

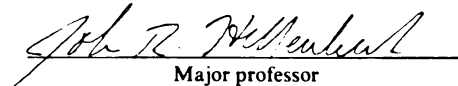


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Reward Contingency as an Explanatory Variable
in the Incentive - Goal Setting Relationship

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REWARD CONTINGENCY AS AN EXPLANATORY VARIABLE IN THE
INCENTIVE - GOAL SETTING RELATIONSHIP.

By

Patrick Michael Wright

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ABSTRACT

The relationship between incentives and goals in determining performance is not well understood. Locke (1968) and Locke, Shaw, Saari and Latham (1981) suggested that goals mediate the relationship between goals and incentives through the effect of incentives on goal level, spontaneous goal setting, and goal commitment. These hypotheses, however, have not been consistently supported in the literature. This study presented Naylor, Pritchard, and Ilgen (NPI) theory (1980) as a tool for better integrating goals and incentives in understanding the motivational process. NPI theory was utilized to derive specific hypotheses regarding how different types of incentives might affect individual's personal goals, commitment to an assigned goal, and performance. These hypotheses were tested in a laboratory study. Subjects worked on a card sorting task under one of three reward conditions (non-contingent, piece-rate, or goal attainment bonus) and one of two assigned goal levels (moderate or difficult). Incentives were found to affect subjects' personal goal levels, although not in the hypothesized rank ordering. Incentives were also found to directly affect goal commitment, contrary to the indirect relationship hypothesized to take place through the effect on personal goals. Finally, only goal commitment was found to relate to performance. These results are discussed, and implications for future research are presented.

DEDICATION

To Mum.

Your love for life, your family and your Lord will never be
forgotten.

ACKNOWLEDGEMENTS

I must recognize the help and support of a number of individuals in this dissertation process. First, professionally, I wish to express my gratitude to my dissertation committee, whose patience and long-suffering made this project an immensely higher quality one than I could ever hope to do on my own. John Hollenbeck, the Chair of the committee, spent unbelievable amounts of time refining the study and document. More important, however, was the fact that rather than simply fix my mistakes, he spent time helping me to understand the problems, and, thus, to grow as a professional. John Wagner added valuable ideas and refinements to the document, and was a pillar of support in my many periods of frustration. Dan Ilgen never allowed me to think superficially, always causing me to tenaciously grasp the issues involved. These men provide exemplary models of a commitment to doctoral education for which I will always be grateful, and to which I will always aspire.

Second, for financial assistance in this project I wish to thank three individuals. Ram Narisimhan, department chairman, and Dan Ilgen, Hannah Professor, exerted extra effort to find and provide funds so that this study might become a reality. Especially, I must thank my grandmother, Gladys Wright. Her life was filled with sacrifices made for her family and it was as a result of

these sacrifices that the funds for this dissertation were available.

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I'm outta here!

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INTRODUCTION

Both qualitative (Locke, Shaw, Saari and Latham, 1981) and quantitative (Locke, Feren, McCaleb, Shaw and Denny, 1980; Mento, Steel, and Karren, 1987; Tubbs, 1986) reviews have documented the strong and consistent relationship between goal difficulty and performance.¹ There is also substantial evidence on the relationship between monetary incentives and performance (Locke et al. 1980). In fact, Locke et al. (1980) found monetary incentives to be more effective for increasing performance than goal setting. While authors have called for applying goal setting (Locke and Latham, 1984), incentives (Milkovich and Newman, 1984), and a combination of both goal setting and incentives (Strauss, 1972) in organizations, little is known about how these two techniques interact to determine performance. For example, Campbell (1984) stated "...the relationship between goal setting and financial payment remains an area which still is incompletely understood" (p. 23).

One technique which utilizes both goal setting and monetary incentives for performance is that of Management by Objectives (MBO). While each MBO system differs, most authors agree that any MBO system should entail subordinate participation in setting goals and some type of financial reward for performance. The type of financial reward, however, is not always clear. No agreement exists as to whether employees should be rewarded for goal attainment, absolute performance, or non-contingently (i.e., pay

unrelated to performance). Patten (1982), for example, states that "If the name of the game is vitality, goal attainment, corporate or agency leadership, or the provision of high-quality products or services, then an adequate MBO-based performance appraisal system linked to the administration of rewards is indispensable," (p. 171, emphasis added). On the other hand, Campbell (1984) cautioned managers about the simultaneous use of incentives and goal setting. In addition, Garland (1983) suggested that offering a salient incentive under difficult goal conditions might be "motivationally disastrous."

With the increasing popularity of MBO systems and goal setting interventions in organizations, a more thorough understanding of how to tie goals and monetary incentives together is necessary. More specifically, due to the participatory nature of the goal setting process, we first need to understand how different types of incentives affect the level of goals that subordinates will choose. Recognition of the finding that a positive relationship exists between goal level and performance would speak for developing reward systems which encourage setting high goals. If different incentive contingency relationships result in lower goals being set, then these systems may be of dubious value.

We also need to comprehend better how financial incentives affect commitment to an externally imposed goal. Participation is a concept that can be viewed as a

continuum dealing with how much input an individual has in determining the goal with self-set goals describing the situation where the individual has total control, and assigned goals being those where the individual has no input. While participation is often advocated for increasing commitment, very few goal setting interventions (or MBO systems) give employees total discretion for choosing goals. Thus, again, reward contingency conditions should encourage commitment to assigned goals in order for goals to work effectively.

Finally, we need to understand how incentives and assigned goals interact to determine performance. Locke (1968) and Locke et al. (1981) stated that the effect of incentives on performance is through the mediating effect on goals. They noted, however, that research supporting this relationship is at present inconsistent (Locke et al. 1981). Campbell (1984) stated "the relationship between goal difficulty and payment schemes and the perceived attractiveness of financial payment calls for continued examination" (1984, p. 38).

The purpose of this study then, is to theoretically explore and empirically test the relationship between goal setting and monetary incentives in order to reconcile conflicting research findings and to better understand how the two can be applied together in organizations. In order to accomplish this, the paper will first examine how goals and monetary incentives are presently believed to interact

in determining performance. It will then posit that reward contingency (the way in which rewards are tied to performance) affects individuals' personal goal level choice, commitment to assigned goals, and performance. Finally, the method and results of this study designed to test the proposed hypotheses will be presented and discussed.

Incentives and Goals - Current Thought

Many writers agree that goal setting should be part of performance planning and evaluation systems, and that rewards should be tied to performance (Latham and Wexley, 1981; Milkovich and Newman, 1984; Patten 1982). As mentioned previously, however, little is known about how incentives and goal setting interact to affect individual performance.

Locke (1968) suggested that goals mediate the effect of incentives on performance. Locke et al. (1981) stated that this mediating effect may occur in three ways. First, they suggested that money could affect the level at which goals are set. Locke, Bryan and Kendall (1968) found in a series of studies that goals correlated positively with performance even after partialling out incentive, but that incentives failed to correlate with performance after partialling out goals. Subsequent studies, however, have not replicated these results. Pritchard and Curts (1973), Terborg (1976), Terborg and Miller (1978), Latham, Mitchell and Dossett (1979), and Chung and Vickery (1976) all found

significant independent effects for incentives on performance after partialling out goals. Thus, little support exists for the first mediating role of goals.

According to the second mediating mechanism proposed by Locke et al. (1981) money might induce more spontaneous goal setting than would occur in the absence of incentives. In apparent support, Saari and Latham (Note 1) found that beaver trappers set specific goals for themselves after the introduction of an incentive system. Terborg (1976) and Terborg and Miller (1978), however, found no significant differences in the frequency of goals set between incentive and no-incentive reward groups. Thus, consistent support for this mediating role is also lacking.

Finally, Locke et al. (1981) proposed that money might affect an individual's degree of goal commitment. Relying on Expectancy Theory, these authors and Locke, Latham, and Erez (1987) hypothesized that monetary incentives increase the valence of goal attainment, and thus increase goal commitment. Locke et al. (1981) stated "This is our interpretation of the results obtained by Latham et al. (1979), London and Oldham (1976), Pritchard and Curts (1973), Terborg (1976), and Terborg and Miller (1978)," (p. 137). This interpretation should be viewed cautiously in light of the fact that direct support has yet to be demonstrated. Even Locke et al. noted that "attempts to measure this commitment effect through self reports have not been successful," (p. 137).

The inconsistent and inconclusive findings regarding each of these seemingly plausible hypotheses has resulted in uncertainty in the current thinking on the goal setting-incentive relationship. Tolchinsky and King (1980) stated " Financial incentives remain the least understood of Locke's original external incentives...the paucity of research makes it difficult to draw any conclusions," (p. 463). The present research will attempt to clarify this relationship by making more precise distinctions among the constructs of interest.

Incentives and Goals - A Reward Contingency Approach

The inconsistent findings of research on the goal-setting incentive relationship stems partly from a failure to distinguish among characteristics of incentives. One characteristic of an incentive is that of "value" of the incentive to the recipient. This value is determined subjectively and depends upon both the recipient's valence for that outcome and the amount of that outcome. For example, to offer mud to individuals for performance would hardly motivate them since it has no valence, and to increase the amount of mud offered would be unlikely to have any different effect. On the other hand, most would argue that money has valence to individuals and that there is generally a monotonic relationship between amount of money and motivation. Pritchard and Curts (1976) for example, showed that the level of monetary reward was positively related to performance independent of goals.

A second characteristic of incentives recognizes that they, by their very nature, are anticipated rewards. That is, they are anticipated for doing something. This second characteristic links rewards with behavior and is termed "reward contingency." It refers to the relationship between performance and rewards, or what amounts of an outcome are received for performance at different levels. This characteristic has been theoretically neglected in past goal setting - incentive research. Research has explored the effects of piece-rate incentives, goal attainment bonus incentives and non-contingent rewards on performance and while differential effects have been found (e.g., Mowen et al. 1981), little theoretical explanation for these results exists. The utilization of Naylor, Pritchard and Ilgen (NPI) Theory (1980) allows us to fill this important gap. The purpose of this study is not to test NPI Theory, but NPI Theory will be used to explore why different reward contingencies may have differential effects on individuals' personal goals, commitment to assigned goals and performance. The use of NPI Theory, then, is to provide a second-order cognitive explanation for the first-order model to be tested.

NPI theory addresses cognitive choice behavior. The theory postulates that a set of cognitive constructs and their proposed interrelationships form the necessary components for rational behavior. It is this emphasis upon rational behavior that provides the common ground upon

which NPI theory and expectancy theory are based. NPI theory, like expectancy theory, views the motivational process as one in which individuals combine positive and negative feelings about future outcomes with beliefs about the contingency relationships between certain behaviors and outcomes.

NPI theory, however, differs from expectancy theory in two very important ways. First, contingency relationships under expectancy theory are viewed as probability estimates whereas NPI theory views contingencies as bivariate functional relationships (Naylor and Ilgen, 1984). Thus, according to expectancy theory (Lawler, 1971) the key choice parameter in the motivational process is an individual's perceived probability of obtaining an outcome given a certain level of performance (Instrumentality). According to NPI theory, it is not the probability of an outcome being associated with a specified performance level that is important. Rather, the importance lies with the perceived functional relationship between levels of performance and levels of outcomes. In other words, individuals have perceptions about what levels of outcomes will be associated with different levels of performance, and it is upon this aspect of the contingency relationships that individuals make decisions about how much effort to expend.

The utilization of three rather than two contingency relationships serves as the second important difference

between NPI and expectancy theories. According to expectancy theory individuals make judgements about two contingency relationships. First, they judge the contingency between effort and performance, called the E→P expectancy. Second, they judge the contingency between performance and outcomes, referred to as the P→O expectancy. Thus, traditional expectancy theory can be viewed as a process involving judgements about E→P→O (Lawler, 1971).

In contrast, NPI theory views the process as involving three contingencies diagrammed as $a \rightarrow p \rightarrow e \rightarrow o$, where a = commitment of resources to an act, p = products produced from an act, e = the evaluation from some other about the products, and o = the outcomes received. The first contingency, $a \rightarrow p$ involves an individual's perception of the functional relationship between committing additional resources (e.g., time, effort, etc.) and the additional products resulting from that commitment.

The second and third contingencies are a more detailed breakdown of the $p \rightarrow o$ contingency of expectancy theory. The $p \rightarrow e$ contingency is the individual's belief about the relationship between different levels of products and the level of evaluation from some external source on a positive to negative continuum. Finally, the $e \rightarrow o$ contingency refers to the individual's perception of the relationship between the level of evaluation and the utility of outcomes obtained.

NPI theory proposes that the motivational process consists of three sequential processing stages. At each stage a prior utility function is converted to a new utility function as one of the contingency relationships is integrated. The first utility function is the "Outcome Valence Function" which represents the individual's belief about the utility of different levels of reward. This is diagrammed in Figure 1a. Like Naylor et al. (1980), a traditional utility function having decreasing marginal utility for both increasing and decreasing amounts of the outcome is used.

The second function in the motivational sequence is the $e \rightarrow o$ contingency function, and is depicted in Figure 1b. For the sake of simplicity, a positive linear function is used indicating that the individual believes that the more favorable the evaluation, the higher the anticipated level of outcome received. Combining these two functions results in the "Evaluation Utility Function" depicted in Figure 1c.

Next, the $p \rightarrow e$ contingency function (Figure 1d) is combined with the Evaluation Utility Function resulting in the "Product Utility Function" (Figure 1e). This describes the individual's perception about the various levels of outcome utility associated with various performance levels.

