

12

Technical Report 553

AD A138185

WORK MOTIVATION: THEORY AND PRACTICE

Gary Kress, Batia Sharon, and David Bassan
Human Resources Research Organization (HumRRO)

ARI FIELD UNIT IN USAREUR

DTIC FILE COPY

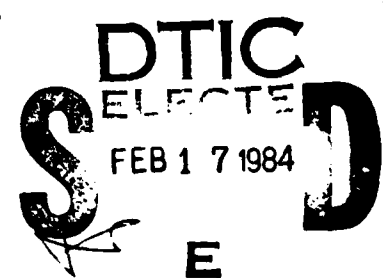


U. S. Army

Research Institute for the Behavioral and Social Sciences

September 1981

Approved for public release; distribution unlimited.



84 02 16 0411

U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the
Deputy Chief of Staff for Personnel

JOSEPH ZEIDNER
Technical Director

L. NEALE COSBY
Colonel, IN
Commander

Research accomplished under contract
for the Department of the Army

HUMAN RESOURCES RESEARCH ORGANIZATION

NOTICES

DISTRIBUTION: Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-TST, 5001 Eisenhower Avenue, Alexandria, Virginia 22333.

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

DD FORM 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Technical Report 553

WORK MOTIVATION: THEORY AND PRACTICE

Gary Kress, Batia Sharon, and David Bassan
Human Resources Research Organization (HumRRO)

Submitted by:
William W. Haythorn, Chief
ARI FIELD UNIT IN USAREUR

Approved by:
Joyce L. Shields, Director
**MANPOWER AND PERSONNEL
RESEARCH LABORATORY**

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333

Office, Deputy Chief of Staff for Personnel
Department of the Army

September 1981

Army Project Number
2Q263743A794

Education and Training

Approved for public release; distribution unlimited.

ARI Research Reports and Technical Reports are intended for sponsors of R&D tasks and for other research and military agencies. Any findings ready for implementation at the time of publication are presented in the last part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

The work reported here was performed at the Heidelberg Office of the Human Resources Research Organization (HumRRO) under contract no. MDA 903-78-C-2042 with the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI). Dr. William W. Haythorn was the contracting officer's technical representative.

The report presents the results of subtask 1.1 of Task 2 (Incentive Systems in Army Units). The research reported here is part of a broader program designed to identify, assess, and evaluate the applicability of various work motivational techniques in Army unit environments.

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

Joseph Zeidner
JOSEPH ZEIDNER
Technical Director



WORK MOTIVATION: THEORY AND PRACTICE

CONTENTS

	Page
INTRODUCTION	1
Motivation and Performance	2
Purpose of This Paper	4
APPROACHES TO WORK MOTIVATION	6
Expectancy Theory	6
Reinforcement Theory	14
Goal Setting	24
Job Design	35
PERTINENT ISSUES AND FACTORS RELATED TO WORK MOTIVATION	49
Incentives and Rewards	49
Performance Feedback	59
Job Satisfaction	64
POTENTIAL APPLICABILITY OF MOTIVATIONAL TECHNIQUES IN A MILITARY ENVIRONMENT	71
REFERENCES	78

LIST OF TABLES

Table 1. Assessment of potential applicability of motivational techniques in a military environment	73
--	----

LIST OF FIGURES

Figure 1. Summary model of expectancy type theories	8
---	---

INTRODUCTION

Inflation, balance of trade deficits, and various energy crises are all indicators of the underlying reality that we as a nation are consuming more than we are producing. A look at statistics shows that the average Growth in Productivity, between 1960 and 1976, in the United States was 2.9 percent. Compared to four other major industrial nations, this rate was the lowest: both France and Sweden showed average rates of 5.7 percent; West Germany, 5.9 percent; and Japan, 8.9 percent (Ahern, 1978). Leaders in business, industry, labor, and the government are in general agreement that the key to a strong economy and the American standard of living is increased productivity. Congress has recognized the problem of low productivity and in 1975 enacted a public law which focused on national productivity and the quality of working life. The Secretary of Defense for his part has issued DoD directives and instructions aimed towards productivity enhancement which establish policies, responsibilities, and procedures for permanent productivity programs in the military services (Nebeker, Broedling, & Doherty, 1978).

Given the national concern for productivity enhancement, a first step is to establish what is meant by productivity and to identify approaches for increasing it. Although the term productivity is widely used, it is generally recognized that there is no singular definition of what productivity is. In practice, different organizations use sometimes different measures and indicators to arrive at a figure of productivity which is meaningful for them. In business and industry there is general agreement, however, that a productivity indicator should be thought of in terms of a ratio concept; namely, the ratio of the output of goods and/or services generated by an organization divided by the inputs used to produce them. Using this concept it is evident that the way to increase productivity is to increase outputs, reduce inputs, or do both simultaneously.

In the past, there has been a strong emphasis and reliance on technology to increase productivity through mechanization and more efficient production methods. In the future, technology will continue to play a role in improved productivity; however, the rate of increase will probably be much smaller than in the past. Therefore, there is a growing awareness and realization that more emphasis has to be placed on the human resources input to the productivity ratio. This means that to increase the goods and services produced, the work force needs to be adequately trained, highly motivated, well managed, and relatively satisfied with their jobs and the organization. The need for the training and management of people in an organization is fairly obvious and has thus been one of the primary areas addressed in attempts to increase human resources productivity. Relatively less attention has been paid to the need for work force motivation and the effects of motivation on productivity improvement.

This latter statement is especially true for the military services. While billions of dollars are appropriated each year to provide for the acquisition and maintenance of weapons systems and the training of personnel, much less

FOLLOWING

Reproduced from
best available copy.

attention is paid to the need for research and development related to increasing productivity through work force motivation. For example, one of the most common motivational techniques used by organizations to increase performance is to provide incentive plans. Hayes, Spector, and Fain (1979) conducted a comprehensive search of the literature for the years 1975-1978 to identify the use and effects of incentive programs in various organizations. They found that of the total number of cases identified, only 13 percent related to or occurred in military organizations.

One reason why motivational strategies and techniques have not been used more extensively in military organizations to influence productivity may be that the productivity concept, as discussed previously, is not applicable to the military. Productivity, as applied to military organizations, is a qualitatively different concept that does not include the production of goods or services. Rather, the evaluation of achievement in a military context is in terms of military readiness. This concept consists of the probabilistic estimate that the organization can perform certain tasks, under certain conditions, when it is called on to perform them. The concept of readiness then involves the assessment of the potential for achieving future goals rather than the measurement of what has already been achieved. How is this readiness potential assessed? As in the case of productivity, there are no simple measures or formulas. The assumption is made that a military unit is in a state of readiness if: it has the assigned number of personnel and equipment, the personnel are trained to perform their tasks, and the equipment is maintained to function effectively. In practice, criteria are defined to evaluate the level of these three conditions and these measurement criteria are then used to provide a readiness estimate.

While it may be more difficult to measure and assess military readiness as compared to industrial productivity, this does not suggest that motivational strategies developed through theory and practice cannot be applied in a military environment or produce significant effects. What it does suggest is that these methods and techniques have to be reviewed and evaluated in terms of the unique environmental conditions, constraints, and goals of military organizations. That motivation will have a positive effect on job performance should hold true regardless of whether performance measures are used to assess military readiness or commercial productivity.

MOTIVATION AND PERFORMANCE

To better understand both the theoretical development and practical applications of the various approaches to work motivation, it is necessary to consider the meaning of motivation and its relationship to performance. The term motivation has assumed various meanings in both the theoretical and applied literature. It is sometimes used to signify the state of an organism. For example, in laboratory research food deprivation of an animal is considered to be synonymous with a motivational state. At the human level the term has sometimes been equated with trait characteristics, which suggests

that people have motivational characteristics much as they have physical characteristics like height or weight.

While it may be helpful on occasion to describe certain behaviors, states, or characteristics of a person as equivalents of motivation, using the term in this sense has very limited heuristic value. For example, if we assume that the motivation is a trait, then one way of increasing work force motivation is through the selection and classification of job applicants. Only those people would be selected who have the requisite number of motivational characteristics. This kind of an approach would obviously have very limited utility.

A more useful way of defining motivation, and the way it is most commonly used in the organizational behavior literature, is to consider it as a summary label that explains the relationship between certain independent and dependent variables (Campbell & Pritchard, 1976). These relationships are based on an equation which ties together ability, motivation, and performance and reads:

$$\text{Performance} = f(\text{ability} \times \text{motivation}).$$

In the equation, performance is considered to be any class of goal-directed behavior. Ability consists of such factors as basic skills, aptitudes, and training. Motivation can, likewise, be expanded so that it consists of certain determinants of performance which include (a) the choice to perform, (b) the amount of effort expended, and (c) the choice to persist in behavior. Using this equation, motivation can then be defined as a construct which explains the direction, strength, and persistence of behavior which cannot be accounted for by ability factors alone.

The following example demonstrates the use of this definition. Consider an employer who is faced with high levels of employee absenteeism from the job. Presumably, in this situation, employees are choosing not to come to work. If the employer were to offer a monetary incentive for those employees who put in a full work week, he might find that absenteeism drops significantly. In this example the relationship between the dependent variable, absenteeism, and the independent variable, the monetary incentive, could be explained by the summary construct motivation. Assuming that ability level stayed constant, the choice to perform was explained by a difference in motivation level.

Defining motivation as suggested above has a great degree of utility from both a theoretical and an applied perspective. Using this approach, the basic research and practical questions with regard to work motivation become: what are the variables which affect choice, strength, and persistence of performance, and how do they operate? In fact, many of the existing theories and techniques of work motivation can be distinguished on the basis of which one of these questions they address. Campbell, Dunnette, Lawler, and Weich (1970) made the distinction between what they called process and content theories of motivation. Process theories have as their objective explaining how major motivational variables operate and interact to influence choice, strength, and

persistence of behavior. Content theories focus on identifying the specific variables within individuals and the environment that have an influence on motivated behavior and are less concerned with the process by which this occurs.

Historically, the major process theories of motivation have been the reinforcement theories of Thorndike, Hull, and Spence and the cognition theories of Tolman and Kurt Lewin. Content theories have centered around need theories such as those presented by Murray and Maslow. While the distinction between content and process theories is not critical to the information presented in this paper, it is a good distinction to keep in mind while reading the description of the various approaches to work motivation presented below. The sections on Reinforcement, Expectancy, Goal Setting, and Feedback relate to process type issues, while the sections dealing with Job Design, Incentives, and Job Satisfaction are more related to content issues.

PURPOSE OF THIS PAPER

The present paper is one part of a larger research effort whose goal is to assess the potential for maintaining and improving Army unit readiness levels through the use of incentives management and other motivational strategies. As a first step in assessing the potential for using motivational strategies in a military unit environment, it is necessary to examine the state of the art in both work motivation theory and practice.

The last 20 years have seen a tremendous growth in both the theoretical and empirical literature dealing with work motivation. The application of existing motivational theories and strategies has had dramatic results in many organizations. Productivity improvements have been obtained in terms of increased quantity and quality of production; reduced personnel turnover, absenteeism and tardiness; and reduced organizational disruptions due to accidents, strikes, grievances, and sabotage (Hinricks, 1978). These results have been obtained by using techniques that range from the fairly simple, such as offering incentives, to those that are more complex and broad-based such as job enrichment. What this suggests is that there is probably no "best" theory or technique for increasing work motivation. Rather, the literature supports the notion that many of the theories and techniques are complementary and their utility depends on the requirements, conditions, and constraints of the situation in which they are applied.

The purpose of the present paper is to review the theoretical and applied literature relating to performance motivation in order to:

1. Identify and describe the current motivational theories and techniques which the literature suggests have the greatest potential for increasing worker performance.
2. Identify those principles, practices, and techniques from various theories which could have potential utility in a military unit environment.

3. Identify the conditions and requirements for applying various performance motivation techniques.

The paper is organized in the following manner. The major theoretical approaches to work motivation are presented first. This section is then followed by a discussion of three important factors which cut across many of the theories, namely, incentives and rewards, feedback, and job satisfaction. The last section identifies and compares the principles and conditions required for successful application of the different motivational techniques and discusses their potential for utilization in a military organization.

APPROACHES TO WORK MOTIVATION

EXPECTANCY THEORY

Many of the modern theories of performance motivation can be traced back directly to two distinct theoretical orientations which guided the attempts to explain and predict behavior. One orientation, commonly called Behaviorism, suggests that an organism's behavior consists of stimulus-response connections which are strengthened or weakened by the events which follow the response (rewards, punishment). More importantly, behavioristic theories point out that future performance can best be predicted based on the occurrence of past response-reinforcement contingencies. The reinforcement theory approach to work motivation, which will be discussed in the next section, is closely aligned with this tradition.

The second theoretical orientation stresses the notion that humans think; that they have expectancies and intentions which guide and direct their behavior. Tolman (1932) introduced the idea that behavior is purposive and that theories of learning and motivation should be more cognitively oriented. K. Lewin (1935) introduced the concepts of valence and force to explain motivated behavior. Together, their writings formed the basis of what today is called Cognitive Psychology and out of which grew current expectancy theories of motivation.

Lawler (1973) points out some important similarities and differences between the behavioristic reinforcement theories of motivation and expectancy theories. He states that both theories make similar predictions, both stress the importance of rewards contingent on desired behavior, and both recognize the necessity for learned connections to guide behavior. The differences between the theories, in terms of performance motivation, are that expectancy theory stresses the importance of forward-looking beliefs or behavior-outcome expectancies, while reinforcement theories primarily emphasize the importance of learned stimulus-response connections. In short, behavioristic approaches suggest that behavior is motivated on the basis of experienced reinforcement history, while cognitive approaches suggest that expectations or anticipation of future rewards motivate behavior. Reinforcement theory concentrates on the issue of how to motivate behavior while expectancy theory takes the additional step and attempts to explain why an organism is motivated.

Most current expectancy theories of motivation are based on the model developed by Vroom (1964) to explain motivation in the work environment. Vroom's theory attempts to predict force or effort expended on a task. He made the distinction between effort and performance which was made earlier in this paper, namely, that performance is a function of additional variables other than effort alone. This is an important distinction to keep in mind when considering expectancy theories since the theories predict only the choice or amount of effort expended; they do not necessarily predict successful performance. In its simplest terms Vroom's model states that $\text{Force} = \text{Expectancy} \times \text{Valence}$. The full explication of the theory involves three important

constructs which have become the foundation of all subsequent expectancy theories: valence, instrumentality, and expectancy.

For Vroom, valence refers to the affective value that each of the anticipated outcomes of an action might have. There are two types of outcomes in his effort model. The first outcome consists of the performance level achieved, while the second outcome refers to the events which might be contingent on the performance level such as pay, recognition, or promotion. Both types of outcomes can have a value or valence for a person which is either positive, neutral, or negative. Instrumentality refers to the connection between the two outcomes. That is, it refers to the expected probability that one outcome (successful performance) will be followed by a second outcome (reward). In his model, the overall valence of a particular performance level is determined by multiplying the instrumentality of that performance level for obtaining each performance contingent outcome by the value which that outcome may have. These products are then summed over all outcomes. Finally, his construct of expectancy refers to the subjective probability that a given level of effort expenditure will lead to a particular level of performance. Vroom's theory, as well as current expectancy theories, argues that the components of the model (expectancy, instrumentality, valence) combine multiplicatively to determine motivation or force. The importance of this argument is that it suggests that if any of the components are at a zero level, there will be no motivation to perform. While some researchers suggest that it may be premature to hypothesize that the relationship among the variables is multiplicative (Campbell & Pritchard, 1976), they also agree that this kind of a relationship makes reasonable sense. For example, a person may want to perform but if that person perceives that effort will not lead to necessary performance levels, and/or that successful performance will not lead to desired outcomes, it is reasonable to presume that there will be no motivation to perform.

Over the last 15 years, the theory, as first presented by Vroom, has been expanded, simplified, modified, and undergone some name changes such as instrumentality theory (Graen, 1969), expectancy theory (Porter & Lawler, 1968; Lawler, 1973), and V-I-E theory (Campbell & Pritchard, 1976). For the purposes of this report, it is not necessary to go into all the variations; however, the interested reader will find an excellent summary of the theories in Campbell and Pritchard (1976). What is important is that, regardless of the variations, the core components of expectancy theory have remained essentially the same and all current theories subscribe to the basic formulations.

General Expectancy Model

Figure 1 shows a diagram which is a simplified summary model of current expectancy type theories. The following discussion of the model and its components draws on, and is in basic agreement with, the models presented by Lawler (1973) and Campbell and Pritchard (1976). Expectancy models attempt to explain and predict motivation to perform. As previously mentioned, motivation is most closely tied to the concepts of direction, amount of effort,

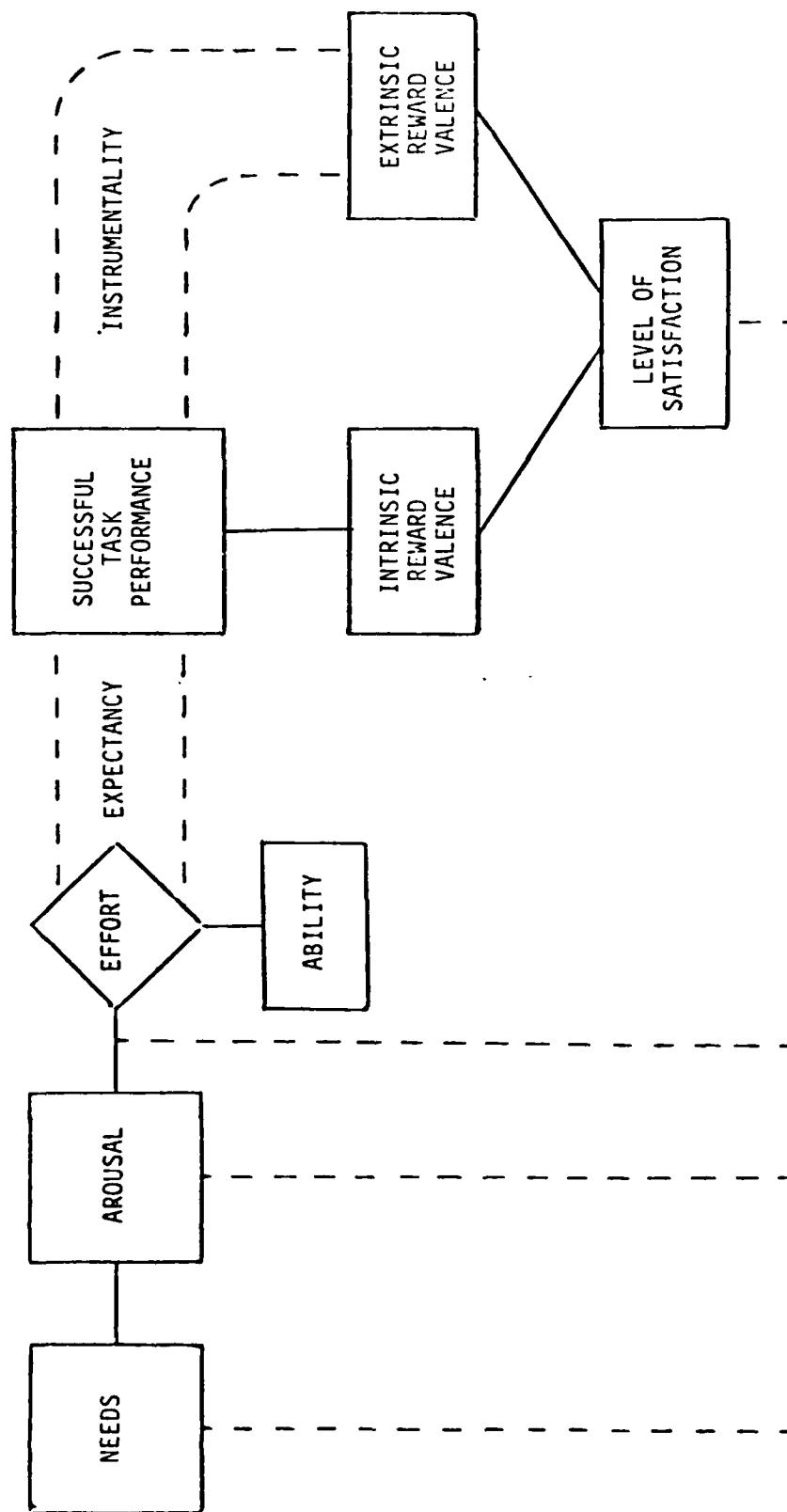


Figure 1: Summary Model of Expectancy Type Theories

and persistence of performance. For the purpose of this discussion, motivation is linked with force or effort to perform. Basic expectancy theory states that effort is a function of three determinants:

1. The expectancy that effort will lead to successful performance.
2. The instrumentality of successful performance for obtaining performance contingent outcomes.
3. The valence or attractiveness of the outcomes.

The basic components of the model are related to a person's perceptions about whether effort will/will not lead to successful performance, whether successful performance will/will not lead to certain outcomes, and whether these outcomes are/are not desirable. Expectancy is simply a person's subjective probability that intended performance will be accomplished given the situation and his/her ability level. This expectancy can vary from 0 to 1. Certain consequences follow on successful performance which have motivational properties. Following the distinction made by Porter and Lawler (1968), the performance contingent outcomes fall into two major classes, extrinsic outcomes and intrinsic outcomes. Extrinsic outcomes are rewards provided by the organization or other people (pay, promotion, etc.). Intrinsic outcomes are directly related to the work (performance) itself and are mediated within a person. That is, the person applies the reward (feeling of achievement, satisfaction, etc.) directly to him or herself. Both types of outcomes can have an attractiveness to a person which can vary from very desirable (+1 valence) to very undesirable (-1 valence). The final component of the model ties together the perceived relationship between task performance and possible outcomes. The expectation that successful performance will lead to a particular intrinsic or extrinsic outcome (reward) is called instrumentality, and like expectancy, it is a subjective estimate or probability that can vary from 0 to 1.

Figure 1 suggests that the assessment of instrumentality is appropriate only in the case of extrinsic rewards, i.e., rewards mediated by an outside agent. For example, whether a promotion will actually be conferred as a result of a particular performance has a continuous subjective probability that can range from 0 to 1. In the case of intrinsic rewards, however, the person is conferring the reward on himself/herself, thus valence is the only operative construct. The contingency between performance and intrinsic reward is either 0 or 1 and is dependent on the desirability of the reward. If, for example, an intrinsic reward has no valence for a person, then no contingency exists between performance and that outcome; however, if the intrinsic reward had, for example, a +.7 valence, then there would be an automatic (1.0) contingency between performance and that reward because there is no reason to assume that the reward would not be conferred as a result of performance. Finally, the model suggests that achieving rewards (outcomes) leads to a level of satisfaction which in turn is related to basic physiological or psychological needs.

Most current expectancy theorists combine the components of the model in a multiplicative fashion as follows: $\text{effort to perform} = f [\text{expectancy} \times \sum (\text{instrumentalities} \times \text{valences})]$. The reason that instrumentalities and valences are summed is simply to suggest that a particular performance can have many outcomes, both intrinsic and extrinsic, and that final effort is an additive function of their respective values. The basic expectancy model as outlined above makes some obvious predictions with respect to how the determinants of the model will influence performance motivation. First, and most obviously, the full multiplicative model suggests that all three components (expectancy, instrumentality, and valence) have to be present at a level greater than zero in order to get effort or force to perform. That is, a person has to perceive that there is a chance to accomplish the task, that the accomplishment of the task has a chance to result in a reward(s), and that the contingent rewards have some value.

