c. Job Characteristics Scale

Low to high values of 1 to 7 were applied.

d. Rating Forms

Low to high values of 1 to 5 or 1 to 7 were applied.

e. Job Description Index

The method of scoring developed by its authors was used.

f. Predictors

For each of the 32 predictor models using the variables of the theory, three scores were obtained. All the items with positive relationships were summed for one score: all the items with negative relationships were summed for a second score: the second score was then subtracted from the first score to obtain the third score. It should be mentioned that with the compound models, the third score was obtained for each variable in the model and then combined with the other third scores in the model.

5. Frequency distributions were run of the items in the valence and expectancy scales as well as the demographic characteristics of the respondents.

6. Correlations were run of all the predictors against all the criteria. A selected group of predictors (the criteria for selection to be defined below) were then used for both a regression analysis and an analysis of the effect of moderating variables.

G. Presentation of Data

As was reported previously, 37 predictor models were tested of which 32 utilized the variables of the theory. Each of the latter 32 models was tested for positive instrumentality alone, negative instrumentality alone, and the algebraic sum of the positive and negative instrumentalities. In similar fashion, the three criteria were tested through 17 individual measures. Finally a study was made of 13 moderating variables. Thus a total of 131 variables were analyzed in this study.

The presentation of significant findings in meaningful form necessitated the development of a selection process. The criteria used for the selection of predictor measures to be presented were:

a. Models used in previous studies and
b. Models which yielded the highest correlation coefficients, or
c. Models which yielded significant correlation coefficients for the largest number of criterion measures.

The findings related to the criterion of satisfaction are presented in terms of the JDI total score. However, in order to examine the effects of the theory upon the individual components of job satisfaction, a subsection is added to analyze each of the five dimensions separately. Since the objective of this study deals with the relationship of expectancy-valence models to various criteria, the major

thrust of the findings would have been compromised if subscales of each criterion had been included in the presentation. Thus the sum of the two subscales for effort and performance respectively are presented in the various tables rather than the subscales themselves. The sum of the Superior Rating items, which was shown through factor analysis to be based strongly on one factor, was used to represent both effort and performance.

Only those moderating variables yielding significant effects are presented in the tables. Finally, only those sample groups were included in each part of the study whose sizes were sufficient to yield significant results.

CHAPTER VI

FINDINGS AND DISCUSSION

A. Statistical Summary

A frequency distribution was run of all the items in the Outcome Desirability and Job Characteristic Scales.

1. Outcome Desirability

A ranking of the seven or eight items most frequently selected in each category by the total sample group is presented:

Item No.	Description	Frequency
a. Most desirable		
8	Pay	280
24	Personal goal achievement	267
27	Intrinsic achievement	233
12	Extrinsic achievement	229
6	Recognition by superior	214
5	Advancement	201
3	Recognition for good performance	189
2	Job security	176

Item No.	Description	Frequency
b. Desirable		
1	Social acceptance	227
13	Leisure	189
21	Respect of coworkers	169
20	Influence in decision making	166
16	Participation	158
2	Job security	135
3	Recognition for good performance	123
c. Most undesirable		
18	Lack of job security	259
25	Being demoted	235
7	Lack of ego involvement	233
22	Undesirable job transfer	202
15	Reduction of territory	186
28	Lack of reward for effort	159
23	Lack of reward for performance	149
d. Undesirable		
26	Lack of leisure	198
10	Lack of social acceptance	163
29	Lack of recognition for effort	162
19	Job pressure	157
14	Lack of job pressure	155
4	Lack of influence	150
23	Lack of reward for performance	146

The five items most frequently selected in each category within each of the subsamples are included in the seven or eight items listed above for each category. This is a strong indication of similar preferences of individuals in different environments. In only one case did a subsample show a strong preference for two items (2 and 3) which were only moderately selected by those in the other subsamples. It was this subsample--Company C--which yielded stronger correlation coefficients for effort and performance than the other subsample. The evidence does not warrant the claim that this stronger desire for job security and recognition for good performance account for the higher coefficients, but it does seem to indicate that individual differences must somehow be considered within the framework of the theory.

After all the human relations studies capped by Herzberg's findings (1959), it is interesting to find in this sample that the most desirable outcome chosen by the respondents was pay. Since the total sample included four different companies, it cannot be said that this result was due to a biased sample. The one common characteristic among the respondents was their employment in the sales function. Thus it may be posited that the importance of pay may be a function of occupational status. This statement may be buttressed by the fact that the only

subgroup for which pay was not the most desirable outcome was the merchandising group in Company A. The merchandising job combines selling with administrative duties.

Also contrary to human relations findings is the fact that recognition by superiors was far more desirable than favorable peer relationships. In addition, the desire for participation was far down the list of desired outcomes, which is not what one would be led to expect from the literature (Argyris (1964), McGregor (1967, Maslow (1965)).

In terms of negative outcomes, the threatened loss of job security and reduction of job level and status dominated the choice of valences. It may be that in an affluent society, job security does not rank very high as a positive aspiration, but assumes paramount importance when its loss is threatened. The only one of the five most undesirable outcomes which did not deal with loss of job security or status was the lack of ego involvement. The strength of this negative valence in a white-collar sales group lends support to the nationwide and even worldwide attention being focused on alienation from work. It is interesting to note that, except for the managerial group, there was no expectancy that greater dedication to the job or more successful performance would remove or ameliorate this feeling of lack of involvement. This would tend to confirm the need for job enrichment programs.

2. Job Characteristics

Item No.	Construct	Frequency
a. Extremely true of my job - Codes 6 and 7		
24	Personal goal achievement	262
27	Pay	251
19	Pay	246
30	Self-esteem	242
12	Intrinsic achievement	241
8	Job security	231
b. Definitely not true of my job - Codes 1 and 2		
29	Negative instrumentality of effort	294
25	Advancement	293
5	Job pressure related to effort	289
28	Job pressure related to performance	286
7	Social acceptance	266
33	Social acceptance	259
c. Neither true nor not true of my job - Codes 3, 4 and 5		
18	Leisure	145
37	Fatigue	144
4	Leisure	137
32	Influence	135
14	Fatigue	134
1	Job security	133
38	Relation with coworkers	132

There was more variability among the subsamples with the items in the Job Characteristics scale than in the Outcome Desirability scale. Company A displayed moderate frequency and Companies B and C strong frequency for the first three items in the category "Very true of my job," while the reverse was true for the last three items of this category. In the indifferent category--Codes 3, 4 and 5--Company A was the only subsample to display a strong frequency for the leisure and fatigue items. There was minimum variability among the subsamples in the category "Definitely not true of my job."

Nevertheless, as was true for the Outcome Desirability scale, the five items most frequently selected within each of the subsamples are included in the six or seven items listed above for each category. Thus the variability found among the subsamples in this study must be due to the level of intensity of the preferences and expectancies rather than to the preferences and expectancies themselves.

It may be seen that the factors which are most characteristic of the job match several of the more desired outcomes. The major exception is in the area of opportunity for advancement. While this is rated sixth among the most desirable outcomes, most respondents felt that there was no relationship between their effort and performance and their advancement. This was as true for sales managers as

for the salesmen and applied to all four companies. Since this belief was apparently based on a realistic perception by the respondents of the actual situation, the question arises as to the alternatives open to management when a desired outcome cannot be satisfied.

There was almost no job pressure felt by any of the participants nor was there a feeling that social acceptance was in any way related to effort or performance. It is possible that the lack of job pressure is related to the lack of ego involvement. The two major factors which were irrelevant as expectancies--leisure and fatigue--were also irrelevant as valences.

B. Expectancy-Valence Theory and Satisfaction

1. Predictor Models

Tables 13 A-D present the correlations between 13 predictor models and satisfaction as measured by the JDI total score. The only model which yielded significant results for all the sample groups was E1, or rather the E1 items with a negative relationship. As is shown in Table 9, models E1 + E2 (Negative), E1 + V1 (Negative), E1E2 (Total), E1V1 (Negative), Importance Ranking (Positive and Total), E1 (E2V2) (Negative), and E2 + (E1V1) (Negative) all yielded significant results among four of the five samples. Significant results were obtained for most of the other models in three out of five cases. It should be noted that in most instances, the non-significant results were associated

with Companies B and C which had sample sizes of 45 and 29 respectively. The non-significant results may have been due to inadequate sample size.

Table 11 presents the findings in terms of the highest correlation coefficients. Among the 13 models, the highest coefficients ranged from .39 to .66. In the behavioral sciences, such a range may be considered highly significant, with the amount of variance accounted for ranging from 15.2 percent to 44 percent. The predictors which had the highest correlation coefficients in one or more of the sample groups were E1 + E2, E2 + (E1V1), E1E2, E1 (E2V2), E1V1 and E $\longrightarrow$ P. The E $\longrightarrow$ P model, that is, the belief that effort leads to good performance, predicted job satisfaction across four of the five samples, as well as or better than the other models. It would thus appear that the simplest way to predict overall job satisfaction is to ask the respondent whether he believes that effort leads to good performance on his job. From these findings it may be concluded that expectancy-valence models are strong predictors of satisfaction.

Table 8 presents a summary of results in terms of comparing positive (P) only and total scores (T) for eleven predictors. Out of 55 possible scores, 41 total scores were higher than the positive only scores, as hypothesized. This amounts to 74.6 percent of all the scores. In the case of two models, E1V1 and E2 (E1V1), the total score was superior

in all five samples. In six other models, the total score was greater in four out of five samples. Only in the case of Importance Ranking were the positive scores greater than the total scores.

A sign test was applied to determine whether these results could have occurred by chance. The Z-value of 3.49 indicates that we may reject this null hypothesis. A test of significance was then made of the difference between the positive only and the total correlation coefficients. Seventeen of the 41 cases where the total score was higher and four of the 14 cases where the positive scores were higher were found to be significant. Thus, out of 21 cases where the difference between the coefficients was significant, the total score was higher 81 percent of the time. Of the remaining 34 cases, the results were in the hypothesized direction 24 times, or 70 percent of the total. It may be concluded that the findings lend partial suppprt to Hypothesis 1.

Tables 14 A-E present the correlations between the Expectancy-Valence predictors and each of the five JDI dimensions, as well as the total JDI score. It may be seen that the coefficient levels for the total score and the work dimension are basically similar across each of the samples. For the three largest sample groups, the dimensions of pay, promotion, and coworkers showed significantly lower coefficients than the total score and work dimension for all

models except for Importance Ranking. The dimension of supervision in these three samples tended to have lower coefficients than the total score and work dimension, but the differences in most cases were not statistically significant.

Out of 78 correlation coefficients, Company B had only eight significant scores. Ten of the 13 significant scores in Company C were found in the dimensions of supervision and promotion. As was noted previously, it would appear that some combination of environmental factors and individual differences in the Company C sample led to these differences in results.

2. Sample Groups

Tables 12 A-E present the correlation coefficients of the 13 predictor models and satisfaction for each sample group. It may be seen that for the two largest groups, the Total Sample and Company A, significant results were obtained in 34 out of 35 possible categories. Only the negative relationship of Importance Ranking was non-significant in each sample. In fact in both groups the results were significant with p less than .01 in all cases except for E1V1 (Positive) in the total sample.

The third largest group, Company A--Division 1, followed the pattern of the two larger groups in the positive and total categories with unanimously highly significant results. However, in the negative category, only four of 11 models yielded significant results.

Company B, with an N of 45, showed no significant results for the positive models, six for the negative models, and three for the total score models. Company C, with a sample size of 29, showed one significant score among the positive models, five among the negative models, and one among the total score models. Unfortunately, the sample sizes were too small to permit a test of whether any of the moderating variables would have improved these results.

C. Expectancy-Valence Theory, Effort and Performance

1. Predictor Models

Tables 16 A-E present the correlations between seven predictor models and effort and performance as measured by the sum of the two effort items, the sum of the two performance items, and the sum of the Superior Rating form. Six sample groups were included in this analysis. As may be seen from Table 10, most of the positive and total scores were significant in the three largest groups. In seven out of 63 categories, there were four significant findings out of a possible six associated with E1 + E2, E2V2, and E1 + E2V2. In each case, the additional group was Company C, as mentioned above in the section on the Outcome Desirability scale.

Table 11 presents the findings in terms of the highest correlation coefficients. Among the seven predictors of effort, the highest coefficients ranged from .28 to .41. In the case of performance, the range was from .25 to .29 and in the case of the Superior Rating form, the range was from .32 to .37. The ranges for effort and Superior Rating may be characterized as moderately significant, accounting for from slightly under 9 percent to slightly more than 16 percent of the variance. The range for the performance measure is of low significance, accounting for 6.25 percent to just under 9 percent of the variance in performance. The best predictor of effort was E2V2, followed by E1, E1 + (E2V2), E1 + E2, and E1V1. The best predictor of performance was E1 + E2, followed by E1, E2V2, E1 (E2V2), and E1 + (E2V2) all of which had coefficients of .26. The best predictor of effort and performance as measured by the Superior Rating form was E2V2, followed by E1 + (E2V2), E1V1, and E2 + (E1V1). These findings indicate that Expectancy-Valence theory alone with no additional variables is a moderate predictor of performance.

Table 8 presents a summary of results in terms of comparing positive only (P) and total scores (T) for seven predictors. Out of 42 possible scores, the total scores were greater than the positive scores in 26 cases for effort, 24 for performance, and 25 for the Superior Rating measure. The percentages of the total were 62 percent, 57.2 percent, and 59.6 percent. In 14 instances the positve and total scores were equal. Taking these scores into account, it may be stated that the total scores were equal to or greater than the positive scores in 73.7 percent, 64.2 percent, and 73.7 percent of all possible outcomes. The sign test supported the significance of these findings for two of the three measures.

The results of the test of significance of the difference between the positive and the total scores were unanimously non-significant. It may be noted that in ten of the paired comparisons, the scores changed from non-significant to significant and it may be contended that these differences are significant regardless of the Z-value. However, whether this contention is accepted or not, it must be concluded that the findings lend at best only the weakest support to Hypotheses 2 and 3, since the magnitude of the results in the hypothesized direction must be considered as non-significant on an overall basis.