Finally, combining the $a \rightarrow p$ function (Figure 1f) with the Product Utility Function results in the "Commitment to Act Utility Function" (Figure 1g). This describes the

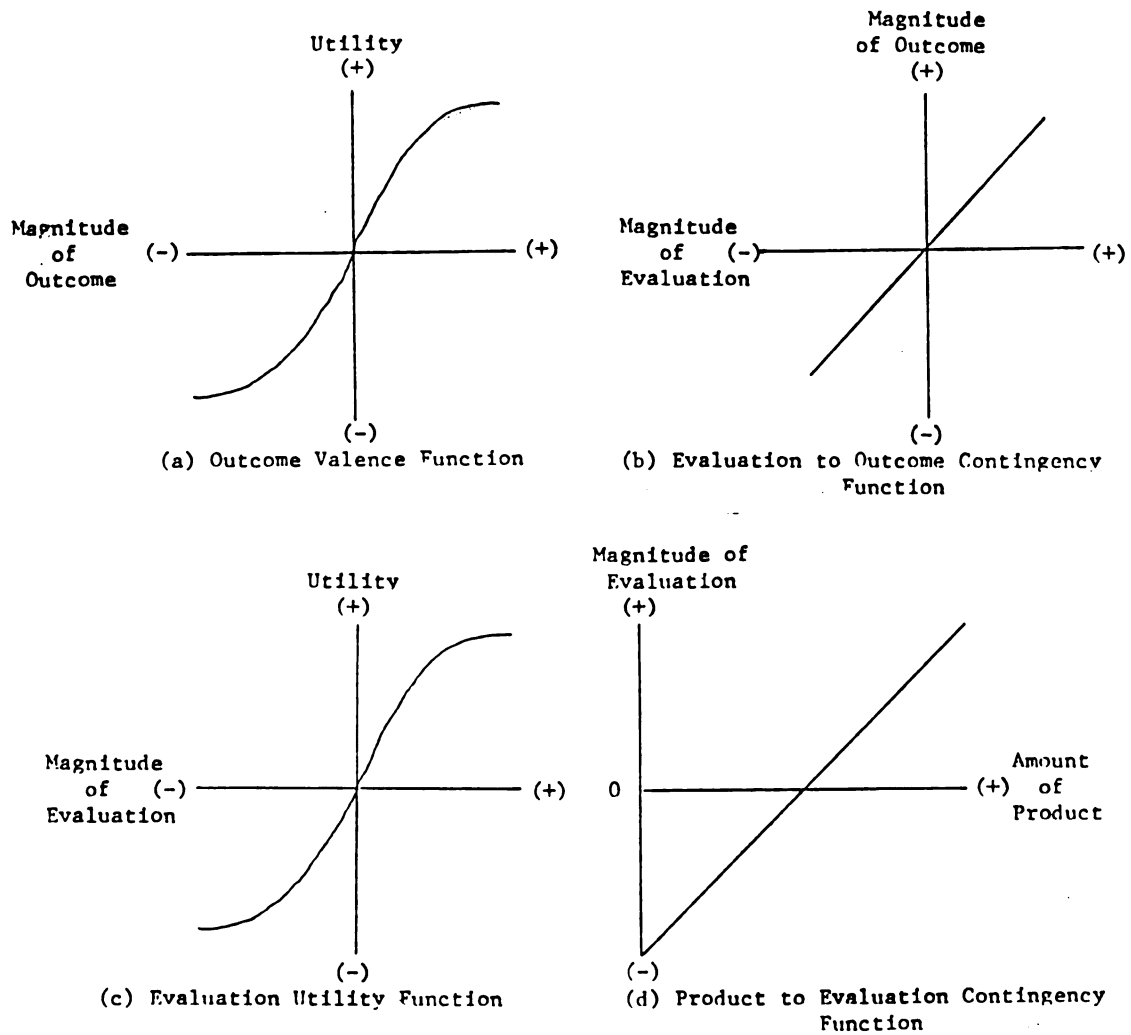
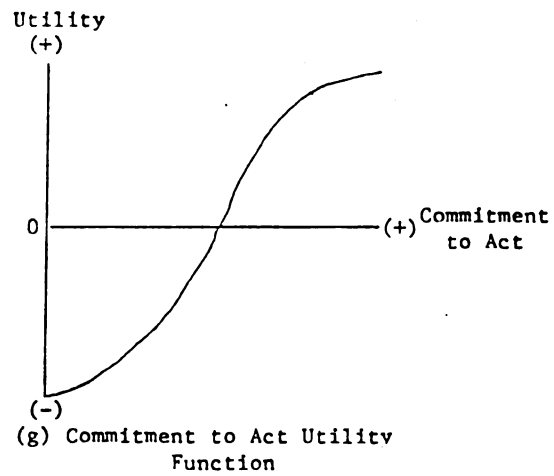
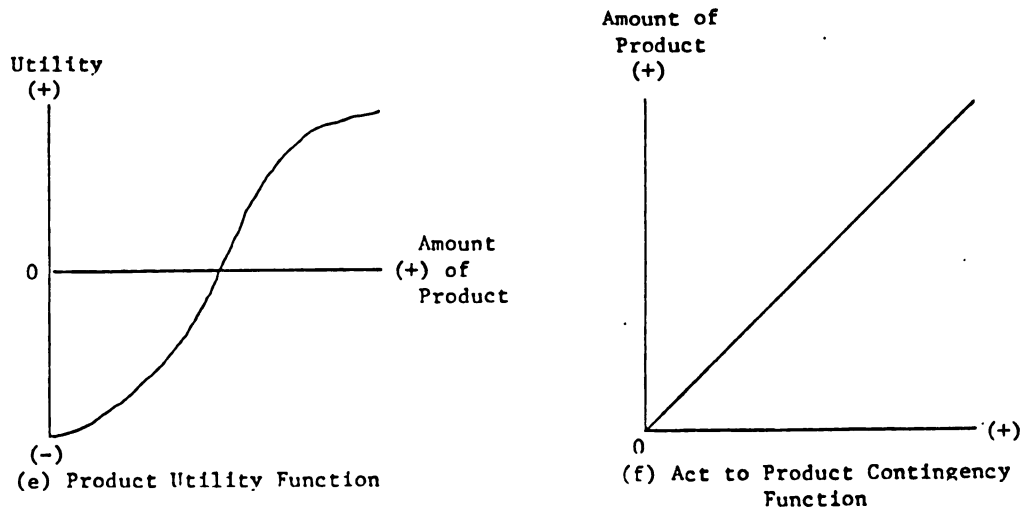


Figure 1. Components of the Motivational Sequences in NPI Theory. (Adapted from Naylor and Ilgen, [1984])

Figure 1 (cont'd)



anticipated utility that the individual associates with different degrees of commitment to the act.

It is the Product Utility Function which serves as the basis for discussing differences in reward contingency conditions. This utility curve can vary according to the way in which rewards are tied to performance and can thus, describe differences between incentive systems (i.e., piece-rate, goal attainment bonus, and hourly rate). These respective utility curves will be described first when considering pay as the only extrinsic reward. They will then be described when considering the addition of a goal. Finally, they will be depicted with the consideration of costs (i.e. effort and the perception of punishment) to individuals.

First, figure 2a depicts the relationship between monetary payoff and performance under a piece-rate reward system. In this situation the individual perceives a strong positive relationship between performance and reward as every additional unit of product results in additional money earned. (The marginal utility curve is not used in this study because the duration of the experimental task was such that it was not likely that individuals would earn enough money for the upper end of the curve to begin to display diminishing returns.) Figure 2b shows the Product Utility Function under a situation where an individual receives a bonus for some level of output. In this condition, the individual receives some set salary level so

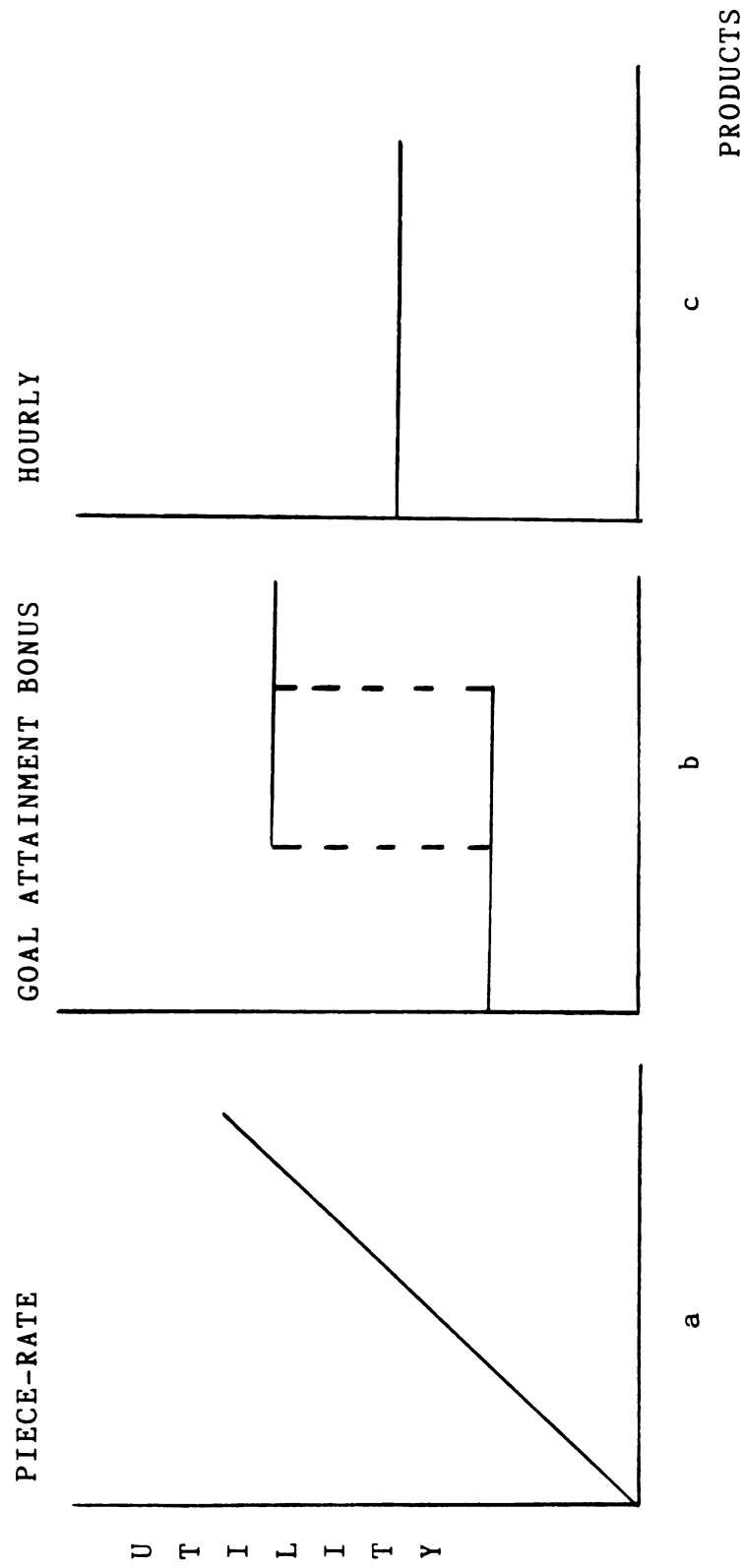


Figure 2 - Product Utility Functions for various reward contingency conditions

that the monetary payoff does not change until some performance level at which a large jump and then plateau takes place. This results in a staircase function. Note that in this condition, the level of output at which the individual receives a bonus could be construed as a goal. It may be however, that the individual knows that s/he will receive an all or nothing bonus based on performance, but be unaware of what that level of performance is (thus, the dotted line indicates that this performance level is not specified). Figure 2c displays the relationship between performance and monetary outcomes under an hourly rate system. In this condition the curve is a flat line as the individual receives the same monetary reward at all levels of product output.

According to Naylor and Ilgen (1984) the effect of instituting a goal in each of the above conditions is on the Product Utility Function such that the previous functions are displaced. This displacement of the entire functions comes from the $p \rightarrow e$ functions being displaced as now individuals know more clearly what is expected of them in order to receive a favorable evaluation. These authors stated "...the goal setting intervention has its initial and primary effect upon both the motivation and subsequent behavior of the individual by causing a modification, or distortion, in the individual's already existing $C_p \rightarrow e$ contingency function" (107). This displacement may be due to additional non-monetary rewards gained as a result of

the goal, whether they be intrinsic (satisfaction with performance) or extrinsic (the favorable evaluation by an external agent). Because the utility functions are combined multiplicatively, this results in a corresponding change in the Product Utility function. The three conditions are now depicted in Figure 3. Note that there is no reason to expect the additional non-monetary utility would be different across the reward contingency conditions, thus, they are shown as being equal.

An additional concept should be considered at this point. Previously we have only considered the positive utility associated with performance. According to Atkinson and Birch (1970), each motivational tendency is the result of two opposing forces--a positive "action" tendency and a negative "negaction" tendency. This negaction works to decrease the action tendency. Thus any costs associated with performance (such as time, effort, or punishment) works to decrease the action tendency.