The model, as presently formulated, furthermore predicts that by maximizing each of the components, and other things being equal, motivation will increase in a monotonic fashion. Thus, the greater the perceived expectancy, instrumentality, or valence, the greater the effort will be to perform. While the model is clear in these predictions, other theories, as well as empirical research, suggest that these predictions may not always be valid. In the case of expectancy, Locke's Goal Theory and Atkinson's Achievement Motivation Theory both predict that motivation will be greatest when the expectancy that effort will lead to successful performance is less than 1.0. The details of these differences in prediction will be discussed in a subsequent section on goal setting. With respect to instrumentality, a great amount of empirical laboratory data in the operant conditioning literature show that intermittent schedules of reinforcement have a more powerful effect on motivation and performance than continuous schedules of reinforcement. Intermittent schedules of reinforcement are, of course, based on a paradigm in which the contingent relationship between a response and a reinforcer is less than 1.0. The predictions that rewards have an additive influence on motivation and that higher "objective" values of a reward will lead to higher motivation have also been questioned. In a series of studies, Deci (1972, 1975) found that by making pay contingent on the performance of intrinsically motivating tasks, the intrinsic motivation value of these tasks was reduced. Thus, extrinsic and intrinsic rewards may not have a summative effect on motivation. Frey, Gleckman, Korman, Goodstadt, and Romanczuk (1974) report data which show that the perceived value of an incentive may not correspond directly to its objective value, e.g., a \$3,000.00 bonus is not always valued greater than a \$1,000.00 bonus. A later section on incentives and rewards will discuss this latter data more thoroughly. The final prediction from the model concerns job satisfaction. If job satisfaction results from rewards meeting basic needs, then it would be expected that measures of job satisfaction would correlate with job performance measures. This would only be the case where rewards are contingent on performance (Campbell & Pritchard, 1976).

The evidence discussed above, which does not support some of the predictions of expectancy theory, suggests that, at best, there are certain limiting experimental conditions under which the predictions made by the model will not

be realized. At worst, it suggests that the model may be invalid. The model does have a great degree of intuitive appeal in terms of explaining the process of work motivations and, as will be discussed below, there is empirical evidence to support the validity of the individual components.

The basic assumption of expectancy theory is that performance motivation is based on the desire of people to obtain valued rewards through their work. The expectancy theory model specifies the key elements that are necessary to obtain motivated performance. These elements or components of the model have certain implications with regard to the conditions that are necessary for a reward or incentive system to work effectively. Cammann and Lawler (1973) discuss some of the general conditions required for any incentive system to work and also some of the specific conditions required for pay or monetary oriented incentive systems. In summary, they state that the conditions necessary for incentive systems to motivate performance are: (a) the employees must believe that they can achieve the required performance level which will lead to rewards and they must believe that they have control over the required performance; (b) there must be a clear relationship between the level of performance and the subsequent rewards; and (c) the rewards offered for effective performance must be valued by the employees and, in the case of multiple performance outcomes, more positive than negative outcomes should tie directly to performance. In the case of pay incentive plans, they must have a payoff structure that:

1. can be clearly and objectively stated,
2. makes clear a strong connection between pay and performance,
3. ties larger amounts of pay to good performance than poor performance,
4. is based on measures and standards of performance that are reasonable.

Current Status

Since the time that Vroom's Expectancy Model first appeared, a considerable amount of empirical research has been conducted to test the explanatory power of the theory. It is interesting to note that the popularity of the theory, in terms of the kinds of research generated by it, is based almost completely on its potential for explaining work motivation rather than on any specific techniques which are suggested by the model on how to motivate behavior. This is not surprising since the conditions implied by the model for producing motivated behavior are, to a great extent, identical to the conditions implied by a behavioristic reinforcement theory approach. Thus, in terms of practical application, it is easier just to set up performance contingent reward relationships rather than trying to deal with the cognitions and perceptions which accompany these relationships. Again, the essential difference between behavioristic reinforcement theory and expectancy theory is not in terms of the predictions that they make, but rather in terms of how the motivational process is explained.

Almost all of the empirical research on expectancy theory consists of between-subject correlational designs. In a typical study, perceptions of valence, instrumentality, or expectancy are assessed using questionnaires or rating scales and these are correlated, individually or in combination, with measures of effort or performance. For example, to assess valence of rewards, subjects might be asked to indicate, on a 7-point Likert scale, the relative importance/unimportance of pay and/or promotion. Likewise, to assess instrumentality, they would be asked to indicate on a Likert scale the degree to which they feel that an incentive payment will result from their job efforts. The assessed values of the expectancy model components are then correlated, across subjects, with subjective or objective measures of performance or effort.

The results of a large number of these studies have been summarized and interpreted in several review articles over the last ten years (e.g., Heneman & Schwab, 1972; Mitchell, 1974; House, Shapiro, & Wahba, 1974; Campbell & Pritchard, 1976; Schwab, Olean-Gottlieb, & Heneman, 1979). In addition to these reviews of the empirical literature, Locke (1975) also presents an excellent critique of the basic assumptions of expectancy theory. These review articles provide a very good source for determining the current status of expectancy theory research. Since many of the same points tend to reappear across the literature, and since the reviews tend to agree on more points than they disagree, a brief summary of the most important findings and interpretations are presented below:

1. Significant relationships have been found between all components of the expectancy model and measures of effort and performance. The correlations, although significant, tend to be low (usually less than .30). There are no consistent findings concerning which of the components of the model are best predictors of performance; however, instrumentality and expectancy usually account for more variance than valence. The components of the model tend to predict self-rating of effort and performance better than supervisor ratings or objective measures.

2. There are no consistent findings regarding whether the full multiplicative model ($V \times I \times E$) predicts performance better than the individual components, or simpler combinations of the components. When the full model does yield higher correlations, the differences usually are not very great. Some research has also suggested that additive combinations of the components are as effective as multiplicative combinations.

3. There are still problems in the literature with respect to defining effort and performance measures adequately. The theory is only meant to predict effort, thus, when performance measures are used, the effects of ability have to be controlled. Likewise, some studies continue to measure only expectancy alone or they confound expectancy with instrumentality. For example, if a subject is asked to specify the subjective probability that effort will lead to reward, it is not clear whether the effort-performance contingencies, performance-reward contingencies, or both are contained in the answer.

4. The empirical studies on expectancy theory continue to focus on between-subjects correlation designs. There are very few experimental studies using the expectancy constructs. It is recognized that more within-subjects designs are needed in which effort or performance is predicted on the basis of alternative levels of expectancies, instrumentalities, and valences.

Schwab et al. (1979) presented an interesting review of the empirical literature on expectancy theory which involved a statistical analysis of the results obtained in previously published studies. The purpose of their study was to determine the extent to which the variance explained in the previous studies (i.e., variance explained in either effort or performance) was a function of the various characteristics of the effort and performance measures used, and the motivational (expectancy model components) measures used. They used multiple regression to analyze 160 observations derived from 32 between-subjects correlation studies.

Their results were reported in terms of the average amount of variance explained as a function of the independent and dependent variables used in the studies. With respect to the relationship between motivational measures and effort and performance measures, they found that the greatest amount of variance was explained when self-report and objective measures of effort and performance were used as compared to measures provided by others. Overall, the measures of effort and performance accounted for 8 percent of the variance explained. Measures of valence accounted for 10 percent of the variance, and scaling valence in terms of desirability resulted in more variance explained than when the valence measure was scaled in terms of importance. Finally, the greatest average variance was explained in studies that did not include a measure of expectancy (12 percent) or that confounded expectancy with instrumentality (14 percent). Unconfounded measures of expectancy accounted for an average of only 5 percent of the variance. The authors discussed the problem that many of the studies yielded the strongest results when measures of motivation were used which were not appropriate to the theory (e.g., no expectancy, or confounded expectancy measures). They concluded that, "... there is a nagging suspicion that expectancy theory overintellectualizes the cognitive processes people go through when choosing alternative actions, at least insofar as choosing a level of performance or effort is concerned" (p. 146).

Based on the evidence in the empirical literature, it would seem that the expectancy model is not very powerful in terms of predicting motivation to perform. In addition, many difficulties exist with regard to trying to test the model appropriately. Some researchers feel that the model is too complex to test and that it exceeds measurement capability (Mitchell, 1974). Despite the problems, expectancy theory does provide an intuitively appealing cognitive framework for the investigation of motivation in organizational settings. Many researchers continue to expand, modify, and test the components of the model and it will undoubtedly continue to play a significant role in organizational psychology. In terms of possible future directions for expectancy theory research, Campbell and Pritchard (1976) probably sum things up very well when they suggest the message that is conveyed by the problems in the literature:

We think it says quite clearly that the VIE (expectancy) model is a simple-appearing formulation that encompasses a highly complex and poorly understood set of variables and variable dynamics. Rather than strive for large scale studies that provide a complete test of the full model with superficial measures of poorly understood variables, we think researchers could better spend their time studying the individual components in depth. (p. 95)

REINFORCEMENT THEORY

Reinforcement theory is a generic term for a group of behavioristic theories which propose that behavior is controlled by its environmental outcomes. Strictly speaking, reinforcement theory deals with the acquisition and sustainment of behavior or performance and, as such, it is generally classified as a learning theory rather than as a theory of motivation. Regardless of how it is categorized, the basic principles of reinforcement theory apply directly to the problem of how to influence the choice, strength, and persistence of behavior. Operant conditioning as developed by B. F. Skinner (1938; 1957) is the dominant version of reinforcement theory at the present time and is widely used in laboratory research and in applied settings. This section will discuss the principles of operant conditioning and examine the issues involved in applying operant conditioning in work settings.

Basic Principles and Relationships

Operant conditioning is not so much a theory as it is an explication of a set of relationships that derive from one basic assumption; namely, that behavior can be predicted and controlled by manipulating the consequences or outcomes of that behavior. Two basic principles follow from this assumption:

1. A particular behavior will be increased or strengthened when it is followed by a reinforcing stimulus or event.
2. The behavior will decrease, or be eliminated altogether, when it is punished or not reinforced.

According to operant conditioning, the process of reinforcement always increases or strengthens the behavior which precedes it while punishment decreases or depresses the strength of the behavior which precedes it. When a behavior is neither reinforced nor punished, it is said to be extinguished (i.e., the behavior has a low probability of occurring again). From an applied perspective a reinforcer is equivalent to a rewarding stimulus (e.g., pay) or a rewarding event (e.g., promotion). A punisher consists of an aversive or unpleasant stimulus or event (e.g., being reprimanded, losing pay, or being fired). Thus, in a work setting, one way the principle of reinforcement can be used to increase performance is to establish a contingency between performance and rewards such that a particular level of performance will lead to the acquisition of a particular reward.

The example given above specifies only one way in which the principle of reinforcement can be used. There are also other ways in which reinforcement can occur which are derived from the basic principle. These, as well as punishment and extinction, will be discussed below.

The basic assumption of operant conditioning can be more generally stated in the following way. All behavior, or performance, is controlled by stimuli or events in the environment. Whether the behavior increases, decreases, or remains unchanged depends on the nature of the relationship between the behavior and the environmental events. Two general types of environmental events or stimuli are recognized in operant conditioning theory; positive or pleasant and negative or aversive. The concepts of reinforcement, punishment, and extinction all derive their meaning from the way in which the two types of stimuli can be operationally related to behavior.

There are three reinforcement relationships: positive reinforcement, escape type negative reinforcement, and avoidance type negative reinforcement. Escape type negative reinforcement is usually called "escape" and avoidance type negative reinforcement is usually called "avoidance." For all three types of reinforcement, the level of behavior is maintained or increased. In the positive reinforcement relationship, the behavior is followed by the presentation of a positive stimulus (e.g., money, praise, recognition, or feeling good). In the escape relationship the behavior removes an aversive or negative condition (e.g., noise, harassment, or unpleasant working conditions). In the avoidance relationship the behavior prevents the occurrence of an aversive event (e.g., getting fired, working overtime). Thus, avoidance may be seen as the threat of punishment if the performance does not occur in a certain time frame.

In work settings both the positive reinforcement and avoidance relationship can be used to control performance. For example, a person could be promoted for performing well over a period of time (positive reinforcement) or a person could be demoted for failing to perform over a period of time (avoidance). It should be noted that in both cases performance would be expected to increase-- in the former case to achieve a reward and in the latter case to avoid a punisher. Using aversive stimuli to establish an escape type condition is one operant relationship which is not actively manipulated in the work setting for obvious reasons. This particular relationship between stimuli and performance, as well as the avoidance condition, does have a great deal of utility in the work environment for explaining certain types of worker behavior. In the work setting, avoidance behavior is usually called absenteeism; while quitting on the job or, from the organization's viewpoint, turnover, can in some instances be an example of escape behavior. While turnover and absenteeism are usually studied in relation to a cognitive state such as job satisfaction, these two behaviors could just as profitably be examined from a behavioral perspective. Using this approach, the work itself and the work environment would be evaluated to identify stimuli, conditions, or events which could have aversive properties that a worker might want to avoid or escape. Reducing or eliminating these conditions could lead to lower rates of absenteeism and turnover.

Thus far relationships that maintain or increase behavior have been discussed. The relationships between behavior and its outcomes that reduce behavior are extinction and punishment. In extinction the behavior is no longer reinforced, thus removing the connection between the behavior and a desired outcome. The result is that the behavior will decrease in occurrence or stop altogether. In the job setting, eliminating rewards which had been previously tied to performance, would provide the conditions for extinction to occur.

Punishment can occur in two ways which can be labeled as positive and negative punishment. In both types of punishment the level of behavior is decreased. In positive punishment the behavior is followed by the presentation of an aversive outcome--such as a reprimand. In negative punishment the behavior is followed by the withdrawal of or reduction in a pleasant outcome or state--such as losing one's job or being reduced in rank. The behavioral effects of punishment and extinction are similar. The level of performance is decreased in both cases. Research suggests that in punishment the behavior is only suppressed, while in extinction the behavior is eliminated. Thus, if punishment is used, it has to be administered on a continuous basis to keep the behavior under control. Punishment, as well as escape, are not recommended for actively controlling work related behavior but, as mentioned previously, these paradigms do have a great deal of explanatory utility.

Schedules of Reinforcement

The principles of reinforcement discussed in the previous section suggest that to increase performance the desired behavior should be rewarded (reinforced) each time it occurs. Laboratory research has indicated that during initial stages of learning, continuous reinforcement is the most efficient way to increase performance. Once a behavior has been learned, however, it no longer needs to be rewarded on every occurrence. Rather, a schedule of reinforcement can be established which can sustain performance at a high level by providing rewards on an intermittent basis. The schedule of reinforcement can be either performance based or time based. In the former, rewards are administered for accomplishing a certain amount of work, while in the latter, rewards are given for spending a given amount of time on the job.

The most basic schedules of reinforcement can be classified into two types: ratio schedules and interval schedules. Ratio schedules prescribe that a certain number of responses must be emitted before reinforcement occurs (e.g., a piece-rate pay plan). Interval schedules prescribe that a given interval of time must elapse before a response is reinforced (e.g., an hourly or weekly wage). When either the amount of behavior (or number of responses) that must occur or the amount of time that must elapse before reinforcement occurs are constant from one event of reinforcement to the next, the schedule is of a "fixed" nature. Accordingly, there are fixed ratio (FR) schedules and fixed interval (FI) schedules. When either the amount of behavior or the amount of time before the reinforcement occurs varies from one event of reinforcement to the next, the schedule is of a "variable" nature; that is, it is either a variable

ratio (VR) schedule or a variable interval (VI) schedule. For example, a piece-rate pay is either a fixed ratio schedule of reinforcement, if the employee is paid for every fixed number of products he/she produces, or a variable ratio schedule, if payments occur on the average of certain number of products produced. Hourly or weekly wages are fixed interval schedules of reinforcement, while if an employee is paid on the average of every few days, or weeks, he/she is on a variable interval schedule of reinforcement.

In laboratory research, variable ratio schedules usually produce a higher rate of performance than variable interval schedules, while the two varied schedules produce higher rates of performance than the two fixed schedules (see Reynolds, 1968). In work settings, the research indicates that fixed ratio schedules of reinforcement lead to the same or higher levels of performance than variable schedules (Pritchard, Hollenback, & DeLeo, 1980).

These schedules can be combined in a variety of ways to produce more complex schedules which do not need to be discussed here. The interested reader is referred to Ferster and Skinner (1957) or Honig (1966).

Conditions for Application

The basic premise of operant conditioning that behavior is controlled by its environmental outcomes implies a number of conditions required for the application of reinforcement theory. In any setting, laboratory or non-laboratory, these conditions are essential for the successful application of all reinforcement principles and must, therefore, be provided.

These conditions are:

1. The desired behavior or performance has to be identified and operationally defined so that performance standards can be set and behavior can be reinforced.
2. Measurement methods must exist which can reliably measure and record these behaviors over time.
3. Valued rewards must be available in the environment.
4. The rewards (reinforcers) must be made explicitly contingent on desired performance.
5. A reliable delivery system for performance contingent rewards must be established and used appropriately.

The extent to which the fulfillment of these conditions can be met differs for laboratory and work environments. In a laboratory setting it is easy to choose a behavior in order to study how this behavior changes as a result of reinforcement. The only requirement is that the behavior can be physically

executed by the subjects, human or animal. In work settings, on the other hand, perhaps the most difficult task is to identify the critical behaviors one wishes to control or change. One difficulty in identifying critical behaviors is that the management may simply not know which work behaviors are really critical to the organization. While there may be some general organizational goals, unless these are translated into specific behavior that can be reinforced, the organizational goals may not be met. One solution is to analyze the organizational goals to identify performance objectives which will lead to the attainment of the goals. The performance objectives can then become the basis of a performance contingent reinforcement system.

The first step then in applying a performance contingent reinforcement system in any organizational environment is to identify and define the performance which should be increased and establish the performance standards which will be rewarded. Implicit in the concept of a performance standard is the requirement that performance can and must be measured and recorded. For some types of behavior, especially repetitive types such as on an assembly line, this is a fairly easy requirement to meet. More complex behaviors involving cognitive rather than manual skills are much more difficult to both define and measure. The requirements for establishing performance standards and measuring performance results is perhaps one reason why reinforcement systems are not used more extensively in a lot of organizations.

The availability of valued rewards (reinforcers) is essential for a reinforcement system to work. It is obvious that a worker will not increase his or her performance level to attain an outcome which is not desired. Monetary rewards are almost universally valued and thus have had a great degree of utility in the application of reward systems. Other types of rewards, including nontangible social rewards, can also be highly valued and used as reinforcers. The problem is to identify the types of rewards which are feasible for the organization to administer and to determine to what extent they are valued by the workers. A later section on incentives and rewards addresses this problem in some detail.

That rewards must be made explicitly contingent on desired performance means that the worker must know exactly what rewards are related to what level of performance. This also means that management must be certain that the desired performance is in fact what is being rewarded. For example, if the management goal is to increase the amount of goods or services produced, increasing salary level paid to the workers may not meet this goal, especially if the salary is not directly related to the amount of goods or services produced. Specifying the amount of work to be done, or the number of items produced, and making rewards contingent on that would establish the conditions for reinforcement to produce increased productivity.

The organization's ability to deliver rewards consistently and correctly to its members requires not only that rewards are available and valuable to the workers, but also a careful planning of the delivery of the rewards. Some rewards are delivered in an impersonal way, a paycheck; and other rewards are

delivered in a personal way, praise or recognition for good work. The organization must ensure that an adequate system exists for the delivery of impersonal rewards and that supervisory personnel are well trained to carry out the social interactions required for the successful delivery of social type rewards. The basic necessary condition of any such delivery system is that the rewards, or punishers, be contingent on performance results and that the contingencies be made known to the workers. The specification of the appropriate schedules of reinforcement to meet both the contingency requirement and the requirement that the behavior of interest is the one upon which the rewards are contingent is, needless to say, very crucial to the effectiveness of the delivery system.

Reinforcement Applications in Work Settings

Meeting each one of the conditions discussed throughout the preceding section in an actual work setting is not a simple matter. Though reinforcement schedules can exist in almost any work setting, very often one or more of these conditions is not met. Moreover, organizational objectives, authority structure, and the nature of the work flow necessitate careful planning and program design to achieve the results that reinforcement procedures achieve under controlled laboratory conditions.

The following are two examples of systematic and formally programmed applications of environmental outcomes (e.g., incentives, rewards) which were implemented in a military and civil service work setting. These examples serve to highlight not only the kind of conditions that have to be met in order to obtain the desired results, but also to show how the organizational environment impacts on both the design and the implementation of an incentive program.

There are literally hundreds of examples of the systematic application of reinforcement theory in work settings. Though such programs carry different labels--contingency management, high instrumentality reward system, token economies, behavior modification, merit-reward system, performance contingent reward system--they are basically quite similar to each other (for examples, see Pritchard, Von Bergen, & DeLeo, 1974).

A Merit-Reward System (MRS) was developed at Fort Ord, California (Datel, 1972) for the purpose of improving the performance of the soldier-in-training and at the same time increase morale and create better attitudes toward the Army among the trainees.

The design and implementation of the program in that environment required the identification of those environmental outcomes of performance (i.e., rewards) which could be feasibly manipulated and applied and which could be administered systematically, contingent upon performance. Moreover, there was a need to identify those rewards which had an incentive value for the soldiers.

The decision was made to use only positive performance contingent outcomes. The use of punishers was expected to have adverse effects on the soldiers'

satisfaction with the program, their morale, and positive attitudes toward the Army, and thus was ruled out.

Survey techniques were used to identify valued incentives. Subsequently, the availability and feasibility of application of these rewards was determined. Items that pertained to time-off privileges were found to have high value; the use of such privileges in the MRS was also feasible. Cash awards, however, though they had high incentive value, were not feasible in the military environment and were eliminated as a possible feature of the program. Recognition type of incentives were of a lower value to the soldiers. Also, rewards allocated on an individual basis were found to be preferable to incentives given on a group basis.

The design of the incentive delivery system required the development of a merit earning system whereby the soldiers could accumulate merit points to obtain more "expensive" rewards. In addition, the amount of reward (reinforcement) to be given for each prescribed behavior had to be established. The use of merit earnings and the creation of differential reward contingencies allowed soldiers the opportunity to obtain highly desired rewards, which required high performance levels. At the same time, some rewards were available to a larger number of soldiers, not all of whom could achieve the performance levels required for the more expensive rewards. By providing a reasonable chance for each one of the soldiers to receive some rewards, the program's designers ensured an equitable delivery system.

A crucial element of the delivery system was an accounting process to record performance and the delivery of rewards. This was achieved through the utilization of individualized merit cards which were punched out by the drill sergeant as the soldiers performed the prescribed behavior. Weekly tabulations of merit earnings were recorded in a master platoon log. By each week's end, the soldiers could decide whether to use their earnings for matching rewards or save them for higher order rewards. This method of punching merit cards proved to be cumbersome and met with some resistance on the part of the drill sergeants; therefore, a roster of merit earnings, posted daily, was substituted for the merit cards.