2. Sample Groups

Tables 15 A-F present the correlation coefficients of the seven predictor models with effort and performance for each of the six sample groups. For the two largest groups, it may be seen that in the positive and total categories, low but significant results were obtained in five or more of the seven models. Less than half the results were significant in the negative category. The table shows that for the third largest group, Company A - Division 1, moderately significant results were obtained in at least five of the seven models in the positive and total categories. No significant results were obtained from the negative category.

Except for one barely significant score in the negative category, no significant results were obtained at all from Company B. Company D had eight significant scores in the positive category and none in the total category. Company C had no significant scores for the performance measure. However, for the criteria of effort and Superior Rating, ten moderately significant scores were obtained from three of the models--
E1 + E2, E2V2, and E1 + (E2V2).

Thus, whether analyzed by predictor model or by sample group, the findings did not support the theory as a strong predictor of effort or performance. The fact that variations were found among the sample groups, especially Company C, would indicate the importance of environmental and personality differences in explaining and predicting these two criteria. It was mentioned earlier that the omission of ability as a variable should be kept in mind as a possible factor affecting the findings on performance.

D. Effect of Moderating Variables

The list of the moderating variables tested was presented in the previous chapter. Only three of the sample groups were large enough to yield significant results from splitting the sample--the total sample, Company A, and Company A - Division 1. Where the distribution of respondents within the sample permitted, the middle group was removed and the balance of the group was analyzed on a low-high basis. This was possible with the following variables: (The N for each low and high group is presented in Tables 18 A-J).

a. Age - Low includes those under 30 years of age; high includes those over 40 years of age.

b. Earnings - Low includes those earning under $12,500; high includes those earning over $15,000.

c. Change in Earnings - Low includes those earning the same or less in 1972 as compared to 1971; high those earning 6 percent or more than in 1971.

d. Seniority with Company - Low includes those employed less than three years; high those employed more than five years.

e. Seniority on Job - Low includes those on job less than one year; high those on job more than two years.

f. Time doing Similar Work - Low includes those doing similar work less than three years; high more than five years.

The distribution did not permit leaving out the middle group for the following variables:

a. Education - Low includes those with some college; high includes those with a Bachelor's degree or higher.

b. Number of Dependents - Low includes those with two or fewer dependents; high those with more than two dependents.

c. Time with Present Supervisor - Low includes those less than one year with supervisor; high those with more than one year.

Four of the variables were characterized by qualitative rather than interval differences. These were:

a. Sex - Male or female

b. Marital Status - Married or other

c. Type of Compensation - Salary or incentive

d. Job Type - Supervisory or salesman

The variables of sex and marital status were eliminated from the analysis upon receipt of the data because of an inadequate number of females and unmarried respondents. The other variables were tested and upon analysis the following were removed from the study due to inconsistent or non-significant differences in the correlation coefficients.

a. Satisfaction

Earnings

Seniority with the company

Seniority on the job

Age

b. Effort and Performance

Education

Number of dependents

Change in earnings

Job type

Seniority on the job

Time with same supervisor

The findings with respect to the other variables are presented in Tables 18 A-J.

1. Effect of Moderating Variables Upon Satisfaction

a. Age - While the younger employees attained higher coefficients than their older colleagues in four of the six predictor models, the differences between the coefficients were not significant, and this variable was not considered to moderate satisfaction.

b. Education - Only one of the models--E1 + (E2V2)--clearly supported education as a moderator for all sample groups. The other five models supported education as a moderator for two of the three sample groups with the third group showing no moderating ability. Where there was support, those with at least a college degree had significantly higher coefficients than those without a degree. The findings indicate that education is a weak moderator.

c. Type of Compensation - Employees paid on an incentive system achieved significantly higher scores than those paid on straight salary under four models--E1, E1V1, E1 + (E2V2), and E2 + (E1V1). The same results were achieved with two of the three sample groups under the other two models. These findings would tend to characterize this variable as a moderate moderator.

d. Number of Dependents - Employees with more than two dependents had significantly higher coefficients than those with two or less dependents in four of the models--E1, E1V1, E1 + (E2V2) and E2 + (E1V1). Results were inconclusive with the other two models. The number of dependents may be classified as a moderate moderator.

e. Change in Earnings - In all six models, employees earning the same or less in 1972 as compared to 1971, had higher coefficients than employees who received raises of 6 percent or more. However in only five of 18 cases were these differences in coefficients significant. Change in earnings must therefore be labelled a weak moderator.

f. Job Type - Sales representatives had significantly higher scores than did their managers in three of the models--E1V1, E1 + (E2V2), and E2 + (E1V1). The same pattern was discerned for two of the three sample groups with the other three models. Job Type may be regarded as a moderate modeator.

g. Time with Same Supervisor - With all six models, employees who were with the same supervisor for less than one year had significantly higher coefficients than those who were with the same supervisor longer than one year. This was the strongest moderator in this part of the study.

2. Effect of Moderating Variables Upon Effort and Performance

a. Age - Younger employees in all cases scored significantly higher than their older colleagues with all six models. This was one of the two strongest moderators associated with effort and performance.

b. Type of Compensation - With three of the models--E1V1, E1 + (E2V2), and E2 + (E1V1)--employees on incentive pay had significantly higher coefficients than those on straight salary. Results were inconclusive with the other three variables. This variable may be classed as a moderate moderator.

c. Change in Earnings - While all of the sample groups in three of the models--E2, E1V1, and E2 + (E1V1) showed higher scores for those without raises than for those

with raises of 6 percent or more, the differences in scores were not significant. This category was therefore not considered to moderate effort and performance.

d. Seniority with Company - In five of the models and in the case of two of the three sample groups in the sixth model, employees with low seniority had significantly higher coefficients than those with more seniority. The findings point to this variable as being a moderate moderator.

e. Time Doing Similar Work - Four of the models revealed that employees who had spent less time doing similar work had significantly higher coefficients than employees who had spent more time in their chosen field. The same results were obtained from two of the three sample groups in the other two models. These findings indicate this variable to be a moderate to strong moderator and one of the two best moderators in this group.

3. Summary of Effectiveness of Moderating Variables

Table 17 presents a summary of the effectiveness rating of the moderating variables tested for this study. It may be seen that only two moderators are effective both as regards satisfaction and effort and performance. Of these two, Type of Compensation seems to be the more stable. Among the variables which moderate satisfaction only, Time With the Same Supervisor is the most effective, followed by Job Type.

Among the variables which moderate effort and performance, Time Doing Similar Work is the most effective, followed by Age.

E. Objective Performance Measure

The complete lack of significance of objective performance as a criterion measure merits comment. It will be recalled that this measure was obtained only from Company A and Company D, but due to the problem of sample size, it could only be tested for Company A, Company A - Division 1, and the total sample. Within these three groups, the measure was correlated with every predictor model and failed to record significant results with any of the variables except for the individual or combined valence variables, where barely significant coefficients were occasionally obtained in the range of .20 to .25.

In an intercorrelation run with the other performance variables, the objective performance measure correlated .32 with the productivity of performance item and .23 with the sum of the two performance items in Division 1 of Company A. It achieved no significant correlation with these items in Division 2.

Since the findings in this study indicate weak to moderate results with the perceptual performance measures used and no significant results at all with the objective performance measure, one may ask whether the objective performance measure is in fact more objective than the perceptual measures. If it is, expectancy-valence theory is

not predicting true performance, but the individual's perception of it. If the objective performance measure is in effect less valid than the perceptual measures, the measurement problem of this vital criterion is thereby compounded. Prior studies have not addressed this problem.

F. Miscellaneous Variables

Reference has been made to five miscellaneous models which were added to the models from the theory. The findings were mixed.

1. E $\longrightarrow$ P - the belief that effort leads to good performance. This model yielded the single highest coefficient in the study, .66. It is apparently a strong predictor of satisfaction, although peculiarly it yielded barely significant sesults for effort and performance.

2. E $\longrightarrow$ -P - the belief that effort leads to poor performance. It was thought that this model might produce strong negative correlations, but the results were inconsistent as regards satisfaction, and nil as regards effort and performance.

3. P w/o E - the belief that good performance is possible without effort. The findings reveal this model to have moderate predictive power for satisfaction, none for effort and performance.

4. Anxiety - It will be recalled that four out of the five items related to anxiety were removed from the study

due to lack of reliability. There were no significant results from the remaining item. The inclusion of anxiety in the Outcome Desirability scale, which is of a "should be" rather than an "is" nature, raises the question as to whether the design of this study was appropriate for the testing of this construct.

5. Change in Pay - Barely significant results were obtained from this variable.

G. Regression Analysis

To determine the amount of variance accounted for by the major variables in the study on satisfaction and on effort and performance, a series of regression analyses were performed. It was recognized that there was a good deal of commonality among the variables, and the attempt was made to minimize the effect of this multicollinearity by limiting the number of highly interdependent variables in specific runs and by "forcing" certain variables to be considered before others. In addition to the four individual variables--E1, E2, V1, and V2--the model most widely used in prior studies, i.e., E1 (E2V2), was tested as well as two additive models, E1 + E2 and V1 + V2. Finally, the effect of the demographic variables was tested. Four ranges of variables were used in the various runs:

a. E1 (E2V2), E1, E2, V1, V2

b. E1 (E2V2), E1 + E2, V1 + V2

c. E1 (E2V2), E1, E2, V1, V2, demographic variables

d. E1 (E2V2), E1 + E2, V1 + V2, demographic variables

The types of runs made for each of the above ranges were:

a. All-way multiple regression with all variables at same time

b. Stepwise regression with strongest variable emerging first

c. Stepwise regression forcing E1, E2, V1, V2 or E1 + E2 and V1 + V2 before E1 (E2V2) and before the demographic variables

Finally, the three types of runs were conducted for each of the four ranges on the total sample only for both satisfaction and effort and performance. Then the third type of run was conducted for the third and fourth ranges on Company A, Company A - Division 1, Company A - Division 2, and Company C for satisfaction, and on Companies A, B, C and D for effort and performance.

1. Satisfaction

The several runs which permitted the strongest variable to be considered first all showed the model E1 (E2V2) to be the strongest variable accounting each time for 17 percent of the variance in satisfaction. The total

of the four variables of the theory, E1, E2, V1, V2, whether as individual variables or as additive models came to 2 percent. When the demographic variables were added, they accounted in total for 7 percent of the variance, with no individual moderator accounting for more than 2 percent. Thus, for the total sample, all the variables in the study accounted for only 26 percent of the variance in job satisfaction. The only significant variable was E1 (E2V2) with 17 percent of the variance accounted for. (See Table 19A).

The same variables were put through again on the next series of runs with the variables of the theory being forced before E1 (E2V2) and before the demographic variables. In the run using the individual variables, E2 emerged as the strongest with 11 percent of the variance, the other three variables combined contributed 3 percent and E1 (E2V2) 6 percent. In the run using the additive models, E1 + E2 accounted for 13.6 percent of the variance, V1 + V2 4 percent, and E1 (E2V2) 4 percent. The eight demographic variables combined added 7 percent to the total. (See Table 19B).

In view of these findings, the analysis of the individual sample groups revealed some surprising results. Table 19B summarizes these findings. As the N of the sample group decreased, the portion of the total variance explained by the variables in the study rose from 26 to 54 percent. The findings from the total sample obviously repressed many significant and unique results among the individual samples.

For example, E1 had contributed negligibly in the total sample, but was responsible for 24.5 percent of the variance for Division 2 of Company A. More surprisingly, V1, which for the total sample had predicted so little that it did not meet the criteria selected for the analysis, was found to account for 32.5 percent of the variance for Company C. Finally, several of the moderating variables were revealed to account for measurable portions of the variance. This was especially true for seniority with the firm.

2. Effort and Performance

The various runs which permitted the strongest variable to emerge yielded no significant results. The models, individual or additive, totalled no more than one to three percent in any of the runs. When the moderating variables were added, the total variance accounted for amounted to from 11 to 15 percent. As far as effort and performance were concerned for the total sample, the variables in the study had no predictive power. Forcing the individual or additive variables to emerge first did not change the picture at all. (See Tables 20A and B).

Table 20B reveals the astonishing change when the individual sample groups were analyzed. It is obvious that Company A dominated the total sample results. Once again, as the N of a sample group decreased, the portion of total variance explained increaased dramatically. E1 and E2 had R-square values of .12 and .25 respectively for Company C

although they were insignificant for the other groups as well as for Company C as regards satisfaction. V1 was insignificant for Company C although it had accounted for 32.5 percent of the variance in job satisfaction for this group. On the other hand, V1 accounted for 42 percent of the variance in effort and performance for Company D. Once again various demographic variables assumed importance in individual groups. Earnings emerged as accounting for 41 percent of the variance for Company B, while seniority with the firm accounted for 11 percent of the variance in Company D.

Clearly the most important findings to emerge from the series of regression analyses were:

a. Some combination of environmental and personality differences in the various sample groups are more accurate predictors of effort, performance and satisfaction than the variables used in this study.

b. While the classical model in the literature, E1 (E2V2), emerged as the strongest predictor of the group in the all-ways regression, it added only from one to six percent of the variance when the individual components were forced to emerge first. This does not indicate a very significant predictive power for the classical model.

c. Although most prior studies have not found valence to be a predictor of effort, performance or satisfaction, there are apparently certain sample groups where preferences possess such predictive power.

d. This study is believed to be the first where valences were divided into V1 and V2 on the basis of their being matched with E1 and E2 items. The findings in Companies C and D of strong V1 predictability without a corresponding change in V2 may indicate the presence of two categories of preferences (other than intrinsic and extrinsic). It would seem that valences related to act-outcome associations may under certain circumstances be strong predictors of satisfaction, effort and performance while valences related to outcome-outcome associations assume predictive power only in combination with their matching expectancies. This may be due to the fact that the act is more likely to be under the control of the individual, while the cause-effect relationship of the first-level to the second-level outcome may be a function of the external situation.

CHAPTER VII

SUMMARY AND CONCLUSIONS

A. Summary

In terms of the objectives of this study, the findings may be summarized as follows:

1. Thirty-two models utilizing the variables of the theory were tested. The models included the individual variables of the theory--additive, multiplicative, and compound (additive plus multiplicative) versions. For each model, scores were obtained for positive relationships between acts and outcomes and outcomes and outcomes, negative relationships, and the algebraic sum of the positive and the negative relationships. The models included most of those used in prior studies.