In order to illustrate the importance of this concept, consider the following example. Individuals are working on a task under one of the three following reward conditions: piece-rate, goal attainment bonus, and hourly (non-contingent) pay. The task is of ten minute duration and entails subjects loading 50 pound boxes from a dock 50 feet away into the back of a truck. A goal of 20 boxes is assigned across all three conditions. Assume a measure of utility to be called a "util." To load one box results in a

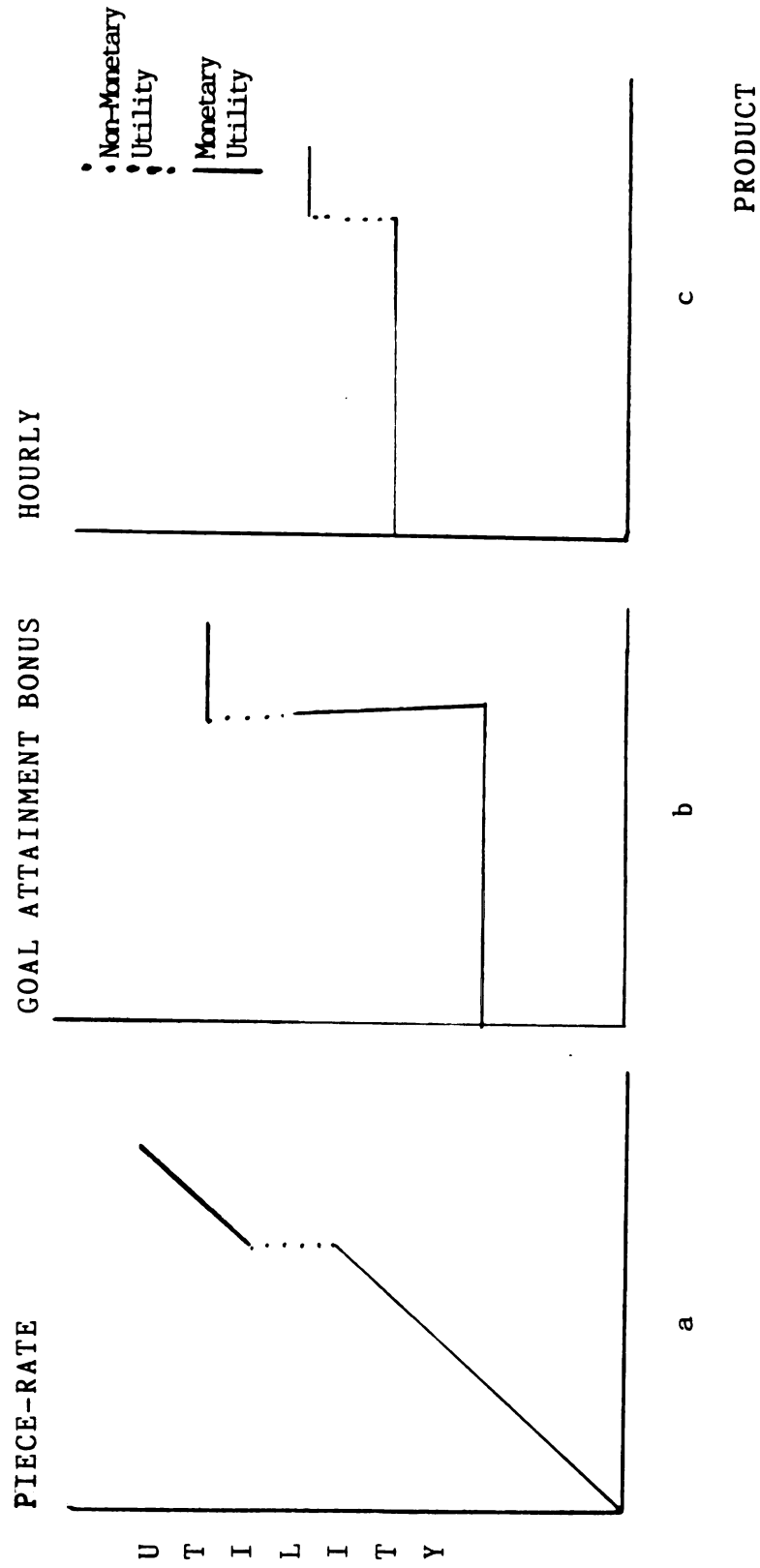


Figure 3 - Product Utility Functions for various reward contingency conditions with the addition of a goal

cost (decrease) of one util due to the expenditure of time and effort, while to load that box also results in earning .50 utils in intrinsic satisfaction. Assume also that to earn \$.50 results in gaining .75 utils. This \$.50 is the per unit pay rate received in the piece-rate condition and is equal to the amount of the bonus (\$10.00) received for attaining the goal in the goal attainment condition. This results in varied Product Utility functions across the pay conditions shown in Figure 4.

The concept of negative utility has little effect on the piece-rate condition. Although the slope is reduced, assuming the payoff is great enough, a positive slope should exist for all levels of performance under the piece-rate condition. Negative utility does change the functions of the hourly pay and goal attainment bonus subjects, however.

This concept of negative utility is most relevant to the goal attainment bonus condition. Figure 4b illustrates that it is in this condition that Motivational Force below the goal level may have a negative slope as increased performance results in increased costs in terms of effort, but no increase in positive utility from monetary rewards. In addition, Locke and Latham (1984) pointed out that individuals often come to see the failure to earn a bonus as a punishment. The effect of this is to make the slope in this condition even more negative than in the hourly pay condition. In addition, this effect may be exponential as

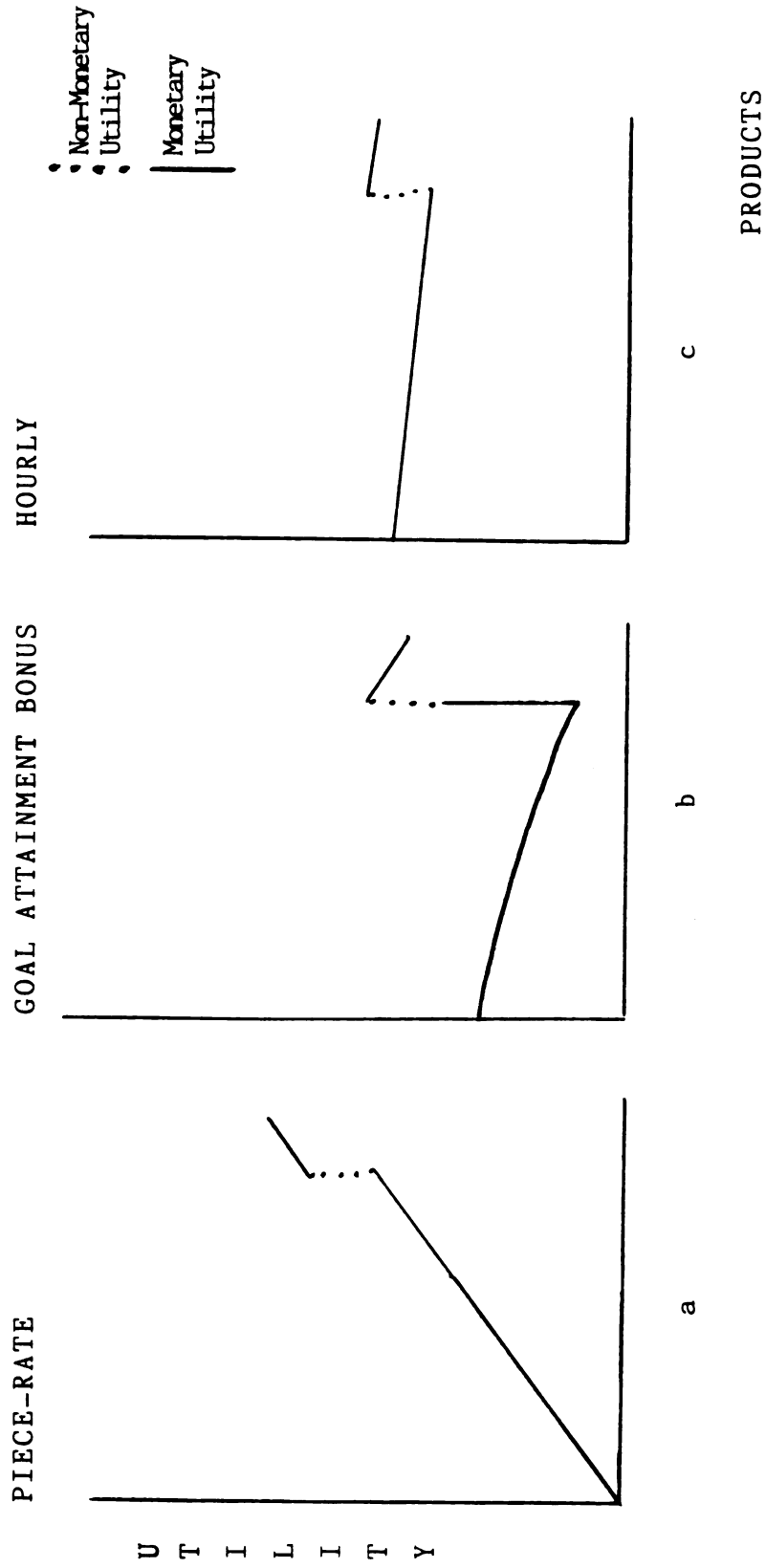


Figure 4 - Product Utility Functions for various reward contingency conditions with recognition of negative utility (costs)

the goal becomes less and less attainable. For example, one can easily picture the negative utility associated with working at full effort to attain a difficult goal in the goal attainment bonus situation and ending up one box short. The thought that one could have earned a large bonus for loading one more box might cause the individual to feel punished for not attaining the goal.

In the hourly pay group the slope of the function would also be negative due to the fact that individuals gain no additional extrinsic rewards for exerting additional effort toward performing at higher levels. This is problematic due to the fact that many goal setting studies that have not tied pay to performance and have still found a relationship between goal difficulty and performance (Mento et al. 1987). In order to explain this, one must consider that one possible dysfunctional effect of tying pay to performance is that the individual focuses solely on that pay rather than intrinsically motivating aspects of the task such as goal accomplishment. Matsui, Okada and Mizuguchi (1981) found a negative relationship between goal difficulty and subjects' assessment of the probability of attainment. They also found, however, that subjects attributed higher valence to difficult goals than easy goals, and that it was this higher valence which motivated subjects to perform at higher levels with difficult goals even though there existed a low probability of attainment. Thus, one assigned a difficult goal in the

hourly pay condition would most likely view the goal as valent. In addition, should that individual end up performing one box short after working at full effort, the result would not likely be viewed as punishing. The result is that like the goal attainment bonus condition, the Product Utility Function in this condition would also have a negative slope, but not as steep.

It should be noted that this discussion has focused solely on only two types of rewards (money and goal accomplishment), and two types of costs (effort and the perception of punishment from not attaining a potential bonus). Certainly other types of rewards (promotions, praise, etc.) and costs (time, peer censure, etc.) could affect one's motivation to perform. The focus of this study, however, is on incentives and goals. While other rewards and costs may operate in other situations, these variables will be either controlled or absent in the present study, and thus, are not discussed.

Given this theoretical description of different reward conditions, it seems obvious that one can not treat all research involving goals and incentives as comparable (e.g., Tubbs, 1986; Mento et al. 1987). The "reward contingency" (i.e., way in which incentives are tied to performance) may have a direct effect on individual's personal goals, commitment to assigned goals and performance. Support for this statement comes from Garland (1983) who questioned the goal attainability assumption.

He pointed out that in two studies that fail to support Locke's proposed positive relationship between goal difficulty and performance (Mowen et al, 1981 and Atkinson, 1958) the monetary rewards were contingent upon goal attainment. In both cases an inverted U relationship was found. A quick review of figures 4a and b shows these findings not to be surprising. Under the goal attainment bonus condition, subjects who were assigned a difficult goal may have rejected that goal, thus, their performance would fall below that of the other conditions.

Figure 5 presents the preliminary model to be tested in the present study. The main independent variables of interest are reward contingency and assigned goal difficulty which are proposed to interact to determine performance. Figure 6 depicts the model for the process through which this interaction takes place. The cognitive mediating variables of personal goal and commitment to an assigned goal are presented as variables which explain how the interactive effect of reward contingency and assigned goal difficulty comes about. Recall that NPI Theory has been used solely to explain how reward contingency might affect the variables in the model. Thus, none of the NPI variables are included in the model.

Reward Contingency as a Determinant of Personal Goal Levels As previously mentioned, the research on how incentives affect goal level is sparse. In fact, Campbell (1982) stated "...there is little empirical evidence to

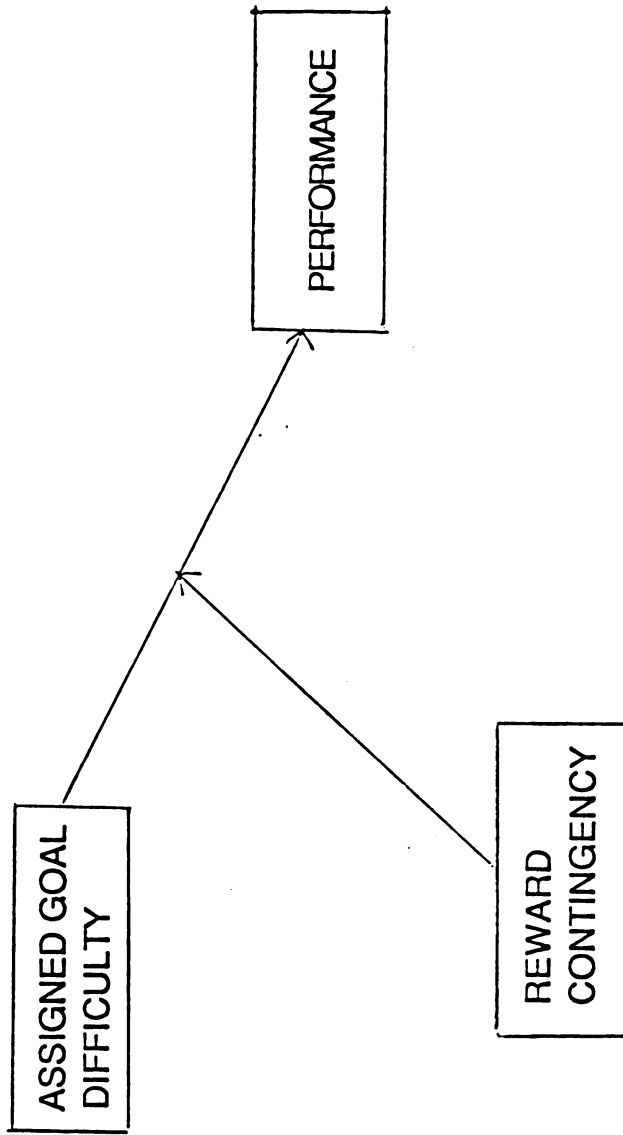


Figure 5 - Proposed model of the effects of assigned goal difficulty and reward contingency on performance