The definition of the behavior of interest upon which the rewards were to be contingent was somewhat problematic since the general objectives of basic combat training had to be translated into specific behavioral objectives. Furthermore, since obviously a great number of different behaviors were involved in the successful completion of the training, only the most important behavioral requirements were to be defined and measured, so as not to overburden those who administered the program.

The final definition of the behaviors of interest included specific objectives which specified the task, how it was to be performed, and the performance standard. These were arrived at with the aid of experts' judgments and empirical "trial and error" implementation.

The success of such a program depends, as Dattel suggested, on the abilities of those who administered the program. They have to be carefully trained to observe and measure the prescribed behavior accurately, deliver the specified performance contingent rewards, and provide the necessary feedback to the soldier so the latter may learn how to improve performance and thus increase his/her merit earnings.

The rules of the program were made clear to both the soldiers and the administrators of the program. This not only increased the meaningfulness of the program, but also eliminated situations in which individual commanders applied their own personal, often arbitrary performance evaluations and allocation of rewards. Moreover, when the contingency rules and their application are clear and "objective," the commander's function becomes one of a coach rather than an arbitrary powerful agent of reward and punishment.

The MRS in Fort Ord also included a "quality control system" whereby problem areas and instances of misapplication could be detected and corrected. In addition, periodical checks--using survey questionnaires--were performed to measure changes in soldiers' morale and attitudes toward the Army. A representative number of commanders were involved in the quality control system and their participation added to the meaning and legitimacy of the program, as well as provided for effective and timely corrective changes.

Unfortunately, aside from attitude surveys showing that the soldiers' morale increased and that they liked the MRS, there was no data collected assessing the training effectiveness of the program. Since no control groups were used, and since the MRS was implemented as part of a larger change in the approach to basic training (i.e., the performance-oriented training approach), it is difficult to attribute any results solely to the MRS system. Also, there is no indication in the literature about whether the MRS was used again after the initial implementation. Drill instructors (trainers) were divided on the utility and desirability of the program because it was burdensome and it departed sharply from previous training methods. Finally, because of organizational constraints, it was not possible to use the most desirable monetary rewards, and this may have limited the possible effectiveness of the system.

Performance Contingent Reward System (PCRS) was developed by Shumate, Dockstader, and Nebeker (1978) for use in a data entry section of a data processing center at the Long Beach Naval Shipyard. The incentive program was designed to improve individual productivity. The employees who participated in the study were Navy civilian key entry operators.

The authors' objective was to study the relationship between motivation and work productivity using motivational techniques as prescribed by reinforcement theory and goal setting theory (goal setting is discussed in the next section of this report). Aside from studying the effects of performance contingent incentives on worker productivity, the authors also wished to study the effects of different types of feedback on performance. From a managerial perspective, the objectives of the program were to increase productivity and minimize

personnel administration problems by reducing absenteeism and turnover rates. A cost/benefit analysis, to assess the value of the program to the organization, was conducted as well. After six months of a trial period, the incentive program was implemented and its results were studied for 12 consecutive months.

The study experimental design involved (a) periodic productivity rate measurements for the period of several months which preceded the implementation of the program, (b) the introduction of the program (the experimental treatment), and (c) subsequent periodic productivity rate measurements to look for changes in productivity rates.

The behavior of interest was defined as the ratio of the number of key strokes per hour of time spent at the key punching machine (because of other duties the workers had, they did not spend all their working time at the machine). The key punching machines themselves recorded the number of strokes and the time of use of the machine thus making the performance measurement process fairly simple and accurate.

For the purpose of setting performance standards (or criteria) to evaluate performance and determine whether reward contingencies had been met, two measurements were used. Both past performance records (though this information was not recorded systematically prior to the study), and the workers' own perceptions of their abilities to perform consistently at a given level were assessed. However, no satisfactory solutions were found and performance standards were finally determined on the basis of the group (average) level of performance as was measured in the three months preceding the implementation of the program.

Since workers had different key punching tasks, some more difficult and more time consuming than others, it was necessary to adjust the contingency parameters (time spent working and performance standards) accordingly, to ensure an equitable reward system; this necessitated some redesign of the work flow. The amount of the bonus workers received for exceeding performance standards was calculated on the basis of the costs saved to the organization when exceeding performance standard by a given percentage, and the overhead costs involved in maintaining the work force and the facilities. Whenever the bonus money reached \$25.00, the worker who earned it had the opportunity to withdraw all or a portion of it, or let it continue to accumulate. Though issued by the payroll office, the bonus checks were given separately from payroll checks, but were not issued for one individual more than once a month. The program went through a variety of changes and improvements during the year of trial period, most of which had to do with the supervisors' tasks in administering the program.

It was already mentioned that the study's procedures were based on other motivational theories than reinforcement theory. This was possible since, for the most part, the theories complement each other. Among the procedures used were the assessment of the value of different rewards to the workers and the workers' expectancies to meet certain performance levels. Also, differential feedback (results of performance) was given to two groups, wherein individuals

in one group were told only of their own performance rates, while those in the other group were given their own performance rates plus the average performance rate for the entire data entry section (i.e., group standard). This was done for the purpose of testing the proposition of goal setting theory that an individual will set a goal spontaneously if he/she receives feedback relating to his/her own performance to a standard. Although no explicit performance goals were set, it was expected that upon knowing of their own performance relative to the group standard the workers would set implicit performance goals which would result in increased performance.

The results of the program were quite impressive. Both productive time and key punching rates increased. Machine usage increased from 8 hours per machine in an average 24-hour work day to 13 hours within the last 6 months of the trial period. This rate remained the same for the first 3 months subsequent to the formal implementation of the program and went down to 11 hours by the end of the study period. This latter result was due to the increase in productivity rates (key punching rates) which resulted in lower need for more machine time. Thus, daily backlog was reduced and use of overtime hours decreased until it was virtually eliminated just before the study ended. The increased productivity rates and the decrease in overtime usage resulted in substantial savings to the organization.

Absenteeism rates did not change, however, though they no longer were considered a productivity related problem, since backlog conditions--a perceived cause of absenteeism prior to the program--were reduced as a result of the incentives program, and the productivity level of those prone to absenteeism was above standard when they were at work.

The results of the feedback study showed that the group whose members received individual feedback plus the section's performance standard yielded higher performance rates than the group the members of which received individual feedback only, presumably because feedback which includes performance standards stimulated the setting of implicit performance goals to meet or exceed the standard. The effects of the feedback were not studied, however, independently of the effects of the incentives to see which motivational technique was more effective.

In summarizing their program Shumate et al. (1978) (see also Bretton, Dockstader, Nebeker, & Schumate, 1978; Dockstader, Nebeker, Nocella, & Shumate, 1980) emphasize the importance of supervisory coordination of such a program, supervisor-worker interaction and, the program's functions not only for motivating people to increase their productivity, but for redefining the workers' role in the organization. Clear work instructions, performance related feedback and the manipulation of goal setting, all contributed to the identification of those behaviors that were important to the organization. Though the authors failed to study whether productivity increased because of the incentives or because of performance related feedback which allowed workers to set implicit performance goals for themselves, the benefits of incorporating the relatively inexpensive feedback techniques may have been quite substantial.

The results show that incentives management involves a great deal of planning and necessitates some changes in the organization's work flow and supervisory functions, but the monetary benefits to the organization and the increase in workers' morale may be well worth the efforts.

GOAL SETTING

Goal setting theory occupies an important place among other cognitive theories of motivation. It focuses on the cognitive process of setting and accepting a performance goal as the mediating (motivating) link between task related stimuli (e.g., task assignments, incentives, rewards, feedback) and performance. The basic premise of goal setting theory is that a person will perform to one degree or another on the basis of the particular performance goal he or she sets. In the absence of a set goal to attain a certain level of performance or improve past performance, the desired performance level is not as likely to occur.

The theory, developed primarily by Edwin A. Locke (1968) and tested, discussed and expanded by others, specifies particular conditions under which the setting of a performance goal will yield optimal performance results. These are:

1. The set goal has to be specific rather than general.
2. To yield high performance levels, the set goal has to be relatively hard.
3. The goal, if assigned to the performer, has to be accepted by him or her.
4. Feedback, or knowledge of performance results, facilitates both the setting of performance goals and the effects of goals on performance.

Goal setting theory also suggests that it is the set and accepted specific goal which directly affects a person's level of effort and choice behavior with regard to the performance of a task. The effects of other stimuli (e.g., incentives, feedback), on performance are not direct, but are mediated by the direct effects of the set goals.

Specifications of the Theory

Locke's preliminary efforts to identify the theoretical principles that would predict and explain performance focused on findings which have shown positive effects of knowledge of results (KR) on performance. These findings indicated that when people are told the results of their task performance, their subsequent performance level tends to increase (Locke & Bryan, 1966a). Previous theoretical explanations (Brown, 1949) stated that knowledge of

results affects performance due to the functions it serves for the performer. These are:

1. A reward function. The knowledge that a desired level of performance has been achieved serves as a reward. Such a reward may be intrinsic in nature--a sense of accomplishment, for example--or extrinsic, when an actual reward is given for the performance--an honorable mention, praise, a bonus.

2. An information function. The knowledge of what has been executed correctly or incorrectly provides the performer with the information needed for the continuation of the correct behavior and/or correcting it.

3. A motivation function. Knowledge of results tells the performer whether a desired performance has been achieved or not. Under such conditions the individual may evaluate the situation and decide either to refrain from working toward the desired performance or to continue to exert the effort necessary to achieve the desired level of performance.

Locke's concern with the motivational function of KR stemmed from the lack of clarity about the specific motivational mechanisms by which KR affects performance. Explanations which stated that KR increases one's interest in the task and motivates him or her to perform the task did not suffice. Moreover, people's reaction to the results of their efforts could not be automatically predicted, even when incentives were introduced (Locke & Bryan, 1966a, 1966b; Locke, 1967, 1968). In other words, information by itself is not sufficient to motivate a person to increase his or her level of performance. Some other mechanism seems to mediate the effects of KR on performance. This mechanism, according to Locke, is cognitive in nature and consists of some form of a decision, a conscious goal or intention, that a person sets regarding the performance level he or she will attempt. When knowledge of results is given, the individual can use such knowledge to modify existing goals or to set a new goal for future performance. Thus, the motivational effects of KR on performance can be explained by the effects of goal setting activity.

Locke makes a distinction between "informational" knowledge of results--referred to as knowledge of correctness (KC)--and "motivational" knowledge of results, or knowledge of the total score (KS). Knowledge of correctness, since it is given in terms of what is right and what is wrong about the performance, could be used to change one's direction of response, correct errors, or change strategy. However, knowing what needs to be done does not necessarily motivate the performer to do it. On the other hand, knowledge of the total score tells the performer how close he or she is to the desired goal. Assuming the performer knows what needs to be done, knowing how close he or she is to achieving it may motivate the performer to exert the necessary effort. In other words, the performer will use KS to set or readjust performance goals. In a review of various studies which involved goal setting to some degree, as well as studies in which the effects of KR were confounded with the effects of goal setting, Locke, Cartledge, and Koeppel (1968) concluded that none of the findings presented in the studies were inconsistent with the notion that the effects of

"motivational" KR on performance are mediated by the goals the individual performer sets in response to such KR. Moreover the authors explained the results by suggesting that when KR is given, performance levels are the product of the joint effect of KR and goal setting, since KR can be used for setting performance goals. The latter is then "translated" into level of effort and direction of behavior.

Is knowledge of results, then, a necessary condition for goal setting? It is clear that while a task is being learned, the performer needs to know how well he or she is doing so corrective action can take place. Yet, how necessary is KR once the task has been learned? When Locke suggested that the motivational effects of KR on performance are mediated by goal setting, he maintained that KR by itself is not sufficient for the attainment of desired performance levels unless it is used to set specific performance goals. He did not propose that KR was a necessary condition for goal setting. Erez (1977) suggested that knowledge of results is necessary for goal setting and hypothesized that "goals will be related to task performance only (or more strongly) under conditions of high knowledge and not (or less strongly) under conditions of low knowledge. In other words, there will be an interaction [joint effect] between feedback and goals on performance" (p. 625). Her findings, based on a laboratory experiment in which several experimental groups received KR, while the control group received no KR, confirmed her hypothesis and led her to conclude that knowledge of results is a necessary condition for goal setting. Elsewhere, Becker (1978) investigated the joint effects of goal setting and feedback in study on electricity savings among community residents. His findings showed that feedback (telling residents on a frequent basis how much electricity they have saved) was a necessary condition in order to achieve the goal (a specific level of electricity savings). Not only were the residents "learning to save" and thus needed feedback to know how they were doing, but they also used the feedback to set "savings" goals. Savings were highest among residents who set the highest "savings" goals. Kim and Hamner (1976) presented evidence showing that the experimental group which received both praise and specific feedback, in addition to an assigned goal, yielded a higher performance level than the groups which received either praise with an assigned goal or an assigned goal with no feedback or praise. Thus, while goal setting can take place with or without knowledge of results (especially at the beginning of a task when only the goal can be set), knowledge of results may be needed to sustain the goal directed behavior and to provide the information required to adjust levels of effort and behavior so as to attain the set goal, or to set a new goal (see also Dockstader, Nebeker, & Shumate, 1977). Locke himself suggested that feedback may be a necessary condition for goal setting in a recent article in which he attempted to reconcile theoretical differences between two motivational approaches, both of which used feedback but provided different explanations as to the effects of feedback on performance (Locke, 1980).

To attain a certain level of performance, the individual performer has to have a specific goal, or intention, with regard to the task he or she is called upon to perform (Locke & Bryan, 1966a; Locke, 1968). Goal specificity implies that performance assignments have to be provided in terms of some standard of

performance so that the KR can be evaluated in relation to that standard. In other words, the goal itself has to be stated in relation to some standard, be it a previous score or some other specific measure of performance. This level of specificity allows the individual to know how close (or far) his or her performance level is to the standard. For example, if the standard is to complete a task in ten minutes, a goal can be set to reach this standard, to exceed it, or to do less. The individual who is given information regarding how long it took him or her to complete the task, knows how close he or she came to reaching the goal and may then set a new goal to either surpass the present level of performance, maintain it, or lower it. Accordingly, the individual's level of effort and direction of behavior will be readjusted to attain the new goal. Since hard goals require higher levels of effort, once set and accepted, such goals should lead to higher levels of performance and, in fact, Locke's studies have shown this to be the case (Locke et al., 1968).

The motivational effects of goal setting were studied empirically by Terborg (1976) who contended that:

It can be assumed that the intentions [goal] a person has with regard to performance will affect not only the actual level of performance attained but also the level of effort exerted and the choice of particular behaviors engaged in when working at the task. (p. 613)

The results of his study showed that goal setting is related to performance as well as to the motivation dependent variables, i.e., level of effort and direction of behavior, and that the latter are also related to performance. However, when the effects of effort and direction of behavior on performance were partialled out, the goal setting-performance relationship was reduced significantly. This suggests that goal setting directly affects effort and choice of behavior which in turn affect performance so that, as Terborg states, "the extent that goals cannot or do not become translated into increased effort and/or more appropriate direction of behavior, then goal setting may not reliably predict performance" (p. 620).

Terborg also examined the effects of goal difficulty and specificity on the motivation dependent variables and found that the relationship between goal setting and performance is quite complex. Overall, goal difficulty was found to be related to effort expenditure while goal specificity was found to have its greatest impact on direction of behavior since a specific goal allows the choosing of an appropriate work plan or strategy. However, difficult goals, when they involve more complex tasks, may affect the choice of performance oriented behaviors. Likewise, when tasks are simple and it is clear what needs to be done to accomplish them, goal specificity can affect level of effort.

Locke's theory prescribes another goal property that has motivational effects; that is, the extent to which a goal is accepted by the performer. It is not always the case that individuals set their own goals. Thus, when the goal is assigned by someone else (e.g., a supervisor, a commander) the individual has to accept the goal, i.e., to adopt it as his or her own. The

assumption is that if the assigned goal has not been accepted, the individual will not work to reach it. Locke, however, neither specifies the conditions under which any particular goal will be set, nor does he predict when an assigned goal will be accepted. The process of goal setting as presented by Locke, Cartledge, and Knerr (1970) does not include such conditions though it suggests that individual attitudes, values, and emotions play a part in the accepting or setting of performance goals. Ilgen, Fisher, and Taylor (1979) have proposed conditions under which feedback, or KR, is accepted and used for goal setting. They suggested that the credibility of the source which provides the feedback, its trustworthiness and power, as well as the clarity, specificity and meaningfulness of the feedback, are crucial factors for its acceptance and use. It might be reasonable to assume that the same factors as they relate to the person who assigns the goal and the particular properties of the goal, such as specificity, will be among the factors that affect the acceptance of the goal.

According to Locke, goal specificity, acceptance, and difficulty are the necessary conditions for the attainment of high performance levels. These requirements raise the question of the goal's attainability. Will people be highly motivated to reach a goal when it is perceived not only hard but unattainable? Locke is not too clear on this issue and it only occupies a minor place in his theory. In an earlier study (Locke & Bryan, 1966b), the authors claim that when improvement on a particular task is impossible, highly motivated individuals (those who set hard goals for themselves) will try to keep their performance rates from falling but will not increase them appreciably. Later Locke (1968) concludes:

It is true that many people reject very hard tasks which are assigned to them and probably more people reject very hard tasks than reject moderately hard tasks. But the point is that once a hard task is accepted, the only logical thing to do is to try one's hardest until one decides to lower or abandon the goal. It is argued that people who do stop trying when confronted by a hard task are people who have decided the goal is impossible to reach and who no longer are trying for that goal. (p. 168)

It should be noted that the attainability of the goal depends, in most cases, on the individual performer's ability and past experience and the performance related feedback (if given), all of which affect the performer's perception of the task and its requirements.

The prediction that performance motivation will be higher when hard goals are set and accepted than when goals are easy or general ("do your best;" "keep a comfortable pace;" "maintain same level as before") is not only unique to Locke's goal setting theory, but it also stands in contradiction to some predictions of other theoretical formulations; namely, expectancy theory (Vroom, 1964) and Atkinson's Achievement Theory (Atkinson, 1957).

Though expectancy theorists maintain that performance motivation can be enhanced by high expectations of successful performance and valued rewards,

expectancy theory does not deal explicitly with goals. Expectancy theory predicts that performance motivation will be the highest when the expectancy (of successfully performing a task) is equal to 1.0--in Locke's terms it means when the goals are the easiest. Atkinson's theory predicts that performance motivation will be the highest when expectancy is .5--a goal is neither too hard nor too easy--since it represents a situation whereby the uncertainty about the attainability of the goal is the greatest. Studies which investigated the relationship between goal difficulty and performance have not yielded conclusive evidence (see Mento, Cartledge, & Locke, 1980; Campbell & Pritchard, 1976; Motowidlo; Loehr, & Dunnette, 1972). It may very well be that the inconclusive findings are due to the fact that, as Locke suggests, though fewer people are likely to accept hard goals, once they have accepted them their performance will be at a higher level than that of people who have accepted easier goals.

If hard goals do lead to higher performance levels, then it seems that the acceptance of hard goals needs to be facilitated. This requires that the conditions under which hard goals are more likely to be accepted be identified. Highly valued incentives may be one condition which serves to increase the acceptance of hard goals since they increase people's commitment to task performance, as was shown to be the case by Mento et al. (1980) and Pritchard and Curtis (1973). Other means which may facilitate the acceptance of hard goals are the assignment of challenging tasks, allowing performers to participate in the setting of the goals, and introducing competition between work groups. While challenging tasks will be discussed in the section on job design, later sections of this chapter will discuss participatory goal setting and competition.

Incentives and Goal Setting

As with knowledge of results, Locke maintains that the motivational effects of incentives or rewards (especially monetary rewards) on performance are not direct but rather are mediated by goal setting activity. An early study (Locke & Bryan, 1966b) suggested that performance was due to goal setting, not to incentives. The authors found that performance levels improved significantly among subjects who were promised monetary incentives contingent on specific performance, and set performance goals to attain the reward-contingent performance levels. Performance levels of subjects who were promised monetary incentives, but who did not set goals to reach reward-contingent performance levels, did not improve significantly. Locke points out that the motivational effects of incentives lie in their ability to enhance the individual's commitment to the task, but performance will increase only when the individual sets a specific performance goal to attain or exceed the performance levels upon which the incentives are contingent (Locke, 1968; Locke et al., 1970).

This particular finding has not been supported by others (see in particular Terborg, 1976; Terborg & Miller, 1968; Latham, Mitchell, & Dossett, 1978) who found incentives to have independent effects on performance. Pritchard and Curtis (1973) found that when incentives were small, Locke's contention was

supported, but when incentives were high and, therefore, had a high value for the performers, the effects of incentives on performance were independent of the effects of set goals. The independent effects of incentives on performance led Pritchard and Curtis to recommend that goal setting procedures in a work environment should not replace financial incentives as a means for improving performance. The same recommendation was made by Terborg and Miller (1978) who suggested also that inasmuch as effort and direction of behavior can be reliably measured, not only should people be rewarded for performance, but they should be rewarded for their efforts and performance related behavior as well. Latham et al. (1978), while finding independent effects on performance for both incentives and goal setting, also suggested that incentives may increase the performer's commitment to perform the task. This may ensure goal acceptance as well which is quite congruent with Locke's explanation. The discrepant findings regarding the effects of goal setting and incentives on performance may be explained by the fact that implicit goal setting can occur in a lot of situations. Locke's concept of goal setting allows for both explicit and implicit goal setting to take place, though the only way one can find out whether goals have been actually set or accepted by an individual is to ask him or her about it (see Locke & Bryan, 1966a, 1966b). Quite possibly, the promise of performance contingent rewards can activate goal setting which might be verbally manifested in terms of "I wanted to get the reward," while the implicit goal is wanting to increase one's score by ten points (if this would have resulted in getting the reward). In this case, performance might be attributed to the effects of incentives while it may actually have been due to the setting of the implicit performance goal.

Though setting goals is less costly than incentives as a motivational technique, present data indicates that incentives not only have independent effects on performance, but that in the long run incentives need to be included in a goal setting program. The reason is that the long term effects of goal setting are not yet clear. Studies (Latham & Kinne, 1974; Latham & Baldes, 1975) have shown goal setting effects to be consistent over a period of 12 weeks, but longer periods have not been examined. Moreover, the effects of feedback have been shown to slack off within 9 to 12 months (Komaki, Barwick, & Scott, 1978; Komaki, Heinzmann, & Lawson, 1980). The consensus is that goal setting and feedback programs may need to be augmented with performance contingent rewards in order to maintain performance levels. Thus, it seems that within a long term theoretical and practical framework, goal setting may not be sufficient to predict and maintain desired performance levels.

Application to Work Situations

Locke's goal setting theory has been supported by studies which tested the external validity of the theory using actual work settings (Latham & Kinne, 1974; Latham & Baldes, 1975; Latham & Yukl, 1975). These studies investigated the effects of goal setting not only on productivity, but also on other organizational objectives such as a low rate of turnover, absenteeism, and safety.