The findings showed various combinations of the variables of the theory to be moderate to strong predictors of total job satisfaction and of satisfaction with work, moderate predictors of satisfaction with supervision, and weak to moderate predictors of effort, performance, and satisfaction with pay, promotion and coworkers. None of the 32 models emerged as a significantly better predictor than the others. The individual valence variables, both

intrinsic and extrinsic, did not predict at all, but with this one exception, all the other models predicted with approximately equal strength. The variations that existed seemed to be a function of the sample group rather than of the models themselves. Thus the individual variables E1 and E2 predicted satisfaction as well, but no better than the additive, multiplicative or combined models. The same lack of differentiation among the models was evidenced for the effort and performance criteria except that E1V1 and E2V2 emerged as distinctly superior models for Division 1 of Company A and for Company C.

The regression analysis confirmed the importance of the environmental differences within the different sample groups (Tables 19 and 20). With Job Satisfaction as the dependent variable, E2 accounted for 20 percent of the variance in Company A, but only one-half of 1 percent in Company C. E1 accounted for 6 percent of the variance of Company A, but for only one-half of 1 percent in Company C. V1 accounted for no variance in Division 1, 3.5 percent in Division 2 and 32.5 percent in Company C. V2 accounted for none of the variance in any sample group.

With effort and performance as the dependent variable, E1 and E2 accounted for less than 2 percent of the variance in Companies A, B, and D, but did account for 12 percent and 25 percent respectively of the variance in Company C. V1 and V2 similarly accounted for less than 2 percent of the variance in Companies A, B, and C, but

did account for 42 percent and 6.5 percent respectively of the variance in Company D. It is clear that the strength of the theory and the variables within it depend in large measure upon environmental differences.

Previous studies have produced inconsistent results regarding the best predictor model. Hackman and Porter (1968) found that additive combinations yielded lower correlations than multiplicative predictors, while Pritchard and Sanders (1973) reported that the multiplicative relationship predicted no better than the additive relationship. To further complicate the issue, in the study of Mitchell and Albright (1971), E1 was found to be not significantly related to either performance or effort when combined additively or multiplicatively, but to add significantly to satisfaction when combined additively. The additive model referred to by researchers is E1+(E2V2), and the multiplicative combination is E1(E2V2). Tables 8 and 9 show that these two models yielded approximately the same number of significant findings for the various criteria, with neither showing significant superiority. In contrast to Mitchell and Albright, it may be seen that the multiplicative model ranked fourth in terms of satisfaction as compared to a ranking of seven for the additive model.

Several researchers have found E2 alone to be a strong predictor of performance. These studies include

Georgopoulos, Mahoney and Jones (1957), Galbraith and Cummings (1967), Mitchell and Knudson (1971), Pritchard and De Leo (1972), and Schwab (1972). The findings in this study conflict with these researchers, and agree rather with Arvey and Dunnette (1970) and Shapiro and Wahba (1973) who did not find E2 to be related to performance (see Table 11).

Intrinsic valence was found to be a predictor of performance by Galbraith and Cummings (1967), Graen (1969), and Galbraith (1972). On the other hand, Koppelman (1973) reported that extrinsic valences are better predictors than are intrinsic valences whereas Wanous (1973) suggested that performance causes intrinsic satisfaction. The coefficients yielded in this study correlating the intrinsic valence of accomplishment and behavior with effort, performance, and satisfaction were so low as not to meet the criteria for presentation in a table.

The level of performance was predicted by combining E1 and E2 additively in the studies of Lawler (1966, 1968) and Porter and Lawler (1968), and multiplicatively in the studies of Lawler and Suttle (1973) and Koppelman (1973). From Table 11, it may be seen that the additive model was found to be a strong predictor of both performance and satisfaction in this study, while the multiplicative model predicted only satisfaction.

These specific examples tend to confirm the findings in this study that there is no clear evidence of superiority of any one or any group of predictor models over the others. In the tables there was no significant distinction among the additive, multiplicative, compound or individual variable models.

2. This study explored the weaknesses in Expectancy-Valence theory resulting from an inadequate theoretical clarification of the concepts of expectancy and instrumentality. It sought to reconcile the operational definition of these two variables through a reformulation of the theory in terms of approach and avoidance motivation. The separate measurement of positive and negative instrumentalities provided the operational vehicle for this reformulation.

3. The study also demonstrated the differences in prediction that result from the two possible methods of operationalizing instrumentality. This was done through a questionnaire submitted to the sales forces of four companies engaged in the manufacture and distribution of consumer products. The questionnaire consisted of demographic background information, an Outcome Desirability scale, Importance Ranking of the Outcome Desirability scale, a Job Characteristics scale, the Job Description Index (JDI), a Self-Rating form, and a Superior Rating form. Although the items in these scales have been used in previous studies, the JDI was the

only standardized scale which has shown *a priori* high validity and reliability. A t test was successfully applied to demonstrate the reliability of the other scales (except for the Superior Rating form) in a test-retest submission to a pilot sample prior to the study. In addition, the data from the study were submitted to a Kuder-Richardson Formula 20 test for the dichotomous type scales and Coefficient Alpha for the Likert-type scales. Adequate to high reliabilities were obtained (Table 6).

The questionnaires were mailed to 591 sales employees of the four companies. The subjects were assured of anonymity in terms of feedback to management, although they were identifiable to the author through a coding system. Three hundred and eighty-two responses were received, and 348 of these were included in the study. Various statistical techniques were employed in the analysis of the results, including descriptive statistics such as means and standard deviations, product-moment correlation coefficients, multiple regression analysis, and factor analysis.

The results of this study showed that Expectancy-Valence theory was a strong predictor of job satisfaction and a moderate predictor of effort and performance. It was conclusively demonstrated that different predictions are obtained when instrumentality is measured from -1 to +1 than when it is measured from 0 to +1. The hypothesis that higher correlation coefficients would result from the inclusion of both

positive and negative instrumentalities as compared to positive instrumentalities alone was somewhat supported in the case of job satisfaction, but weakly and not at all statistically supported in the case of effort and performance.

4. To the extent that this study has shown that different predictions are obtained from instrumentality is measured from -1 to +1 than when it is measured from 0 to +1 and that the predictions tend to be stronger when both positive and negative relationships are included, it may be argued that the behaviors that should be considered should include not working hard as well as working hard, that the first-level outcomes include poor performance as well as good performance, and that second-level outcomes include negative as well as positive outcomes. Thus, while the generality of the theory may be limited by personality and environmental differences, it may be extended by considering a wider range of behavior and outcomes.

5. A statistical analysis of the preferences of the respondents showed that pay was chosen as the most desirable factor by the greatest number of employees. It is not likely that pay serves as a status or recognition symbol to sales representatives of four different companies. The findings would rather seem to indicate that the ranking of human needs should be moderated by occupational status. The analysis also showed that a lower-level need, such as job security, which

ranks fairly low as a positive factor in our affluent society, assumes major importance when there is a threat of deprivation. This finding tends to support Maslow's tehory. Finally, this analysis combined with the open-ended list of outcomes demonstrated that the criticism of researcher-selected lists of outcomes is not operationally valid.

6. The results did not reflect any strong moderating variables. Only two demographic factors--type of compensation and time doing similar work--moderated both satisfaction and effort and performance. Job type effectively moderated satisfaction. However, since sales representatives are paid on an incentive system and supervisors and managers on straight salary, it is not clear whether it is the job classification or the type of compensation which is moderating. It is interesting to note that most of the variables which were at least moderately effective deal in some fashion with time. One is led to speculate whether those who are young either in years, experience, or seniority perceive the Effort $\longrightarrow$ Performance $\longrightarrow$ Reward relationship as achievable, while those who have "been through the mill" have altered their perceptions in this regard.

7. It has been mentioned above that for satisfaction negative instrumentalities produced more significant findings than either positive or total instrumentalities, whereas the opposite was true in the case of effort and performance

In terms of the Atkinson dilemma referred to earlier in the study, fear of failure may be regarded as a specific negative instrumentality. To the extent that dissatisfiers are motivators of behavior, the findings in this study support the position that fear of failure is a stimulus to increased approach behavior in order to reduce or eliminate this fear. However, the Herzberg controversy in the literature has shown that satisfiers and dissatisfiers are not necessarily motivators of positive behavior. Also, negative instrumentality did not produce significant results in predicting effort and performance. Thus it may be concluded that while this study did not show that fear of failure inhibits approach behavior, it did not make a clear case for its stimulating approach behavior.

The theory of achievement motivation (McClelland (1961), Atkinson (1964), Atkinson and Feather (1966)) is based upon the affective need of individuals to achieve and the concomitant need to avoid failure. Korman (1971) has pointed out that individuals with a high need to achieve will be motivated to work harder in situations of moderate risk, where knowledge of results is provided, and where individual responsibility is provided. Thus while the need to achieve is affective in nature and has elicited projective measures on the part of researchers, the boundary conditions summarized by Korman affect the rational behavior of individuals and thus may be brought into the

purview of Expectancy-Valence theory. The evaluation of the degree of risk inherent in a situation is certainly related to the expectancy of an individual that an act will lead to an outcome, and the credit accruing to the responsible achieving individual is commonly included among the second level outcomes in Expectancy-Valence theory. Investigation of the relationship between the two theories would seem to show promise for future research.

8. A method has been demonstrated of retaining the distinction between first and second level outcomes and measuring both positive and negative relationships in terms of subjective probability without the necessity of establishing an artificial distinction between expectancy and instrumentality. This resolves both the logical and the methodological inconsistencies in the theory insofar as expectancy and instrumentality are concerned. Furthermore, by reducing the number of major variables in motivation to work theory from three to two, it rejoins the mainstream of Expectancy-Valence theory in other areas of research.

B. Conclusions

A major purpose of this study was to provide a more comprehensive test of Expectancy-Valence theory than has hitherto appeared in the literature. To accomplish this objective, the major components of the theory were subjected to a rigorous analysis of their conceptual frameworks.

The analysis led to a reformulation of the theory to broaden the base of behavior alternatives available to the individual in a work situation by including both approach and avoidance acts and to incorporate both positively and negatively valent first-level and second-level outcomes. This expansion of the domain of the major constructs of the theory permitted the study of various combinations of both positive and negative relationships between acts and outcomes and between first-level and second-level outcomes.

The number of models tested in this study was also more comprehensive than prior studies in the literature. Since prior research had produced inconsistent findings relative to the results from various models, it was decided to test the individual variables of the theory, i.e., E1, E2, V1, V2, IVa and IVb, additive combinations of these variables, multiplicative combinations of the variables, and compound versions (additive plus multiplicative) of the variables. Thirty-two such models were tested, and for each, where applicable, scores were obtained for positive relationships, negative relationships and the algebraic sum of the positive and negative relationships.

The final element of the design which contributed to the comprehensiveness of the study was the inclusion of four sample groups from four different industrial organizations. The samples varied in size from 27 to 232. The

total of all the samples amounted to 348 respondents. To provide comparability of the data, the sample groups consisted of only one occupational group--sales representatives.

The findings which emerged from the study were inconsistent with respect to the objectives of the study and criteria used. While the findings clearly showed differences in the predictive power of the theory when measuring approach behavior, avoidance behavior, or a combination of the two types of behavior, the direction of the differences and their magnitudes varied depending on the model or the sample group tested. Similarly, while individual models accounted for a significant or respectable amount of the variance in effort, performance and satisfaction, no individual model was consistently superior to others--either across approach and avoidance behavior or across all sample groups. Finally, while the sample groups were shown to be differentiated as to the predictive power of various models of the theory, there was no consistency in the direction or magnitude of the differentiation either with respect to the criteria or specific models tested.

The inconsistent results of this study raise the question about the usefulness of Expectancy-Valence theory in the area of motivation to work. Future researchers are faced with the choice of abandoning the theory and seeking other conceptual frameworks to explain individual behavior in a work situation or accepting the fact that the theory as

formulated to date is not a universal or general theory and devoting their efforts to finding out under what specific conditions the theory will or will not predict work behavior. There are at least three reasons why it would not be appropriate to desert Expectancy-Valence theory at this time. First, there is no other theory in the field at present which predicts motivation to work any better than, or perhaps even as well as, Expectancy-Valence theory. Secondly, with substantially less than 50 published studies in the field, it cannot be said that the theory has been adequately tested and found wanting. Finally, the degree of predictability which has been demonstrated for the theory to date is a strong indication that elements within the theory do contribute to the explanation of the individual's motivation to work and challenge the researcher to uncover other relevant variables which, when combined with the theory's variables, will significantly increase both the level and consistency of the predictive power of the theory.

On the other hand, when one considers the inconsistency of the findings within the context of the comprehensiveness of this study, it seems obvious that no fruitful developments can be expected from future research dealing exclusively or even primarily with the original variables of the theory. In the face of the dubious validity of several of the assumptions of the theory, (i.e., rationality,

transitivity of preferences, dominance, independence of the variables, and so forth), the failure to achieve conceptual clarification of the major constructs of the theory, and the difficulties experienced in the areas of operationality and measurement, the findings of the study point to the theory as being able at best to explain and predict a limited portion of human behavior. Within this restricted area, the modification of the theory may enhance our understanding of motivation to work under specified conditions. However, it also seems clear that if we wish to expand our knowledge of the behavior of individuals in a work situation, Expectancy-Valence theory can serve only as part of a more comprehensive and general model.

C. Implications

In 1965, Guion and Gottier stated:

> It must be admitted that industrial psychology lacks a general theory of work; it lacks a more specific theory of the relationship of motivational constructs to the behavior of an individual at his job; and it lacks even a substantial body of research explicitly aimed toward the development of such theories.

Since these words were written, industrial and organizational psychologists have focused their efforts and attention upon expectancy theory as the most promising conceptual framework within which to explain and predict an individual's motivation to work. These efforts have resulted in a not insubstantial amount of studies testing the theory as well as a group of critiques evaluating the current status of the theory.

The most recent review of research in the area was made by House, Shapiro and Wahba (1973). They listed 31 studies in the field and concluded that the promise of the theory shown by earlier studies had been compromised by the inconsistent magnitude of support revealed by more recent findings. An analysis of the 31 studies leads to two avenues of explanation for the disappointing findings.