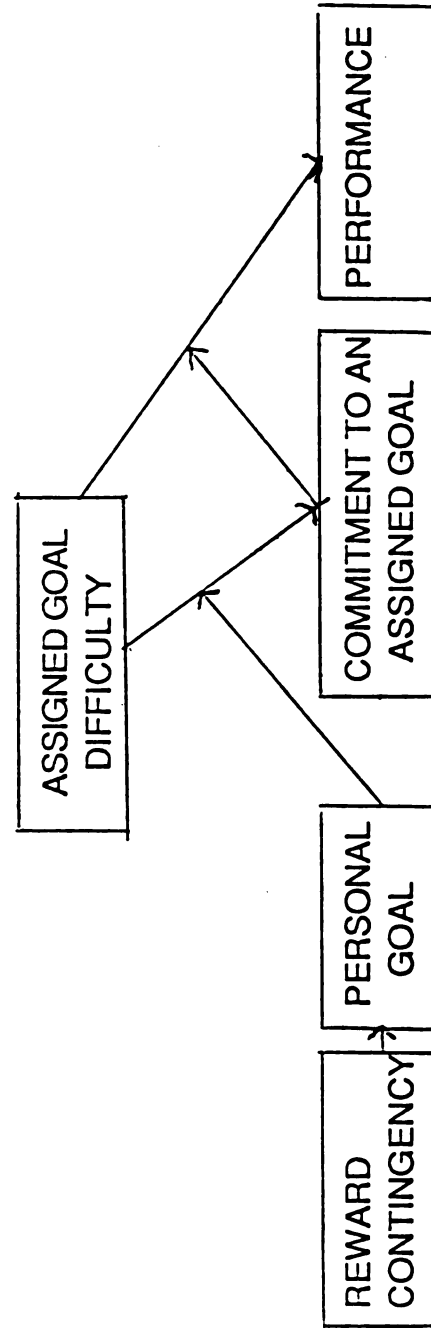


Figure 6 - Proposed model of the interaction between Reward Contingency and Assigned Goal Difficulty on Performance

clarify the effect of incentives on choice of goal difficulty level" (p. 83). Locke et al. (1968) found that goal attainment bonus subjects had higher goals than piece-rate subjects, but this result is misleading since the former had goals assigned to them. Furthermore, while Terborg (1976) noted that incentive subjects may have set higher goals than no-incentive subjects, he lacked the data to test this hypothesis.

Given the lack of research on the effect of reward contingency on goal level, NPI theory can be used to make some predictions. The negative utility associated with failure to attain a goal in the goal attainment bonus condition would likely influence subjects to set low goals (i.e., goals that they are sure to attain). Locke and Latham (1984) pointed out that one risk inherent in paying people for goal success is that "To the extent that they have influence over what goals are set, they may be motivated to set easy goals..." (p. 114). Piece-rate subjects, on the other hand, would be influenced to set high goals, as higher performance is associated with higher rewards. Subjects under the hourly pay condition would have no extrinsic reasons for setting either high or low goals.

Thus, the following hypothesis is proposed:

Hypothesis 1 Reward Contingency will exert an effect on personal goal level choice. Subjects in the Goal Attainment Bonus condition will set the lowest goals and subjects in the piece-rate condition will set the highest goals with hourly

pay subjects setting goals between the other two groups.

Determinants of Assigned Goal Commitment Mowen et al (1981) found that reward contingency conditions moderated the relationship between assigned goal level and performance, as subjects assigned difficult goals in the goal attainment bonus condition displayed lower performance than those assigned difficult goals in the piece-rate condition. In essence a linear relationship was observed between goal difficulty and performance in the piece-rate condition, and a curvilinear (inverted U) relationship was observed in the goal attainment bonus condition. Locke et al. (1987) stated that this lower performance could have been due to their lack of acceptance of the assigned goal. While this explanation seems reasonable, their rationale is problematic. Locke et al. (1987) gave no explanation as to why these subjects would have lower acceptance than those individuals assigned the same goals in the piece-rate condition. In fact, expectancy theory would predict the same level of goal commitment across the two conditions. In addition, this runs counter to the argument made by Locke et al (1981) that money increases goal commitment.

According to Naylor and Ilgen (1984) two conditions must be met in order for goals to be accepted. First, the individual must believe that the goal is a reality. The reality issue is determined by whether or not the goal truly displaces the p->e contingency. Second, the individual must believe that he or she can attain the goal.

The attainability issue is concerned with the individual's a→p contingency.

In the goal attainment bonus condition, the goal (as mentioned before) would have a more profound displacement effect on the Product Utility Function than in the piece-rate condition. This stems from the fact that the individuals e→o as well as p→e contingency function would be distorted in this condition. Thus, in Naylor and Ilgen's (1984) terms, it may heighten the reality of the goal. With this heightened salience of the goal, the attainability issue may become more important. In situations where no rewards were given for performance, even unattainable goals have been accepted and resulted in increased performance (Garland, 1983; Locke et al. 1984). In the situation where a piece-rate incentive system exists, goals with a low probability of attainment (and possibly even unattainable goals) might not be rejected since performance below the goal still results in a monetary payoff for increased performance. Under a goal attainment bonus condition, however, increases in performance at all levels below the goal results in no additional monetary payoff. This would make individuals in this situation less amenable to accepting a goal which they perceive as not being attainable. Thus, as the goal becomes more difficult, subjects in the goal attainment bonus condition would be less likely to accept the goal than those in other conditions.

While research on the issue of goal commitment has most often concerned the initial acceptance of a goal, Locke et al. (1987) and Hollenbeck and Klein (1987) stated that commitment also refers to the tenacity with which one holds a goal. Thus, an individual may accept a goal before performing the task, but reject that goal at some point during the task. This is another possible explanation for the findings of Mowen et al. (1981). Subjects assigned difficult goals in the goal attainment bonus condition may have realized that success was impossible at some point during the task and quit. This would reconcile the conflicting findings of Mowen et al. (1981) and Campbell (1984) who found that goal contingent payment resulted in higher performance than non-contingent or no payment. The task in the Campbell (1984) study did not provide feedback on performance until after the task had been performed and subjects would therefore be less likely to quit. In the Mowen et al. (1981) study, subjects had some knowledge as to their progress toward the goal.

Finally, Locke et al. (1987) hypothesized that having individuals set a personal goal before being assigned a hard goal might lower their commitment to the assigned goal. They stated "the deleterious effect of self-set goals preceding assigned goals will be most marked when the assigned goals are more difficult than the self-set goals." (p. 16).

Locke et al. (1987) pointed out that this notion of the discrepancy between personal goal and assigned goal as a determinant of commitment is problematic. Goal "rejection" by subjects in easy goal conditions may not be the same as goal "rejection" in difficult goal conditions. Rejection in the first case may entail setting a harder additional goal. Thus, while personal goal might influence commitment to an assigned goal, it is also likely that assigned goal level will moderate the relationship between personal goal and commitment to an assigned goal.

Thus, the following hypotheses are proposed with regard to the determinants of goal commitment:

Hypothesis 2a Personal goal level will moderate the relationship between assigned goal and commitment to an assigned goal.

Hypothesis 2b The effect of reward contingency on commitment to an assigned goal will be through the moderated mediating effect of assigned goal level and personal goals.

Determinants of Performance As was previously mentioned, Locke (1968) stated that incentives may affect performance through the mediating effect on goals. Integral to Locke's (1968) theory of goal setting was the notion of acceptance of or commitment to goals. He stated that only difficult goals that were accepted would motivate higher performance. Although this notion was central to his theory, Hollenbeck and Klein (1987) pointed out that recognition of this is lacking in the empirical studies to date. They stated that of the 109 published studies they reviewed, only three have measured goal commitment and

tested its role as a moderator of the goal difficulty-performance relationship.

Thus, the following hypotheses are proposed:

Hypothesis 3a Goal commitment will moderate the relationship between assigned goal level and performance.

Hypothesis 3b Reward contingency will moderate the relationship between goal difficulty and performance. This moderating relationship will be such that a linear relationship will be observed between goal level and performance for the piece-rate and hourly rate groups but the relationship will not be linear for the goal attainment bonus condition.

METHOD

Overview

This study examined the effects of reward contingency and assigned goal level on personal goal level, commitment to an assigned goal, and performance. The design consisted of manipulating reward contingency (three levels) and assigned goal level (two levels). Subjects were assigned an easy, moderate or difficult goal, and performed the experimental task under one of the following reward conditions: Piece-rate, hourly rate, or goal attainment bonus. Dependent variables were personal goals, commitment to an assigned goal, and performance.

Task

The task consisted of computer card sorting. Each card contained information on three demographic variables: income (three levels), sex (two levels) and marital status (two levels), allowing for twelve possible configurations. Subjects were required to read each card and then place it into the proper pile on a sorting board. The cards were punched with three holes corresponding to the information on the card. Pegs were present on the sorting board corresponding to each of the twelve possible configurations of holes. Thus, the actual sorting task consisted of fitting the cards onto the proper set of pegs.

This task was chosen for two reasons. First, due to the motivational nature of goal setting, the task allowed for performance to reflect the effects of differential

motivation, as opposed to a task where required ability accounts for so much variance as to mask motivational differences. Numerous studies on goal setting have used this task and have shown the goal setting effect (e.g., London and Oldham, 1976; Pritchard and Curts, 1973; Rakestraw and Weiss, 1981).

On most goal setting tasks, performance can vary in terms of either quantity or quality. Bavelas and Lee (1978) showed that subjects sacrificed quality while trying to meet a quantity goal. The fact that this task eliminates variance on the quality dimension was the second reason for choosing it. Since subjects were required to sort cards by placing them on the wooden pegs, performance quality differences are impossible because an incorrect placement of a card immediately becomes evident by its failure to fit.

Subjects performed the task for two 20 minute periods. The first trial was a practice trial during which subjects were asked to sort as many cards possible. The purpose of this trial was twofold. First, it gave them some idea of how many cards they could reasonably sort in a 20 minute period. Second, it provided them enough practice to begin to approach their ability peaks. (London and Oldham [1976] found practice effects across three seven minute trials.) It was hoped that this, combined with the monotony of the task would make any performance differences across

experimental groups due mainly to motivational differences caused by the interventions.

Subjects

Subjects were 243 students from Michigan State University recruited from two large management classes. A majority were business majors and all were sophomore level and above. They received course credit for participation, and were told that participation would enable them to make between \$5 and \$15 for a one and one-half hour time commitment.

Manipulated Variables

Assigned Goal The assigned goal consisted of two levels operationalized as a goal at either the 67th or 99th percentile of the performance of a pilot study group on their second trial. The goal at the 67th percentile will be referred to as a "moderate" goal and can be thought of as difficult, but attainable. The goal at the 99th percentile will be referred to as a "difficult" goal and can be considered unattainable for almost all subjects.

Reward Contingency The method of payment for subjects depended upon the condition. Subjects in the piece-rate condition were paid \$.03 for every card they sorted. Each subject in the non-contingent condition was yoked to a subject in the piece-rate system, and paid an hourly rate equal to that earned by their yoked partner. The goal attainment bonus condition subjects received a \$5.00 salary plus a bonus of \$5.05 (moderate goal) or \$7.00 (difficult

goal) if they attained their goal. In addition, they received \$.03 for every card they sorted above the goal. This made their pay equal to that of subjects in the piece-rate condition who were performing at or above their goal level. It should be noted that this operationalization of the piece-rate and goal attainment bonus conditions is similar to that used by Mowen et al. (1981). The Product Utility Curves for each of the three reward contingency conditions with three goal levels are depicted in Figure 7. Note that these curves only recognize monetary payoffs, and are meant only to graphically illustrate how subjects earned money in the study.

Operationalizing the pay systems in this way accomplished two objectives. First, it made the expected monetary payoffs equal for all subjects across the contingent pay conditions (piece-rate and goal attainment bonus) performing at or above their assigned goal level. Equality between piece-rate and non-contingent subjects was achieved by yoking.

Second, it made the potential pay equal across all goal levels for the contingent reward conditions. Subjects assigned moderate goals could work beyond their goal level and those that achieved performance at the difficult goal level received the same reward as those assigned difficult goals who achieved them. This eliminated the potential confounding of amount of reward with assigned goal level.