Latham and Kinne's (1974) study, done in a logging company, showed that the production of logging crews who were trained to use goal setting increased significantly and was higher than that of crews who did not set any production goals. Moreover, the effects of goal setting on productivity were immediate and consistent over 12 weeks; these results were significant for both individual and group measures of productivity. While absenteeism rates were significantly lower in the goal setting group, goal setting had no significant effect on either turnover or injuries on the job. Lower absenteeism rates were explained in terms of job satisfaction among the crews who set performance goals and received information with regard to their performance outcome. Knowledge of results presumably provided meaning to the task and the knowledge of having reached or exceeded the set goal provided a sense of achievement, i.e., job satisfaction, and thus served to reduce absenteeism.

A further test of the external validity of Locke's theory was carried out by Latham and Baldes (1975) who replicated Latham and Kinne's study in six other logging operations. Their major contribution lies in the ruling out of alternative explanations to the increase in performance levels under goal setting conditions. The authors contended that KR alone could not have accounted for the increase in performance levels since feedback had been available to the workers even prior to the field experiment, and no additional KR was provided under the experimental conditions. However, the authors suggested that the setting of goals made the workers more aware of the KR that was available since the workers started using informal ways to record their performance. Latham and his colleagues arrived at a similar conclusion in a later study as well (Latham et al., 1978). Latham and Baldes also ruled out two other rival hypotheses that relate the improvement in performance to either inter-group competition or to the "Hawthorne Effect." Competition as an explanatory variable was ruled out because "no special prizes or formal recognition programs were provided for those groups who came closest or exceeded the goal. No effort was made by the company to single out one 'winner'" (Latham & Baldes, 1975, p. 124). However, informal, spontaneous competition did develop among the crews and it may have affected the workers' commitment to a very hard goal. The authors suggest, though, that the effects of this competition on performance were not direct, but were mediated by the setting of hard goals. This argument is supported by Locke (1980); yet the role of competition in the attainment of desired performance level needs to be looked at more systematically since competition can have motivating effects on people. Both goals and knowledge of results when provided can facilitate and direct competition behavior toward the achievement of desired performance levels. At the same time the introduction of competition as a deliberate intervention may induce feelings of pressure in people which could negatively affect the workers' commitment to a hard goal. It seems, then, that the incorporation of competition in a goal setting program will have to be done in such a way that acceptance of hard goals is ensured. Furthermore, though it will be discussed in more detail later, when employees participate in setting performance goals, they more often tend to set hard goals. It may be the case that if group competition is introduced and group members set performance goals participatively, not only will hard goals be set and the group members' commitment to such goals be high, but also the aversive

effects of competition may be reduced. The group processes that take place while goals are set and accepted undoubtedly introduce important mediating factors which can affect the motivational states of the group members and should be explored.

The "Hawthorne Effect" as an explanatory variable was ruled out by Latham and Baldes on the basis that the amount of attention and supervisory presence given to the workers before and after goal setting were relatively equal. Yet, since workers did receive praise for meeting or exceeding the goal, this argument is not entirely sufficient. Nonetheless, the authors conclude that it was the setting of specific and hard, challenging goals that led to an increase in performance. Thus, Locke's prediction that hard goals will result in higher performance levels was supported. Latham and Baldes (1975) maintained that a hard goal

. . . makes it clear to the individual what he is supposed to do. This in turn may provide the worker with a sense of achievement, recognition and commitment . . . the worker is not only incited to expend greater effort, but he may devise better or more creative tactics for attaining the goal. (p. 124)

Another aspect of goal theory in work settings involves the procedures by which goals are set and the individual differences which could have a mediating effect on performance under different goal setting conditions. The studies which looked at the effects of different goal setting conditions have two important implications for the application of goal setting procedures in actual work settings. One pertains to the role of the management in training the employees to set performance goals. The second involves the mediating effects of personal attributes of the employees in different goal setting conditions.

Latham and Yukl (1975) studied the effects of assigned versus participatory goal setting among samples of educated and uneducated woodcutters (each sample was located at a different site). Results showed that among the uneducated crews, performance level was higher in the participative goal setting condition than in either the assigned goal setting or the "do your best" (general goal) conditions. The authors attributed their findings to the fact that the goals set by participatory means were considerably more difficult than the assigned and general goals. Thus the effects of participatory goal setting on performance were mediated by the acceptance of hard goals. Moreover, their findings suggested that workers who are allowed to participate in goal setting processes tend to accept harder goals more readily and are more motivated to attain them. However, no significant differences were found between performance level of the assigned and the participatory goal setting groups of the educated sample. The authors explained this finding to have been due to the lack of involvement on the part of the management in the implementation of the goal setting program at the educated sample's site.

The crucial role of managerial participation in goal setting programs was further emphasized by Latham and Saari (1979) who presented evidence showing

positive effects of supportive management on the setting of hard goals in both assigned and participatory goal setting conditions; also, hard goals resulted in higher performance than did easy goals. However, when goal difficulty was held constant, participatory set goals led to higher performance than did assigned goals. This supports Latham and Yukl's contention that participation in goal setting affects performance to the extent that it leads to the setting and acceptance of hard goals. On the other hand, Latham and Saari did not find that participation in goal setting affected goal acceptance; their conclusion is that it is the presence of an authority figure (a supervisor) that is the key to ensuring goal acceptance, whether goals are set participatively or are assigned. Goal setting-related exchange between employees and supervisors is considered to provide both sides with the confidence to set high goals, to illuminate the meaning of the task and increase the workers' sense of commitment to the goal. This notion was also supported in Latham, Mitchell, and Dossett's (1978) study on engineers and scientists in an R & D department of a large international corporation. Ivancevich (1976) cautions, though, that participatory goal setting may not always enhance performance since employees who are inexperienced in mutual decision making may be reluctant to participate in goal setting--they prefer to accept assigned goals. This was found to be also true for inexperienced workers, i.e., trainees (Hillery & Wexley, 1974).

It follows, then, that management policies with regard to goal setting should consider the ability levels and readiness of employees to utilize such democratic procedure as participatory goal setting effectively. Furthermore, whichever goal setting conditions are implemented, supervisors need to explain, guide and coordinate the goal setting program.

An additional point should be made in regard to the possible advantages of participatory goal setting in a work environment since it might affect employees' job satisfaction in addition to its motivational effects. An earlier study by Meyer, Kay, and French (1965) indicated that participatory goal setting not only resulted in higher levels of performance, but also resulted in a higher sense of satisfaction with the program which included participatory goal setting. Latham and Saari (1979) suggested that participatory goal setting increases the meaning of the task and increases the workers' sense of commitment to the goal. Such participation on the part of the employees gives them greater responsibility for their job and possibly a greater sense of control. Steers (1975, 1976) found job involvement and satisfaction to be related to the amount of participation allowed in goal setting. The meaningfulness of the job, job responsibility, a sense of control, a sense of commitment, have all been used as measures of job satisfaction. Thus, it is reasonable to assume that allowing employees to participate in goal setting will not only be instrumental to the setting of hard goals and, therefore, to higher levels of performance, as an earlier discussion indicated, but participation in goal setting will also positively affect job satisfaction. Job satisfaction has been shown to be related to lower absenteeism rates (see a later chapter on job satisfaction in this paper); thus, it is possible that participatory goal setting is a contributing factor to two major organizational objectives, that is, high levels of performance and low absenteeism rates.

Summary and Conclusions

Goal setting as a cognitive theory of motivation stipulates that performance depends on the particular performance goal, or intentions, an individual sets for him or herself with regard to the task to be performed. Whether the goal is assigned to the individual--in which case the goal has to be accepted by the individual--or is set by either the individual on his/her own or by mutual agreement with other(s), the goal has to be specific, i.e., defined in terms of a performance standard. Performance level will be highest when the goal is hard and presumably attainable. The individual has to be able to receive feedback concerning the results of his or her performance and which can be used to modify or set further (specific) performance goals. Feedback can be provided by supervisors or can be obtained by the individual performer as part of the process of performing the task.

The motivational effects of goal setting on performance are explained in terms of the effect of set goals on both the level of effort required to attain the goal, and the direction of the behavior the individual chooses to use for the attainment of the specific goal. Individuals vary in their choice behavior, but given their intentions with regard to the achievement of their goal, their choice behavior and performance levels could be predicted.

The effects of knowledge of results of one's performance, as well as the effects of incentives are assumed to be mediated by the motivational effects of set goals. However, while the mediating effects of goal setting in the case of knowledge of results have been widely supported empirically both in laboratory and field studies, the effects of incentives on performance were found more often to be independent of goal setting especially when incentives were high.

Goal setting theory has been widely tested and expanded upon and the most important findings are:

1. Goal setting theory is applicable to actual work settings, though personal and situational factors intervene in the effects of goal setting on performance.
2. Goal difficulty affects mainly level of effort, and goal specificity affects mainly direction of behavior.
3. Goal acceptance was found to be related to supervisory functions and to participatory goal setting. Since the presence of monetary incentives increases commitment to the task, goal acceptance may also be facilitated by the presence of incentives.
4. Participatory goal setting leads to the setting of hard goals and thus to higher performance levels. Studies have also indicated, though not conclusively, that participatory goal setting leads to a greater job satisfaction because it increases both the meaningfulness of the task and the goal, and one's involvement with or commitment to the job.

5. The implementation of goal setting techniques in work settings, though it requires training of people to set specific performance goals and the introduction of feedback procedures, is both applicable to a variety of work settings and is inexpensive. Yet, since the effects of both goal setting and feedback tend to slack off after 9 to 12 months, goal setting programs may have to be augmented with incentives to sustain performance levels.

Ensuring goal acceptance may be the most crucial factor in implementing goal setting programs and there are some possible ways to do it, among them are job design, participatory goal setting, supervisory presence when tasks are assigned. It is important, however, to consider both the ability levels of employees and their readiness (or willingness) to respond effectively to any type of goal setting technique.

JOB DESIGN

Present approaches to job design are based on the premise that jobs should be designed in such a way that successful performance of the job provides the worker with some sense of accomplishment and self actualization. Such feelings are in essence reinforcers the worker gives him/herself as a result of a successful performance. The management, in this case, does not directly control the reinforcers but it can manipulate job characteristics in order to create such motivating effects.

While the use of the concept of a rewarding job is relatively new, dating from the 1950's, rewarding jobs, such as those carried out by tradesmen and craftsmen, were prevalent prior to the Industrial Revolution. These jobs were structured in such a way that one person manufactured the complete item and was directly responsible for the product. The required skills and knowledge were attained through a long apprenticeship which increased the meaningfulness of the job to its performer.

The Industrial Revolution brought with it a radical change in the relationship between the worker and his/her job. Industrial organizations began to base their work process on the principles of division of labor, task specialization, and the definition of tasks in relation to the whole work process (Dunham, 1979).

In essence, jobs were broken down into a number of discrete tasks so that even relatively unskilled workers could perform them. With the emphasis on task specialization, workers were involved in only a portion of the whole production process and lost their direct responsibility for the total product. This approach to job design and the management of work was most clearly and convincingly presented by Frederick Taylor in 1911 and which he called scientific management.

Scientific Management

Taylor (1911) espoused a system of scientific management in which he stated:

The work of every workman is fully planned out by the management at least one day in advance, and each man receives in most cases complete written instructions, describing in detail the task which he is to accomplish. . . . This task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it. (p. 39)

A good deal of labor unrest preceded Taylor's book that was due to the intolerable working and living conditions that most workers experienced. Taylor's idea was that by careful scientific management of work, overall productivity would increase so substantially that rather than arguments and riots about how to divide the surplus or profits, the pie would be big enough for everyone to get a fine share. While it is clear that Taylor's procedures worked splendidly, productivity and profits increased substantially and the general standard of living increased, a major problem developed. Simply stated, the problem was centered around the issue of having people do jobs that are essentially repetitive in nature and designed so that robots or machines can perform them. The problem has actually proved to be exceedingly complex.

As more and more jobs were converted to these scientifically designed jobs, workers began to do a variety of things that were clearly not in the interests of management. Increasing rates of tardiness, absenteeism, and turnover became serious problems for management. When workers were present for work, they sometimes slowed the pace of work and sabotaged the equipment and products. Although productivity suffered, it was still greater than before the implementation of scientific management techniques. In the early 1950's management began to direct more attention to the needs of their employees as people. While it was clear that there were problems with jobs designed according to scientific management principles, it was not clear exactly how to design jobs differently (Dunham, 1979). The essence of scientific management was to design jobs in which the same thing was done over and over. Not only was the job extremely repetitive, but any single worker only completed a small portion of the finished product--an assembly line type of operation. To alleviate some of the problems inherent in the scientific management approach, two obvious ways of changing jobs emerged.

Moving Away From Scientific Management

The first way of changing a job away from the strictly scientific management approach simply was to give the worker a greater variety of things to do repetitively. The basic idea was that any job should consist of two or more different tasks. This approach to job design is called job enlargement. The second way of changing a job away from the scientific management approach was to allow the worker to complete a greater part or all of some given product. This approach to job design is called job enrichment. Job enrichment is essentially a change in the amount of responsibility that a worker has for a given product and job enlargement is essentially a change in the number of different tasks one can perform during the work day with no increase in responsibility. Job enrichment is a vertical type of change whereas job enlargement is a horizontal type of change.

Starting in the middle 1950's a number of critical ideas were developed that added impetus to the job enlargement and job enrichment approach to job design. Maslow published a book that became reasonably popular beyond the academic community and which clarified and concretized an earlier version of his ideas on human motivation. Maslow postulated five types of needs (Maslow, 1970):

1. Physiological needs including the need for food, water, air, etc.
2. Safety needs including security, stability, and the absence from discomforts such as pain, threat, illness.
3. Social needs such as affection, belongingness, affiliation, and love.
4. Self-esteem needs such as personal feelings of achievement or self-esteem and respect or recognition from others.
5. Self-actualization needs which involve a feeling of self-fulfillment or the realization of one's potential.

Maslow also specified a hierarchical process by which each class of these needs becomes important or energizing. He suggested that lower order needs (physiological and then safety) will always be more important if not met than the higher order needs (social followed by self-esteem followed by self-actualization).

Researchers applied Maslow's motivational theory to the work situation. It was reasonably clear that in the late 1950's workers had fairly well satisfied their needs for physiological and safety items. The problem was that the work situation was not satisfying their higher order needs which had now become important. The argument was that scientific management type jobs did not provide the stimulation required to meet higher order needs. Thus, one could suggest that job enlargement and job enrichment could satisfy some of the higher order needs that human beings have.

While Maslow was more concerned with the general question of motivation, the next major impetus to job enrichment and job enlargement came from Herzberg, Mausner, and Snyderman (1959) who were mainly concerned with satisfaction in the work setting. Herzberg et al. postulated the idea that job satisfaction was primarily caused by one set of job factors called motivators and that job dissatisfaction was primarily caused by another set of job factors called hygiene factors. The job factors called motivators include recognition, achievement, advancement, and responsibility. The job factors called hygiene factors concern pay, technical supervision, human relations quality of supervision, company policy and administration, working conditions, and job security. In 1966 Herzberg extended this proposition one step further and claimed that job satisfaction is only caused by the motivator factors and job dissatisfaction is only caused by the hygiene factors. Herzberg's (1966) position has been refuted (King, 1970; Locke, 1976) but his 1959 position is generally accepted. Of Herzberg's job factors only achievement and responsibility

apply to the design of the job itself. The other factors apply to non-task features of the work environment. For example, recognition for good performance can be given to a key punch operator or a tank mechanic or an intelligence analyst. Advancement and the hygiene factors are similarly not properties of the job itself but are variables that apply to the social and physical characteristics of the organization. Herzberg et al. (1959) suggested that jobs be enlarged (a greater variety of tasks) and enriched (a greater responsibility for the whole product or service) so that people who performed well could feel a sense of achievement and no matter how people performed, they could feel responsible.

McGregor's (1960) work on Theory X and Theory Y also became quite popular in organizational circles. McGregor's basic idea is that managers can operate from two contradictory theories about people in general and workers in particular. Theory X holds that workers are not to be trusted, are not motivated to do good work, and must be supervised very carefully. On the other hand, Theory Y holds that workers are motivated to do good work, can be trusted, will act in the organization's interests and do not have to be supervised very carefully. If a manager believes Theory X is the state of affairs, then organizations and jobs should be designed according to scientific management specifications. Such organizations are called mechanistic. On the other hand, if a manager believes that Theory Y is the actual state of affairs, then one should design jobs and organizations according to the specifications of job enlargement and job enrichment concepts. Such organizations are called organic.

There are a number of additional authors who had an impact in this time frame on the growing momentum of job enlargement and job enrichment. Greiner (1979) presents a concise sequence of the ideas developed in the late 1950's and early 1960's in regard to job enlargement and job enrichment. However, sufficient information has been presented at this point to show the theoretical bases that were used to support the job enlargement and enrichment approach to job design.

Dunham (1979) points out that initially great claims were made for the success of job enlargement and enrichment based on case studies. Soon studies of greater scientific rigor were conducted and the results were quite inconsistent. Sometimes these procedures worked and other times they did not. Further, not only were the jobs changed in terms of enlargement and enrichment but changes in technology, the pay system, worker selection procedures, and the composition of the work also occurred which made it very difficult to sort out which variables were causing the observed effects.

Current Approaches to Job Design and Redesign

In 1965 Turner and Lawrence conducted a study which provided a new direction in the investigation of the nature of jobs. This new direction was to define and examine specific job attributes that should be related to job satisfaction and attendance. Turner and Lawrence defined and developed measurement procedures for six task attributes which they labelled as:

1. autonomy--the amount of discretion a worker is expected to exercise when doing his/her job in terms of material used, tools selected, and sequencing of tasks.
2. variety--the quantity of both different objects dealt with and different physical behaviors required to do the work.
3. required interaction--the amount of interaction between two or more workers required to complete successfully a job task requiring two or more workers.
4. optional interaction--the amount of interaction between two or more workers that could occur but is not related to the performance of job tasks.
5. knowledge and skill--the amount of specific information and motor skills necessary to do a job (the actual measure of this attribute was the amount of time a person needed to learn how to perform the job).
6. responsibility--the extent of ambiguity about what to do on a job when something goes wrong, the degree to which serious damage to equipment or material and personal injury can occur, and the amount of time after job completion before small mistakes could be detected.

Turner and Lawrence were interested in the degree of correlation among the six job attributes and the relationship between these attributes and job satisfaction and attendance. They collected data on these variables for 47 different jobs in 11 companies. The companies were chosen so as to cover different technologies, company size, community size, and regional location. The total sample contained 470 male workers. The data analysis yielded the following results.

The six job attributes were substantially correlated with each other. Turner and Lawrence were able to show logically that some of these relationships should exist. However, they also argued that there was no obvious reason for a number of the relationships. They suggested that examples can easily be found of jobs that have all combinations from high to low of these different attributes. They concluded that these correlations were not an artifact of their definitions of the job attributes or the measuring process and decided to create a single index for jobs which they called the Requisite Task Attribute Index (RTA). The RTA was simply a weighted sum of the six task attributes.

The composite RTA and some individual job attributes were used to examine the relationship between the attributes of the job and job satisfaction and attendance. A significant positive relationship was found between RTA scores and attendance. All of the individual job attributes, except job variety, were also strongly related to attendance. In the case of variety, motor variety was found to be positively related, while object variety was unrelated to attendance.

The positions of Maslow (1970), Herzberg et al. (1959), and McGregor (1960) suggest that there should be a positive relation between the RTA and job satisfaction. However, Turner and Lawrence found no such relationship. In order to further understand this unexpected finding, they examined this same relationship with their sample broken down by type of technology, company size, community size, and regional location. They found an effect for community size on the relationship between RTA and job satisfaction. Workers in urban areas, large community size, were more satisfied with low RTA jobs than high RTA jobs whereas workers in rural areas, small community size, were more frequently satisfied with high RTA jobs than with low RTA jobs. This finding about the moderating effect of community size on the relationship between the job's RTA value and job satisfaction was replicated by Blood and Hulin (1967).

These data suggested that there was something about urban versus rural workers which caused the former to prefer "simple," unenriched jobs while the latter preferred more "complex," enriched jobs. Turner and Lawrence did not have sufficient data to allow them to sort out the individual differences, beyond the demographic distinction, which might have created this effect. They did speculate, however, that the differences may be due to two systems of beliefs or values on the part of urban and rural workers which affect how work is perceived. Under this notion, city workers would view work as something to be endured in order to receive a salary, whereas rural workers have a more traditional work ethic which considers work to have intrinsic value.

Hackman and Oldham's Job Characteristics Model

Following Turner and Lawrence's work, efforts were directed toward finding out what individual differences were important for explaining why workers with essentially the same skills would respond differently to the same job. Hackman and Lawler (1971) suggested that one important individual difference in this regard was the extent to which people differed on Maslow's higher order needs; i.e., social needs, self-esteem needs, and self-actualization needs. In particular, Hackman and Lawler were concerned with self-esteem and self-actualization needs. Their basic idea was that, "Individuals who are capable of higher order need satisfaction will in fact experience such satisfaction when they learn that they have, as a result of their own efforts, accomplished something that they personally believe is worthwhile or meaningful" (p. 262). With this idea the essential attributes of jobs are those which create conditions that would allow people who desire higher order need satisfaction to experience this satisfaction as a result of successful job performance. Hackman and Lawler (1971) state:

To establish conditions for internal work motivation, then, it appears that a job must: (a) allow workers to feel personally responsible for an identifiable and meaningful portion of the work, (b) provide work outcomes which are intrinsically meaningful or otherwise experienced as worthwhile, and (c) provide feedback about performance effectiveness.

The harder and better an individual works on such a job, the more opportunities he will have to experience higher order need satisfactions and the more incentive there can be for continued effective performance. Higher order need satisfaction, therefore, are seen both as (a) a result of (rather than a determinant of) effective performance (Lawler & Porter, 1967), and (b) an incentive for continued efforts to perform effectively. (p. 262-263)

It is important to realize that there are types of job satisfaction which these job conditions do not address. Examples of these types of job satisfaction are satisfaction with amount of pay received, satisfaction with the relation between amount of work done and amount of money paid, and satisfaction with supervision. The types of job satisfaction which these job conditions do address are feelings of self-esteem based on successful performance of a job and feelings of self-actualization based on realizing and expanding one's potential.

Hackman and Lawler (1971) presented a set of job characteristics which were used as measures for the three job conditions. Autonomy as developed by Turner and Lawrence (1965) was used to measure the extent which workers felt responsible for or "owned" the results of their work. Intrinsic meaningfulness of a job had two components. The first component was the extent to which a job would test a variety of skills and knowledge that the worker had acquired. This idea is different from Turner and Lawrence's (1965) variety attribute in that different tasks performed must tap different skills and knowledge that the worker has regardless of the number of physical objects dealt with or the number of different physical behaviors required. The second component was the extent to which a job had task identity. Hackman and Lawler (1971) used Turner and Lawrence's (1965) definition of task identity which was that:

... jobs high on task identity are characterized by (a) a very clear cycle of perceived closure--the job provides a distinct sense of the beginning and ending of the transformation process, (b) high visibility of the transformation to the worker, (c) high visibility of the transformation in the finished product, and (d) a transformation of considerable magnitude. (p. 264)

As an example, building a whole automobile is a meaningful transformation process. On the other hand, building the same automobile using an assembly line procedure is not a meaningful transformation process. Hackman and Lawler assumed that a job which involves a meaningful transformation should also be experienced as worthwhile. Subsequently, however, Hackman et al. (1974) and Hackman and Oldham (1974a) introduced the idea of task significance to address the extent of how worthwhile the product of a job is; this added a third component to the definition of meaningfulness. Feedback was defined as information about job performance that the worker received. It was measured by assessing the extent to which workers believed the feedback was received, and whether it was obtained from performing the task, coworkers, or supervisors.