On the one hand, the design of most of the studies is based on the premise of the globality or universality of the theory; that is, that the main components of the model account for the major portion of the variation in the dependent variable. This premise has recently been challenged on several grounds. Wahba (1973) has pointed out that since motivation can only be "a necessary but not a sufficient condition for the occurrence of certain work behavior, we should then look for complementary conditions to fully explain this behavior." Moreover, with regard to the rationality assumptions of the theory, several writers (Rapaport and Wallsten, 1972; MacCrimmon, 1968; Soelberg, 1967; Simon and Newell, 1971) have shown that decision attributes are usually multidimensional and that Subjective Expected Utility (SEU) theory is restricted to a very narrow range of behavior. As Rapaport and Wallsten conclude, "The basic experimental question should not be to accept or reject SEU theory as a whole, but rather to systematically discover the conditions under which it is or is not valid."

Finally, the ahistoric nature of the theory has been called into question. Graen (1969) suggested that the existence of boundary conditions may require a modification of the general model to account for motivation in such situations. For example, in situations where differential behavior-outcome contingencies do not exist or cannot be accurately perceived, the expectancy model does not adequately predict behavior. Goodman (1973) proposed that these boundary conditions might include role factors such as leadership style and peer relationships and organizational factors such as task structure, the reward system, and size and structure of the firm. Goodman also suggested that these antecedent factors influence the motivational components through the intervening processes of communication, generalization and reinforcement, and that these learning processes, as he labels them, must be incorporated in any generalized model of expectancy theory.

The findings of this study support the situational approach of these researchers. The lack of consistent results and the lack of superiority of any one or group of the 32 models over any of the others, point strongly to the non-universality of the pure model unmodified by external factors. Future studies should aim to clarify and elaborate upon the boundary conditions which affect the theory. Within this framework it is likely that the individual variables of the

theory and their various combinations will be found to be important predictors of effort and performance under certain specified conditions.

The second avenue of explanation that emerges from an analysis of the 31 studies relates to the lack of conceptual clarity of the constructs of the theory and the consequent methodological difficulties revealed in the studies. The definition and measurement of both the independent and dependent variables are as varied as the number of researchers involved in these studies. The operational variations in these studies stem from lack of agreement on such issues as:

1. Relationships among variables--
   multiplicative or additive
2. Weighted or unweighted valences
3. Additivity of outcomes
4. Expectancies or instrumentalities
5. Positive or negative outcomes
6. Independence of expectancy and valence
7. Level of specificity of outcomes

It is difficult to compare or assess these studies because each researcher who has considered these issues has determined his own solution to them and based his study on his individual solution. Under these conditions, it is hardly surprising that the theory has not fulfilled its earlier promise. This study has attempted to clarify the conceptual and operational framework of two of these issues--

expectancies versus instrumentalities and positive versus negative outcomes. Until these issues are thrashed out to a point of general agreement, positive development of the theory cannot be anticipated.

There are thus two concurrent requirements demanded of future research in the area of motivation to work. Any future studies must be concerned on the one hand with the clarification of individual, organizational and environmental boundary conditions to modify the general model, and on the other hand must seek simultaneously to resolve the conceptual and operational issues posed above.

D. Limitations of the Study

The major limitations of this study were:

1. The study did not include all of the possible related variables, such as individual differences in personality.

2. The results were very weak for Companies B and C for satisfaction, and Companies B and D for effort and performance. This may have been due to the small sample size. However, at least in the case of Company B, which had an N of 45 for satisfaction and 52 for effort and performance, other factors may have been responsible for the poor results. A measure of company climate should be included in future studies.

3. The lack of highly valid measures of effort and performance is a serious limitation to all work-related research.

E. Areas for Future Research

The findings of this study provide numerous possibilities for cross-validation research. The present study should be replicated utilizing different scales for effort and performance. For example, future studies could use effort and performance ratings by self or peers, rather than the superior rating used in this study.

The finding that purely negative models predicted satisfaction significantly more frequently than either the positive or total models warrants investigation of the possible relationship between this part of expectancy theory and areas of research dealing with anxiety, frustration, fear of failure and other negative syndromes.

Serious attention should be paid in future research to the implications to be drawn from the lack of significant findings from the objective performance measure.

Further investigation should be made of type of compensation and time factors as meaningful moderating variables.

Finally, much work remains to be done in the area of expectancy and valence scales. A factor analysis was run on the Outcome Desirability scale for Company A and four clear factors emerged. The first focused on the most

positive outcomes of achievement, recognition and satisfaction. The second factor dealt with personal time and fatigue. The items which loaded on the third factor were those dealing with lack of effort and lack of performance regardless of direction of outcome. The fourth factor included items which had negative outcomes only. Mobley (1971) performed a factor analysis on his outcome desirability ratings with two different sample groups and obtained four and six factors respectively. Two of the factors in each group were the same as the first and fourth factors which emerged from this study. Clearly, such analyses should be performed in future studies until sufficient data are obtained to construct standardized expectancy and valence scales.

APPENDIX

COMPANY LETTERHEAD

Date

To:

From:

Subject: Participation in Research Project

Since we have a continuing interest in learning more about how to motivate our employees to perform more effectively both for their benefit and the benefit of the company, we have agreed to participate in a research project being conducted on this subject by Leon Reinharth, Assistant Professor of Organizational Science at the Newark College of Engineering.

Professor Reinharth has explained to us that for a study of this kind to be successful, all replies must be treated in the strictest confidence, and the anonymity of the respondents must be respected in any reports to management. We have agreed to this condition and you will find enclosed with this questionnaire a stamped envelope addressed to Professor Reinharth at his college. We will <u>not</u> have access to your replies.

Another condition of this project is that participation is completely voluntary. However, Professor Reinharth points out that in order for him to obtain meaningful results, it is necessary that most employees who receive the questionnaire respond to it. Thus, we would urge you to spend the hour or so it takes to complete the questionnaire so that Professor Reinharth will have adequate data to prepare a useful report for us.

Please return the completed questionnaire to Professor Reinharth in the enclosed envelope within the next two weeks. Thank you for your cooperation.

BACKGROUND INFORMATION

Differences in background often affect the way people see the work situation and how they feel about it. The following questions are asked so that these differences can be studied. Please place a check mark in the correct blank space for each question.

All information provided will be held in strict confidence. No individual will be identified in any report of results.

Name:_____ Company:_____

1. Sex of respondent
   1___male
   2___female

2. Marital status
   1___married
   2___single
   3___other

3. Number of dependents___

4. My present age is:
   1___20-29
   2___30-39
   3___40-49
   4___50 or over

5. The highest level of education I have attained is:
   1___less than high school
   2___high school diploma
   3___some college; no degree
   4___Bachelor's degree
   5___graduate study; no degree
   6___higher degree

6. How many levels of management are between you and the President of the company?
   1___one
   2___two
   3___three
   4___four
   5___five
   6___six or more

7. My responsibilities and job are best described as:
   1___executive
   2___marketing-supervisory
   3___marketing-nonsupervisory
   4___sales supervisory
   5___sales-nonsupervisory
   6___other_____

8. My total earnings in 1972 (salary, commission, bonus, etc.) were:
   1___under $10,000
   2___$10,000-$12,500
   3___$12,500-$15,000
   4___$15,000-$20,000
   5___$20,000-$25,000
   6___$25,000-$30,000
   7___over $30,000

9. Compared to 1971, my 1972 earnings were:
   1___about the same
   2___higher by from 1 to 5%
   3___higher by from 6 to 10%
   4___higher by from 11 to 20
   5___higher by more than 20%
   6___lower by from 1 to 5%
   7___lower by from 6 to 10%
   8___lower by more than 10%

10. Time Spent:

	a With company	b On present job	c With present superior	d Doing similar work
Less than 1 year	1___	___	___	___
1-2 years	2___	___	___	___
3-5 years	3___	___	___	___
6-9 years	4___	___	___	___
10-15 years	5___	___	___	___
16 or more years	6___	___	___	___

OUTCOME DESIRABILITY RATINGS

People have different feelings about how desirable or undesirable certain aspects of their jobs are. By desirable is meant how much you would like to have or experience each of the things referred to. By undesirable is meant how much you would dislike experiencing or having each of these things.

Remember, your rating should not be influenced by whether you presently do or do not have any of the listed things. Your ratings should indicate only how you feel about these things in general, regardless of whether you have them now or not. In making your ratings remember that there are no right or wrong answers. The best answer is the one that comes closest to describing how you feel about each item.

Listed below are a number of things you may consider desirable or undesirable. Next to each of these things is a blank. In each blank, please write the number of the statement which best tells how you feel about that item.

Write a '1' if it is 'Very desirable'

Write a '2' if it is 'Desirable'

Write a '3' if it 'Doesn't matter one way or the other'

Write a '4' if it is 'Undesirable'

Write a '5' if it is 'Very undesirable'

PLEASE RATE ALL THE ITEMS LISTED BELOW

HOW DESIRABLE ARE EACH OF THESE THINGS?

CODE
1. VERY DESIRABLE
2. DESIRABLE
3. DOES NOT MATTER
4. UNDESIRABLE
5. VERY UNDESIRABLE

Item Number

1___ Being popular with your fellow workers.

2___ Feeling of job security.

3___ Receiving recognition for work well done.

4___ Suggestions are ignored by superiors.

5___ Chances for promotion to a higher position.

6___ Having the respect of your boss.

7___ Feeling that time is dragging.

8___ Opportunity to earn more money.

9___ Assurance that you will not be laid off or demoted.

10___ Not being accepted by colleagues.

11___ Feeling too tired after a hard day's work.

12___ Opportunity for accomplishing something significant.

13___ Having more time for personal activities.

14___ Having a boss who doesn't expect too much of you.

15___ Having your territory or accounts cut down.

16___ Being asked about your opinions and suggestions.

17___ Jealousy of fellow employees.

18___ Getting fired.

19___ Too much pressure on the job.

20___ Opportunity to influence important decisions.

CODE

1. VERY DESIRABLE
2. DESIRABLE
3. DOES NOT MATTER
4. UNDESIRABLE
5. VERY UNDESIRABLE

Item Number

21___ Being respected by your colleagues.

22___ Getting transferred to a less desirable job.

23___ Not being rewarded for good performance.

24___ Opportunity to achieve your personal goals in life.

25___ Being demoted.

26___ Not enough time for family or friends.

27___ Inner satisfaction of proving your worth.

28___ Not being rewarded for working hard.

29___ Efforts are not appreciated.

30___ Being worried about not succeeding on job.

31___ Being worried about not being rewarded for good performance.

32___ Feeling lack of self-confidence.

33___ Uncertainty about my boss recognizing my efforts.

34___ Anxiety about my standing with my colleagues.

Add here any other features about your job which seem desirable or undesirable to you.

35___ _____

36___ _____

37___ _____

IMPORTANCE RANKING OF JOB CHARACTERISTICS

Please review the items above which you have rated as Very Desirable (Code 1) and indicate how you would rank the importance of each one to you personally. Below are ten blank spaces prefixed with the numbers 1 to 10. In blank 1 place the number of the Very Desirable item which you consider most important to you. In blank 2 place the number of the Very Desirable item which you consider the second most important to you, and so forth. Please rank all the items which you rated as Very Desirable up to a maximum of ten.

In like manner, please review the items which you have rated as Very Undesirable (Code 5) and indicate how you would rank the importance of each one to you personally. By importance is meant how important is it to you to avoid the Very Undesirable item. In the spaces provided below place in blank 1 the number of the Very Undesirable item which you consider most important to avoid, in blank 2 the number of the Very Undesirable item which you consider the second most important to avoid, and so forth. Please rank all the items which you rated as Very Undesirable up to a maximum of ten.

Very Desirable (Code 1)	Very Undesirable (Code 5)
1_____	1_____
2_____	2_____
3_____	3_____
4_____	4_____
5_____	5_____
6_____	6_____
7_____	7_____
8_____	8_____
9_____	9_____
10_____	10_____

JOB CHARACTERISTICS QUESTIONNAIRE

The statements listed on the next few pages describe some specific characteristics about your particular job. They will appear as follows:

Job Characteristic	Definitely Not True of My Job						Extremely True of My Job
I know what my responsibilities are	1	2	3	4	5	6	7

Please read each job characteristic, and circle the number on the right that most reflects your opinion of how true the characteristic is for your job.

Your answers to these questions will help us to understand what working in this company is like.