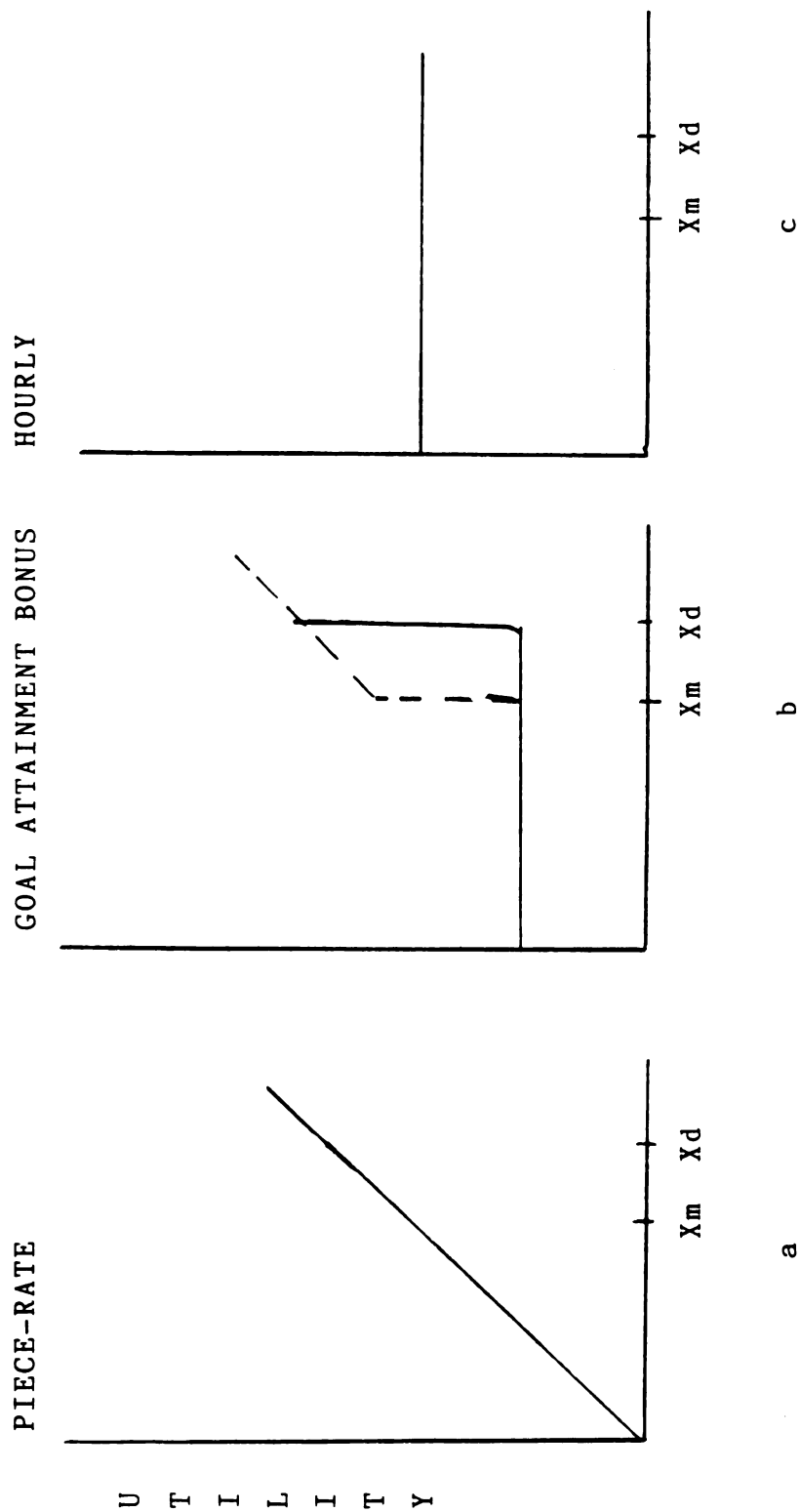


Figure 7 - Product Utility Function manipulations for various experimental conditions (recognizing only monetary payoffs) (X_m and X_d corresponding to moderate and difficult goals respectively)

One potential confound still existed, however. There were differences in the amount of the bonus across the two goal levels in the goal attainment bonus condition. Subjects in the moderate and difficult goal conditions received bonuses of \$5.05 and \$7.00 respectively. It should be remembered, however, that subjects assigned difficult goals in the goal attainment bonus condition were hypothesized to perform more poorly than those in the other conditions. Since this hypothesized effect is in direct opposition to the effect of the expected confound, it was deemed to be unimportant.

Measured Variables

All of the measures to be used in this study can be found in Appendix A.

Manipulation Checks Manipulation checks were performed for the independent variables, reward contingency and assigned goal level. Subjects were asked upon what basis their pay for the experiment was determined (Number of Cards sorted, Goal attainment, or not contingent upon performance at all) and also asked subjects what goal had been assigned to them.

Personal Goal was measured by asking subjects to write down what they considered to be a reasonable personal goal to pursue for the experimental trial.

Goal Commitment (Pre-performance) was measured by two 9 item scales asking subjects the extent to which they accepted and were committed to the assigned goal. These

items were taken from Hollenbeck, Williams, and Klein (1987). The first scale was administered prior to the experimental trial, whereas the second scale was administered after the trial. This second scale contained the same items, simply reworded in the past tense. The measure utilized was the mean of the two scales. The coefficient alpha reliability for this measure was .92.

Past Performance was measured as the number of cards sorted on the twenty minute practice trial.

Performance was measured as the number of cards sorted on the twenty minute trial.

Procedure

Participants were recruited from junior and senior level management classes. The experimenter explained briefly what the study involved and what the subjects could expect to receive in terms of course credit and money. A sign-up sheet was then made available to the subjects with five spaces for each time. Each time slot was randomly assigned a treatment, but the fact that subjects could choose their time slot (i.e. to go with friends, etc.) the assignment of subjects to conditions could only be described as arbitrary, and not random.

Upon arriving at the experiment, the researcher introduced the subjects to the study by telling them that the study was to explore some determinants of performance. They were then asked to fill out a number of demographic questions. Participants were then introduced to the

experimental task. They were told that they would have a practice trial during which time they would earn no money, but to sort as many cards as they could (Trial 1). After Trial 1 the researcher explained the subjects' incentive condition and asked the subjects to set a personal goal which they believed was a reasonable goal they would choose to pursue. After the personal goal had been set, the researcher assigned a goal to the subjects, and they were asked to fill out the goal commitment questionnaire. Subjects then performed the twenty minute experimental task. After performing the experimental task, they filled out the post-performance goal commitment questionnaire and the manipulation checks. Subjects were then debriefed, and told the true purpose of the experiment. They were asked not discuss any aspect of the study with other students and told that if asked by other students they should merely tell them that they worked on a computer card sorting task, and that it took only one and one-half hours of their time.

Data Analysis

Power Since previous research has not looked at the various moderating relationships proposed by this paper, the estimate of effect sizes was difficult. At an $\alpha=.05$, power sought of .80, and 5 predictor variables, the critical L value=12.83. Five predictor variables were the most used in any one regression to test a hypothesis. In order to detect an incremental R squared of .04 in an equation that explains 30% of the variance, a sample of 231

was necessary (Cohen and Cohen, 1983). Although the initial sample consisted of 243 participants, the final sample consisted of 219 subjects, thus, providing just less than .80 power for the tests of the hypotheses.

Statistical Tests of Hypotheses The variables used in this study were coded as follows. Reward Contingency was coded as two dummy variables (Goal attainment, piece-rate, and non-contingent coded 0,0, 1,0, and 0,1 respectively) to reflect that they are categorical variables. This provided that the significance contrasts were made for piece-rate as compared to goal attainment bonus and hourly as compared to goal attainment bonus conditions. This was chosen since the hypothesis regarding reward contingency stated that goal attainment bonus condition would result in the lowest goals. Assigned goal difficulty was coded as a continuous variable using the actual goal values.

Hypothesis 1 stated a main effect for reward contingency on personal goals. This hypothesis was tested by regressing personal goal level on the dummy coded reward contingency variables. Support for this hypothesis would be indicated by the two dummy-coded variables explaining a significant amount of variance in personal goal.

Hypothesis 2a stated that personal goal level would moderate the relationship between assigned goal and goal commitment. This hypothesis was tested via hierarchical multiple regression. In the first step personal goal was entered, in the second step assigned goal level was

entered, and in the third step, the personal goal by assigned goal interaction was entered. Support for this hypothesis would be indicated by a significant personal goal X assigned goal interaction.

Hypothesis 2b stated an indirect effect for reward contingency on goal commitment through its effect on personal goal. This hypothesis was tested through hierarchical regression. In the first regression, goal commitment was regressed on the reward contingency variables. In the second equation, goal commitment was regressed on assigned goal, personal goal, and the reward contingency variables in successive steps. Support would be shown if reward contingency significantly predicted commitment in the first, but not the second equation.

Hypothesis 3a stated that goal commitment would moderate the relationship between assigned goal and performance. This was tested using hierarchical regression, regressing performance on assigned goal level in step one, goal commitment in step two and the assigned goal level X goal commitment interaction term in step three. Support for this hypothesis would be indicated by a significant interaction term.

Hypothesis 3b stated that reward contingency would moderate the relationship between assigned goal difficulty and performance (see figure 6). This hypothesis was tested by performing a hierarchical multiple regression, regressing performance on assigned goal level in step one,

adding the reward contingency variables in step two, and adding the assigned goal difficulty X reward contingency interactions in steps three and four. Support for the hypothesis would be indicated if the interactions provide significant incremental explained variance.

RESULTS

Manipulation Checks To determine the effectiveness of the reward contingency manipulation, subjects were asked to check the item that best described the basis for their pay. For the purpose of this analysis, the reward contingency groups were coded 1,2, and 3 (Goal Attainment, Piece-rate, and Hourly-rate, respectively) and a chi-square analysis was performed. A chi-square of 144.19 ($df=4$, $p<.001$) was observed, indicating that the reward contingency manipulation had been effective.

To determine the effectiveness of the assigned goal difficulty manipulation, subjects were asked what goal they had been assigned. Subjects who incorrectly answered this item were deleted from further analyses. This reduced the original sample of 243 to the final sample of 219. An attrition analysis indicated that the subjects eliminated did not differ from those retained on any variables with the exception of assigned goal difficulty. Those eliminated tended to be in the lower goal group ($r = .23$, $p < .05$).

The means, standard deviations, and intercorrelations among the variables are presented in Table 1. As can be seen in this table, despite the attempt at randomization, there were pretest differences in performance between the reward contingency groups ($r=-.16$ between the piece-rate/goal attainment comparison dummy variable, $p<.05$).

TABLE 1

Mean, Standard Deviations, Ranges, and Intercorrelations
Among Experimental Variables

Variables	Observed Range	$\bar{X}$	SD	1	2	3	4	5	6	7
(1) Dummy 1 (Piece-Rate)	0-1	.35	.48	--						
(2) Dummy 2 (Hourly)	0-1	.32	.46	-.51	--					
(3) Assigned Goal Difficulty	335-400	369.43	32.52	.00	.02	--				
(4) Trial 1 Performance	65-366	216.43	61.90	-.16	.04	.02	--			
(5) Personal Goal	100-600	258.30	74.97	.00	-.08	.04	.80			
(6) Goal Commitment	9-44.5	31.79	6.30	-.05	-.13	-.20	.43	.46		
(7) Performance	85-463	283.89	60.88	-.10	.02	.00	.81	.69	.47	--

a(n=219) $r = .12$ $p = .05$
 $r = .16$ $p = .01$

Hypothesis 1 stated that reward contingency would affect subjects goals on the second twenty minute trial. This hypothesis was tested by regressing subjects' personal goal on the dummy coded reward contingency variables. Table 2 displays the regression results while Table 3 displays the cell means. As can be seen, there was no significant effect of reward contingency on personal goals.

Due to the pretest performance differences between reward contingency groups and the strong relationship between past performance and personal goal ($r=.80$), however, a need existed to reoperationalize the personal goal variable. Rogosa, Brandt, and Zimowski (1982) have discussed the relative advantages of using absolute difference scores over regressed gain scores. These authors show that although the reliability of absolute difference scores may be questionable, it need not be the case, and even when the difference score is unreliable, it still may be a more precise measure than a regressed gain score. In addition, with regressed gain scores so much of the variance in the dependent variable may be consumed in the partialling process, as to leave little variance to be accounted for by the main independent variable of interest. For these reasons, personal goal was reoperationalized as an absolute difference score, subtracting practice trial performance from the goal itself. This essentially measured how much above the subjects' first trial performance they set their goals.

TABLE 2
Results of Regressing Personal Goal on The Reward
Contingency Variables^a

Hierarchical Step	Variable	R ²	P	ΔR ²	P of Δ
1	Dummy 1 (Piece Rate)	.00	N.S.	.00	N.S.
2	Dummy 2 (Hourly Rate)	.00	N.S.	.00	N.S.

^aN=219

TABLE 3

Mean Personal Goals for the Reward Contingency Groups

REWARD	
CONTINGENCY	
PIECE- RATE	258.25
GOAL ATTAINMENT	
BONUS	267.29
HOURLY-RATE	249.30
MEAN	258.30

Hypothesis 1 was again tested through hierarchical regression, regressing the reoperationalized personal goal variable on the two dummy coded reward contingency variables. It should be noted that this tests hypothesis 1 unconfounded by pretest performance differences. These results are displayed in Table 4. Table 5 presents the means for each cell.

As can be seen in Table 4, the reward contingency variables explain six percent of the variance in goal level, with the bulk of this variance explained by the contrast between the piece rate and goal attainment bonus groups. Examination of the regression equation or the table of means showed subjects under piece rate conditions setting the highest goals followed by goal attainment bonus and hourly condition subjects respectively. Thus, only limited support was found for Hypothesis 1. (It should be noted that using regressed gain scores partialling out trial 1 performance rather than absolute difference scores did not appreciably change the results. The rank orderings of the reward contingency groups did not change, and a significant two percent of incremental variance was explained by these variables with trial 1 performance explaining 63 percent.)

It should be noted at this point that the failure to fully support Hypothesis 1 stemmed from faulty reasoning in developing the hypothesis. This misspecification will be discussed in more detail in the discussion section.