Hackman and Lawler (1971) developed a psychological basis for a person's reaction to various jobs, defined a set of job characteristics relevant to a

person's reaction, and provided a procedure for measuring these characteristics. However, they did not provide a way to combine these measures into a single job index. A single job index entitled the Motivation Potential Score (MPS) was devised by Hackman et al. (1974) and Hackman and Oldham (1974b) using the measures discussed previously. The formula for the MPS is:

$$MPS = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \right] \times [\text{Autonomy}] \times [\text{Feedback}].$$

The implications of this formula are more obvious if it is recalled that the intrinsic meaningfulness of a job is:

$$\text{Meaningfulness} = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \right].$$

Then the formula for MPS is:

$$MPS = [\text{Meaningfulness}] \times [\text{Autonomy}] \times [\text{Feedback}].$$

In this formula it is obvious that each term on the right-hand side of the equation--Meaningfulness, Autonomy, and Feedback--**must be greater than zero or MPS will equal zero.** Thus autonomy, feedback, and **meaningfulness are all necessary conditions for a job to meet higher order needs and thus be motivating.**

The critical feature of the MPS is that it provides a single summary index of the extent to which the job attributes will allow a person to satisfy his/her higher order needs if he/she performs successfully. However, there is a great amount of variability among people on how strong their higher order needs are. The basic premise of the job characteristic model is that people who have strong higher order needs will respond well to and prefer high MPS jobs, and that people who have weak higher order needs will respond well to and prefer low MPS (unenriched) jobs. Thus, there should be a match between the type of person and type of job for the best results.

Hackman and Oldham (1974a) tested their model using data from 658 workers who performed 62 jobs in 7 companies. The sample included different types of workers (blue collar, white collar, and professional) and covered both manufacturing and service firms. The independent variables consisted of objective measures of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback. The dependent variables were experienced Meaningfulness, experienced Responsibility, experienced Feedback, job satisfaction, the effort a worker expended, the quality and quantity of work produced, and absenteeism. Measures of absenteeism were obtained from company records. Supervisors used a rating form to measure the effort a worker expended as well as the quality and quantity of work a person produced. All other variables were measured by having the workers fill out the Job Diagnostic Survey (Hackman and Oldham, 1974b). The overall results of the study were in general supportive of their model.

1. The first part of the model states that Skill Variety, Task Identity, and Task Significance should be related to experienced Meaningfulness and that Autonomy and Feedback should not be. Similarly, only Feedback should be related to experienced Feedback and only Autonomy should be related to experienced Responsibility. Skill Variety, Task Identity, and Task Significance were related to experienced Meaningfulness as predicted. The Feedback job characteristic was the only job attribute strongly related to a worker's perception of feedback. Autonomy and the other four job attributes were almost equally related to experienced responsibility for work rather than just Autonomy as was predicted.

2. The second part of the model states that experienced meaningfulness, experienced Responsibility, and experienced Feedback (the three psychological conditions or states) should be positively related with intrinsic motivation to work, job satisfaction, and work effectiveness and negatively related to absenteeism. There was a strong positive relationship between the three psychological states and internal motivation to work and job satisfaction. However, there was only a weak positive relationship between the three psychological states and work effectiveness, and a weak negative relationship between the three psychological states and absenteeism. Further, the five job characteristics were substantially related to internal motivation to work and job satisfaction as concerns the job itself. The authors used partial correlation techniques to determine if the psychological states do indeed mediate between job characteristics and outcome measures. The results supported the predictions of the model that the psychological states are mediating links between job attributes and job outcomes.

3. The third part of the model states that people who have strong higher order need strengths should respond poorly to unenriched jobs and favorably to enriched jobs and that people who have weak higher order need strengths respond poorly to enriched jobs and favorably to unenriched jobs. The findings supported the predictions for strong higher order need strength people. However, the findings contradicted the predictions for weak higher order need strength people. While these people responded to unenriched jobs slightly more favorably than strong higher order need strength people, the difference was not statistically significant. In addition, the weak higher order need strength people responded favorably to enriched jobs--the size of the increase was small but was statistically significant.

In summary, the research findings supported the main components and relationships of the job enrichment model especially with respect to the relationship between job attributes, psychological states, and internal motivation and job satisfaction. The essential conclusion from this study is that enriched or high MPS jobs will work for all people but that some people respond more favorably than others. This last finding has received additional support (Dunham, 1979; Pierce, Dunham, & Blackburn, 1979) and it is now accepted that high MPS jobs do not have adverse effects on people with weak higher order need strengths.

The Role of the Non-Task Environment

The works of Hackman and Oldham (1974a, 1974b) and Turner and Lawrence (1965) considered how workers might react and relate to the job itself. Since most jobs exist in work organizations, there could be a three-way interaction between characteristics of the work organization, characteristics of the job, and individual differences among people in regard to higher order need strength. Porter, Lawler, and Hackman (1975) developed a model which incorporated organizational, job, and personnel variables and which stipulates a three-way interaction between the three components. The importance of this interaction is that one must know the characteristics of each component--the organization, the job, and the workers--in order to know whether or not it will be worthwhile to enrich the jobs.

In this model Porter et al. (1975) placed organizations on a scale from highly mechanistic (the classical bureaucratic organization) to highly organic system design. These two ways of designing organizations were discussed earlier in this section when McGregor's (1960) Theory X and Theory Y were presented. Jobs were placed on a continuum from simple to complex and people were scaled in terms of high and low growth need strength. As the Army is a mechanistically designed organization, the predictions that the model makes for organically designed organizations will not be dealt with. The predictions the Porter et al. (1975) model makes for performance and satisfaction measures for the four combinations of job design (simple and complex) and higher order need strength (high and low) in a mechanistically designed organization are:

1. Highest levels of performance and job satisfaction should occur for simple jobs filled by people who are low on higher order need strengths.
2. Intermediate levels of performance and job satisfaction should occur for (a) complex jobs filled by people who are high on higher order need strengths, and (b) complex jobs filled by people who are low on higher order need strengths.
3. Lowest levels of performance and job satisfaction should occur for simple jobs filled by people who are high on higher order need strengths.

The implications of these predictions for the Army are clear. If most of the low ranking enlisted soldiers have weak higher order need strengths, then the Army's jobs for these people should be unenriched, or simple jobs. If there is a sizeable percentage of strong higher order need strength people amongst the lower ranking enlisted soldiers, then the Army's jobs for these positions or ranks should be enriched or complex jobs. However, it is a reasonable assumption that the average value for higher order need strengths of low rank enlisted soldiers is on the weak end of the scale. Thus, the Army jobs for these people should be simple or unenriched jobs.

The Porter, Lawler, and Hackman model (1975) has been challenged by a model presented by Pierce et al. (1979). Pierce et al. (1979) hypothesized that the most important factor of the model's components--organization type,

job type, and person type--is the job type. That is, while a three-way interaction may occur, the effect for job type is (a) large, (b) all people respond favorably to enriched jobs (some people simply respond more favorably), and (c) they argued that enriched jobs would be responded to favorably in both types of organizations but more favorably in organic organizations. The data Pierce et al. (1979) gathered strongly supported their model. The upshot for the Army setting is that enriched or complex jobs should be used for all soldiers regardless of higher order need strength.

Conditions for Application

The empirical evidence for the effects of enriched or high MPS jobs has largely been established by studying various jobs that already existed (correlational studies). However, when the research involved actual changes in jobs, the effects suggested by the correlational studies have frequently failed to be as strong as expected (Pierce & Dunham, 1976; Dunham, 1979). This problem is thought to be caused in three different ways. First, the job changes can be so extensive that the organization becomes temporarily disrupted and does not function well, particularly where the jobs are strongly interconnected with each other. Second, some jobs simply cannot be enriched or only slightly enriched by job redesign procedures. Third, there may have been inadequacies in the job design changes themselves.

Any time a change is initiated in an organization, there will be a transition phase from the old system to the new system. The art of making changes is knowing or feeling how much of a change, actually how difficult or disruptive a transition period, the organization can and/or will accept. What evidence there is suggests that the degree or extent of the change should be small (Alderfer, 1976, 1977; Beer, 1976; Dunham, 1979). It is much better to make a series of smaller changes over time than one large change all at once. Just how large a small change can be is not known. In large part this quantity will depend on how committed upper level management is to the change and the extent to which the change alters basic organizational relationships.

Without regard to the extent of the job redesign, any job change must be based on a careful analysis of the present jobs. It may be that a job in an organization simply cannot be further enriched. For example, a janitor's job will never have as much task significance as a tool and die maker's job; in the Army, the degree of autonomy that soldiers can be given in deciding when to do various types of work is quite limited if the leadership elements are to retain their leadership prerogatives. The difficulty is that job design requires that a careful analysis should be made of the present jobs, how these jobs interrelate with each other, and how the actual job incumbents react to the present jobs and to change [Hackman et al. (1974) provide detailed procedures for this analysis]. Also, the problem is that such an analysis and diagnosis is expensive if done correctly. Frequently, due to budget constraints, the analysis is not well done and the organization ends up with poor results.

In summary, there are two essential conditions for successfully applying job design principles. The first condition is the support of management both for the change in jobs and the inevitable transition difficulties. The second condition is that the present job, job environment, and job incumbents be carefully analyzed to determine what type, if any, of changes may be beneficial.

Application of Job Design

Steers and Rhodes (1978) review a number of articles on job design. Their chief criticism of actual job design interventions is the lack of control groups. Without a control group, one cannot correctly attribute any observed changes to the job design procedure but only to the fact that some change was made (the Hawthorne Effect). The second criticism was that most studies failed to make a statistical test of significance to decide whether or not an effect occurred. While both criticisms are valid from a scientific research point of view, it is also true that an applied research setting does not allow the sort of scientific rigor that can be established in a laboratory setting. Therefore, in field settings research results often have to be evaluated in terms of "meaningful" changes or differences rather than in terms of statistically significant differences.

Two applications of job design will be presented, one of which worked well and was accepted; one of which worked well and was not accepted. Hackman et al. (1974) presented information on a job redesign with key punch operators at The Travelers Insurance Companies. Locke et al. (1976) presented information on a job redesign with clerical workers at the headquarters of a large government agency.

In the Hackman et al. (1974) study a careful analysis of the present key punch operator job, the key punch supervisor job, and the work sequence was done. The diagnosis of the present key punch operator's job revealed that:

1. There was no Skill Variety as all they did was key punch.
2. There was virtually no Task Identity.
3. There was no Task Significance since the operators had no idea who in the company the work was being done for, nor how this work affected customers of the company.
4. There was no Autonomy as the errors they made in key punching were checked for and corrected by someone else and the key punchers had no freedom in arranging their daily tasks to meet schedules.
5. There was no Feedback as the errors were detected and corrected by someone else.

Based on this diagnosis, it was concluded that job redesign procedures would be useful.

The authors implemented five concepts for job redesign: (a) create natural units of work, (b) combine related tasks into one job, (c) create channels of communication between the work group using a product and the work group producing that product, (d) provide two or more sources of feedback to the workers, and (e) create "vertical loading" which allows workers to be responsible for and correct their work. These concepts were used to suggest job changes. The suggested job changes were tested using an experimental group and a control group in which the job changes were not made. The total sample size was 98 workers. The dependent variables were quantity of work, quality of work, absenteeism, and attitude toward the job. The results showed that the quantity of work in the experimental group increased 39.6 percent compared to 8.1 percent for the control group. The error rate decreased from 1.53 percent to .99 percent for the experimental groups. No information on error rates for the control group was provided. Absenteeism decreased 24 percent for the experimental group and increased 29.0 percent for the control group. Job satisfaction increased 16.5 percent for the experimental group and increased .5 percent for the control group. In summary, the job redesign worked very well. The actual savings realized by the company in the first year was \$64,305.00 and potential savings when all key punch jobs were changed was put at \$91,937.00 annually.

Locke et al. (1976) did essentially the same thing as Hackman et al. (1974) except that the jobs were clerical and the company was a large government organization. The implementing concepts for the job redesign were based on Herzberg's (1966) list which uses different names for virtually the same concepts Hackman et al. (1974) used. The results of the Locke et al. study were similar. For the experimental groups productivity increased 23 percent, absenteeism decreased 5 percent, turnover decreased 6 percent, and there were no complaints or disciplinary actions during the test period. However, there was no change in job satisfaction which was found in the Hackman et al. (1974) study. The control groups experienced a 2 percent increase in productivity, a 7 percent increase in absenteeism, a 20 percent increase in turnover, four complaints and disciplinary actions during the test period, and no change in job satisfaction occurred. Based on interviews with the workers, this result appeared to be caused by the worker's expectation that they should also be paid more money. It was not that these workers disliked or were indifferent to more challenging jobs, but that such jobs were seen as a means to an end, not the end in itself. Increases in productivity were seen as caused by more efficient use of manpower, more efficient work flow, competition, and feedback. Changes in absences and turnover were attributed to initial (and evidently unfounded) expectations of higher pay. Further, the authors stated, "The final outcome of this project was that upon receiving the report summarizing the results of the study, the agency apparently lost interest in the job enrichment idea" (p. 710).

Summary

It is clear that the basic premise of job design--make the job as intrinsically motivating as possible--works. The three general problem

areas encountered when implementing job design are the extent to which job design is the answer to the problem being experienced, the extent of disruption the organization either can or will accept when jobs are actually changed, and the extent to which employees expect to get paid more money for more challenging jobs. When implementing job design procedures for already existing jobs, each of these three problem areas should be carefully considered in order to facilitate success of the project.

PERTINENT ISSUES AND FACTORS RELATED TO WORK MOTIVATION

INCENTIVES AND REWARDS

In the literature and in ordinary conversation, the terms incentive and reward are sometimes used interchangeably. While this does not usually create a great deal of difficulty, for the sake of clarity, it would be well to make a distinction between the terms. An incentive is usually thought of as some external object or event (e.g., pay, promotion) that arouses motivated behavior. A reward can be any object, event, or situation (e.g., pay, promotion) which, when attained, produces satisfaction or increases the probability of occurrence of the behavior that produced it. It is obvious from the definitions that the same thing can be referred to as either an incentive or a reward. The distinction is that when something is called an incentive we are referring to its property for "attracting" behavior, while as a reward it is thought of in terms of the effects it produces when achieved. In the discussion that follows, the term reward will be primarily used and the assumption made that any reward can have incentive properties.

The role of rewards in a work environment is clear. An organization usually rewards workers to motivate them to perform in a manner desired by the organization. The fact that organizations are aware of this potential and use it is illustrated by statistics. Spector and Hayes (1979) report that 26 percent of all U.S. workers are covered by some sort of work incentive plan aimed at improving productivity, while in Europe over 50 percent of the workers are covered by such plans. Rewards can be administered either equally to all workers on the basis of their membership in the organization (e.g., a Christmas bonus), or they can be administered differentially on the basis of accomplishing some standard of work (e.g., piece-rate, performance bonus). What is clear from both theory (reinforcement theory, expectancy theory) and empirical data (Cherrington, Reitz, & Scott, 1971) is that rewards will have an effect on performance only to the extent that they are administered contingent on performance. Thus, distributing rewards to workers will not automatically lead to increased productivity, rather the rewards have to be administered in relation to desired productivity improvements to affect performance motivation. Rewards that are administered independent of a performance evaluation can, however, have significant positive effects on employee satisfaction (Cherrington et al., 1971).

The motivational theories discussed in the preceding sections (especially reinforcement and expectancy theory) describe how rewards can be used to increase performance. The common assumption as to why rewards are desired or have a value for an individual is that rewards serve to satisfy basic physiological or psychological needs (Maslow, 1970). Given how and why rewards function, the practical issue remains of identifying types of rewards and assessing their potential utility in the work environment.

A good way of classifying types of rewards is to use the distinctions made by Porter and Lawler (1968) between extrinsic and intrinsic rewards.

Extrinsic rewards are derived from the work environment, are visible, and are administered or mediated by the organization. Common examples of extrinsic rewards are tangible rewards such as pay and fringe benefits and social rewards such as praise and recognition. Intrinsic rewards are derived from and are inherent in the job or task; deal with feelings and, therefore, are not tangible; and are administered or mediated internally by the employee. Examples of intrinsic rewards are feelings of competence and self-fulfillment.

The significance of these distinctions with respect to the theories of performance motivation which have been discussed is as follows. Extrinsic rewards require an external agent to apply them and they need to be applied contingent on performance to function as motivators. Intrinsic rewards, since they derive from the work itself, are inherently contingent on performance so that what is required for motivation is that the work itself has characteristics which lead to conditions whereby the worker can administer rewards to him or herself. Reinforcement theory, especially operant conditioning, deals exclusively with extrinsic rewards while expectancy theory allows for both extrinsic and intrinsic motivation. In the goal setting approach, while there is no requirement for rewards, it could certainly be argued that the motivational dynamics of goal setting revolve around intrinsic motivation and rewards. For example, the setting of goals could make a job more challenging and interesting, could provide competition, and could lead to feelings of achievement and competence. Finally, the job design approach, while it does not rule out extrinsic rewards, is concerned mainly with structuring the work so that it has the characteristics required to provide for intrinsic motivation and rewards. Comparing the theories in terms of this extrinsic-intrinsic reward dichotomy indicates that, with the exception of expectancy theory, the other theories focus on only one aspect of reward variables which can lead to increased performance motivation. If the concept of intrinsic versus extrinsic rewards is valid, then it needs to be addressed in both theory and practice in order to obtain a comprehensive picture of the motivational process.

The distinction between classes of rewards is somewhat easier to make in theory than in practice. Dyer and Parker (1975) conducted a survey among organizational and industrial psychologists in which they asked the respondents to classify 21 work "outcomes" as (a) intrinsic, (b) extrinsic, (c) either intrinsic or extrinsic, or (d) not sure. What they found was that one psychologist's extrinsic outcome could be another psychologist's intrinsic outcome and vice versa. Specific results showed that there was no unanimous agreement with respect to the classification of any of the outcomes. There were some outcomes, however, that were classified consistently into one or another of the categories and others that were almost evenly distributed across categories. A high percent of respondents classified salary (83 percent) and working conditions (89 percent) as extrinsic outcomes. The outcomes that were classified with a high degree of agreement in the intrinsic category were feelings of accomplishment (94 percent), feelings of self-fulfillment (93 percent), and pride in work (89 percent). Outcomes such as recognition and advancement were much more difficult to define since respondents classified them, with almost equal frequency, into the three types of categories. The

authors concluded with the suggestion that if the intrinsic-extrinsic distinction is used in research, the researchers should be careful to define the terms and consistent in which outcomes they use, and how they classify them.

Utilization of Rewards in the Work Environment

Despite the fact that incentive programs are used in many organizations, the selection and effective utilization of rewards to increase performance motivation is by no means a simple process. This is especially true in a military environment since the most common type of rewards, i.e., monetary, are probably not feasible to use on a day-to-day basis. As mentioned previously, the basic prerequisites for a reward system to affect performance motivation are that the rewards have to be positively valued and they have to be related to the desired performance. What has been found in both research and practice is that there are considerable individual differences in the values attached to various rewards. Also, the same reward may be desired for different reasons; that is, the same reward may meet different needs for different people. The value of rewards may not stay constant but can change as a result of experience or as a result of changing needs. The particular situation or work environment can also have an effect on what rewards are more highly valued. Finally, even though desired rewards may be identified, it is not always possible to administer them contingent on performance. Some of the literature relating to these observations is discussed below.

The most common types of incentives and rewards used in the organizational environment are monetary in nature. Hayes et al. (1979) reported that 85 percent of the work incentive plans which they studied used monetary rewards. The reasons for using pay as a reward are fairly obvious. Money has a high degree of value for most people and it is also very easy to administer contingent on performance. What is not so obvious is the fact that monetary rewards are not consistently ranked as the most important overall, and that the role of pay in an organization may be much more complex than it appears to be on the surface.

Lawler (1971) reviewed 49 research studies in which the importance of pay was compared with such factors as chances for promotion, job security, and interesting work. What he found was that pay, on the average, was ranked as third in importance. Blum and Naylor (1968) also report that when workers were asked to rank the value of different job characteristics, they ranked pay as number five or six. More interestingly, they report that when college students were asked to rank the importance of job characteristics, they ranked pay as number one. Porter and Lawler (1965) report data which suggest that pay is rated as more important by workers as opposed to managers. This is not surprising since managers presumably are paid more and thus their needs probably focus on other aspects of the work situation.

In the military services the use of monetary rewards is limited almost exclusively to their use as enlistment or reenlistment incentives. Weybrew (1966) presents some very interesting data with respect to the importance of

various incentives for Navy enlisted men. In one of the studies which he reported, the open-ended responses of 6,314 men were content-analyzed with respect to the three questions they were asked: (a) what men want in a job or career, (b) what men like best about the Navy, and (c) what the Navy could do to make men like the service better. The results showed that in response to the first question, both the men who intended to reenlist and those that didn't intend to reenlist, ranked interesting work and job security (in that order) as the most important things that they want out of a job or career. Both categories of men also ranked travel and adventure and training, respectively, as what they liked best about the Navy. In terms of what the Navy could do to make men like the service better, again those intending to reenlist and those not intending to reenlist, cited pay and allowances as the number one factor with housing and living conditions ranking in the second position.

Another study Weybrew reported involved 16,000 enlisted men and showed that for both first-term and career personnel, pay and allowances was the most influential factor affecting reenlistment. Choice of duty was the second most important factor. In summarizing these and other studies, Weybrew drew the following conclusions with respect to the most effective incentive concepts for reenlistment:

1. For first-term reenlistment the main incentives are, in rank order:

- advancement and educational opportunities
- pay and allowances
- satisfaction with duty

2. For second and subsequent reenlistments, the rank ordering of incentives is:

- monetary security (pay, allowances, retirement)
- choice of duty
- advancement opportunities

Gordon (1974) also conducted a survey of 2,720 first-term soldiers in military reserve components to examine the question of what military members want out of a job. His basic contention was that enlistment bonuses and fringe benefits alone are not sufficient to attract and retain people. His methodology consisted of analyzing and tabulating the responses to a single question; "What would it take to keep you in your unit?" What he found was that 32 percent of the respondents wanted interesting and useful work and training and 26 percent wanted improved training. All the remaining types of responses were endorsed by less than 10 percent of the respondents. The author concluded by suggesting that job enrichment is a key to increasing motivation in a military environment.

The literature discussed above indicates that monetary incentives are certainly one class of incentives which have a high degree of utility in an organizational environment. This is especially true with respect to their importance in attracting personnel into an organization. One is left with the

impression, however, that while pay may be a necessary condition for performance motivation, it may not be a sufficient condition in a lot of cases. That is, while adequate (or more than adequate) pay is necessary to attract and keep people on the job, what they seem to want out of a job involves, in a lot of cases, those kinds of outcomes that have been previously labeled as intrinsic rewards. Furthermore, it is not altogether clear whether pay is only desired for its most obvious properties; namely, the ability to take care of basic needs. Monetary rewards could also be desired for the recognition that they could bring, but more importantly, pay and bonuses, when they are contingent on performance, serve as a source of feedback that a job has been accomplished to some standard. This situation would provide the conditions for the administration of intrinsic rewards involving feelings of competence and fulfillment.