	Job Characteristic	Definitely Not True of My Job						Extremely True of My Job
1.	Putting forth as much energy as possible assures my not being fired or demoted.	1	2	3	4	5	6	7
2.	The harder I work the more pressure I feel on the job.	1	2	3	4	5	6	7
3.	Improving my performance will lead to my making more money.	1	2	3	4	5	6	7
4.	The harder I work, the less time I have for family or friends.	1	2	3	4	5	6	7
5.	If I don't work too hard, my boss will not expect too much of me.	1	2	3	4	5	6	7
6.	If I don't apply myself, I may get fired.	1	2	3	4	5	6	7
7.	If I don't perform too well, I will be better liked by my coworkers.	1	2	3	4	5	6	7

	Job Characteristic	Definitely Not True of My Job						Extremely True of My Job
8.	Poor job performance may get me fired.	1	2	3	4	5	6	7
9.	The harder I work, the better my performance.	1	2	3	4	5	6	7
10.	I can do a good job without working hard.	1	2	3	4	5	6	7
11.	Working harder will not result in my producing more.	1	2	3	4	5	6	7
12.	Putting forth as much energy as possible gives me a feeling of accomplishment.	1	2	3	4	5	6	7
13.	Working harder than I do will arouse the jealousy of my coworkers.	1	2	3	4	5	6	7
14.	After a hard day's work, I feel too tired to do anything.	1	2	3	4	5	6	7
15.	The more I produce, the better are my chances for promotion.	1	2	3	4	5	6	7
16.	Working harder will not improve my performance.	1	2	3	4	5	6	7
17.	Not working hard seems to make the time drag.	1	2	3	4	5	6	7
18.	By not working too hard, I will have more time for personal activities.	1	2	3	4	5	6	7
19.	Poor job performance will keep me from earning more money.	1	2	3	4	5	6	7
20.	If I don't perform too well, there is less chance that my territory or account will be cut.	1	2	3	4	5	6	7

	Job Characteristic	Definitely Not True of My Job						Extremely True of My Job
21.	The harder I work, the more I produce.	1	2	3	4	5	6	7
22.	Putting forth as much energy as possible gains me the respect of my boss.	1	2	3	4	5	6	7
23.	There are no rewards for working hard in this company.	1	2	3	4	5	6	7
24.	Doing a good job will help me to achieve my personal goals.	1	2	3	4	5	6	7
25.	Better performance will hurt my chances for promotion.	1	2	3	4	5	6	7
26.	I do not have to put forth much energy to accomplish what is expected of me.	1	2	3	4	5	6	7
27.	Not working hard may hurt my chances of earning more money.	1	2	3	4	5	6	7
28.	If I don't perform too well, my boss will not expect too much of me.	1	2	3	4	5	6	7
29.	The harder I work, the poorer my job performance.	1	2	3	4	5	6	7
30.	Poor job performance makes me think less highly of myself.	1	2	3	4	5	6	7
31.	There are no rewards for good performance in this company.	1	2	3	4	5	6	7
32.	The harder I work, the more likely it is my boss will listen to my suggestions.	1	2	3	4	5	6	7
33.	Producing a high quantity of work will make me less popular with my fellow employees.	1	2	3	4	5	6	7

	Job Characteristic	Definitely Not True of My Job						Extremely True of My Job
34.	If I perform well, I can expect to be recognized by my boss.	1	2	3	4	5	6	7
35.	Putting forth as much energy as possible leads to beating my performance quotas.	1	2	3	4	5	6	7
36.	If I don't work hard, I will ruin my chances for promotion.	1	2	3	4	5	6	7
37.	If I don't work too hard, I will not be too tired to enjoy myself in the evening.	1	2	3	4	5	6	7
38.	Poor performance makes me ashamed to face my fellow workers.	1	2	3	4	5	6	7
39.	If I don't perform too well, there is less chance of my being transferred to another territory.	1	2	3	4	5	6	7

SELF-RATING FORM

The purpose of this form is to determine how you rate yourself relative to others in your company with similar duties. You will be asked to rate yourself for characteristics on a seven-point scale which will look like this.

(low) 1 2 3 4 5 6 7 (high)

You are to circle the number of the scale that represents where you stand compared to others with similar duties. If you think you are low on the characteristic, you would circle the numeral 1. If you think that you are a little less than average as compared with others with similar duties, you would circle the numeral 3, and so on. For each scale, circle only one number.

Please do not omit any scales.

1. Quality of your job performance. (low) 1 2 3 4 5 6 7 (high)

2. Your productivity on the job. (low) 1 2 3 4 5 6 7 (high)

3. Amount of effort you expend on the job. (low) 1 2 3 4 5 6 7 (high)

4. On most days on your job, how often does time seem to drag for you?

   (1) _____ About half the day or more
   (2) _____ About one-third of the day
   (3) _____ About quarter of the day
   (4) _____ About one-eighth of the day
   (5) _____ Time never seems to drag

5. Some people are completely involved in their job--they are absorbed in it night and day. For other people, their job is simply one of several interests. How involved do you feel in your job?

   (1) _____ Very little involved; my other interests are more absorbing
   (2) _____ Slightly involved
   (3) _____ Moderately involved; my job and my other interests are equally absorbing to me.

(4) _____ Strongly involved
(5) _____ Very strongly involved; my work is the most absorbing interest in my life.

6. How often do you do some extra work for your job which isn't really required of you?

(5) _____ Almost every day
(4) _____ Several times a week
(3) _____ About once a week
(2) _____ Once every few weeks
(1) _____ About once a month or less

7. Would you say you work harder, less hard, or about the same as other people doing your type of work in your company?

(5) _____ Much harder than most others
(4) _____ A little harder than most others
(3) _____ About the same as most others
(2) _____ A little less hard than most others
(1) _____ Much less hard than most others.

SUPERIOR RATING FORM

Your name_____ Name of subordinate_____

The purpose of this form is to determine how you rate the employee listed above relative to others in your company with similar duties. You will be asked to rate him for characteristics on a seven-point scale which will look like this.

(low) 1 2 3 4 5 6 7 (high)

You are to circle the number on the scale that represents where he stands compared to others with similar duties. If you think he is low on the characteristic, you would circle the numeral 1. If you think that he is a little less than average as compared with others with similar duties, you would circle the numeral 3, and so on. For each scale, circle only one number.

Please do not omit any scales.

1. Quality of employee's job performance. (low) 1 2 3 4 5 6 7 (high)

2. Employee's productivity on the job. (low) 1 2 3 4 5 6 7 (high)

3. Amount of effort employee expends on the job. (low) 1 2 3 4 5 6 7 (high)

4. Some people are completely involved in their job--they are absorbed in it night and day. For other people, their job is simply one of several interests. How involved do you think the employee feels in his job?

   (1) _____ Very little involved; his other interests are more absorbing
   (2) _____ Slightly involved
   (3) _____ Moderately involved; his job and his other interests are equally absorbing to him
   (4) _____ Strongly involved
   (5) _____ Very strongly involved; his work is the most absorbing interest in his life

5. How often does this employee do some extra work for his job which isn't really required of him?

(5) _____ Almost every day
(4) _____ Several times a week
(3) _____ About once a week
(2) _____ Once every few weeks
(1) _____ About once a month or less

6. Would you say the employee works harder, less hard, or about the same as other people doing his type of work in your company?

(5) _____ Much harder than most others
(4) _____ A little harder than most others
(3) _____ About the same as most others
(2) _____ A little less hard than most others
(1) _____ Much less hard than most others

JOB DESCRIPTION INVENTORY

Think about your job. If the word or phrase in each item below describes your feeling toward your job (work, pay, and so forth), write a Y for YES in the space. If the item does NOT tell how you feel, write N for NO in the space. If you don't know exactly how you feel about the question write ? in the space

- -

WORK

___ Fascinating
___ Routine
___ Satisfying
___ Boring
___ Good
___ Creative
___ Respected
___ Hot
___ Pleasant
___ Useful
___ Tiresome
___ Healthful
___ Challenging
___ On your feet
___ Frustrating
___ Simple
___ Endless
___ Gives sense of accomplishment

PAY

___ Income adequate for normal expenses
___ Barely live on income
___ Bad
___ Income provides luxuries
___ Insecure
___ Less than I deserve
___ Highly paid
___ Under paid

PROMOTION

___ Good opportunity for advancement
___ Opportunity somewhat limited
___ Promotion on ability
___ Dead-end job
___ Good chance for promotion
___ Unfair promotion policy
___ Infrequent promotions
___ Regular promotions
___ Fairly good chance for promotion

SUPERVISION

___ Asks my advice
___ Hard to please
___ Impolite
___ Praises good work
___ Tactful
___ Influential
___ Up-to-date
___ Doesn't supervise enough
___ Quick tempered
___ Tells me where I stand
___ Annoying
___ Stubborn
___ Knows job well
___ Bad
___ Intelligent
___ Leaves me on my own
___ Lazy
___ Around when needed

CO-WORKERS

___ Stimulating
___ Boring
___ Slow
___ Ambitious
___ Stupid
___ Responsible
___ Fast
___ Intelligent
___ Easy to make enemies
___ Talk too much
___ Smart
___ Lazy
___ No privacy
___ Active
___ Narrow interests
___ Loyal
___ Hard to meet

TABLE 5

RELIABILITY AND VALIDITY OF PREVIOUSLY USED MEASURES

1. Effort and Performance Measure

Source: Porter, L.W., and Lawler E.E., Managerial attitudes and performance, Homewood, Illinois: Irwin, 1968a, 1-55 and 120-150.
Validity: Price (1972), 96.
Reliability: Correlations among individual questions for different groups. Price (1972), Table 11-1, 96-97.

2. Work Motivation Measure

Source: Patchen, M., Some questionnaire measures of employee motivation and morale. Ann Arbor, Michigan: Survey Research Center, University of Michigan, 1965, 1-40 and 41-47.
Validity: Price (1972), 141.
Reliability: Test-retest with correlation coefficients of 0.80 and 0.83.

3. Job Description Index

Source: Smith, P.C., Kendall, L. and Hulin, C.L., The measurement of satisfaction in work and retirement, Chicago: Rand McNally, 1969.
Validity: Smith, Kendall, and Hulin assess convergent and discriminant validity by means of the multitrait-multimethod matrix. The results show consistent convergent and discriminant validity (Price, 1972).
Reliability: Split-half correlation coefficients corrected to full length with Spearman-Brown formula ranged from .80 for pay to .87 for supervision.

TABLE 6

SCALE RELIABILITIES

Scale Tested	No. Items	N	K-R20	Spearman-Brown Correction	Coefficient Alpha	Spearman-Brown Correction
Job Characteristics	39	317			.64	.78
E1-Positive	11	344			.67	.80
E2-Positive	8	342			.52	.68
E1-Negative	7	334			.47	.64
E2-Negative	13	335			.66	.79
Outcome Desirability	29	345	.81	.89		
V Positive	14	348	.69	.82		
V Negative	15	345	.67	.80		
Superior Rating	6	347			.77	.87
JDI Work	18	260	.74	.85		
JDI Supervision	18	260	.80	.89		
JDI Pay	8	260	.65	.79		
JDI Promotion	9	260	.82	.90		
JDI Coworkers	17	260	.86	.93		

TABLE 7

FACTOR ANALYSIS OF SUPERIOR RATING FORM

ROTATED FACTOR MATRIX

Item	Factor 1
1	.838
2	.820
3	.845
4	.758
5	.737
6	.788

TABLE 8

COMPARISON OF NUMBER OF SUPERIOR POSITIVE ONLY (P) AND TOTAL (T) SCORES

Predictor	Satisfaction		Effort		Performance		Superior Rating	
	T	P	T	P	T	P	T	P
E1	4	1	4	2	3	2	2	3
E2	3	2						
E1 + E2	4	1	3	2	3	2	3	2
E1 + V1	4	1						
E1E2	3	2						
E2V2	4	1	3	1	5	1	5	0
E1V1	5	0	5	0	4	2	5	0
Imp. Ranking	1	4						
E1 (E2V2)	4	1	3	3	1	4	1	4
E1 + (E2V2)	4	1	3	2	4	2	4	2
E2 + (E1V1)	5	0	5	1	4	2	5	0
Total	41	14	26	11	24	15	25	11
			5 Even		3 Even		6 Even	
Percent T of Total	74.6		62.0		57.2		59.6	
Z - score	3.49		2.3		1.3		2.17	

TABLE 9

EXPECTANCY - VALENCE AND SATISFACTION

Summary of Results in Terms
of Number of Significant Findings

(Maximum Possible - Five Sample Groups)

	JDI Total Score		
Predictor	Positive	Negative	Total
E1	3	5	3
E2	3	2	3
E1 + E2	3	4	3
E1 + V1	2	4	3
E1E2	3	2	4
E2V2	3	3	3
E1V1	3	4	3
Importance Ranking	4	0	4
E1 (E2V2)	3	2	4
E1 + (E2V2)	3	3	3
E2 + (E1V1)	3	4	3
E $\longrightarrow$ P			3
P w/o E			3

TABLE 10

EXPECTANCY - VALENCE, EFFORT AND PERFORMANCE

Summary of Results in Terms of Number of Significant Findings

(Maximum Possible - Six Sample Groups)

Predictor	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
E1	3	1	1	3	1	2	2	0	2
E1 + E2	3	0	1	3	0	2	2	0	4
E1V1	3	1	3	3	3	3	3	3	3
E2V2	3	1	3	3	2	3	4	1	4
E1 (E2V2)	3	0	3	3	1	3	3	0	3
E1 + (E2V2)	4	0	4	3	2	3	4	1	4
E2 + (E1V1)	3	2	3	3	3	3	3	3	3

TABLE 11

RANKING OF PREDICTORS IN TERMS OF HIGHEST CORRELATION COEFFICIENTS

Predictor	Satis-faction	Effort	Perfor-mance	Superior Rating
E1	9	2	2	5
E2	8	-	-	-
E1 + E2	2	4	1	5
E1 + V1	12	-	-	-
E1E2	4	-	-	-
E2V2	9	1	2	1
E1V1	6	5	6	3
Importance Ranking	11	-	-	-
E1 (E2V2)	4	7	2	5
E1 + (E2V2)	7	3	2	2
E2 + (E1V1)	2	6	6	3
E $\rightarrow$ P	1	-	-	-
P w/o E	13	-	-	-
Range	.39-.66	.28-.41	.25-.29	.32-.37

TABLE 12-A

CORRELATION BETWEEN JOB SATISFACTION
AND EXPECTANCY-VALENCE PREDICTORS

Total Sample

N = 260

	Satisfaction - JDI Total Score		
	Positives	Negatives	Total
Individual Variables			
E1	.16**	-.36**	.36**
E2	.27**	-.20**	.30**
Additive Predictors			
E1 + E2	.24**	-.34**	.38**
E1 + V1	09	-.28**	.29**
Multiplicative Predictors			
E1E2	.26**	-.27**	.41**
E2V2	.28**	-.23**	.33**
E1V1	14*	-.36**	.31**
Importance Ranking	.37**	.07	.24**
Combined Predictors			
E1 (E2V2)	.27**	-.30**	.40**
E1 + (E2V2)	.28**	-.30**	.37**
E2 + (E1V1)	.17**	-.36**	.33**
Miscellaneous Predictors			
E $\rightarrow$ P	-	-	.36**
P w/o E	-	-	-.25**

* significant $p < .05$
** significant $p < .01$

TABLE 12-B

CORRELATION BETWEEN JOB SATISFACTION
AND EXPECTANCY-VALENCE PREDICTORS

Company A

N = 186

	Satisfaction - JDI Total Score		
	Positives	Negatives	Total
Individual Variables			
E1	.30**	-.36**	.43**
E2	.39**	-.25**	.43**
Additive Predictors			
E1 + E2	.40**	-.36**	.50**
E1 + V1	.20**	-.26**	.33**
Multiplicative Predictors			
E1E2	.39**	-.30**	.45**
E2V2	.37**	-.22**	.40**
E1V1	.28**	-.38**	.42**
Importance Ranking	.40**	.08	.27**
Combined Predictors			
E1 (E2V2)	.38**	-.29**	.43**
E1 + (E2V2)	.38**	-.30**	.45**
E2 + (E1V1)	.32**	-.40**	.46**
Miscellaneous Predictors			
E $\longrightarrow$ P	-	-	.49**
P w/o E	-	-	-.33**