TABLE 4
Results of Regressing Personal Goal on The Reward
Contingency Variables^{a, b}

Hierarchical Step	Variable	R ²	P	ΔR ²	P of Δ
1	Dummy 1 (Piece Rate)	.05	.01	.05	.01
2	Dummy 2 (Hourly Rate)	.06	.01	.01	.05

^aN=219

^bPersonal Goal Reoperationalized

Personal Goal = 14.91 Dummy 1 - 11.14 Dummy 2 + 40.19

TABLE 5

Mean personal goals (re-operationalized) of the Reward
Contingency Groups

REWARD
CONTINGENCY

PIECE-RATE	55.10
GOAL ATTAINMENT BONUS	40.19
HOURLY-RATE	29.06
SUM	41.87

Hypothesis 2a stated that personal goal would moderate the relationship between assigned goal difficulty and goal commitment. Subjects' goal commitment was regressed on assigned goal difficulty, personal goal, and the goal difficulty by personal goal interaction term. The original personal goal measure was used for this analysis because the hypothesis was not concerned with the reward contingency variables. These results are displayed in Table 6. While assigned goal difficulty and personal goals explained approximately 4% and 22% of the variance in goal commitment respectively, the assigned goal difficulty by personal goal interaction did not contribute significantly to the explained variance. Subjects assigned difficult goals were less committed to those goals than subjects assigned less difficult goals, and subjects' personal goals were positively related to goal commitment. Essentially, the goal level effects are in the opposite direction depending upon the source of the goal. The implications of this will be discussed later.

Hypothesis 2b stated that the effect of reward contingency on goal commitment would be through its effect on personal goal. First commitment was regressed on the reward contingency variables. Second, a hierarchical regression was performed entering assigned goal difficulty, personal goal, and the reward contingency variables in successive steps. These results are displayed in Tables 7A and 7B. Table 8 presents the cell means of the 3 (reward

TABLE 6
Results of Regressing Goal Commitment on
Personal Goal, Assigned Goal, and the Interaction^{a,b}

Hierarchical Step	Variable	R ²	P	ΔR ²	P of Δ
1	Assigned Goal	.04	.01	.04	.01
2	Personal Goal	.26	.01	.22	.01
3	Assn. Goal x Pers. Goal	.26	.01	.00	N.S.

^aN=219

^bGoal Commitment = -.04 Assigned Goal + .04 Personal Goal +
Interaction + 37.76

TABLE 7A
Results of Regressing Commitment on the
Reward Contingency Variables

Hierarchical Step	Variable	R^2	P	ΔR^2	P of Δ
1	Dummy 1 (Piece)	.00	N.S.	.00	N.S.
2	Dummy 2 (Hourly)	.03	.02	.03	.01

N-219

TABLE 7B
Results of Regressing Commitment on the
Reward Contingency Variables

Hierarchical Step	Variable	R^2	P	ΔR^2	P of Δ
1	Assigned Goal	.04	.01	.04	.01
2	Personal Goal	.26	.01	.22	.01
3	Dummy 1 (Piece)	.26	.01	.00	N.S.
4	Dummy 2 (Hourly)	.28	.01	.02	.01

N-219

TABLE 8
Cell Means of Goal Commitment

Reward Contingency	Assigned Goal Level		
	335	400	SUM
Piece-Rate	32.13	30.65	31.35
Goal Attainment Bonus	35.02	32.05	33.41
Hourly-Rate	32.40	28.94	30.94
Sum	33.14	30.59	31.79

contingency) X 2 (assigned goal) design to illustrate the effects of the two main independent variables on commitment. These results indicate that while reward contingency had an indirect effect on goal commitment through its effect on personal goal, it also had a direct effect on goal commitment, with bulk of that effect being carried by the goal attainment bonus versus hourly payment contrast. Goal attainment bonus subjects expressed the highest commitment, followed by piece-rate and hourly groups, respectively.

Hypothesis 3a stated that goal commitment would moderate the relationship between assigned goal difficulty and performance. Performance was regressed on the goal difficulty, goal commitment, and goal difficulty by goal commitment variables. These results are displayed in Table 9. Assigned goal difficulty failed to explain any significant variance in performance. Goal commitment, however, explained 16% of the variance in performance. Subjects who were committed to their assigned goal (no matter how difficult) performed better than those who were not committed to the assigned goal. The goal difficulty by goal commitment interaction explained a nonsignificant 1% of the variance in performance.

Finally, Hypothesis 3b stated that reward contingency would moderate the relationship between assigned goal difficulty and performance. The results from hierarchical analysis are displayed in Table 10. Assigned goal

TABLE 9
Results of Regressing Performance on Assigned
Goal, Goal Commitment, and the Interaction^a

Hierarchical Step	Variable	R^2	P	ΔR^2	P of Δ
1	Assigned Goal	.00	N.S.	.00	N.S.
2	Goal Commitment	.23	.01	.23	.01
3	Assn. Goal x Goal Comm.	.23	.01	.00	N.S.

^aN=219

TABLE 10
Results of Regressing Performance on Goal Difficulty,
Reward Contingency and the Interaction^a

Hierarchical Step	Variable	R ²	P	AR ²	P of Δ
1	Dummy 1 (Piece Rate) Dummy 2 (Hourly Rate)	.00	N.S.	.00	N.S.
2	Goal Difficulty	.01	N.S.	.01	N.S.
3	Dummy 1 x Goal Diff. Dummy 2 x Goal Diff.	.00	N.S.	.01	N.S.

^aN=219

difficulty, the reward contingency variables and the interaction terms all failed to explain any incremental variance in performance.

Once again, because of the pretest differences between reward contingency groups and the significant relationship between past performance and performance on the practice trial ($r=.81$), a new measure of performance was created by operationalizing performance as a gain score (Trial 2 - Trial 1). Hypothesis 3b was then retested using these reoperationalized variables. These results are displayed in Table 11. Assigned goal difficulty, reward contingency, and the interaction term still failed to explain any significant variance. The failure of the interaction terms to explain any significant incremental variance in either case fails to support Hypothesis 3b.

TABLE 11
Results of Regressing Performance on Goal Difficulty,
Reward Contingency and the Interaction^{a,b}

Hierarchical Step	Variable	R ²	P	AR ²	P of Δ
1	Dummy 1 (Piece Rate) Dummy 2 (Hourly Rate)	.01	N.S.	.01	N.S.
2	Goal Difficulty	.08	.01	.07	.01
3	Dummy 1 x Goal Diff. Dummy 2 x Goal Diff.	.08	.01	.00	N.S.

^aN=219

^bPerformance and Goal Difficulty Reoperationalized

Performance = 1.43 Dummy 1 + 6.9 Dummy 2 + .15 Goal
Difficulty + .03 Dummy 1 x Goal Difficulty - .04
Dummy 2 x Goal Difficulty + 42.67

DISCUSSION

As previously noted, Locke (1968) proposed that goals mediate the relationship between incentives and performance, and Locke et al. (1981) hypothesized that this mediating effect could come about through the effect of incentives on individuals' goal levels and goal commitment. This study was designed specifically to test these propositions and the results lend support for the notion that different types of incentives may affect individual's goal level and goal commitment.

Determinants of Personal Goals First, with regard to personal goal levels, it was hypothesized that reward contingency would affect an individual's choice of personal goal level. The results of the study showed that piece-rate, hourly-rate, and goal attainment bonus conditions may differ in their effects on goal level, with this distinction accounting for approximately 6% of the variance in goal level. The hypothesis stated that subjects under piece-rate conditions would set the highest goals, followed by hourly-rate subjects, with goal attainment bonus subjects setting the lowest goals. The results, however, showed piece-rate subjects setting highest goals, and goal attainment bonus subjects set higher goals than their hourly-rate counterparts, thus, showing only limited support for Hypothesis 1.

This departure from the hypothesis most likely stemmed from the fact that the hypothesis was contingent upon

subjects being rewarded for their personal goals, when in fact, they were only rewarded for their assigned goals. It should be remembered that the ranking of the goal levels by reward contingency condition stemmed from exploring the Product Utility curves, and showing that piece-rate subjects had reason to set higher personal goals and goal attainment bonus subjects had reason not to set high goals. It was hypothesized that hourly subjects would have no reason to set either high or low goals, thus, this group was predicted to be in between the piece-rate and goal attainment bonus subjects. In either participative or self-set goal conditions, these predictions seem sensible.

In the present study, however, subjects were informed that they would be assigned a goal, and were never led to believe that they would have any input into what that goal would be. It should be noted that this problem only affected the goal attainment bonus group. The piece-rate and hourly-rate groups would be unaffected because in both cases subjects' rewards were not contingent upon either the personal or assigned goal. This, however, still fails to explain why subjects in the goal attainment bonus condition would fall between the other two groups.

One explanation would be that this result was due to the uncertainty of the subjects about their reward basis. Remember that piece-rate subjects had extrinsic incentive to set high goals while subjects in the hourly pay condition had no extrinsic incentive to set high goals

since their pay would be the same regardless of performance and attainment of the assigned goal. Some subjects might see themselves as being under a strongly contingent system, thus, setting high goals like the piece-rate subjects. Others may believe that the goal would be unattainable, thus, assuming themselves to be under an almost non-contingent system. This might lead them to set goals like the hourly subjects.

If this were true, then a larger variance would be observed in the goal attainment bonus condition than in the other two conditions. This was tested using the F-max test for homogeneity of variance (Winer, 1971). The results indicated that the difference between the variance of goals in the goal attainment bonus condition and that of the hourly condition were marginally statistically significant ($F = 1.53$, $df\ 3,80$, $p \approx .10$). This shows limited support for this explanation.

It might be hypothesized that should subjects have some influence in determining the goal upon which their bonus is based, the rankings of goal levels would correspond to that of Hypothesis 1. As Locke and Latham (1984) stated, to the extent that individuals are allowed to participate in setting the goal upon which their rewards will be contingent, they may be tempted to set lower goals. Thus, future research should explore how the locus of the goal interacts with type of incentive to determine an individual's goal.

The finding that contingent payment conditions (piece-rate and goal attainment bonus) result in higher goals being set provides support for Campbell's (1982) statement that an individual's goal level can be influenced by the application or withdrawal of incentives. He noted the lack of any empirical test of this hypothesis. In fact, the only potential support came from Terborg's (1976) statement that monetary incentives in his study may have influenced subjects goal level, but he lacked the data to test it.

Determinants of Goal Commitment The results failed to support the hypothesized moderating relationship of personal goal on the assigned goal difficulty - goal commitment relationship. Both personal goal and assigned goal difficulty, however, had independent effects on goal commitment. This deviation from the hypothesis was most likely due to the level of difficulty of the assigned goals.

Locke et al. (1987) pointed out that the rejection of a goal that is lower than a subject's personal goal may not be the same as the rejection of a more difficult assigned goal. This implies the moderating relationship that was hypothesized. This study, however, utilized only difficult goals, thus, very few subjects set goals above that which they were assigned. Only 15% of the subjects in the moderately difficult goal condition and only 3% in the difficult goal condition set goals higher than their

assigned goal. For this reason, the present study failed to adequately test this moderating relationship.

The direct effect of assigned goal difficulty on goal commitment replicates past goal setting results. The finding that individuals are less committed to more objectively difficult assigned goals has been shown in numerous studies (Earley, 1985a; Earley, 1985b, Erez, Earley and Hulin, 1985, Locke, 1982, Locke et al. 1984). This also supports Naylor and Ilgen's (1984) claim that the major determinant of goal acceptance is the Act-to-Product contingency, i.e., the individuals' belief that s/he is able to attain the goal. In spite of the restricted range of the goals assigned, this effect was observed in the present study.

The finding that personal goal was positively related to goal commitment was also not surprising. Since commitment is an affective reaction to an externally imposed goal, one important criterion individuals may use to judge the appropriateness of this goal is their own internal standards (goals). The strong relationship ($r=.80$) between performance on the practice trial (possibly a rough measure of ability) and personal goal level also provides indirect support for the role of the Ca->p contingency in determining goal commitment (Naylor and Ilgen, 1984).

The fact that assigned goal level and personal goal level both were related to goal commitment but in opposite

directions leads to the possibility that it was in fact the discrepancy between these two variables that predicts commitment. In other words, the more congruent the assigned goal is with the personal goal, the higher the commitment. This alternative formulation was tested by computing a discrepancy measure between assigned goal difficulty and personal goal and correlating this measure with goal commitment. This discrepancy accounted for the same amount of variance (25.7%) as the combination of personal goal and assigned goal tested in hypothesis 2a, lending some support for this idea.

The analysis regarding Hypothesis 2b and the mediating role of personal goal in the incentive - goal commitment relationship provided some interesting findings regarding the incentive - goal commitment process. First, as was already discussed, incentives affected personal goals, and personal goals were directly related to goal commitment. Thus, reward contingency has an indirect effect on goal commitment through its effect on personal goals. Remember that this effect was such that piece-rate subjects had the highest goals, followed by goal attainment bonus subjects, and finally hourly subjects. This effect on goal commitment would present similar rank orderings.

Second, the results also supported the proposition that incentives directly affect goal commitment (Hollenbeck and Klein, 1987; Locke et al. 1981; Locke et al. 1987). Goal attainment bonus subjects expressed the highest

commitment, followed by piece-rate and hourly condition subjects respectively. This finding is important in that it provides empirical support for this much discussed, but previously unresearched idea.

This finding was also important in that the direction of the effect was not parallel to that of the effect on personal goals and, in fact, was exactly opposite to that which Locke et al. (1987) used to explain the results of Mowen et al. (1981). Mowen et al. (1981) found that subjects assigned difficult goals in the goal attainment condition had the lowest performance, and Locke et al. (1987) reasoned that this was due to their lower goal commitment. In the present study, however, subjects in the goal attainment bonus condition expressed significantly higher levels of commitment.

Naylor and Ilgen (1984) suggested that goal acceptability is determined by an individual's beliefs about whether or not s/he could attain the goal and by his/her beliefs about the reality of the goal. The former determinant was supported by the positive relationship between personal goal and goal commitment and the negative relationship between assigned goal difficulty and goal commitment. Little attention, however was paid to the effect of the reality issue in formulating the hypothesis.