The literature that exists with respect to the use of incentives and rewards in the military shows that, with the exception of enlistment bonuses, most of the classes of rewards used in a military environment are non-monetary in nature. Furthermore, the use of performance contingent rewards in the military has been tied almost exclusively to training type situations. The types of studies that have been conducted fall into two classes: (a) studies which identify incentives and assess their value, and (b) studies which both identify and utilize performance contingent rewards. A sample of both types of studies is reviewed below.

The methodology most commonly used to identify incentives and assess their value consists basically of drawing up a list of incentives (based on interviews and previous literature) and asking people to rate the importance of the incentives. Bialek and McNeil (1968) were among the first to develop a scale of incentives for Army basic trainees. They developed a list of 43 incentives which they classified into three categories; recognition, material reward, and autonomy (freedom). In terms of these three classes of incentives, they found that, in general, recognition and autonomy related rewards were more attractive than material rewards. The top five individual rewards all related to either recognition or autonomy and were, in order:

1. special promotion in rank (E-2),
2. choice of future assignment,
3. three extra days leave,
4. given a three-day pass,
5. special letter of merit to parents.

Bloom (1977) conducted a similar and more recent study to assess the value of potential incentives for military training. He also classified the incentives into the three categories used by Bialek and McNeil and added another category called "avoidance of work details." The main difference in the two studies was that Bloom used enlisted personnel in grades E-2 through E-6 while the subjects

in the Bialek and McNeil study were mostly E-1 basic trainees. The results of the study showed that the top five rewards were, in rank order:

1. having a say in next assignment,
2. receiving an increase of \$25.00 a month for mastering a new duty position,
3. receiving points toward promotion,
4. receiving \$20.00 a month for performing newly learned skill at acceptable level,
5. having an opportunity to be reassigned to the unit of choice.

The rank order of the reward categories, from high to low, was: autonomy, monetary rewards, recognition, and avoidance of work details. Bloom concluded by saying that, with the exception of the incentive ranked as number three, the rest of the incentives are probably not feasible to use in a military unit environment.

A comparison of the top five incentives from the two studies shows some interesting similarities and differences. Both sets of incentives show a high value for promotion and choice of assignments. Basic trainees, however, value time off (leave and passes) highly while higher ranking personnel in regular units value monetary rewards highly. These differences in how rewards were valued could be explained on the basis of situational factors affecting the respondents. That is, basic trainees, since their time is strictly controlled, may have a stronger "need" for free time while unit personnel may be relatively more concerned with the financial aspects of the situation. This interpretation is also supported by the rankings of the rewards used in the Merit-Reward System at Ford Ord in the early 1970's (Datel, 1972). Time off privileges were ranked as the most valued rewards, with promotion second, by basic trainees participating in this program.

A major compendium of job rewards is presented by Pritchard and Shaw (1978). They developed a taxonomy of 1,500 job rewards which they then compared to 18 job satisfaction instruments to determine the degree to which the reward areas were included in the instruments. No attempt was made to rank order or assess the value of the rewards. This taxonomy is a good source for deriving lists of potential rewards; however, many of the rewards listed seem to be variables that affect job satisfaction rather than rewards that can be made contingent on performance (e.g., openness to change, job complexity).

Pritchard, Von Bergen, and DeLeo (1974) studied the effectiveness of incentive motivation techniques in Air Force technical training. The study was conducted in an Air Force technical school setting and was designed to test the effectiveness of three types of incentive systems: (a) rewards awarded on basis of performance in course, (b) rewards given on basis of effort, (c) effort rewarded, but with more valuable monetary rewards (e.g., points could be accumulated towards the purchase of a \$25.00 savings bond). The results of

the study showed that only the third reward system had an effect but this was found for only one course and the authors concluded that the effect was not practically significant. Of more particular interest is the information they presented with regard to the development and use of the reward system.

Using interviews and subjective judgments, the authors developed an initial list of 70 potential incentives. These incentives were then rated, in terms of attractiveness and potential value, by 264 airmen. The three incentives rated most attractive all involved the choice of duty assignments while the fourth most attractive incentive was a \$20.00 bonus paid every two weeks. In general, male and female airmen found the same incentives to be attractive but there were some sex differences. Males found free beer, recognition, and lack of restrictions more attractive while females found a free photograph and being able to wear their choice of uniform more attractive.

The list of 70 incentives were then evaluated to assess their feasibility for utilization in the reward systems. Discussions with commanders, subordinates, and department heads resulted in the elimination of many of the incentives including the four that were judged most attractive. Reasons for elimination of incentives included lack of funds, difficulty of administration, conflict with Air Force regulations or current practices. After the feasibility evaluation, 12 incentives remained which consisted of such things as letters of commendation sent to parents or commanding officers, various passes and free time privileges, and wearing of any uniform to class for a week. It should be noted at this point that the authors suggested that one of the major reasons why the reward systems did not produce positive performance effects was because the incentives simply were not powerful enough.

A final issue pointed out in the study concerned the stability of the incentive ratings. In the middle of the program, a group of 30 students were asked to rate the attractiveness of the rewards being used. These students all had experience in receiving the rewards. The analysis of these results indicated that the attractiveness of the rewards had changed drastically after they had been experienced. For example, in the initial ratings, a three-day pass was rated substantially higher than a walkers pass; after experience with these rewards, the attractiveness rating of these two rewards showed a complete reversal. The authors suggested two implications from these findings: (a) the attractiveness of incentives can change markedly after experience with them, and (b) incentives which increase the autonomy of the individual may be very powerful.

Thus far the rewards which have been discussed could be considered primarily extrinsic and tangible in nature. A second class of extrinsic rewards exist which could be categorized as social in nature. Wood, Hakel, DelGaizo, and Klimoski (1975) conducted a study concerned with the identification and evaluation of social type incentives which could be used in Air Force technical training. They defined social incentives as "reinforcement which arises from personal interaction (e.g., esteem, recognition and approval), as distinguished from tangible incentives (e.g., time off, financial benefits, etc.)" (p. 1).

In the study the authors identified 62 potential incentives which they then assigned to what were called four social motive categories. The categories were: (a) recognition and approval, (b) affiliation and identification, (c) social influence, and (d) altruism or helping others. It should be noted that some of the incentives selected and categorized were tangible incentives even by the authors' own definition (e.g., time off, free phone calls home). (This merely points out once again the problem in coming up with clear cut definitions and classifications of rewards.) Rating scales were then developed for the incentives and these were administered to 565 Air Force personnel, the majority of whom were trainees with less than six months of service. Respondents were asked to rate the incentives in terms of attractiveness, feasibility, and the potential for applying the incentives contingent on performance.

The results of data analysis showed that the incentives with the highest mean attractiveness ratings were those which could have a direct impact on the trainee, and these were also generally either costly or relatively low in administrative feasibility. The seven incentives with the highest attractiveness rating were, in order: choice of permanent base assignment, college credit for technical training, time off, being treated as an individual, free phone calls home, reduced squadron details, and promotion. Factor analysis was used to identify the most important incentive dimension and this turned out to be recognition, with secondary dimensions of personal freedom, self-development, social behaviors and information feedback. Interesting demographic differences were also found which were related to the attractiveness ratings. Females rated incentives which allowed for social interaction more highly than did males, whereas males viewed ribbons and recommendations as more attractive than did females. Blacks preferred recognition-oriented incentives more than whites, while whites generally preferred personal control and career-related incentives more than did blacks.

In concluding, the authors proposed four experimental incentive systems which included 18 of the original 62 incentives that they felt were both feasible and attractive. They also made two important observations. The first was that some of the incentives that they dropped, they later redesignated as social behaviors (e.g., showing concern for others; being treated as an individual) because they concluded that these could not be made contingent on performance. They did say, however, that these were important behaviors which should be encouraged perhaps by being targets of the incentive system. The second observation was that some of the incentives were "one shot" in the sense that they could not be awarded on a regular basis (e.g., promotion, choice of base assignment). This latter point is important for the development of any incentive system because the most valuable rewards may also be those that can't be applied frequently and thus there is the problem of sustainment of performance.

Controversial Issues Related to Reward Systems

Before concluding this brief review of the literature on incentives and rewards, it is necessary to mention some literature which raises doubts about

some of the implicit assumptions underlying any reward system. A reward system, whether it is based on expectancy theory or reinforcement theory, basically assumes that the greater the magnitude of the reward, the stronger its motivational potential. Implicit in this notion is that there is a proportional relationship between the objective magnitude of rewards and the subjective value or perception attached to them. What is further implied, especially by expectancy theory, is that rewards can combine additively to produce their effects. Expectancy theory postulates both intrinsic and extrinsic rewards; thus, it could be assumed that the optimal motivational work environment is one in which the work is structured to arouse intrinsic motivation, and one in which workers are extrinsically rewarded for doing well.

Deci (1972) presents the results from several of his experiments which were designed to test the assumption of the additivity of the effects of intrinsic and extrinsic rewards. Deci's basic experimental paradigm involved college students who were given puzzle-solving tasks which were judged to be intrinsically motivating. All subjects were given the same task; however, the experimental group received a dollar for each puzzle solved while the control group did not receive any performance contingent extrinsic rewards. During the problem solving sessions, the subjects were left alone for an eight minute "free choice" period during which the experimental conditions were suspended and they could do anything that they liked (e.g., work on puzzles, read magazines). The basic assumption was that, if during this period the subjects chose to work on puzzles in the absence of any extrinsic rewards, then they must be intrinsically motivated to do so. What Deci found was that experimental subjects (subjects receiving extrinsic rewards) lost intrinsic motivation as a result of receiving monetary rewards contingent on performance. That is, across the sessions, experimental subjects spent less time on puzzles in the free choice period than did the subjects who were not extrinsically rewarded.

Deci replicated the basic results several times and concluded that not only are intrinsic and extrinsic rewards not necessarily additive, but also, some extrinsic rewards given contingent on performance can actually decrease intrinsic motivation. In another experiment reported in the same article, Deci also showed that it was not monetary rewards per se which decreased intrinsic motivation, but the effect was due to the performance contingent aspect of the reward.

From the point of view of everyday experience, Deci's findings are not necessarily surprising. Most people have probably experienced a situation in which they performed some task for which they could have received extrinsic rewards, but "preferred" to do it for no reward. For example, helping a neighbor paint his house could be intrinsically motivating (the Tom Sawyer effect perhaps), and this intrinsic motivation could be reduced if one were paid for the effort. From the point of view of motivational theory, Deci's findings create the problem of deciding when or if to offer both types of rewards. At the present time, his findings only suggest that in some situations extrinsic and intrinsic rewards may not be additive since subsequent research is almost equally divided in terms of support for his findings (Pinder, 1976; Pritchard, Campbell, & Campbell, 1977) and non-support (Farr, 1976; Hamner & Foster, 1975).

With regard to the question of whether more of a particular incentive or a number of incentives combined will produce greater perceived attractiveness, data presented by Frey et al. (1974) showed some interesting findings. The researchers conducted nationwide surveys of male American youths between the ages of 16-22 who could be considered potential Navy recruits. In the survey the respondents were asked to rate the attractiveness of various enlistment incentives which were either single incentives, or an incentive "package" consisting of the combination of two or more single incentives (e.g., \$3,000.00 enlistment bonus plus special job training to start civilian life, plus a two-year enlistment). Some of the single incentives included in the survey differed only in terms of absolute magnitude (e.g., \$1,000.00 versus \$3,000.00 bonus; a bonus of 10 percent versus 25 percent of base pay for exceptional performance).

The analysis of the data and comparisons among the incentives showed that there was no support for the assumption that more of a reward is necessarily better for attracting men to the Navy. That is, there were no differences in some cases in the perceived attractiveness of rewards which differed in absolute magnitude and, in some cases, the higher magnitude rewards were actually judged as less attractive. The most attractive incentives generally were those that allowed for a high degree of self-determination and the exercise of fate control as well as traditional monetary and tangible incentives. Finally, individual differences in perceived attractiveness were also found to be related to demographic differences.

Support for the finding that "more is not better" was also found in the Bloom (1977) study discussed previously which showed some instances of higher magnitude rewards being rated lower than lower magnitude rewards. The findings and implications of the Frey et al. study are best summarized by the authors:

1. Increasing the number of different enlistment incentives offered does not increase the attraction of the Navy for young men--double or even triple incentive packages are no better than single incentives.
2. Increasing the absolute value of tangible incentives beyond a critical point either has no effect on likelihood of enlistment or may even decrease the attraction of an enlistment in the Navy.
3. The opportunity to exercise a greater degree of fate control in one's vocational life represents an influence that is equal to or stronger than the appeal of traditional tangible incentives.
4. The Navy needs to target its enlistment incentives--different incentives attract different demographic groups.

In other words, the viability of simplistic recruiting strategies based primarily upon the "economic man" model are highly suspect. There is need for more experiments to be conducted in advance of general implementation of incentive programs in order to provide comparative tests of the effectiveness of specific kinds of incentives, at specific

levels, for specific population groups. This is needed in order to avoid costly non-productive or counter-productive recruiting efforts, as well as to broaden the pool of men who might be drawn to the Navy as a career. (p. 61)

The theory and research relating to the use of incentives and rewards in a work environment which has been reviewed in this section, suggest the following general comments and conclusions:

1. Monetary and other types of tangible rewards have been and will undoubtedly continue to be powerful motivational variables. In a military environment, however, these types of rewards may not be feasible especially if used on a regular basis to sustain motivated behavior.
2. Non-tangible rewards such as social rewards, and intrinsic rewards related to a sense of autonomy and self-determination, have also been demonstrated to be highly attractive and thus show a high potential for utilization in the work environment.
3. Regardless of what rewards are used, the rewards must be related to or contingent on behavior in order to produce motivational effects leading to higher performance levels. Non-contingent rewards, however, can produce important effects with regard to job satisfaction.
4. The perceived attractiveness of a reward is presumed to be based on individual needs which can change as a function of time and experience; therefore, the value of a reward can also change over time. The particular work context or other situational factors can also influence the attractiveness of rewards. Some rewards can only be used on a "one shot" basis and other rewards may saturate as a result of having received them over time.
5. There are obvious individual differences in perceived attractiveness of the same rewards. Differences in reward value are also related to demographic characteristics. Thus a reward system should provide a sufficient variety of rewards to be effective.
6. Intrinsic and extrinsic rewards may not produce an additive effect in all situations. They could, in fact, work in opposition under some conditions.

Increasing the absolute magnitude of a reward may not lead to a proportional increase in its perceived attractiveness. In some instances higher magnitude rewards may be perceived as less attractive than lower magnitude rewards.

PERFORMANCE FEEDBACK

Motivational theories or techniques such as goal setting and job design include and prescribe the use of feedback as an integral feature of their framework and application. Though the concept and process of feedback has occupied

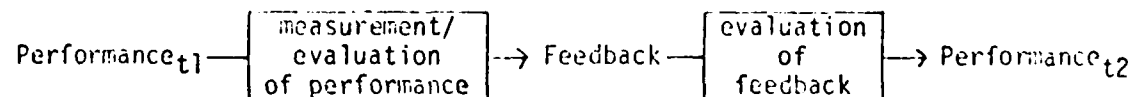
an important role in a variety of behavioral research areas, it will be discussed here only within the framework of motivation and the application of motivational techniques. Feedback connotes the information which an individual, who has performed some task, receives with regard to the results and effectiveness of his or her performance. This information, often referred to as knowledge of results (KR), informs the performer as to: (a) whether the task has been performed correctly; (b) what needs to be corrected if the performance has deviated from some performance standard, and (c) how much the performance has deviated from a desired performance level. All three functions cue the performer as to the "fit" between the effort exerted in the performance and its effectiveness. Feedback is thus necessary for learning since it provides information that can be used to correct and/or improve performance (Becker, 1978). Feedback can also affect the individual's motivational state in that it may be used by the performer as a basis for making a choice to either abandon a task which is perceived to be too hard to accomplish, or to improve previous levels of performance. Moreover, when a task has been accomplished correctly, feedback to that effect may also provide an intrinsic reward such as a sense of accomplishment. Obviously the feedback message can provide extrinsic reward when it contains, for example, praise or recognition. The underlying assumption for the importance of feedback is that without KR an individual will not know how well he or she is doing and/or will not know if and what needs to be done to achieve better performance in the future (Kim & Hamner, 1976).

The motivational effects of feedback have been widely disputed (Locke, 1968, 1980; Hundal, 1969; Komaki, Barwick, & Scott, 1978; Komaki, Heinzmann, & Lawson, 1980). There seems to be some consensus, however, that feedback is necessary for facilitating the effects of set goals, and it is the set goal, not the feedback, that is the motivational factor (Erez, 1977; Becker, 1978; Locke, 1980). On this basis it seems that the presence of feedback in the implementation of motivational techniques is required, not because feedback necessarily motivates, but because it provides information that can, on the one hand, be used for changing one's level of effort and direction of behavior. On the other hand, it can be a vehicle for extrinsic and intrinsic rewards.

Since other sections of this report cover a number of feedback-related issues with regard to goal setting and job design, the following discussion will focus on (a) general issues pertaining to the use of feedback and (b) the implications of feedback in the work environment.

The Nature of Feedback

The following schematic view of the relationship between feedback and performance presumes that the use of feedback for future performance involves a cognitive, evaluation process. This process can be depicted as follows:



where t_1 connotes performance prior to feedback and t_2 , performance after feedback has been received. The initial performance is assessed and this information

is relayed to the performer, who then interprets and judges its meaning in terms of some standard of performance, past performance, performance instructions, as well as his or her own individual needs and goals. Following the evaluation of the feedback, the performer makes a choice whether and how to use the feedback for future performance.

The conditions under which feedback will be accepted by the recipient and used for improving performance need to be specified. In a comprehensive theoretical analysis of feedback which has clear implications for the implementation of motivational techniques in actual work settings, Ilgen, Fisher, and Taylor (1979) identify three factors which affect the acceptance and use of feedback; (a) the source of the feedback; (b) inherent properties of the feedback; and (c) individual traits which affect one's perception and evaluation of the feedback.

There are basically three types of feedback sources: (a) another individual (a supervisor, coworker, subordinate), (b) the task environment (either the feedback is inherent in working on the task itself or is provided by automated means), and (c) the individual performer (self feedback). Ordinarily feedback will be accepted and used if it is perceived as coming from a credible, trustworthy source. Impersonal (automated) and self sources are usually perceived as more credible and trustworthy sources than coworkers or supervisors. At the same time the response to the feedback is more likely when the feedback source is powerful, i.e., has organizational authority and/or has significant control over valued rewards or sanctions. In fact, Ilgen and his colleagues maintain that the source's power is more effective than the source's credibility. However, when the source is not perceived to be powerful, unless it has credibility (due to experience and/or expertise) the feedback is not likely to be accepted and used. In actual work settings it is probably preferable to attain employees' compliance with feedback by using sources which will provide useful, credible feedback, rather than relying primarily on supervisory power positions. Mayer, Kay, and French (1965) found that when feedback contained useful performance evaluation, but it neither reflected adversely on the employees' personal abilities, nor was it tied to future salary or promotion, employees accepted and used such feedback to significantly improve their performance. On the other hand, when the performance evaluation did reflect adversely on employees' abilities and was tied to future monetary rewards, employees receiving such feedback became defensive about their performance and did not improve their performance. Greller (1980) stresses that supervisors need to be sensitive to both the specific value which feedback sources have for employees and the information employees find useful, so that the necessary information will come from the more valued sources and will be most useful for improving performance levels.

While the source of the feedback can affect whether the feedback is accepted and used or not, the effectiveness of the feedback for improving performance depends mainly on the particular content and properties of the message contained in the feedback. In general, for feedback to be useful for improving performance, its content must: (a) relate specific information pertaining to the correctness, accuracy, and adequacy of the performance; (b) be such that it can be translated

into meaningful (to the performer) behavior; (c) reduce the uncertainty about what caused correct and incorrect performance; and (d) clearly identify the behavior that needs sustainment or change. In other words, the feedback has to be specific, pertain to the behavior itself, be meaningful to the recipient and directive (Ilgen et al., 1979). Pritchard, Montagno, and Moore (1978) studied the effects of specific feedback in relationship to how the feedback was delivered. They found that specific, non-evaluative, non-personal feedback was superior to specific, personal, evaluative feedback; however, both had positive effects on performance. The apparent reason for the differences is that people may prefer to evaluate their performance themselves, once provided with specific performance results, rather than have someone else do it for them. In a separate study Pritchard and Montagno (1978) found that non-specific (general) feedback was more effective than specific feedback when the feedback was given publicly and consisted of performance comparisons between the subjects. It is possible that under these circumstances people may have felt threatened by specific feedback.

The timing, frequency, and sign of the feedback have also been found to be crucial for the effective use of feedback (see Ilgen et al., 1979, review of relevant studies). Timing pertains to the time lag between the performance and the reception of the feedback. While the time lag has to be short enough so that the recipient still remembers the original response, delayed feedback is more effective when the original behavior is remembered and no other interfering activities occur. Immediate and/or too frequent feedback may create pressures on the individual or tend to lead to information overload (see for example, Pritchard & Montagno, 1978). There is, unfortunately, no conclusive evidence available as to the optimal frequency of feedback. As for the feedback's sign, positive feedback is perceived and recalled more accurately than negative feedback since the latter leads to defensiveness and disruptive emotional states which can result in lower performance levels (see Meyer et al., 1965). In summary, the message contained in the feedback should be such that it is perceived as encouraging, as directing behavior toward successful performance, and should be delivered frequently enough to maintain its relationship to the original behavior and still not cause an information overload.

The properties of feedback discussed above are not only important for the successful execution of tasks but are also instrumental in clarifying the individual's role in the organization. Specific, meaningful and directive feedback is instrumental in setting specific performance goals. When these particular properties of feedback become an integral part of the job, they also contribute to the meaningfulness of one's work. When self feedback is possible, it increases the individual's sense of control over, or responsibility for, his/her task performance (see also Dunham, 1979; Hackman & Oldham, 1974a). Moreover, from expectancy theory perspective, when specific and meaningful feedback alludes to one's chances to receive both extrinsic and intrinsic rewards, it acts as a facilitator to clarify the relationship between one's effort and performance outcome. Note that while some expectancy models do not include feedback in their theoretical framework, it is clear that feedback is instrumental in the cognitive process on which expectancy theory is based.

(see Steers & Mowday, 1976). Evaluative feedback which contains praise about one's performance serves as a reward in itself; likewise, information contained in non-evaluative feedback can be used by the recipient to intrinsically reward him/herself by providing information that the required task has been accomplished. Thus both praise and information indicating the accomplishment of a task have reinforcing properties in and of themselves (Brown, 1949; Annett, 1969).