* significant $p < .05$
** significant $p < .01$

TABLE 12-C

CORRELATION BETWEEN JOB SATISFACTION
AND EXPECTANCY-VALENCE PREDICTORS

Company A - Division 1

N = 86

	Satisfaction - JDI Total Score		
	Positives	Negatives	Total
Individual Variables			
E1	.50**	-.20*	.45**
E2	.51**	-.11	.46**
Additive Predictors			
E1 + E2	.57**	-.18*	.53**
E1 + V1	.45**	-.14	.36**
Multiplicative Predictors			
E1E2	.56**	-.12	.47**
E2V2	.50**	-.11	.45**
E1V1	.50**	-.34**	.54**
Importance Ranking	.46**	.13	.25**
Combined Predictors			
E1 (E2V2)	.56**	-.12	.47**
E1 + (E2V2)	.53**	-.15	.49**
E2 + (E1V1)	.54**	-.34**	.57**
Miscellaneous Predictors			
E $\rightarrow$ P	-	-	.66**
P w/o E	-	-	-.39**

* significant $p < .05$
** significant $p < .01$

TABLE 12-D

CORRELATION BETWEEN JOB SATISFACTION
AND EXPECTANCY-VALENCE PREDICTORS

Company B

N = 45

	Satisfaction - JDI Total Score		
	Positives	Negatives	Total
Individual Variables			
E1	-.09	-.36**	.15
E2	.07	-.17	.17
Additive Predictors			
E1 + E2	-.01	-.30*	.17
E1 + V1	-.15	-.29*	.10
Multiplicative Predictors			
E1E2	.03	-.20	.39**
E2V2	.06	-.31*	.18
E1V1	-.17	-.15	-.07
Importance Ranking	.24	-.08	.27*
Combined Predictors			
E1 (E2V2)	.02	-.31*	.37**
E1 + (E2V2)	.04	-.35**	.19
E2 + (E1V1)	-.14	-.17	-.01
Miscellaneous Predictors			
E $\longrightarrow$ P	-	-	.25
P w/o E	-	-	-.22

*significant $p < .05$
**significant $p < .01$

TABLE 12-E

CORRELATION BETWEEN JOB SATISFACTION
AND EXPECTANCY-VALENCE PREDICTORS

Company C

N = 29

	Satisfaction - JDI Total Score		
	Positives	Negatives	Total
Individual Variables			
E1	-.09	-.38*	.29
E2	-.02	.00	-.02
Additive Predictors			
E1 + E2	-.06	-.29	.15
E1 + V1	-.07	-.42*	.42*
Multiplicative Predictors			
E1E2	-.06	-.24	-.21
E2V2	.12	-.18	.18
E1V1	-.09	-.56**	.18
Importance Ranking	.40	-.32	-.04
Combined Predictors			
E1 (E2V2)	.02	-.38*	.28
E1 + (E2V2)	.08	-.29	.22
E2 + (E1V1)	-.08	-.50**	.16
Miscellaneous Predictors			
E $\longrightarrow$ P	-	-	-.17
P w/o E	-	-	.14

*significant p $<$ .05
**significant p $<$ .01

TABLE 13-A

CORRELATION BETWEEN JOB SATISFACTION AND EXPECTANCY-VALENCE PREDICTORS

Predictor	Sample	N	Satisfaction - JDI Total Score		
			Positives	Negatives	Total
E1	Total	260	.16**	-.36**	.36**
	Co.A	186	.30**	-.36**	.43**
	Co.A.-Div.1	86	.50**	-.20*	.45**
	Co.B	45	-.09	-.36**	.15
	Co.C	29	-.09	-.38**	.29
E2	Total	260	.27**	-.20**	.30**
	Co.A	186	.39**	-.25**	.43**
	Co.A.-Div.1	86	.51**	-.11	.46**
	Co.B	45	.07	-.17	.17
	Co.C	29	.02	.00	-.02
E1 + E2	Total	260	.24**	-.34**	.38**
	Co.A	186	.40**	-.36**	.50**
	Co.A.-Div.1	86	.57**	-.18*	.53**
	Co.B	45	-.01	-.30*	.17
	Co.C	29	-.06	-.29	.15
E1 + V1	Total	260	.09	-.28**	.29**
	Co. A	186	.20**	-.26**	.33**
	Co.A.-Div.1	86	.45**	-.14	.36**
	Co.B	45	-.15	-.29*	.10
	Co.C	29	-.07	-.42*	.42*

* significant $p < .05$
** significant $p < .01$

TABLE 13-B

CORRELATION BETWEEN JOB SATISFACTION AND EXPECTANCY-VALENCE PREDICTORS

Predictor	Sample	N	Satisfaction - JDI Total Score		
			Positives	Negatives	Total
E1E2	Total	260	.26**	-.27**	.41**
	Co.A	186	.39**	-.30**	.45**
	Co.A-Div.1	86	.56**	-.12	.47**
	Co.B	45	.03	-.20	.39**
	Co.C	29	-.06	-.24	-.21
E2V2	Total	260	.28**	-.23**	.33**
	Co.A	186	.37**	-.22**	.40**
	Co.A-Div.1	86	.50**	-.11	.45**
	Co.B	45	.06	-.31*	.18
	Co.C	29	.12	-.18	.18
E1V1	Total	260	.14*	-.36**	.31**
	Co.A	186	.28**	-.38**	.42**
	Co.A-Div.1	86	.50**	-.34**	.54**
	Co.B	45	-.17	-.15	-.07
	Co.C	29	-.09	-.56**	.18
Importance Ranking	Total	260	.37**	.07	.24**
	Co.A	186	.40**	.08	.27**
	Co.A-Div.1	86	.46**	.13	.25**
	Co.B	45	.24	-.08	.27*
	Co.C	29	.40*	-.32	-.04

* significant $p < .05$
** significant $p < .01$

TABLE 13-C

CORRELATION BETWEEN JOB SATISFACTION AND EXPECTANCY-VALENCE PREDICTORS

Predictor	Sample	N	Satisfaction - JDI Total Score		
			Positives	Negatives	Total
E1 (E2V2)	Total	260	.27**	-.30**	.40**
	Co.A	186	.38**	-.29**	.43**
	Co.A-Div.1	86	.56**	-.12	.47**
	Co.B	45	.02	-.31*	.37**
	Co.C	29	.02	-.38*	.28
E1 + (E2V2)	Total	260	.28**	-.30**	.37**
	Co.A	186	.38**	-.30**	.45**
	Co.A-Div.1	86	.53**	-.15	.49**
	Co.B	45	.04	-.35**	.19
	Co.C	29	.08	-.29	.22
E2 + (E1V1)	Total	260	.17**	-.36**	.33**
	Co.A	186	.32**	-.40**	.46**
	Co.A-Div.1	86	.54**	-.34**	.57**
	Co.B	45	-.14	-.17	-.01
	Co.C	29	-.08	-.50**	.16
E → P	Total	260	-	-	.36**
	Co.A	186	-	-	.49**
	Co.A-Div.1	86	-	-	.66**
	Co.B	45	-	-	.25
	Co.C	29	-	-	-.17

* significant $p < .05$
** significant $p < .01$

TABLE 13-D

CORRELATION BETWEEN JOB SATISFACTION AND EXPECTANCY-VALENCE PREDICTORS

Predictor	Sample	N	Satisfaction - JDI Total Score		
			Positives	Negatives	Total
P w/o E	Total	260	-	-	-.25**
	Co.A	186	-	-	-.33**
	Co.A-Div.1	86	-	-	-.39**
	Co.B	45	-	-	-.22
	Co.C	29	-	-	.14

* significant $p \leq .05$
** significant $p \leq .01$

TABLE 14-A

CORRELATION BETWEEN JDI DIMENSIONS AND EXPECTANCY-VALENCE PREDICTORS

Total Sample

N = 260

Predictors	Total Score	Work	Supervision	Pay	Promotion	Coworkers
E1	.36**	.37**	.27**	.17**	.16**	.17**
E2	.30**	.31**	.20**	.11*	.17*	.12*
E1 + E2	.38**	.39**	.27**	.17**	.19**	.17**
E1 + V1	.29**	.30**	.25**	.09	.12*	.13*
E1E2	.41**	.41**	.33**	.19**	.17**	.19**
E2V2	.33**	.29**	.28**	.11*	.19**	.13*
E1V1	.31**	.31**	.28**	.14*	.12*	.11*
Importance Ranking	.24**	.19**	.18**	.18**	.16**	.07
E1 (E2V2)	.40**	.37**	.33**	.18**	.20**	.18**
E1 + (E2V2)	.37**	.33**	.30**	.13*	.21**	.15*
E2 + (E1V1)	.33**	.33**	.29**	.15*	.14*	.12*
E → P	.36**	.39**	.25**	.13*	.19**	.21**
P w/o E	-.25**	-.40**	-.07	-.09	-.10	-.15*

* significant $p < .05$
** significant $p < .01$

TABLE 14-B

CORRELATION BETWEEN JDI DIMENSIONS AND EXPECTANCY-VALENCE PREDICTORS

Company A

N = 186

Predictors	Total Score	Work	Supervision	Pay	Promotion	Coworkers
E1	.43**	.44**	.33**	.24**	.19**	.21**
E2	.43**	.41**	.28**	.21**	.25**	.25**
E1 + E2	.50**	.49**	.36**	.26**	.26**	.26**
E1 + V1	.33**	.34**	.28**	.18*	.16*	.09
E1E2	.45**	.44**	.35**	.22**	.21**	.24**
E2V2	.40**	.33**	.33**	.19*	.22**	.21**
E1V1	.42**	.39**	.37**	.24**	.17*	.20*
Importance Ranking	.27**	.22**	.19*	.28**	.17*	.05
E1 (E2V2)	.43**	.39**	.36**	.22**	.21**	.21**
E1 + (E2V2)	.45**	.38**	.36**	.22**	.23**	.23**
E2 + (E1V1)	.46**	.42**	.38**	.25**	.20*	.23**
E $\longrightarrow$ P	.49**	.47**	.36**	.14	.28**	.31**
P w/o E	-.33**	-.48**	-.09	-.06	-.16*	-.24**

* significant p $\leq$ .05
** significant p $\leq$ .01

TABLE 14-C

CORRELATION BETWEEN JDI DIMENSIONS AND EXPECTANCY-VALENCE PREDICTORS

Company A - Division 1

N = 86

Predictors	Total Score	Work	Supervision	Pay	Promotion	Coworkers
E1	.45**	.45**	.23*	.30**	.15	.32**
E2	.46**	.39**	.33**	.24*	.29**	.30**
E1 + E2	.53**	.49**	.33**	.31**	.25*	.36**
E1 + V1	.36**	.35**	.20*	.25*	.11	.20*
E1E2	.47**	.43**	.31**	.26*	.22*	.33**
E2V2	.45**	.36**	.37**	.26*	.24*	.25*
E1V1	.54**	.47**	.43**	.38**	.17	.33**
Importance Ranking	.25**	.13	.11	.30**	.23*	.10
E1 (E2V2)	.47**	.40**	.34**	.27*	.23*	.31**
E1 + (E2V2)	.49**	.41**	.38**	.30**	.24*	.29**
E2 + (E1V1)	.57**	.49**	.45**	.39**	.21*	.35**
E $\longrightarrow$ P	.66**	.57**	.46**	.25*	.36**	.57**
P w/o E	-.39**	-.51**	-.13	-.18	-.12	-.35**

* significant p $\leq$ .05
** significant p $\leq$ .01

TABLE 14-D

CORRELATION BETWEEN JDI DIMENSIONS AND EXPECTANCY-VALENCE PREDICTORS

Company B

N = 45

Predictors	Total Score	Work	Supervision	Pay	Promotion	Coworkers
E1	.15	.17	-.01	.08	.06	.13
E2	.12	.22	.04	.02	.08	-.02
E1 + E2	.15	.21	.02	.05	.08	.05
E1 + V1	.10	.17	.07	-.12	-.13	.17
E1E2	.39**	.39**	.20	.22	.16	.22
E2V2	.18	.23	.19	.04	.11	-.02
E1V1	-.07	.01	-.01	-.07	-.04	-.12
Importance Ranking	.27*	.07	.39**	.15	.20	.15
E1 (E2V2)	.37**	.35*	.25	.25	.19	.17
E1 + (E2V2)	.19	.23	.17	.05	.11	.01
E2 + (E1V1)	-.03	.06	.01	-.05	-.02	-.10
E $\not\longrightarrow$ P	.25	.28*	-.04	.22	.18	.17
P w/o E	-.22	-.29*	-.02	-.14	-.12	-.13

* significant $p < .05$
** significant $p < .01$

TABLE 14-E

CORRELATION BETWEEN JDI DIMENSIONS AND EXPECTANCY-VALENCE PREDICTORS

Company C

N = 29

Predictors	Total Score	Work	Supervision	Pay	Promotion	Coworkers
E1	.29	.20	.36*	-.01	.33*	.07
E2	-.02	-.20	.16	-.12	.03	-.13
E1 + E2	.15	-.01	.29	-.08	.20	-.04
E1 + V1	.42*	.35*	.42*	-.02	.43*	.24
E1E2	.21	.07	.34*	-.08	.25	.01
E2V2	.18	.08	.30	-.20	.31*	.03
E1V1	.18	.17	.16	-.10	.25	.13
Importance Ranking	-.04	.00	.19	-.40*	.06	-.17
E1 (E2V2)	.28	.19	.36*	-.11	.33*	.10
E1 + (E2V2)	.22	.11	.33*	-.17	.33*	.04
E2 + (E1V1)	.16	.11	.17	-.11	.22	.08
E $\longrightarrow$ P	-.17	-.10	-.22	-.14	-.03	-.01
P w/o E	.14	.09	.07	-.02	.13	.14