It should be remembered that the reality of the goal is determined by the extent to which the goal distorts the $C_p \rightarrow e$ function. It was hypothesized that the different

reward contingency conditions would distort the entire Product Utility Function heightening the reality of the goal. (Remember that this function describes the individuals' beliefs about what levels of Utility are associated with various performance levels.) Accompanying this heightening of the reality of the goal, it was proposed that the attainability of the goal would become more important. This reasoning ignored the potential direct impact of the Product Utility Function on goal commitment in addition to the indirect impact through the heightened salience of attainability.

The higher commitment of goal attainment bonus subjects shows the potentially important role of the Product Utility function in determining goal acceptance. Naylor et al. (1981) proposed that the slope of the Utility Curve acts as the major motivational mechanism. Although the present study presents no concrete data, these results lend support to the potential role of that slope in determining goal commitment as well as performance. As can be seen in figure 7, the slope of this curve is steepest for the goal attainment bonus group, followed by the piece-rate and hourly groups, respectively. The ranking of the groups in terms of goal commitment parallels that of the ranking of the groups in terms of steepness of slope of the Product Utility Curve around the assigned goal.

One issue deserving attention is that of the potential rival hypothesis that the amount of the bonus was a large

determinant of commitment. It should be remembered that this was presented as a potential confound but was deemed to be unimportant because it would have worked in a direction opposite that of the hypothesis. Due to the fact that the hypothesis was not supported, the question arises as to whether or not the confound was at work.

If the confound had an effect that effect would have been that commitment and performance in the goal attainment bonus groups would have increased (rather than decreased) relative to the other incentive groups when comparing moderate and difficult goals. Empirically, this would have appeared as a significant reward contingency X assigned goal interaction. To test this, commitment was regressed hierarchically on reward contingency, assigned goal and the interactions. No significant interactions were observed. As was already mentioned, however, range restriction existed in the goal difficulty variables. Thus, while no evidence indicates that the confound existed, this conclusion should be considered tentative.

Another potential criticism relevant to the amount of the bonus is that the goal attainment bonus subjects were getting larger bonuses than piece rate subjects for goal attainment (to sort the goal attaining card paid piece-rate subjects \$.03 while goal attainment bonus subjects earned an additional \$5.05 or \$7.00). However, it is important to note that the total amount of reward was equal across the two groups at that level of performance. The slope of the

Product Utility Function would have been different across the conditions. Remember that the main contention of the study was that it is the slope rather than just the amount that can affect goals, commitment and performance. This once again supports the proposition that the reward contingency must be considered when studying the role on incentives in determining goal commitment.

Determinants of Performance Support was not shown for Locke's (1968) original proposition that goal commitment moderates the relationship between goal difficulty and performance. Rather, goal commitment exerted a direct positive effect on performance in this study. These results resemble those found by other researchers (Earley, 1985; Earley and Hulin, 1985; Erez and Zidon, 1984; Hollenbeck, Williams and Klein, 1987; Locke, Frederick, Buckner and Bobko, 1984). These findings also support Locke et al.'s (1987) formulation of commitment having a positive relationship with performance.

This deviation from the hypothesis stemmed from utilizing only difficult goals (as was previously mentioned). Hollenbeck et al. (1987) noted that the moderating effect of goal commitment takes place only when the entire range of goals is present (easy, moderate, difficult) such that performance is high only when both goal level and goal commitment are high. When, on the other hand, only difficult goals are being utilized a positive relationship between goal commitment will be

observed. Thus, in their study which explored the determinants of commitment to difficult goals, goal commitment accounted for 13 percent of the variance in future academic performance. In addition, Earley, (1985b) reported that goal commitment was related to performance within each of a number of goal difficulty levels, but this relationship was not observed when collapsed across all difficulty levels.

This implies that the goal levels utilized in a goal setting study have implications for the type of relationship that will be observed between goal commitment and performance. Since the present study utilized only difficult (67th and 99th percentile performance) goals, it is not surprising that the direct positive relationship between goal commitment and performance was observed rather than the original moderating effect proposed by Locke (1968).

A troubling finding with regard to the determinants of performance was the failure to replicate the relatively strong research findings of a positive relationship between goal difficulty and performance (Mento et al, 1987; Tubbs, 1986). It should be noted that both the Mento et al. (1987) and Tubbs (1986) studies consisted of meta-analyses of the goal difficulty-performance relationship. This procedure entails cumulating effect sizes across a number of studies to determine the "true" population relationship

between those variables (Hunter, Schmidt and Jackson, 1983).

With the effect size as the variable of interest in any meta-analysis, one must be cautious in interpreting the results. This caution stems from the fact that one important determinant of the effect size in experimental research is the levels at which the experimental variable (in this case the goals) is set (Kerlinger, 1973).. In fact, Kerlinger stated in support of maximizing effect sizes when designing research to "Design, plan, and conduct research so that the experimental conditions are as different as possible" (p. 308). Thus, one must recognize that the observed relationship between goal difficulty and performance in any experimental study is partly a function of the levels at which the goal difficulty construct is operationalized.

Because the present study was designed to extend the Mowen et al. (1981) study, it is necessary to look at how these researchers operationalized goal difficulty. They set goals at performance levels that either 100% (easy), 50% (moderate), or 0% (difficult) of the pilot subjects had attained (i.e., the 1st, 50th and 99th percentiles). The present study, on the other hand, operationalized goal difficulty at only two levels, those being at the 67th and 99th percentiles of pilot study subjects. This restriction of range may be the cause of a failure to detect a

significant positive relationship between goal difficulty and performance.

This problem also was evident in Campbell's (1984) study. He hypothesized that his failure to find the goal difficulty - performance relationship was due to the fact that both the moderate and difficult goals were in fact difficult goals. In support of this, he cited the fact that very few subjects attained either goal. This prompts the question as to what, exactly, is meant by goal difficulty. Relevant to this discussion is the need to distinguish between the various operationalizations of goal difficulty in past research.

The construct of goal difficulty in past research has been operationalized in three ways. First, many studies have utilized absolute goal levels (e.g. the 335 and 400 cards in the present study). For the sake of the following discussion this operationalization will be referred to as "goal level." Second, some studies have operationalized goal difficulty as goal levels which certain percentages of the subject population could be expected to attain (e.g. the 67th and 99th percentiles in this study). This operationalization will be termed "normative goal difficulty". Finally, some studies have operationalized goal difficulty as a discrepancy score, usually as the difference between the goal and an individual's past performance. This operationalization will be called "subjective goal difficulty" because it describes the

difficulty of the goal to the individual. Because goal setting theory is an individual level theory, it seems that this operationalization tends to be the most accurate as an operationalization of goal difficulty.

To illustrate the differences between these operationalizations, Figure 8 displays a normal distribution with a mean of 500 and a standard deviation of 100. In addition, the standard error distributions for low, medium and high ability individuals are also shown. This figure displays the fact that goal level differences may not be the same as normative goal difficulty differences. Although the difference between 500 and 600 units equals the difference between 700 and 800 units with regard to goal level, this is not true for normative goal difficulty. According to the normative operationalization, approximately 34% few subjects would attain the higher goal in the first case, but only 2% fewer would attain the goal in the later case.

Similarly, goal difficulty according to goal level and normative operationalizations may differ from a subjective operationalization. A study using goals of 500 and 600 units would likely find a goal difficulty effect using either of the former operationalizations, but these goals would have different subjective difficulty meanings to different subjects. Both goals would be difficult for the low ability subject (although the latter would be more so), only the latter goal would be difficult for the medium

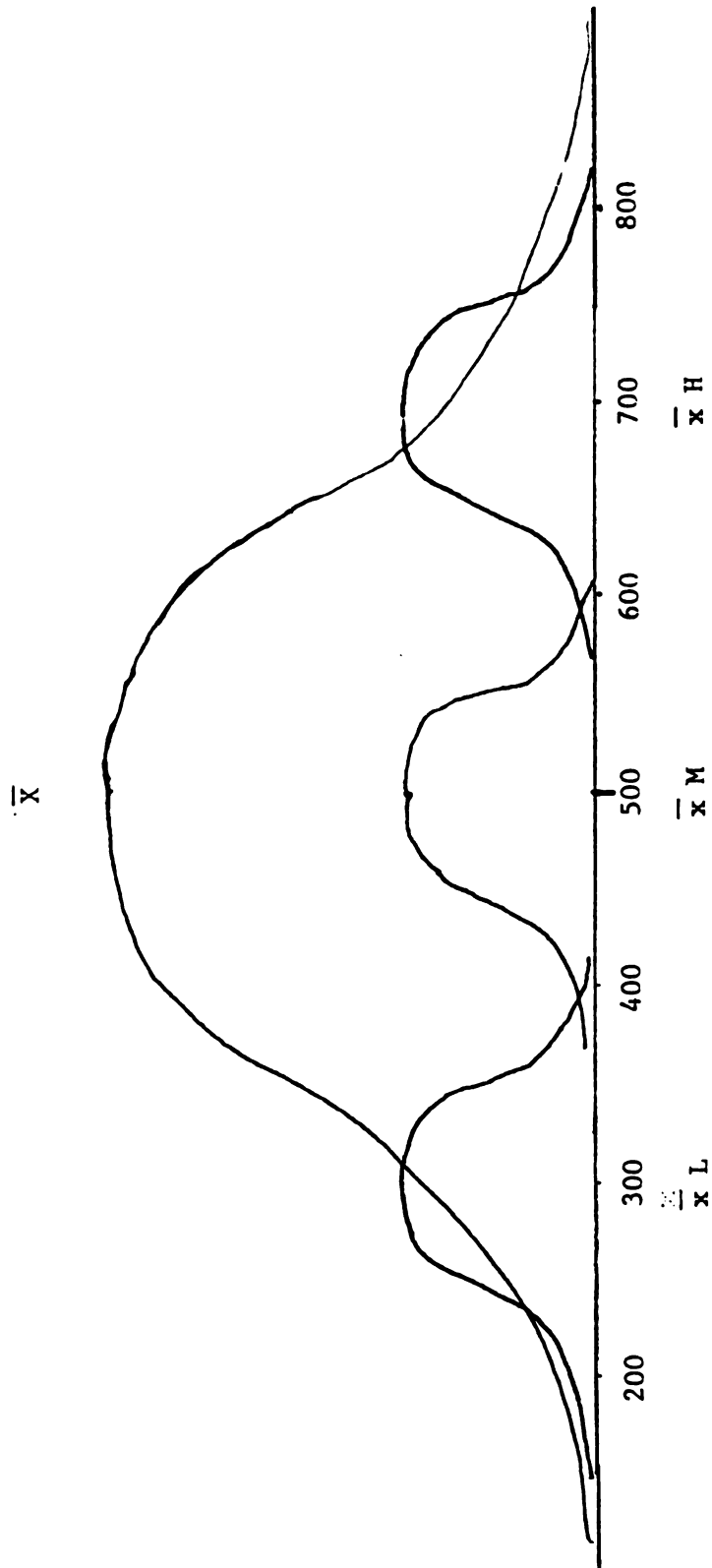


Figure 8 - Normal Distribution of Performance with Standard Error
Distributions for Low, Medium, and High Ability
Subjects

ability subject, and neither would be difficult for the high ability subject.

The importance of this discussion relative to the present study lies in explaining why no relationship was observed between goal difficulty and performance. Although the goal levels may have differed substantially (335 vs. 400), according to the normative difficulty operationalization the goals were not that different. In the present study, none of the subjects performed on the practice trial above the goal that they were subsequently assigned. It is reasonable to assume that the average subject (having sorted 216 cards on the first trial) would view even the moderate goal of 335 as quite difficult. In addition, only 17% of the subjects in the moderate goal condition and approximately 3% of the subjects in the difficult goal condition performed above their goal level on the experimental trial. In the sample as a whole, only 10% of the subjects actually exceeded their goal. Thus, a restriction in range in goal difficulty by normative standards may have existed.

If, in fact, the failure to detect a relationship between goal difficulty and performance stems from this hypothesized restriction in range, then one way to eliminate this range restriction would be to utilize a subjective goal difficulty operationalization. This would consist of using the discrepancy between the assigned goal and the subjects' performance on the practice trial as a

measure of goal difficulty. Thus, rather than having only two levels of difficulty, many levels are present, and these levels reflect the individual's subjective goal difficulty.

One additional problem is created by doing this, however. Due to the fact that a strong correlation was observed between the two performance trials ($r=.81$), then to correlate the discrepancy measure of goal difficulty with the pure performance measure would result in a strong negative relationship between the two variables (i.e. subjects who had high ability would have a lower discrepancy score but higher performance on the experimental trial). Thus, performance in this case was also operationalized as a gain score.

Additional analyses were performed operationalizing goal difficulty and performance as discrepancies between the assigned goal and practice trial performance and performance and practice trial performance respectively. This resulted in an observed correlation of .28, consistent with the often observed positive relationship between goal difficulty and performance. Since the major problem with using discrepancy scores to operationalize variables stems from their unreliability (Rogosa et al. 1982) a correlation of .28 between two discrepancy scores may underestimate the true relationship between the two variables. This result lends support to the idea that range restriction in assigned goals was a problem in the study.

In light of this, the hypotheses dealing with the effect on goal difficulty on goal commitment and performance were retested using these measures. These results are displayed in Tables 12 and 13. These analyses showed no further support for the hypotheses, and differed from the previous analyses only in that goal difficulty accounted for 22 percent of the variance in goal commitment and 8 percent of the variance in performance.

A problem that arises when comparing these results to those of Mowen et al. (1981) is that the performance decrement due to the goal attainment bonus condition observed in the latter study was not observed here. This divergence might, however, support the Locke et al. (1987) explanation that the performance decrement in the Mowen study was due to lower goal commitment.