Finally, since the individual is the primary agent who processes the information contained in the feedback, he or she will use the feedback as interpreted and evaluated. The individual's abilities, need strengths (particularly needs for achievement, autonomy, and affiliation), self-esteem, values, aspirations and attitudes will mediate the processing of the information and will affect the choices that are made with regard to performance changes (see also Locke, Cartledge, & Knerr, 1970). The mediating effects of personal traits on the acceptance and effective use of feedback imply that the response to the feedback cannot always be adequately predicted. However, to the extent that individuals are selected to do certain tasks on the basis of their abilities, and the appropriate feedback sources and properties are used, the feedback is quite likely to be accepted and used effectively. Overall, since feedback is often interpreted by recipients in terms of personal gains and fulfillment of their own needs, the feedback message will be accepted more readily when it contains this kind of information. In their study of an industrial safety program, Zohar, Cohen, and Azar (1980) found that when employees received feedback about the decrease in employees' hearing impairment as a result of using ear plugs, they accepted the feedback more readily and used the ear plugs as was required by the management.

Summary

In a motivational context feedback is a facilitator of behavior to the extent that it provides specific information pertaining to the correctness, accuracy, and adequacy of the individual's performance, and increases the individual involvement with the task to be performed. Under the conditions whereby feedback is (a) received from a reliable and/or powerful source and thus, is accepted by the performer; (b) judged to be correct and is meaningful; and (c) congruent with the performer's personal frame of reference (i.e., traits, values, attitudes), such feedback can be used by its recipient to formulate specific performance goals and lead to a desired performance. Since motivation, in the present context, can in one sense be simply defined as the degree to which a person desires to perform a task, feedback is clearly one of the factors that affects such a desire. More importantly, feedback, when given, is instrumental in "directing" the desire toward a specific behavior.

Though goal setting theory suggests that it is the goal which directs behavior, it also stipulates that feedback is instrumental to necessary readjustment of the direction a performance behavior takes. Similarly, expectancy theory implies that feedback can strengthen the desire to perform to the extent that it provides information telling the performer that the desired (or required)

performance level is attainable and, therefore, rewards, contingent upon the performance, could be attained. In terms of operant conditioning, the attainment of a reward (money, praise, etc.) is in and by itself a form of knowledge of results--"If I got the reward, I must have done what I was supposed to do," but unless such feedback contains specific directive information, it is not sufficient for improving the performance. Feedback, as an integral element of job design, functions to provide information about effective performance that can lead to the satisfaction of higher order needs.

It seems, then, that the implementation of any motivational technique should include feedback in the program since it is important for both motivation and performance. When used, the content of the feedback and the way it is delivered should take into account the conditions delineated above.

JOB SATISFACTION

Although job satisfaction is not an integral component of any of the motivational theories discussed in this report, it is a topic which occurs repeatedly in the work motivation literature and is certainly an integral component of what could be called the quality of working life. Job satisfaction refers to the positive feelings or attitudes that a person has with respect to job characteristics and job related experiences. As such it is an internal, emotional state which can affect all aspects of a worker's behavior. From the point of view of understanding and predicting behavior in an organizational environment, it is important to identify both the determinants and consequences of job satisfaction. With respect to understanding work motivation, it is necessary to identify the relationships, if any, between motivation, job satisfaction and performance.

Since the 1930's an impressive amount of literature has been generated in the area of job satisfaction. Locke (1976) indicates that approximately 3,350 articles or publications exist on the topic. Most of the studies on job satisfaction have been correlational in nature and have tried to identify relationships between job satisfaction measures and characteristics of the job or characteristics of the worker. For instance, since job satisfaction is basically a feeling or belief about aspects of the job, it is usually measured or assessed using attitude surveys, checklists, or rating scales. One of the more popular instruments used for this purpose is the Job Description Index (JDI) (Smith, Kendall, & Hulin, 1969). In a typical study the scores obtained on the job satisfaction instrument are correlated with such things as: ratings of job characteristics or dimensions (e.g., working conditions, financial benefits, supervision, promotion opportunities); demographic variables (e.g., age, education, job tenure); and/or behavioral measures (e.g., performance, absenteeism, turnover).

Not surprisingly, the results of these types of studies have shown that measures of job satisfaction are significantly related to a wide array of variables. Less is known, however, concerning the extent to which job

satisfaction is causally related to these variables; that is, what factors cause job satisfaction and what effects job satisfaction has on work related behavior. While some progress has been made in this direction, at the present time only tentative conclusions can be drawn with regard to the causes and effects of job satisfaction. Locke (1976), in an extensive review of the literature, reports that the causes of job satisfaction, suggested by the literature, are mentally challenging jobs (high autonomy, variety, responsibility), good working conditions, high and equitable pay, and good opportunities for promotion. With respect to the effects of job satisfaction, there seems to be agreement that people satisfied with their jobs are more satisfied with life in general, have better mental and physical health, and tend to be on the job more frequently than those that are dissatisfied (Mitchell, 1974).

The area of job satisfaction research which is most directly related to work motivation, and is also the most controversial, concerns the effects of satisfaction on performance and other work related behaviors. The issue which is at the crux of the controversy is whether job satisfaction is directly or causally related to performance, whether the two only tend to covary because of third variables, or whether they are completely unrelated. Some of the current theory and research addressing this issue is presented below.

The early research on the satisfaction-performance issue was guided in part by the somewhat intuitive notion that a happy or satisfied worker is also a productive worker. One of the earliest reviews on the topic (Brayfield & Crockett, 1955) concluded that the research showed that there was no demonstrable relationship between job satisfaction and performance. In subsequent research, Herzberg, Mausner, and Snyderman (1959) argued that their own data and review of the literature indicated that there was a direct effect of job satisfaction on performance. Since these two major reviews of the literature came to opposite conclusions (a direct relationship versus no relationship between satisfaction and performance), numerous subsequent studies have attempted to reconcile the contradictory findings and have also questioned the basic assumptions underlying a satisfaction-performance relationship. As a result of the research conducted over the last 20 years, the position on the relationship between satisfaction and performance which has emerged could be called a compromise between the two polar conclusions reached in the early studies. This position is supported both by theory and empirical data.

First of all, the notion that satisfaction leads to better performance is not necessarily supported by common observation. Numerous examples could be found in the work environment of workers who are very satisfied with their jobs but who are not very productive or below average in performance. Likewise, examples of the opposite could also be found, workers who dislike or are dissatisfied with their jobs but are nevertheless very productive. The findings that have been the most consistent in the literature and the position accepted by the majority of the research community is that there is no direct or causal relationship between job satisfaction and performance but there is a relationship between job satisfaction and absenteeism and turnover (Lawler, 1973; Locke, 1976; Landy & Trumbo, 1976). Simply stated, this means

that a worker who is not satisfied in his or her job may still be very productive, but the chances are high that the worker will be tardy or absent from the job or may quit work altogether.

Where relationships have been found between performance and satisfaction, the literature suggests that the relationship is indirect and mediated by other factors. For example, when measures of tardiness and turnover are included in the performance or productivity assessment, and this overall measure is correlated with job satisfaction, there will tend to be a relationship between satisfaction and productivity. A more common finding is that job satisfaction is related to performance in those situations where rewards are received contingent on performance. It is interesting to note that the trend of this relationship suggests that performance produces satisfaction rather than the other way around. Porter and Lawler (1968), as part of their overall expectancy model, suggest that satisfaction and performance are indirectly related through the mediating effects of performance contingent rewards. According to their model both extrinsic and intrinsic rewards cause satisfaction. These rewards, when they are administered contingent on performance, will also increase performance level. Thus correlations between performance and job satisfaction will show that the two variables covary as a result of the third variable, reward level.

A study conducted by Cherrington et al. (1971) illustrates very neatly the linkage between satisfaction, performance, and rewards. The authors hypothesized that there is no inherent relationship between satisfaction and performance, and that relationships between the two variables are highly dependent on performance-reward contingencies. They further hypothesized that to affect performance significantly, performance contingent rewards have to be used. To test their hypotheses the authors experimentally set up three types of performance-reward systems: (a) random rewards, in which rewards were distributed independent of performance; (b) positively contingent rewards, in which high performers were rewarded and low performers not rewarded; and (c) negatively contingent rewards, in which rewards were inversely related to performance (i.e., low performers rewarded and high performers not rewarded). All subjects performed the same task and filled out self-report measures of satisfaction and attitudes.

The analyses of the data showed the following results. In the reward system where rewards were randomly delivered (not contingent on performance), there were no differences in performance between rewarded and nonrewarded subjects. Rewarded subjects, however, reported significantly higher levels of satisfaction than nonrewarded subjects and across all subjects there was no relationship between satisfaction and performance. Subjects who were appropriately rewarded for performance (positively contingent rewards) performed significantly better than subjects who were inappropriately rewarded (negatively contingent rewards) but there was no difference in the level of satisfaction between the two groups. Finally, significant positive correlations were found between satisfaction and performance for the appropriately reinforced group, while significant negative correlations were found between satisfaction and performance for the inappropriately reinforced group.

Overall, the results supported the authors' hypothesis that there is no inherent causal relationship between satisfaction and performance but rather an indirect relationship which depends on the nature of the performance-reward contingencies. The results also can be used to support the Porter and Lawler model.

Gupta (1980) examined the relationship between employee satisfaction and both performance-contingent intrinsic and extrinsic rewards. Her hypothesis was that there is a direct positive relationship between performance-contingent rewards and satisfaction and that this relationship is evident even when the effects of the actual reward levels are partialled out. Data were collected from 649 employees of five organizations. Measures of performance-contingent extrinsic rewards were derived from the knowledge of pay practices in the organizations. Intrinsic reward measures were operationalized in terms of the degree to which certain job characteristics (i.e., autonomy, variety, task identity, and feedback) facilitated intrinsic reward achievement. Interviews were used to assess employee job satisfaction on three dimensions: intrinsic satisfaction, pay satisfaction, and general satisfaction.

The results of the correlational analyses showed that performance-contingent intrinsic rewards were positively related to both intrinsic satisfaction and general job satisfaction. Furthermore, performance-contingent pay was positively related to both pay satisfaction and general job satisfaction. When correlations were computed which removed the effects of actual reward levels, the results showed some support for the notion that the size of the reward and the contingency of the reward may have an independent effect. However, she concluded that the contingency characteristics of rewards do not explain a great deal of variance in satisfaction beyond that which can be explained by the actual presence of rewards.

The current state of knowledge with regard to the relationship between job satisfaction and productivity has been succinctly summarized in a comprehensive review of the literature conducted by Srivastva, Salipante, Cummings, Notz, Bigelow, and Waters (1977). The authors reviewed the research conducted over the last 15 years on organizational factors which could affect job satisfaction and productivity. Over 2,000 literature references were found which included 600 empirical studies that were included in the review. The goal of the review was policy-oriented. That is, the research was assessed to identify the knowledge required by organizational decision makers in the development and application of strategies for improving productivity and the quality of working life.

The findings of the review were summarized separately for correlational studies (about 90 percent of the total studies reviewed) and innovative field experiments. The results of the correlational studies were recorded in terms of relational statements which described the study's findings. Statements dealing with similar variables were then grouped together and their agreement assessed by statistical measures of convergence. The statements which received the most support and a brief discussion of the statements presented by the authors are presented below.

1. The intrinsic nature of the work itself is positively related to satisfaction and negatively related to absenteeism and turnover.
2. Autonomy is positively related to satisfaction and performance.
3. Democratic supervisory style is positively related to satisfaction, but may be either positively or negatively related to performance.
4. Supportive supervisory style is positively related to satisfaction.
5. Organizational climate (reflecting support, open communication, and autonomy) is positively related to satisfaction and, in most cases, to performance.

When these findings are examined together, the theme of autonomy emerges as a significant organizational factor related to both satisfaction and productivity. The concept of autonomy appears as an important aspect of the work itself, the nature of supervisor-subordinate relations, and the organizational climate of work. Although the correlational results do not demonstrate causality, the predominance of autonomy over many of the studies suggests that it is a potentially effective action lever for improving productivity and the quality of work life.

An equally important finding from the correlational studies is that many of the relationships between organizational factors and outcome variables were contingent upon other factors. For instance, the positive relationship between supportive supervisory style and subordinates' satisfaction seems to hold primarily for workers who do not have strong independence needs. Since similar contingent factors were shown to pervade many of the relationships, a general conclusion from these studies is that the effectiveness of various organizational factors is context-determined. Thus, contingencies having to do with workers, the organizations, and the larger environment must be taken into account if organizational improvements are to have the desired effects. (p. xvi)

Correlational studies, of course, only indicate the degree of relationship between variables and not whether one variable caused another to change. Experimental studies, however, are designed to identify the causal relationships between variables. Thus the authors analyzed and classified the results of the field experiments in terms of four causal "action levers" or change orientations and identified the effects for each. The action levers and their effects were described by the authors as follows:

1. Socio-technical¹ system changes toward making work groups more autonomous are likely to result in increased performance and satisfaction when groups are provided with:

¹Socio-technical system concepts emphasize the interaction among technological, social, and psychological determinants of organization behavior.

- a. tasks that are relatively whole and self-completing;
- b. autonomy and discretion concerning methods of work;
- c. timely feedback of results; and
- d. a requisite variety of task skills.

2. Changes in job restructuring are likely to result in increased performance and satisfaction when individual workers are provided with:

- a. autonomy and discretion concerning methods of work;
- b. adequate amounts of task variety; and
- c. timely feedback of results.

3. Participative management increases in decision-making by individual workers or groups of workers are likely to result in increased satisfaction.

4. Organizational change directed at reductions in the number of hierarchical levels, increases in the span of control, and introduction of new line and staff positions are likely to lead to increased performance.

Although the field studies did not explicitly experiment with contingent factors and methods of change, they provided a rich array of anecdotal data that were relevant to these types of knowledge. A variety of possible contingent factors were mentioned--e.g., job restructuring is more likely to result in increased satisfaction and performance when workers possess higher order needs. Since many of these contingencies were similar to those found in the correlational studies, these data underscore the need to account for contingent or contextual factors when implementing work improvement programs. Similarly, information about methods of change suggests that some of the theoretical and change orientations may require special change processes if they are to be successful--e.g., socio-technical systems and participative management strategies may require the active participation of workers if the action levers are to be effectively manipulated. (pp. xvii-xviii)

The findings from the job satisfaction literature which have been reviewed in this section have some clear implications with respect to the theory and application of work motivation procedures. First of all, it is clear that job satisfaction can result from numerous factors or variables, some of which may also be related to motivation and performance. The literature seems to be consistent in showing that job satisfaction is not causally related to performance or productivity (i.e., satisfaction does not increase performance) but that the two can certainly be related indirectly through the mediating

effects of performance contingent rewards. Job satisfaction does seem to be causally related to absenteeism and turnover and to the general attitudes and feelings involved in the concept of quality of life.

With respect to the four work motivation theories addressed in this report, job satisfaction is not a necessary component in any of the theories. Goal theory and reinforcement theory for the most part ignore the question of satisfaction. Expectancy theory, especially the Porter and Lawler (1968) version, discusses job satisfaction but does so in terms of job satisfaction being one possible result of performance rather than being a cause. They do say, however, that satisfaction with rewards can be an input which could affect the valence of future rewards. The job design approach, especially if it is conceptualized in terms of job characteristics such as meaningfulness, autonomy, and feedback, is certainly dealing with factors which are related to job satisfaction. The point, however, is still that job satisfaction is a feeling or attitude which is produced by variables that can also have a direct effect on performance. This is not the same as saying that job design approaches (or other motivational approaches) lead to satisfaction which in turn leads to better performance. One of the major unanswered questions in organizational research involves the identification of those variables which have independent and joint effects on both satisfaction and performance.

The most direct implication of the job satisfaction findings with respect to the application of motivational techniques is that to motivate an employee, the employee first has to be on the job. The extent to which an employee is satisfied with his job will determine if he or she will come to work or stay with the organization. Therefore, both performance motivation and job satisfaction, although they seem to be causally unrelated, are necessary conditions for increasing organizational productivity and the quality of workers' lives.

POTENTIAL APPLICABILITY OF MOTIVATIONAL TECHNIQUES IN A MILITARY ENVIRONMENT

This paper has reviewed four of the most popular approaches to work motivation both in terms of theory and practical application. In addition, rewards, feedback, and job satisfaction were discussed individually in terms of their relationship to motivation and work behavior. The literature reviewed and the information presented in this paper clearly suggests that there is at present no single or best theory or technique of work motivation. Rather, the different approaches tend to be complementary in the sense that each theory addresses separate aspects of motivated behavior which are both intuitively reasonable and experientially verifiable. A common theme which seems to underlie all of the theories is that motivated behavior is purposeful and that in most cases the purpose is to fulfill psychological or physiological needs. Expectancy and reinforcement theories focus on the idea that needs can be fulfilled as a result of obtaining performance related outcomes. Goal setting and job design theories, in contrast, focus on the desired performance levels and the characteristics of the work itself as being the important determinants of need fulfillment and motivated behavior.

Since the theories tend to be complementary and since there are not serious contradictions among them, it is reasonable to assume that in terms of practical application, the principles and techniques from more than one theory could be used. In fact, an optimal applied motivational strategy is probably one which combines or incorporates salient principles from several of the theories. The extent to which this can be accomplished in any organization depends upon organizational constraints which will put practical limitations on both the principles that can be applied and the conditions that can be met for their application.

A particular goal of this report is to identify the motivational principles and techniques which could be applied in a military environment (more specifically, an Army unit environment) and the conditions required for their application. With respect to the work motivation principles and techniques discussed in this paper, all have potential applicability in a military environment. The basic work motivation principles are summarized below.

1. Both reinforcement and expectancy theories state that performance and productivity can be increased by providing rewards contingent on successful performance. The rewards must be valued by the recipient, he or she must be aware of their relationship to performance, and they have to be consistently administered when required performance standards are met.

2. Expectancy theory expands on the above principle by stressing that the worker's perceptions and intentions are important determinants of motivated behavior. Specifically, in addition to perceiving performance-reward contingencies, the worker also has to have the expectation or belief that the required performance level can be achieved.

3. The basic premise of goal theory is that performance levels will be modified to the extent that people set and accept specific performance goals. An auxiliary principle is that hard goals will lead to higher performance levels than will easy goals.

4. The job design approach is based on the principle that workers are motivated by characteristics of their work which will satisfy higher order psychological needs (e.g., achievement, self-esteem, and self-actualization). The job characteristics which satisfy these higher order needs are job meaningfulness, autonomy in performing the work, and knowledge of the results of work activity (feedback).

In addition to the specific principles tied to each of the theories or techniques, there are also two general work related factors which have implications with respect to theories of motivation and performance. The first of these factors concerns feedback. The general consensus is that feedback, or knowledge of results of work activity is essential to obtain both efficient learning and smooth performance. While feedback itself may not be intrinsically motivating, it does seem to be a necessary condition for obtaining the motivational effects of goal setting, and for designing meaningful jobs. The clear implication is that feedback of performance results should be an integral component of any job whether used independently or in combination with a particular work motivation procedure.

The second factor is job satisfaction. The literature on job satisfaction indicates that this factor is an important determinant in reducing both absenteeism and job turnover. There is also a great deal of agreement that job satisfaction itself does not lead to increased performance, but that certain variables, such as performance contingent rewards, can increase both job satisfaction and performance. Providing work conditions which will lead to job satisfaction should be, in itself, an important goal of any organization which wants to maintain the stability of its work force. The important thing to keep in mind is that satisfaction and performance seem to be independent factors, so that changes in one may not have an effect on the other. That is, if the goal is to increase satisfaction, the variables which affect satisfaction have to be identified and manipulated. In the same way, if the goal is to increase performance, then variables related to motivation have to be identified and manipulated.

There is nothing inherent in a military organization in general or the Army in particular which would automatically preclude the utilization of the principles and factors discussed above. The extent to which various principles and theories of motivation could actually be applied depends on the degree to which the conditions and requirements for their effective implementation exist or could exist in an organization.

Table 1 is a matrix which lists the four motivational techniques and shows the major conditions and requirements necessary for their application. The conditions and requirements are shown in the column headings, with the

TABLE 1

(Continued on next page)

Assessment of Potential Applicability of Motivational Techniques in the Military Environment

Conditions and Requirements for Application

	Specific Job Tasks Must Be Identified & Defined	Tasks Should Have Variety And Significance	Worker Must Know What To Do And How To Do It	Worker Must Have Control Over Job Task (Autonomy To Perform)	Performance Standards Must Be Set	Performance Goals Must Be Set
Expectancy Theory	to identify performance contingency	not a requirement	necessary for expectancy component	influences degree of expectancy	necessary for performance-reward contingency	no, only performance standards
Reinforcement Theory	to identify performance contingency	not a requirement	necessary for performance contingency	influences performance-reward contingency	necessary for performance-reward contingency	no, only performance standards
Goal Setting	if necessary to set goal	not a requirement	necessary to set goal	influences goal acceptance	goals must be set	yes, must be specific
Job Design	to provide task identity/ completeness	required to increase job meaningfulness	determines meaningfulness	increases feeling of responsibility	necessary for feedback of job accomplishment	not a requirement

Feasibility In The Military Environment

high

unknown

high

medium

high

high

Presently Exists In The Military Environment

yes

unknown

unknown

unknown

yes

unknown

Motivational Techniques

TABLE 1 CONTINUED

Conditions and Requirements for Application					
	Performance Must Be Measured/ Evaluated	Valued Rewards Must Be Available	Performance Feedback Must Be Given	Performance-Reward Contingencies	Performance Standard Or Goal Attainability
Expectancy Theory	to apply rewards	intrinsic & extrinsic contingent on performance	not a requirement	must be clear to worker; must be systematically applied	standards should be relatively easy
Reinforcement Theory	to apply rewards	extrinsic contingent on performance	not a requirement	must be clear to worker; must be systematically applied	standards should be relatively easy
Goal Setting	to give feedback & determine goal achievement	not a requirement	used to set goals and facilitates their effects	not applicable	goals should be relatively hard
Job Design	to provide feedback	not a requirement	necessary for feeling of task accomplishment	not applicable	not applicable

Feasibility
In The
Military
Environment

medium

medium

high

medium

high

Presently
Exists In The
Military
Environment

yes

unknown

unknown

unknown

unknown

motivational techniques labeling the rows. The comments within each cell of the matrix indicate if or how a particular condition applies to a particular technique. Below the matrix a subsequent assessment is presented for each of the conditions or requirements showing whether it is feasible in the military and whether it presently exists in the military environment.

The contents of Table 1 should be self-explanatory; however, two general comments are in order. First, not all conditions are applicable to each of the techniques and this is indicated by the comments "not a requirement" or "not applicable." The distinction between the two comments is that with the former, the condition is not required but could exist or be used, while the latter comment simply means that the condition does not apply to the technique. Secondly, in those instances where a condition or requirement is applicable to more than one technique, it may be applicable for different reasons. For example, the requirement that a "worker must know what to do and how to do it," while it may be common sense assumption, it has different implications for each of the techniques. For expectancy theory, this requirement is the basis on which a worker establishes the perception or subjective probability that a particular effort will lead to a desired performance level. In reinforcement theory, the requirement is very basic in the sense that one cannot reward performance that cannot be accomplished. For goal theory, the requirement is related to setting a goal, while for job design, it is directly related to the evaluation of job meaningfulness. In applying any motivational technique, it is important to keep in mind why a particular condition or requirement is necessary for that technique. This will insure that the technique is used correctly and will also aid in the diagnosis of why it is, or is not, producing the desired results.