* significant $p < .05$
** significant $p < .01$

TABLE 15-A

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Total Sample

N = 348

	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
Individual Variable									
E1	.06	-.03	-.07	.10*	-.06	.11*	.08	-.02	.08
Additive Predictor									
E1 + E2	.10*	-.05	.10*	.12*	-.07	.13**	.12*	-.06	.12*
Multiplicative Predictors									
E1V1	.10*	-.11*	.15**	.10*	-.13**	.15**	.12*	-.13**	.17**
E2V2	.17**	-.09*	.17**	.14**	-.11*	.16**	.18**	-.11*	.19**
Combined Predictors									
E1 (E2V2)	.14**	-.06	.11*	.14**	-.11*	.13**	.15**	-.08	.12*
E1 + (E2V2)	.16**	-.08	.16**	.14**	-.11*	.16**	.17**	-.09*	.18**
E2 + (E1V1)	.11*	-.12*	.15**	.11*	-.13**	.16**	.13**	-.13*	.17**

* significant p $\leq$.05
** significant p $\leq$.01

TABLE 15-B

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Company A

N = 232

	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
Individual Variable									
E1	.11*	.01	.07	.16*	-.07	.16*	.15*	-.01	.11*
Additive Predictor									
E1 + E2	.12*	-.00	.07	.15*	-.07	.15*	.15*	-.02	.11*
Multiplicative Predictors									
E1V1	.17**	-.10	.18**	.16*	-.14*	.20**	.17**	-.13*	.20**
E2V2	.17**	-.07	.17**	.14*	-.10	.16*	.17**	-.09	.17**
Combined Predictors									
E1 (E2V2)	.16*	-.13	.11*	.17**	-.10	.15*	.18**	-.05	.13*
E1 + (E2V2)	.17**	-.05	.16*	.15*	-.11*	.17**	.18**	-.07	.17**
E2 + (E1V1)	.17**	-.10	.18**	.16*	-.14*	.19**	.18**	-.12*	.20**

* significant $p < .05$
** significant $p < .01$

TABLE 15-C

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Company A - Division 1

N = 115

	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
Individual Variable									
E1	.26**	.01	.16*	.26**	.02	.15	.32**	.01	.20*
Additive Predictor									
E1 + E2	.23*	.02	.15	.20*	.01	.14	.28**	-.00	.20*
Multiplicative Predictors									
E1V1	.30**	-.14	.30**	.25**	-.10	.24**	.33**	-.15	.33**
E2V2	.23*	-.04	.20*	.21*	-.10	.25**	.25**	-.10	.32**
Combined Predictors									
E1 (E2V2)	.28**	.01	.21*	.26**	-.05	.17*	.32**	-.03	.24**
E1 + (E2V2)	.25**	-.03	.21*	.23*	-.08	.22*	.29**	-.08	.26**
E2 + (E1V1)	.30**	-.12	.29**	.25**	-.10	.24**	.33**	-.15	.33**

* significant $p < .05$
** significant $p < .01$

TABLE 15-D

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Company B

N = 52

	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
Individual Variable									
E1	.01	-.11	.07	-.12	-.06	-.04	-.04	-.05	.01
Additive Predictor									
E1 + E2	.04	-.13	.09	-.02	-.12	.05	.03	-.11	.08
Multiplicative Predictors									
E1V1	.07	-.05	.08	-.04	-.05	-.01	.06	-.05	.08
E2V2	.12	-.15	.15	.15	-.24*	.21	.18	-.22	.22
Combined Predictors									
E1 (E2V2)	.10	-.17	.15	.05	-.23	.05	.10	-.21	.10
E1 + (E2V2)	.10	-.16	.15	.11	-.21	.17	.15	-.19	.19
E2 + (E1V1)	.07	-.08	.09	-.03	-.08	.02	.07	-.08	.10

* significant $p \leq .05$
** significant $p \leq .01$

TABLE 15-E

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Company C

N = 37

	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
Individual Variable									
E1	.07	-.05	.12	.22	.21	.02	.11	.03	.08
Additive Predictor									
E1 + E2	.20	-.23	.35*	.29	.08	.23	.22	-.15	.32*
Multiplicative Predictors									
E1V1	.11	-.12	.18	.21	.13	.15	.14	-.03	.16
E2V2	.36*	-.22	.41**	.26	-.05	.25	.35*	-.17	.37*
Combined Predictors									
E1 (E2V2)	.25	-.17	.26	.25	.05	.12	.26	-.09	.23
E1 + (E2V2)	.32*	-.19	.38*	.26	.05	.22	.31*	-.12	.34*
E2 + (E1V1)	.14	-.22	.24	.24	.08	.20	.17	-.12	.23

* significant P $<$ .05
** significant p $<$ .01

TABLE 15-F

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Company D

N = 27

	Effort			Performance			Superior Rating		
	Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
Individual Variable									
E1	-.40*	-.38*	-.01	-.17	-.38*	.17	-.20	-.34	.12
Additive Predictor									
E1 + E2	-.17	-.30	.08	-.02	-.30	.18	-.03	-.28	.17
Multiplicative Predictors									
E1V1	-.34	-.53**	-.01	-.10	-.52**	.19	-.15	-.50**	.13
E2V2	.03	-.27	.16	.11	-.26	.22	.11	-.25	.22
Combined Predictors									
E1 (E2V2)	-.25	-.21	-.02	-.06	-.23	.15	-.08	-.20	.10
E1 + (E2V2)	-.06	-.32	.13	.06	-.31	.22	.05	-.29	.21
E2 + (E1V1)	-.29	-.50**	.02	-.07	-.48**	.20	-.12	-.47**	.16

* significant $p < .05$
** significant $p < .01$

TABLE 16-A

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY VALENCE PREDICTORS

Predictor	Sample	N	Effort			Performance			Superior Rating		
			Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
E1	Total	348	.06	-.03	.07	.10*	-.06	.11*	.08	-.02	.08
	Co.A.	232	.11*	.01	.07	.16*	-.07	.16*	.15*	-.01	.11*
	Co.A.-Div.1	115	.26**	.01	.16*	.26**	.02	.15	.32**	.01	.20*
	Co.B	52	.01	-.11	.07	-.12	-.06	-.04	-.04	-.05	-.01
	Co.C	37	.07	-.05	.12	.22	.21	.02	.11	.03	.08
	Co.D	27	-.40*	-.38*	-.01	-.17	-.38*	.17	-.20	-.34	.12
E1 + E2	Total	348	.10*	-.05	.10	.12*	-.07	.13**	.12	-.06	.12*
	Co.A.	232	.12*	-.00	.07	.15*	-.07	.15*	.15*	-.02	.11*
	Co.A.-Div.1	115	.23*	.02	.15	.20*	.01	.14	.28**	-.00	.20*
	Co.B	52	.04	-.13	.09	-.02	-.12	.05	.03	-.11	.08
	Co.C	37	.20	-.23	.35*	.29	.08	.23	.22	-.15	.32*
	Co.D	27	-.17	-.30	.08	-.02	-.30	.18	-.03	-.28	.17

* significant $p < .05$
** significant $p < .01$

TABLE 16-B

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Predictor	Sample	N	Effort			Performance			Superior Rating		
			Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
E1V1	Total	348	.10*	-.11	.15**	.10*	-.13**	.15**	.12*	-.13**	.17**
	Co.A	232	.17**	-.10	.18**	.16*	-.14*	.20**	.17**	-.13*	.20**
	Co.A-Div.1	115	.30**	-.14	.30**	.25**	-.10	.24**	.33**	-.15	.33**
	Co.B	52	.07	-.05	.08	-.04	-.05	-.01	.06	-.05	.08
	Co.C	37	.11	-.12	.18	.21	.13	.15	.14	-.03	.16
	Co.D	27	-.34	-.53**	-.01	-.10	-.52**	.19	-.15	-.50**	.13
E2V2	Total	348	.17**	-.09*	.17**	.14**	-.11*	-.16**	.18**	-.11*	.19**
	Co.A	232	.17**	-.07	.17**	.14*	-.10	.16*	.17**	-.09	.17**
	Co.A-Div.1	115	.23*	-.04	.20*	.21*	-.10	.25**	.25**	-.10	.32**
	Co.B	52	.12	-.15	.15	.15	-.24*	.21	.18	-.22	.22
	Co.C	37	.36*	-.22	.41**	.26	-.05	.25	.35*	-.17	.37*
	Co.D	27	.03	-.27	.16	.11	-.26	.22	.11	-.25	.22

* significant $p \leq .05$
** significant $p \leq .01$

TABLE 16-C

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY-VALENCE PREDICTORS

Predictor	Sample	N	Effort			Performance			Superior Rating		
			Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
E1 (E2V2)	Total	348	.14*	-.06	.11*	.14**	-.11*	.13**	.15**	-.08	.12*
	Co.A	232	.16*	-.03	.11*	.17**	-.10	.15*	.18**	-.05	.13**
	Co.A-Div.1	115	.28**	.01	.21*	.26**	-.05	.17*	.32**	-.03	.24**
	Co.B	52	.10	-.17	.15	.05	-.23	.05	.10	-.21	.10
	Co.C	37	.25	-.17	.26	.25	.05	.12	.26	-.09	.23
	Co.D	27	-.25	-.21	-.02	-.06	-.23	.15	-.08	-.20	.10
E1 + (E2V2)	Total	348	.16**	-.08	.16**	.14**	-.11*	.16**	.17**	-.09*	.18**
	Co.A	232	.17**	-.05	.16*	.15*	-.11*	.17**	.18**	-.07	.17**
	Co.A-Div.1	115	.25**	-.03	.21*	.23*	-.08	.22*	.29**	-.08	.26**
	Co.B	52	.10	-.16	.15	.11	-.21	.17	.15	-.19	.19
	Co.C	37	.32*	-.19	.38*	.26	.05	.22	.31*	-.12	.34*
	Co.D	27	-.06	-.32	.13	.06	-.31	.22	.05	-.29	.21

* significant $p < .05$
** significant $p < .01$

TABLE 16-D

CORRELATION BETWEEN EFFORT AND PERFORMANCE AND EXPECTANCY VALENCE PREDICTORS

Predictor	Sample	N	Effort			Performance			Superior Rating		
			Pos.	Neg.	Total	Pos.	Neg.	Total	Pos.	Neg.	Total
E2 + (E1V1)	Total	348	.11*	-.12*	.15**	.11*	-.13**	.16**	.13**	-.13**	.17**
	Co.A	232	.17**	-.10	.18**	.16*	-.14*	.19**	.18**	-.12*	.20**
	Co.A-Div.1	115	.30**	-.12	.29**	.25**	-.10	.24**	.33**	-.15	.33**
	Co.B	52	.07	-.08	.09	-.03	-.08	.02	.07	-.08	.10
	Co.C	37	.14	-.22	.24	.24	.08	.20	.17	-.12	.23
	Co.D	27	-.29	-.50**	.02	-.07	-.48**	.20	-.12	-.47**	.16

* significant $p < .05$
** significant $p < .01$

TABLE 17

SUMMARY OF MODERATING EFFECT OF DEMOGRAPHIC VARIABLES

Moderating Variable	Satisfaction	Effort and Performance
Age	Not rated	Moderate
Education	Weak	Not rated
Type of compensation	Moderate	Moderate
Number of dependents	Moderate	Not rated
Earnings	Not rated	Weak
Change in earnings	Weak	Not rated
Job type	Moderate	Not rated
Seniority with company	Not rated	Moderate
Time with same supervisor	Moderate to strong	Not rated
Time doing similar work	Weak	Moderate to strong

TABLE 18-A

EFFECT OF AGE AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	71-L 94-H	Not rated		91-L 139-H	.28**	-.00
	Co.A	57-L 58-H			73-L 75-H	.26*	-.04
	Co.A-Div.1	31-L 32-H			45-L 43-H	.37**	.17
E2	Total				91-L 139-H	.21*	.10
	Co.A				73-L 75-H	.21*	.01
	Co.A-Div.1				45-L 43-H	.30*	.18
E1 + E2	Total				91-L 139-H	.29**	.05
	Co.A				73-L 75-H	.27*	-.02
	Co.A-Div.1				45-L 43-H	.39**	.20
E1V1	Total				91-L 139-H	.29**	.08
	Co.A				73-L 75-H	.30**	.04
	Co.A-Div.1				45-L 43-H	.40**	.24
E1 + (E2V2)	Total				91-L 139-H	.26**	.07
	Co.A				73-L 75-H	.27*	.05
	Co.A-Div.1				45-L 43-H	.37**	.26*
E2 + (E1V1)	Total				91-L 139-H	.30**	.09
	Co.A				73-L 75-H	.30**	.03
	Co.A-Div.1				45-L 43-H	.41**	.25

*significant $P < .05$
**significant $p < .01$

TABLE 18-B

EFFECT OF EDUCATION AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	155-L	.30**	.43**	211-L	Not rated	
		105-H			137-H		
	Co.A	106-L	.40**	.47**	134-L		
		80-H			98-H		
	Co.A-Div.1	50-L	.31*	.46**	68-L		
		59-H			75-H		
E2	Total	155-L	.20**	.42**			
		105-H					
	Co.A	106-L	.37**	.49**			
		80-H					
	Co.A-Div.1	50-L	.39**	.46**			
		59-H					
E1 + E2	Total	155-L	.28**	.42**			
		105-H					
	Co.A	106-L	.45**	.56**			
		80-H					
	Co.A-Div.1	50-L	.43**	.56**			
		59-H					
E1V1	Total	155-L	.24**	.41**			
		105-H					
	Co.A	106-L	.37**	.51**			
		80-H					
	Co.A-Div.1	50-L	.52**	.48**			
		59-H					
E1 + (E2V2)	Total	155-L	.25**	.55**			
		105-H					
	Co.A	106-L	.35**	.62**			
		80-H					
	Co.A-Div.1	50-L	.37**	.58**			
		59-H					
E2 + (E1V1)	Total	155-L	.25**	.50**			
		105-H					
	Co.A	106-L	.39**	.55**			
		80-H					
	Co.A-Div.1	50-L	.55**	.53**			
		59-H					