In this study, goal attainment bonus subjects were more committed to the goal than piece-rate subjects, and this commitment was directly related to performance. Thus, if in fact subjects were less committed to the goals in the Mowen study, and commitment was related to performance, then the Locke et al. explanation would be supported. The main question to be answered concerns why subjects in that study would be less committed to goals than subjects in the present study.

One explanation may be that the differences were due to differences in the valence or utility of the incentives. The Mowen study used poker chips which could be redeemed

TABLE 12

Results of Regressing Goal Commitment on Personal Goal,
Goal Difficulty and the Interaction^{a,b}

Hierarchical Step	Variable	R ²	P	ΔR^2	P of Δ
1	Personal Goal	.03	.01	.03	.01
2	Goal Difficulty	.27	.01	.24	.01
3	Pers. Goal x Goal Diff.	.27	.01	.00	N.S.

^aN=219

^bPersonal and Goal Difficulty Re-operationalized

Commitment = .02 Personal Goal -.05
Goal Difficulty + .00 Interaction + 37.76

TABLE 13
Results of Regressing Goal Commitment on Personal Goal,
Goal Difficulty and the Interaction

Hierarchical Step	Variable	R ²	P	ΔR^2	P of Δ
1	Goal Difficulty	.08	.01	.08	.01
2	Goal Difficulty	.12	.01	.04	.01
3	Pers. Goal x Goal Diff.	.12	.01	.00	N.S.

^aN=219

^bPerformance and Goal Difficulty Re-Operationalized

Performance = .07 Goal Difficulty + .73 Goal Commitment + .00
Interaction + 13.25

for school supplies. This type of incentive might not be evaluated as having as great a utility as monetary incentives. The monetary incentive used in this study could be redeemed for a wider variety of valent objects (e.g., food, clothes, gas, etc.). It is also likely that the total value of redemption may have been higher (i.e., subjects could buy a larger amount of school supplies) in the present study.

If this is true, then the Product Utility Function would be less steep in Mowen study than in the present study. If the steepness of the Product Utility Function does, in fact, act as one determinant of goal commitment, this would explain why the Mowen subjects would be less committed to the assigned goal. Subjects in the Mowen study may have been more likely to reject or abandon the assigned goal since the utility in goal attainment was not that high. This might be consistent with Pritchard and Curts' (1976) finding that the amount of reward plays a role in the effectiveness of goals for influencing performance.

While recognizing that this explanation is purely speculative, the differing results between the two studies certainly displays the need for further research into the mediating role of goal commitment in the incentive - performance relationship.

Conclusions About the Mediating Role of Goals

Although the purpose of this study was to test hypotheses specifically with regard to reward contingency, data relevant to Locke (1968) and Locke et al.'s (1981) hypotheses regarding the mediating role of goals in the incentive - performance relationship should be discussed. As stated before, these authors believed that goals mediated the incentive - performance relationship through spontaneous goal setting, affecting goal level, and/or affecting goal commitment. The present study tested the latter two propositions.

In order to evaluate these hypotheses, one must first understand the concept of a mediating relationship. James and Brett (1984) pointed out that a complete mediation model has the form $x \rightarrow m \rightarrow y$ where x is the antecedent, m is the mediator and y is the dependent variable. The relationship can be defined as follows: " m is a mediator of the probabilistic relation $y=f(x)$ if m is a probabilistic function of x and y is a probabilistic function of m " (p. 310). This relationship in the past has been tested empirically by establishing a relationship between the antecedent and consequence, and then showing that this relationship disappears when the mediator is controlled for.

James and Brett (1984) stated that all mediation models have in common the attribute that the mediator transmits influence from an antecedent to a consequence.

They, however, also point out that this transmission need not involve all of the influence of the antecedent on the consequence.

Given this definition of a mediator, support has been shown for the mediating role of goals in the incentive - performance relationship. Hypotheses 1 and 2b showed that reward contingency (incentives) affected personal goal level and goal commitment respectively. Hypothesis 3a showed the relationship between goal commitment and performance, and Table 1 shows the correlation between personal goals and performance. (Additional analyses also showed that personal goal was related to performance even after controlling for goal commitment).

In summary, this study supported two of Locke et al.'s (1981) hypotheses for how goals mediate the relationship between incentives and performance. This should provide a basis for additional research on these two as well as the third proposition.

Potential Limitations of the Study Locke et al. (1987) discussed indirectly measuring goal commitment by asking subjects their personal goals. Earley (1985) used this indirect measure of goal commitment and found that it correlated .76 with a self-report questionnaire measure of goal commitment. In light of this, one might question the construct validity of using personal goal as a predictor of assigned goal commitment.

The present study did not use personal goal as an indirect measure of assigned goal commitment. The study was designed such that individuals were asked to report their own personal goal before knowing what goal they would be assigned. This measure of personal goal was influenced by subjects' past performance and the incentive condition. Although reward contingency affected both personal goals and assigned goal commitment, the effect was different for the two dependent variables as piece-rate subjects expressed the higher goals but lower goal commitment than goal attainment bonus subjects. Schwab (1980) notes that one step in the construct validation process is to show that the variable of interest relates differently to an independent variable than a similar but theoretically distinct construct. This provides support for the contention that personal goals in this study were more than an indirect measure of assigned goal commitment.

One apparent problem with this study was the nature of the task. Although the task was chosen to maximize the observability of motivational differences, it seems likely that ability played a substantial role in performance. First, the task is similar to pegboard ability tests used in selection decisions. In addition, past research successfully utilizing this task have used a much shorter trial period (7 or 10 minutes). The two twenty minute trials likely caused fatigue, thus, adding to the ability (endurance) component in performance.

One may also question the external validity of this study due to its laboratory setting. This issue is especially relevant due to the recent debate in the organization behavior literature about the use of laboratory research (Gordon, Slade and Schmitt, 1986,1987; Greenberg, 1987).

Two issues are relevant to this debate. First, one must ask whether the student sample utilized in the present study provides any generalizability power. Second, one must determine if generalizability is the goal of this study.

With regard to the first issue, Dipboye and Flanagan (1979) reviewed the subject populations utilized in studies published in some of the major organizational behavior journals. These authors found that the assumption that research conducted in field settings is inherently more generalizable than research conducted in laboratory setting is oversimplified, and in fact, possibly erroneous. They stated "field research in industrial-organizational psychology has dealt with a rather narrow subset of settings, actors, and behaviors (p.146)." They concluded that studies should not be accepted or rejected because of the setting, but that a careful examination of the organizations, people, and responses sampled should determine the possible limits on external validity.

Greenberg (1987) proposed a strategy of conducting numerous studies on different sets of homogeneous

subpopulations, and determining the "boundary conditions" (Fromkin and Streufert, 1976) of any theory based on how the theory predicts behavior in each of the different studies. According to him, differences between subject populations may not only be expected but provide a valuable source of information. He stated "...the assumption that nonstudent samples allow for broader generalizability than samples of students appears unwarranted (p. 158)." Thus, while recognizing the limited generalizability of the results to other populations, there is little reason to believe that the sample was less representative than a nonstudent sample. Thus, this study may provide one necessary link in the overall chain of establishing the generalizability of the Locke et al. (1981) propositions.

With regard to the second issue, Berkowitz and Donnerstein (1982) questioned whether or not generalizability should be a goal of all research. They recognized that in order to establish population parameters a representative sample is a must. However, these authors pointed out that laboratory experiments are mainly oriented toward testing some causal hypothesis, and are not carried out to determine the probability that a certain event will occur in a particular population.

Mook (1983) more specifically questioned that assumption that generalizability is the goal of all research, stating that it is the purpose of the research that dictates the importance of the representativeness of a

sample. He pointed out that when the purpose of research is to apply findings to the real world, then studies should be designed so as to identify the target population and then select a random sample from that population. He also noted, however, that some research is designed to test a theory rather than to generalize to some population. In these cases, representativeness of the sample is a trivial issue since the intended conclusion is about a theory and not a population. He stated that "external validity...is a concept that applies only to a limited subset of the research we do (p. 386)."

The purpose of the present study was not to establish population parameters, nor specifically to apply the findings to the general population. The purpose of the present study was to test Locke et al.'s (1981) often discussed, but previously untested propositions about how goals might mediate the relationship between incentives and performance. To the extent that no theoretical reason exists to expect that these propositions might apply only to real world subjects working in real world situations, and not to student subjects working in a laboratory setting, this study provides a vital step toward a better understanding of how goals mediate the incentive-performance relationship, and generalizability becomes less of an issue.

Summary and Conclusions This study explored the mediating role of goals and goal commitment in the incentive - performance relationship. While not achieving its aim to reconcile conflicting past research findings with regard to the interaction of goals and incentives in determining performance, this study provides two concrete additions to the literature on incentives, goals and performance. First, it presented a theoretical base for further exploration into the incentive - goal - performance relationship. NPI Theory (Naylor et al. 1980) was used to depict the various types of incentives. These incentives were characterized by contingency relationships and labeled reward contingency. This theoretical framework aids in better understanding the process through which goals and incentives interact to determine performance as opposed to the current reliance on traditional expectancy theory (e.g. Porter and Lawler, 1971).

Second, this study shed some empirical light on the issue of how goals mediate the incentive - performance relationship. Although researchers have often hypothesized about how incentives might affect goal level choice (Campbell, 1982) or goal commitment (Hollenbeck and Klein, 1987; Locke, 1968; Locke et al. 1981) very little data exists, and that which does exist is of dubious value. In the present study, reward contingency was shown to affect both personal goals and goal commitment as hypothesized by Locke (1968) and Locke et al. (1981). As was discussed,

however, the effect of reward contingency on goal commitment was in the opposite direction of that discussed by Locke et al (1987). The results observed here elicit some interesting questions to be answered by future research in this area.

The theoretical framework and empirical results presented here hardly comprise the answers to all of the questions that have been asked about the role of incentives and goals in determining performance. They do, however, fill a long existing void, and form an important starting point in the quest to better understand the relationship among goals, incentives and human performance.

APPENDIX A

MANIPULATION CHECKS**REWARD CONTINGENCY**

Which of the following statement best describes what your pay was based on? Put a check next to the one that best describes it.

- ☐ 1. I was paid based upon attaining the goal assigned to me.
- ☐ 2. I was paid based upon how many cards I sorted.
- ☐ 3. I was paid just for participating on the trial.

ASSIGNED GOAL

What was the goal that was assigned to you by the experimenter?

_____ cards on the twenty-minute trial.

PERSONAL GOAL

Having been told what your pay will be based on, I'd like you to set a personal goal that you think would be a reasonable goal for you to work toward on the next trial. What is that goal?

_____ cards on the twenty-minute task

GOAL COMMITMENT (PRE)

INSTRUCTIONS Please rate how strongly you agree or disagree with the following statements regarding the performance goal that was assigned to you. Circle the appropriate number after each item based on the scale below. Please respond to all statements.

1	2	3	4	5
Strongly	Disagree	Uncertain	Agree	Strongly
Disagree				Agree

1. I am strongly committed to pursuing this performance goal

1	2	3	4	5
---	---	---	---	---

2. I am willing to put forth a great deal of effort in order to achieve this goal

1	2	3	4	5
---	---	---	---	---

3. Quite frankly, I don't care if I achieve this goal or not.

1	2	3	4	5
---	---	---	---	---

4. There is not much to be gained by trying to achieve this goal.

1	2	3	4	5
---	---	---	---	---

5. It is quite likely that this goal may need to be revised, depending on how things go on the trial.

1	2	3	4	5
---	---	---	---	---

6. It wouldn't take much for me to abandon this goal.

1	2	3	4	5
---	---	---	---	---

7. It's unrealistic for me to expect to reach this goal.

1	2	3	4	5
---	---	---	---	---

8. It's hard for me to take this goal seriously.

1	2	3	4	5
---	---	---	---	---

9. I think this goal is a good goal to shoot for.

1	2	3	4	5
---	---	---	---	---

10. This goal will be quite difficult to attain.

1	2	3	4	5
---	---	---	---	---

GOAL COMMITMENT (POST)

INSTRUCTIONS Please rate how strongly you agree or disagree with the following statements regarding the performance goal that was assigned to you. Circle the appropriate number after each item based on the scale below. Please respond to all statements.

1	2	3	4	5
Strongly	Disagree	Uncertain	Agree	Strongly
Disagree				Agree

1. I was strongly committed to pursuing this performance goal

1	2	3	4	5
---	---	---	---	---

2. I put forth a great deal of effort in order to achieve this goal

1	2	3	4	5
---	---	---	---	---

3. Quite frankly, I didn't care if I achieved this goal or not.

1	2	3	4	5
---	---	---	---	---

4. There was not much to be gained by trying to achieve this goal.

1	2	3	4	5
---	---	---	---	---

5. I revised the goal during the trial.

1	2	3	4	5
---	---	---	---	---

6. I abandoned this goal.

1	2	3	4	5
---	---	---	---	---

7. It was unrealistic for me to expect to reach this goal.

1	2	3	4	5
---	---	---	---	---

8. It was hard for me to take this goal seriously.

1	2	3	4	5
---	---	---	---	---

9. I think this goal was a good goal to shoot for.

1	2	3	4	5
---	---	---	---	---

10. This goal was quite difficult to attain.

1	2	3	4	5
---	---	---	---	---

FOOTNOTES

1

It should be noted that the relationship between goal difficulty and performance has been shown to be somewhat robust (Mento, Steel and Karren, 1987; Tubbs, 1986). Recently, some authors have questioned the generalizability of this relationship to more complex tasks (Earley, in press; Huber, in press; Wood, in press). The present study will utilize a simple card sorting task, while recognizing that the model proposed may not be generalizable to more complex tasks.

NOTES

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