The feasibility assessment at the bottom of the matrix shows that all of the conditions and requirements (with the possible exception of task variety and significance) are feasible in the military. Whether or not they presently exist or the extent to which they exist is unknown for many of the conditions and requirements but could be empirically assessed by collecting the appropriate data.

Three of the most important conditions do presently exist in the military, particularly in Army organizations. In the last 10 years the Army has been stressing the concept of performance oriented training, especially the idea of developing and using performance objectives. Thus, at the present time, all of the various jobs in the Army have been identified and defined in terms of the specific tasks required on the job and the performance standards that must be met. In addition, performance measurement and evaluation techniques have also been developed [e.g., Skill Qualification Test (SQT), Army Training and Evaluation Program (ARTEP)] to assess the degree of mastery and training readiness.

The four work motivation theories discussed in this report can all be applied in a military organization. The conditions required for their application are generally feasible but the extent to which they exist in a particular organization or unit needs to be determined. There is no readily

available decision process which can be used to determine which technique, or combination of techniques, to use in a particular situation. One basis that could be used for deciding which technique to apply is to evaluate the basic utility or ease of application of the technique. Goal setting, for example, probably has almost universal utility and requires relatively few conditions for application. Performance-contingent reward methods also have high utility but can be more costly, difficult, or cumbersome to apply. Job design methods probably have the lowest degree of utility since this technique could require substantial analyses and modifications of both jobs and the work environment.

An optimal motivational strategy that could be used in an Army unit environment may be to combine goal setting with performance-contingent rewards. For example, the primary indicator of productivity in an Army unit is unit readiness. This readiness is assessed and evaluated in three areas: individual skills and training, unit skills and training, and maintenance. The evaluation methods involve, respectively; SQT tests, ARTEPs, and the Annual General Inspection (AGI). Goal setting could be used at both the individual and unit levels to set performance goals in each of the three areas, on a continuous basis, depending upon current performance levels. Either or both tangible and social rewards could be administered contingent on either intermediate standards of performance or on final goal accomplishment. The use of rewards would, of course, require that valued rewards be identified and that their effectiveness be monitored on a continuous basis. The information with regard to types, value, and effects of rewards, as well as the individual differences in how rewards are valued, which is contained in the section on Incentives and Rewards, should also be considered.

Regardless of which motivational techniques are selected for application in a military setting, there is a personnel problem, characteristic of military organizations, which will have an impact on the success of the program. This problem concerns the basic non-stability of management and the "work force." The lack of stability is characterized by frequent rotations between jobs or between duty stations which affect all members of the military. Officers change duty assignments on the average of every two years. This results in what has sometimes been called a state of "transitional management." Enlisted members and NCO's also change jobs at approximately the same frequency, creating what is called unit turbulence.

The potential effects that this kind of a situation can have on the implementation of any kind of unit-wide performance improvement program are obvious. Commanders who may want to institute motivational techniques may not have the time to completely implement the program and they are faced with constant turnover in their supervisory and troop personnel. Even if a motivational program is fully implemented, there is no guarantee that the next commander will accept or continue it. From the point of view of the service member in the unit, the fact that goals may be set, performance may be rewarded, or jobs enriched in one unit does not guarantee that the same state of affairs will exist in the next unit to which he or she is transferred.

There is no easy solution to this problem but it could be minimized if certain motivational techniques, after they have been demonstrated to be effective, are adopted on an organization-wide basis. Suggesting that certain motivational principles or techniques be adopted on a broad basis does not mean that their application should be standardized. The literature on motivation clearly suggests that it is a dynamic process which can be influenced by the type of work, the type of leadership, individual worker differences, and most importantly, changing needs. Therefore, strategies of work motivation, while based on specific principles and conditions of application, have to be tailored to the particular work situation and the people involved in the program.

Once implemented, a motivational program should be monitored, performance should be measured and evaluated, and the program should be modified when necessary to maintain its effectiveness.

In summary, all of the motivational theories reviewed in this report are potentially applicable to a military organization. The conditions required for their implementation are feasible, although the extent to which they currently exist needs to be assessed. From the point of view of utility and ease of implementation, goal setting and the application of performance-contingent rewards are the most promising work motivational techniques. These techniques could be used independently or in combination, and should lead to increased levels of performance and unit readiness.

REFERENCES

- Ahern, J. Productivity problems in the military sector which stem from motivational problems: Panel discussion. In L. A. Broedling & R. Penn (Eds.), Military Productivity and Work Motivation: Conference Proceedings (NPRDC SR 78-15). Navy Personnel Research and Development Center, August 1978.
- Alderfer, C. P. Change processes in organizations. In M. D. Dunnette (Ed.), Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally College Publishing Company, 1976.
- Alderfer, C. P. Organizational development. In M. R. Rosenzweig & L. W. Porter (Eds.), Annual Review of Psychology (Vol. 28). Palo Alto, CA: Annual Reviews, 1977.
- Annett, J. Feedback and Human Behavior. Baltimore, MD: Penguin Books, 1969.
- Atkinson, J. W. Motivational determinants of risk-taking behavior. Psychological Review, 1957, 64(6), 353-372.
- Becker, L. J. Joint effect of feedback and goal setting on performance: A field study of residential energy conservation. Journal of Applied Psychology, 1978, 63(4), 428-433.
- Beer, M. The technology of organization development. In M. D. Dunnette (Ed.), Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally College Publishing Company, 1976.
- Bialek, H., & McNeil, M. Preliminary study of motivation and incentives in basic combat training (HumRRD Tech. Rep. 68-6). Alexandria, VA: Human Resources Research Organization, May 1968.
- Blood, M. R., & Hulin, D. L. Alienation, environmental characteristics, and worker responses. Journal of Applied Psychology, 1967, 51(3), 284-290.
- Bloom, R. D. Enlisted ratings of possible incentives for skill acquisition (ARI Research Memorandum 77-28). Alexandria, VA: U. S. Army Research Institute for the Behavioral and Social Sciences, December 1977.
- Blum, M. L., & Naylor, J. C. Industrial Psychology: Its Theoretical and Social Foundations. New York: Harper & Row, 1968.
- Brayfield, A. H., & Crockett, W. H. Employee attitudes and employee performance. Psychological Bulletin, 1955, 52, 336-424.
- Bretton, G. E., Dockstader, W. L., Nebeker, D. M., & Shumate, C. E. A performance-contingent reward system that uses economic incentives: Preliminary cost-effectiveness analysis (DPRDC TR 78-13). San Diego, CA: Navy Personnel Research and Development Center, February 1978.

- Brown, J. S. A proposed program of research on psychological feedback in the performance of psychomotor tasks. Lackland Air Force Base, Human Resources Research Center, 1949.
- Cammann, C., & Lawler, E. E. Employee reactions to a pay incentive plan. Journal of Applied Psychology, 1973, 58(2), 163-172.
- Campbell, J. P., Dunnette, M. D., Lawler, E. E., & Weich, K. E., Jr. Managerial Behavior, Performance, and Effectiveness. New York: McGraw-Hill, 1970.
- Campbell, J. P., & Pritchard, R. D. Motivation theory in industrial and organizational psychology. In M. D. Dunnette (Ed.), Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally College Publishing Company, 1976.
- Cherrington, D. J., Reitz, H. J., & Scott, W. E., Jr. Effects of contingent and noncontingent reward on the relationship between satisfaction and task performance. Journal of Applied Psychology, 1971, 55(6), 531-536.
- Datel, W. E. The Fort Ord Merit-Reward System. Fort Ord, CA: Unpublished Report, June 1972. (NTIS No. AD-743213)
- Deci, E. L. The effects of contingent and noncontingent rewards and controls on intrinsic motivation. Organizational Behavior and Human Performance, 1972, 8, 217-229.
- Deci, E. L. Intrinsic Motivation. New York: Plenum, 1975.
- Dockstader, S. L., Nebeker, D. M., Nocella, J., & Shumate, C. E. Incentive management training: Use of behavioral principles for productivity enhancement (Tech. Rep. NPRDC 80-29). San Diego, CA: Navy Personnel Research and Development Center, July 1980.
- Dockstader, S. L., Nebeker, D. M., & Shumate, E. C. The effects of feedback and an implied standard on work performance (NPRDC TR 77-45). San Diego, CA: Navy Personnel Research and Development Center, September 1977. (NTIS No. AD-A0045430)
- Dunham, R. B. Job design and redesign. In S. Kerr (Ed.), Organizational Behavior. Columbus, OH: Grid Publishing, Inc., 1979.
- Dyer, L., & Porter, D. F. Classifying outcomes in work motivation research: An examination of the intrinsic-extrinsic dichotomy. Journal of Applied Psychology, 1975, 60(4), 455-458.
- Erez, M. Feedback: A necessary condition for the goal setting-performance relationship. Journal of Applied Psychology, 1977, 62(5), 624-627.
- Farr, J. L. Task characteristics, reward contingency, and intrinsic motivation. Organizational Behavior and Human Performance, 1976, 16, 294-307.

- Ferster, C. B., & Skinner, B. F. Schedules of Reinforcement. New York: Appleton-Century-Crofts, 1957.
- Frey, R. C., Jr., Gleckman, A. S., Korman, A. K., Goodstadt, B. E., & Romanczuk, A. P. A study of experimental incentives as an influence on enlistment intentions: More is not better (AIR-32201-6/74-TR3). American Institute of Research, 1974.
- Gordon, P. N. Are we operating with obsolete motivational tools? (Student Essay). U. S. Army War College, September, 1974. (NTIS No. AD-A002588)
- Graen, G. Instrumentality theory of work motivation: Some experimental results and suggested modifications. Journal of Applied Psychology Monograph, 1969, 53.
- Greiner, L. E. A recent history of organizational behavior. In S. Kerr (Ed.), Organizational Behavior. Columbus, OH: Grid Publishing, Inc., 1979.
- Greller, M. M. Evaluation of feedback sources as a function of role and organizational level. Journal of Applied Psychology, 1980, 65(1), 24-27.
- Gupta, N. Performance-contingent rewards and satisfaction: An initial analysis. Human Relations, 1980, 33(11), 813-829.
- Hackman, J. R., & Lawler, E. E., III. Employee reactions to job characteristics. Journal of Applied Psychology, 1971, 55(3), 259-286. (Monograph)
- Hackman, J. R., & Oldham, G. R. Motivation through the design of work: Test of a theory (Tech. Rep. No. 6). Arlington, VA: Office of Naval Research, 1974a. (NTIS No. AD-A009331)
- Hackman, J. R., & Oldham, G. R. The job diagnostic survey: An instrument for diagnosing the motivational potential of jobs (Tech. Rep. No. 4). Yale University, Department of Administrative Sciences, 1974b.
- Hackman, J. R., Oldham, G., Janson, R., & Purdy, K. A new strategy for job enrichment (Tech. Rep. No. 3). Arlington, VA: Office of Naval Research, May 1974. (NTIS No. AD-779 827)
- Hamner, W., & Foster, L. Are intrinsic and extrinsic rewards additive: A test of Deci's cognitive evaluation theory of task motivation. Organizational Behavior and Human Performance, 1975, 14(3), 398-415.
- Hayes, J. J., Spector, B. I., & Fain, J. Incentive management: Stimulating worker productivity through rewards-for-performance (Interim Tech. Rep.). Defense Advanced Research Projects Agency, April 1979.
- Heneman, H. G., III, & Schwab, D. P. Evaluation of research on expectancy theory predictions of employee performance. Psychological Bulletin, 1972, 78, 1-9.

- Herzberg, F. Work and the Nature of Man. New York: World, 1966.
- Herzberg, F., Mausner, B., & Snyderman, B. B. The Motivation to Work (2nd ed.). New York: John Wiley, 1959.
- Hillery, J. M., & Wexley, K. N. Participation effects in appraisal interviews conducted in a training situation. Journal of Applied Psychology, 1974, 59(2), 168-171.
- Hinricks, J. R. Practical Management for Productivity. Van Nostrand Reinhold/Work in America Institute Series, 1978.
- Honig, W. K. (Ed.). Operant Behavior: Areas of Research and Application. New York: Appleton-Century-Crofts, 1966.
- House, R. J., Shapiro, H. J., & Wahba, M. A. Expectancy theory as a predictor of work behavior and attitude: A re-evaluation of empirical evidence. Decision Sciences, 1974, 5, 481-506.
- Hundal, P. S. Knowledge of performance as an incentive in repetitive industrial work. Journal of Applied Psychology, 1969, 53(3), 224-226.
- Ilgel, D. R., Fisher, C. D., & Taylor, S. M. Consequences of individual feedback on behavior in organizations. Journal of Applied Psychology, 1979, 64(4), 349-371.
- Ivancevich, J. M. Effects of goal setting on performance and job satisfaction. Journal of Applied Psychology, 1976, 61(5), 605-612.
- Kim, J. S., & Hamner, W. C. Effects of performance feedback and goal setting on productivity and satisfaction in an organizational setting. Journal of Applied Psychology, 1976, 61(1), 48-57.
- King, N. Clarification and evaluation of the two-factor theory of job satisfaction. Psychological Bulletin, 1970, 74, 18-31.
- Komaki, J., Barwick, K. D., & Scott, L. R. A behavioral approach to occupational safety: Pinpointing and reinforcing safe performance in a food manufacturing plant. Journal of Applied Psychology, 1978, 63(4), 434-445.
- Komaki, J., Heinzmann, A. T., & Lawson, L. Effects of training and feedback: Component analysis of a behavioral safety program. Journal of Applied Psychology, 1980, 65(3), 261-270.
- Landy, F. J., & Trumbo, D. A. Psychology of Work Behavior. Homewood, IL: The Dorsey Press, 1976.
- Latham, G. P., & Baldes, J. J. The "practical significance" of Locke's theory of goal setting. Journal of Applied Psychology, 1975, 60(1), 122-124.

- Latham, G. P., & Kinne, S. B. Improving job performance through training in goal setting. Journal of Applied Psychology, 1974, 59(2), 187-191.
- Latham, G. P., Mitchell, T. R., & Dossett, D. L. Importance of participative goal setting and anticipated rewards on goal difficulty and job performance. Journal of Applied Psychology, 1978, 63(2), 163-171.
- Latham, G. P., & Saari, L. M. Importance of supportive relationships in goal setting. Journal of Applied Psychology, 1979, 64(2), 151-156.
- Latham, G. P., & Yukl, G. A. Assigned versus participative goal setting with educated and uneducated woods workers. Journal of Applied Psychology, 1975, 60(3), 299-302.
- Lawler, E. E. Pay and Organizational Effectiveness: A Psychological View. New York: McGraw-Hill, 1971.
- Lawler, E. E. Motivation in Work Organizations. Monterey, CA: Brooks/Cole, 1973.
- Lewin, K. A Dynamic Theory of Personality. New York: McGraw-Hill, 1935.
- Locke, E. A. The motivational effects of knowledge of results: The influence of goal-setting. Journal of Applied Psychology, 1967, 51, 324-329.
- Locke, E. A. Toward a theory of task motivation and incentives. Organizational Behavior and Human Performance, 1968, 3, 157-189.
- Locke, E. A. Personal attitudes and motivation. In M. R. Rosenzweig & L. W. Porter (Eds.), Annual Review of Psychology (Vol. 26). Palo Alto, CA: Annual Reviews, Inc., 1975.
- Locke, E. A. The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally College Publishing Company, 1976.
- Locke, E. A. Latham versus Komaki: A tale of two paradigms. Journal of Applied Psychology, 1980, 65(1), 16-23.
- Locke, E. A., & Bryan, J. F. The effects of goal setting: Rule learning and knowledge of score on performance. Journal of Applied Psychology, 1966a, 79, 451-457.
- Locke, E. A., & Bryan, J. F. An analysis of performance goals and their relationship to level of performance. Psychological Monographs, 1966b.
- Locke, E. A., Cartledge, N., & Knerr, C. S. Studies of the relationship between satisfaction, goal-setting, and performance. Organizational Behavior and Human Performance, 1970, 5, 135-158.

- Locke, E. A., Cartledge, N. D., & Koepfel, J. Motivational effects of knowledge of results: A goal-setting phenomenon? Psychological Bulletin, 1968, 70(6), 474-485.
- Locke, E. A., Sirota, D., & Wolfson, A. D. An experimental case study of the success and failures of job enrichment in a government agency. Journal of Applied Psychology, 1976, 61(6), 701-711.
- Maslow, A. H. Motivation and Personality (2nd ed.). New York: Harper & Row, 1970.
- Mento, A. J., Cartledge, N. D., & Locke, E. A. Maryland vs. Michigan vs. Minnesota: Another look at the relationship of expectancy and goal difficulty to task performance. Organizational Behavior and Human Performance, 1980, 25, 419-440.
- Meyer, H. H., Kay, E., & French, J. R. P., Jr. Split roles in performance appraisal. Harvard Business Review, 1965, 43, 123-129.
- McGregor, D. The Human Side of Enterprise. New York: McGraw-Hill, 1960.
- Mitchell, T. R. Expectancy models of job satisfaction, occupational preference and effort: A theoretical, methodological and empirical appraisal Psychological Bulletin, 1974, 81, 1053-1077.
- Motowidlo, S. J., Loehr, V., & Dunnette, M. D. The effects of goal specificity on the relationship between expectancy and task performance (Tech. Rep. 4008). Minneapolis: Center for the Study of Organizational Performance and Human Effectiveness, April 1972. (NTIS No. AD-747 954)
- Nebeker, D. M., Broedling, L. A., & Doherty, L. M. Military productivity and work motivation: Conference recommendations (NPRDC SR 79-6). Navy Personnel Research and Development Center, December 1978.
- Pierce, J. L., & Dunham, R. B. Task design: A literature review. Academy of Management Review, 1976, 1, 83-97.
- Pierce, J. L., Dunham, R. B., & Blackburn, R. S. Social systems structure, job design, and growth need strength: A test of a congruency model. Academy of Management Journal, 1979, 22(2), 223-240.
- Pinder, C. C. Additivity versus nonadditivity of intrinsic and extrinsic incentives: Implications for work motivation, performance and attitudes. Journal of Applied Psychology, 1976, 61, 693-699.
- Porter, L. W., & Lawler, E. E. Properties of organizational structure in relation to job attitudes and job behavior. Psychological Bulletin, 1965, 64, 23-51.
- Porter, L. W., & Lawler, E. E. Managerial Attitudes and Performance. Homewood, IL: Dorsey Press, 1968.

- Porter, L. W., Lawler, E. E., III, & Hackman, J. R. Behavior in Organizations. New York: McGraw-Hill, 1975.
- Pritchard, R. D., Campbell, K. M., & Campbell, D. J. Effects of extrinsic financial rewards on intrinsic motivation. Journal of Applied Psychology, 1977, 62, 9-15.
- Pritchard, R. D., & Curtis, M. I. The influence of goal setting and financial incentives on task performance. Organizational Behavior and Human Performance, 1973, 10, 175-183.
- Pritchard, R. D., Hollenback, J., & DeLeo, P. J. The effects of continuous and partial schedules of reinforcement on effort, performance, and satisfaction. Organizational Behavior and Human Performance, 1980, 25, 336-353.
- Pritchard, R. D., & Montagno, R. V. Effects of specific vs. nonspecific and absolute vs. comparative feedback on performance and satisfaction (AFHRL-TR-78-12). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, May 1978. (NTIS No. AD-A055693)
- Pritchard, R. D., Montagno, R. V., & Moore, J. R. Enhancing productivity through feedback and job design (AFHRL-TR-78-44). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, August 1978. (NTIS No. AD-A061703)
- Pritchard, R. D., & Shaw, J. B. Comparison of published measures of job satisfaction on a taxonomy of job rewards (AFHRL-TR-78-21). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, 1978.
- Pritchard, R. D., Von Bergen, C., Jr., & DeLeo, P. J. Incentive motivation techniques evaluation in Air Force technical training (AFHRL-TR-74-24). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, November 1974. (NTIS No. AD-A005302)
- Reynolds, G. S. A Primer of Operant Conditioning. Glenview, IL: Scott, Foresman and Company, 1968.
- Schwab, D. P., Olean-Gottlieb, J. D., & Heneman, H. G., III. Between-subjects expectancy theory research: A statistical review of studies predicting effort and performance. Psychological Bulletin, 1979, 86(1), 139-147.
- Shumate, C. E., Dockstader, S. L., & Nebeker, D. M. Performance contingent reward system: A field study of effects on worker productivity (NPRDC 78-20). San Diego, CA: Navy Personnel Research and Development Center, May 1978.
- Skinner, B. F. The Behavior of Organisms. New York: Appleton-Century-Crofts, 1938.
- Skinner, B. F. Verbal Behavior. New York: Appleton, Century-Crofts, 1957.

- Smith, P. C., Kendall, L. M., & Hulin, C. L. The Measurement of Satisfaction in Work and Retirement; A Strategy for the Study of Attitudes. Chicago: Rand McNally, 1969.
- Spector, B. I., & Hayes, J. J. Productivity improvement through incentive management (Final Tech. Rep.). Cybernetics Technology Office, Defense Advanced Research Projects Agency, September 1979.
- Srivastva, S., Salipante, P. F., Jr., Cummings, T. G., Notz, W. W., Bigelow, J. D., & Waters, J. A. Job Satisfaction and Productivity. Kent State, OH: Kent State University Press, 1977.
- Steers, R. M. Task goal attributes, N achievement and supervisory performance. Organizational Behavior and Human Performance, 1975, 13, 392-403.
- Steers, R. M. Factors affecting job attitudes in a goal-setting environment. Academy of Management Journal, 1976, 19(1), 6-16.
- Steers, R. M., & Mowday, R. T. The motivational properties of tasks (Tech. Rep. No. 7). Arlington, VA: Office of Naval Research, September 1976. (NTIS No. AD-A032550)
- Steers, R. M., & Rhodes, S. R. Major influences on employee attendance: A process model. Journal of Applied Psychology, 1978, 63(4), 391-407.
- Taylor, F. W. The Principles of Scientific Management. New York: Harper & Row, 1911.
- Terborg, J. R. The motivational components of goal setting. Journal of Applied Psychology, 1976, 61(5), 613-621.
- Terborg, J. R., & Miller, H. E. Motivation, behavior and performance: A closer examination of goal setting and monetary incentives. Journal of Applied Psychology, 1978, 63(1), 29-39.
- Tolman, E. C. Purposive Behavior in Animals and Men. New York: Century Co., 1932.
- Turner, A. N., & Lawrence, P. R. Industrial Jobs and the Worker. Boston: Harvard University, 1965.
- Vroom, V. H. Work and Motivation. New York: Wiley, 1964.
- Weybrew, B. B. The effectiveness of Navy incentive programs--some methodological considerations and preliminary findings (INS Research Contribution No. 15). Center for Naval Analysis, 1966.
- Wood, M. T., Hakel, M. D., DelGaizo, E. R., & Klinoski, R. J. Identification and analysis of social incentives in Air Force technical training (AFHRL-TR-75-10). Brooks Air Force Base, TX: Air Force Human Resources Laboratory, 1975.
- Zohar, C., Cohen, A., & Azar, N. Promoting increased use of ear protectors in noise through information feedback. Human Factors, 1980, 22(1), 69-79.