* significant $p < .05$
** significant $p < .01$

TABLE 18-C

EFFECT OF TYPE OF COMPENSATION AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	69-L 148-H	.32**	.43**	90-L 208-H	-.05	.15*
	Co.A	57-L 129-H	.33**	.47**	68-L 164-H	-.08	.18*
	Co.A-Div.1	23-L 86-H	.33	.45**	28-L 115-H	.14	.20*
E2	Total	69-L 148-H	.28**	.40**	90-L 208-H	.16	.14*
	Co.A	57-L 129-H	.30**	.48**	68-L 164-H	.05	.12
	Co.A-Div.1	23-L 86-H	.41**	.46**	28-L 115-H	.13	.15
E1 + E2	Total	69-L 148-H	.36**	.48**	90-L 208-H	.04	.17**
	Co.A	57-L 129-H	.37**	.55**	68-L 164-H	-.04	.17*
	Co.A-Div.1	23-L 86-H	.54**	.53**	28-L 115-H	.12	.20*
E1V1	Total	69-L 148-H	.16	.47**	90-L 208-H	.02	.24**
	Co.A	57-L 129-H	.20	.52**	68-L 164-H	-.03	.29**
	Co.A-Div.1	23-L 86-H	.24	.54**	28-L 115-H	.13	.33**
E1 + (E2V2)	Total	69-L 148-H	.24*	.49**	90-L 208-H	.12	.21**
	Co.A	57-L 129-H	.27*	.52**	68-L 164-H	00	.23**
	Co.A-Div.1	23-L 86-H	.34	.49**	28-L 115-H	.07	.26**
E2 + (E1V1)	Total	69-L 148-H	.20	.50**	90-L 208-H	.05	.24**
	Co.A	57-L 129-H	.23*	.55**	68-L 164-H	-.02	.28**
	Co.A-Div.1	23-L 86-H	.33	.57**	28-L 115-H	.15	.33**

* significant $p < .05$
** significant $p < .01$

TABLE 18-D

EFFECT OF NUMBER OF DEPENDENTS AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	136-L 124-H	.29**	.47**	187-L 161-H	Not rated	
	Co.A	99-L 87-H	.38**	.50**	129-L 103-H		
	Co.A-Div.1	54-L 55-H	.33**	.50**	76-L 67-H		
E2	Total	136-L 124-H	.23**	.38**			
	Co.A	99-L 87-H	.46**	.39**			
	Co.A-Div.1	54-L 55-H	.49**	.38**			
E1 + E2	Total	136-L 124-H	.29**	.49**			
	Co.A	99-L 87-H	.47**	.52**			
	Co.A-Div.1	54-L 55-H	.50**	.50**			
E1V1	Total	136-L 124-H	.16*	.45**			
	Co.A	99-L 87-H	.31**	.52**			
	Co.A-Div.1	54-L 55-H	.36**	.60**			
E1 + (E2V2)	Total	136-L 124-H	.20**	.55**			
	Co.A	99-L 87-H	.33**	.57**			
	Co.A-Div.1	54-L 55-H	.31**	.61**			
E2 + (E1V1)	Total	136-L 124-H	.18*	.48**			
	Co.A	99-L 87-H	.36**	.54**			
	Co.A-Div.1	54-L 55-H	.42**	.61**			

* significant $p < .05$
** significant $p < .01$

TABLE 18-E

EFFECT OF EARNINGS AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	74-L 106-H	Not rated		94-L 154-H	.03	.01
	Co.A	64-L 62-H			82-L 74-H	.04	-.01
	Co.A-Div.1	22-L 44-H			33-L 54-H	.33*	-.11
E2	Total				94-L 154-H	.18*	.15*
	Co.A				82-L 74-H	.11	.15
	Co.A-Div.1				33-L 54-H	.29	.12
E1 + E2	Total				94-L 154-H	.12	.09
	Co.A				82-L 74-H	.08	.08
	Co.A-Div.1				33-L 54-H	.35*	.01
E1V1	Total				94-L 154-H	.18*	.08
	Co.A				82-L 74-H	.17	.07
	Co.A-Div.1				33-L 54-H	.50**	-.04
E1 + (E2V2)	Total				94-L 154-H	.20*	.13
	Co.A				82-L 74-H	.14	.15
	Co.A-Div.1				33-L 54-H	.29	.07
E2 + (E1V1)	Total				94-L 154-H	.20*	.10
	Co.A				82-L 74-H	.17	.09
	Co.A-Div.1				33-L 54-H	.50**	-.01

* significant $p < .05$
** significant $p < .01$

TABLE 18-F

EFFECT OF CHANGE IN EARNINGS AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	62-L 95-H	.41**	.31**	84-L 121-H	Not rated	
	Co.A	46-L 56-H	.55**	.38**	58-L 57-H		
	Co.A-Div.1	33-L 33-H	.51*	.24	42-L 42-H		
E2	Total	62-L 95-H	.37**	.24*			
	Co.A	46-L 56-H	.58**	.30*			
	Co.A-Div.1	33-L 33-H	.60**	.24			
E1 + E2	Total	62-L 95-H	.43**	.31**			
	Co.A	46-L 56-H	.64**	.38**			
	Co.A-Div.1	33-L 33-H	.64**	.27			
E1V1	Total	62-L 95-H	.41**	.19*			
	Co.A	46-L 56-H	.51**	.40**			
	Co.A-Div.1	33-L 33-H	.53**	.42**			
E1 + (E2V2)	Total	62-L 95-H	.48**	.46**			
	Co.A	46-L 56-H	.66**	.46**			
	Co.A-Div.1	33-L 33-H	.69**	.40*			
E2 + (E1V1)	Total	62-L 95-H	.43**	.21*			
	Co.A	46-L 56-H	.57**	.42**			
	Co.A-Div.1	33-L 33-H	.59**	.43**			

* significant $p < .05$
** significant $p < .01$

TABLE 18-G

EFFECT OF JOB TYPE AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	50-L 174-H	.34**	.39**	71-L 229-H	Not rated	
	Co.A	33-L 118-H	.33*	.50**	37-L 149-H		
	Co.A-Div.1	23-L 77-H	.16	.46**	26-L 102-H		
E2	Total	50-L 174-H	.26*	.31**			
	Co.A	33-L 118-H	.29	.49**			
	Co.A-Div.1	23-L 77-H	.35	.46**			
E1 + E2	Total	50-L 174-H	.37**	.39**			
	Co.A	33-L 118-H	.39*	.56**			
	Co.A-Div.1	23-L 77-H	.43*	.53**			
E1V1	Total	50-L 174-H	.19	.35**			
	Co.A	33-L 118-H	.20	.54**			
	Co.A-Div.1	23-L 77-H	.06	.55**			
E1 + (E2V2)	Total	50-L 174-H	.16	.44**			
	Co.A	33-L 118-H	.12	.60**			
	Co.A-Div.1	23-L 77-H	.01	.59**			
E2 + (E1V1)	Total	50-L 174-H	.22	.37**			
	Co.A	33-L 118-H	.24	.58**			
	Co.A-Div.1	23-L 77-H	.16	.58**			

* significant $p < .05$
** significant $p < .01$

TABLE 18-H

EFFECT OF SENIORITY WITH COMPANY AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	113-L 92-H	Not rated		154-L 126-H	.14*	-.05
	Co.A	93-L 56-H			120-L 68-H	.13	-.10
	Co.A-Div.1	49-L 37-H			65-L 48-H	.23*	.01
E2	Total				154-L 126-H	.26**	.02
	Co.A				120-L 68-H	.15	-.01
	Co.A-Div.1				65-L 48-H	.17	.16
E1 + E2	Total				154-L 126-H	.23**	-.02
	Co.A				120-L 68-H	.16*	-.08
	Co.A-Div.1				65-L 48-H	.24*	-.17
E1V1	Total				154-L 126-H	.21**	.08
	Co.A				120-L 68-H	.21*	-.00
	Co.A-Div.1				65-L 48-H	.31**	.10
E1 + (E2V2)	Total				154-L 126-H	.24**	.06
	Co.A				120-L 68-H	.21*	.02
	Co.A-Div.1				65-L 48-H	.26*	.15
E2 + (E1V1)	Total				154-L 126-H	.23**	.08
	Co.A				120-L 68-H	.21*	-.08
	Co.A-Div.1				65-L 48-H	.31**	.12

* significant $p < .05$
** significant $p < .01$

TABLE 18-I

EFFECT OF TIME WITH SAME SUPERVISOR AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	155-L 105-H	.45**	.22*	199-L 148-H	Not rated	
	Co.A	136-L 50-H	.47**	.30*	172-L 60-H		
	Co.A-Div.1	79-L 30-H	.44**	.25	104-L 39-H		
E2	Total	155-L 105-H	.47**	.07			
	Co.A	136-L 50-H	.47**	.28*			
	Co.A-Div.1	79-L 30-H	.53**	.15			
E1 + E2	Total	155-L 105-H	.53**	.16			
	Co.A	136-L 50-H	.54**	.33**			
	Co.A-Div.1	79-L 30-H	.58**	.23			
E1V1	Total	155-L 105-H	.42**	.11			
	Co.A	136-L 50-H	.45**	.32*			
	Co.A-Div.1	79-L 30-H	.51**	.41			
E1 + (E2V2)	Total	155-L 105-H	.55**	.13			
	Co.A	136-L 50-H	.55**	.23*			
	Co.A-Div.1	79-L 30-H	.60**	.22			
E2 + (E1V1)	Total	155-L 105-H	.46**	.11			
	Co.A	136-L 50-H	.48**	.35**			
	Co.A-Div.1	79-L 30-H	.55**	.42**			

* significant $p < .05$
** significant $p < .01$

TABLE 18-J

EFFECT OF TIME DOING SIMILAR WORK AS A MODERATING VARIABLE

Predictor	Sample	Satisfaction N	Satisfaction Low	Satisfaction High	Effort and Performance N	Effort and Performance Low	Effort and Performance High
E1	Total	90-L 108-H	.39**	.35**	114-L 154-H	.20*	-.07
	Co.A	72-L 65-H	.43**	.40**	92-L 82-H	.18*	-.08
	Co.A-Div.1	36-L 43-H	.25	.47**	50-L 54-H	.26*	.04
E2	Total	90-L 108-H	.26**	.40**	114-L 154-H	.27**	.02
	Co.A	72-L 65-H	.36**	.61**	92-L 82-H	.16	.04
	Co.A-Div.1	36-L 43-H	.36*	.66**	50-L 54-H	.07	.20
E1 + E2	Total	90-L 108-H	.38**	.41**	114-L 154-H	.24**	-.03
	Co.A	72-L 65-H	.46**	.56**	92-L 82-H	.17*	-.03
	Co.A-Div.1	36-L 43-H	.42**	.63**	50-L 54-H	.16	.13
E1V1	Total	90-L 108-H	.26**	.31**	114-L 154-H	.26**	.03
	Co.A	72-L 65-H	.32**	.37**	92-L 82-H	.25**	-.00
	Co.A-Div.1	36-L 43-H	.30*	.42**	50-L 54-H	.32*	.11
E1 + (E2V2)	Total	90-L 108-H	.26**	.42**	114-L 154-H	.26**	.04
	Co.A	72-L 65-H	.31**	.54**	92-L 82-H	.24*	.02
	Co.A-Div.1	36-L 43-H	.20	.63**	50-L 54-H	.23	.15
E2 + (E1V1)	Total	90-L 108-H	.28**	.35**	114-L 154-H	.28**	.03
	Co.A	72-L 65-H	.34**	.44**	92-L 82-H	.25**	.00
	Co.A-Div.1	36-L 43-H	.34*	.50**	50-L 54-H	.30*	.13

* significant $p < .05$
** significant $p < .01$

TABLE 19-A

REGRESSION ANALYSIS -
SATISFACTION AS THE DEPENDENT VARIABLE

(Stepwise - Variables not forced)

Total Sample

N = 215

Variable	R - Square
E1 (E2V2)	.17
Change in pay	.02
Seniority with firm	.01
V1	.01
Education	.009
Number of dependents	.009
Earnings	.008
Type compensation	.007
E2	.005
E1	.004
V2	-
Time with superior	-
	.252

TABLE 19-B

REGRESSION ANALYSIS -
SATISFACTION AS THE DEPENDENT VARIABLE

(Stepwise - Variables forced)

	Co.A	Co.A-Div.1	Co.A-Div.2	Co.C	Total Sample
N =	164	97	67	23	215
Variable	R - Square				
E1	.06	.06	.055	.005	.026
E2	.20	.20	.245	.005	.11
V1	.01	-	.035	.325	.003
V2	-	-	-	-	.001
E1 (E2V2)	-	.01	-	.06	.057
Seniority with firm	.03	.06	-	.035	.01
Time with superior	-	-	-	.03	.002
Change in pay	.01	.005	.01	.005	.01
Earnings	.005	.01	-	.04	.01
Number of dependents	.01	.01	.03	.005	.01
Education	-	.01	.005	.002	.005
Age	-	-	-	.003	-
Type compensation	-	-	-	.03	.01
	.325	.365	.38	.54	.254

TABLE 20-A

REGRESSION ANALYSIS -
EFFORT AND PERFORMANCE AS THE DEPENDENT VARIABLE

(Stepwise - Variables not forced)

Total Sample

N = 286

Variable	R - Square
Change in pay	.03
Time with supervisor	.03
V2	.02
Earnings	.02
Age	.01
Type compensation	.009
V1	.007
Number of dependents	.006
E2	.005
E1	.005
E1 (E2V2)	.004
Education	.002
Seniority with firm	.001
	.149

TABLE 20-B

REGRESSION ANALYSIS -
EFFORT AND PERFORMANCE AS THE DEPENDENT VARIABLE

(Stepwise - Variables forced)

	Co.A	Co.B	Co.C	Co.D	Total Sample
N =	203	44	34	22	286
Variable	R - Square				
E1	-	.01	.12	.002	.001
E2	.01	.02	.25	.005	.015
V1	-	.02	.02	.42	.006
V2	-	.01	.02	.065	.002
E1 (E2V2)	-	.02	.03	.035	.001
Seniority with firm	.01	.005	.06	.11	.015
Time with supervisor	.01	.005	.002	.008	.006
Change in pay	.01	.01	.003	.03	.003
Earnings	.01	.41	.01	.045	.05
Number of dependents	-	.01	.03	.04	.01
Education	-	.04	.03	.005	.005
	.05	.56	.575	.765	.114

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