EFFECTS OF GOAL SETTING AND FINANCIAL INCENTIVES ON CLERICAL PERFORMANCE

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ABSTRACT

EFFECTS OF GOAL SETTING AND FINANCIAL INCENTIVES ON CLERICAL PERFORMANCE

By

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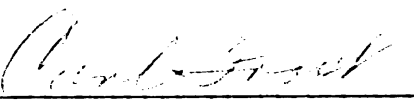
The present study tested the effects of goal setting and financial incentives on the productivity of individuals employed on a clerical type of task. The objectives were to test (a) whether performance of clerical work is improved by prescribing a goal and/or offering financial incentives, (b) whether the effect on performance of goal setting and financial incentives is additive or interactive, (c) whether performance is affected by the order of presentation of the two incentives in what manner.

Forty female undergraduate students were hired through the university placement service at regular clerical rates. They were individually instructed on an inventory pricing and valuation task and the quantity and quality of their work was recorded during a 15 minute practice period. Each subject was then randomly assigned for a 1 1/2 hour work period to an experimental condition (N = 8), given one of the five experimental manipulations: (1) no goal setting - no financial incentives; (2) goal setting - no financial incentive; (3) no goal setting - financial incentive; (4) goal setting followed by financial incentive; (5) financial incentive followed by goal setting.

Differences in performance among the experimental conditions were not significant. Results were compared with earlier studies and possible factors contributing to different findings were suggested. Shortcomings in research design are discussed and changes which might improve future studies are proposed.

Approved by Thesis Committee:

Dr. Carl Frost, Chairman 

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EFFECTS OF GOAL SETTING AND FINANCIAL INCENTIVES ON CLERICAL PERFORMANCE

By

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INTRODUCTION

Goal Setting Theory

The use of the term "goal setting" as a popular term in performance studies began in the mid-sixties, but the process itself originated much earlier. The expression "level of aspiration" had been used as early as the 1930's (cf. Festinger, 1942) to mean the future level of performance an individual will try to attain. Fryer, (1964) found that subjects required to set "levels of aspiration" for themselves before beginning a difficult task performed better than subjects not required to do so. Mace, (1935) reported success in the use of what he called an "intended level of achievement" by setting goals for his subjects in terms of the number of correct answers on an arithmetic task. Locke, (1966) set standards for his subjects of above average performance on each task and described these standards as "levels of intended achievement." Locke and Bryan, (1966) referred to performance standards as goals and in the following year used the expression "goal setting" to describe the process of establishing standards, (Locke, 1967, Bryan and Locke, 1967).

Of more interest than the derivation of goal setting as a term are the explanations advanced for its results. Mace suggested that subjects who knew their scores set standards for themselves even when not instructed to do so. These standards might be a goal of constant improvement or a specific score higher than the last performance. This "intended level of achievement" was further developed by Locke, (1966)

as resulting from the subject's "need for achievement," (McClelland, 1961) which is described as "not part of the individual's conscious desires." Orne, (1962) suggests that the improvement through goal setting results from higher "demand characteristics" of a type which are inherent in most experimental situations because of the implicit demand to improve performance. Latham and Baldes, (1975) found that the performance of logging crews improved immediately upon the assignment of a specific hard goal and suggested that

> The setting of a goal that is both specific and challenging leads to an increase in performance because it makes clear to the individual what he is supposed to do. This in turn may provide the worker with a sense of recognition, achievement and commitment in that he can compare how well he is doing now vs. how well he has done in the past and in some instances, how well he is doing in comparison to others. Thus, the worker is not only incited to expend greater effort, but he may devise better or more creative tactics for attaining the goals.

These explanations for goal setting may be valid but do not form a complete theoretical framework.

Since goal setting results in behavioral change it might be well to look at areas of psychology most concerned with such changes for an applicable theory. One of these areas is learning, which has been the focus of much experimental analysis over a period of years. Perhaps the best known learning theory is that of operant conditioning, which attempts to explain behavior by factors that can be observed, measured and reproduced. Operant conditioning deals with the large proportion of behavior which is emitted or operant (i.e., operating on the environment). It began with Thorndike's classic experiment with the hungry cat which "learned" to move the latch on its box to get the food outside,

(Thorndike, 1911). This led him to postulate the importance of reward in increasing the probability that a behavior would take place. His Law of Effect stated that any act producing satisfaction became more likely to be repeated. Thorndike's principles were further developed by Skinner, (1938, 1953) as operant conditioning which included the following definitions and principles:

1. Positive reinforcement means the increase in frequency of a behavior which is followed by a reward (positive reinforcer). Negative reinforcement means the increase in behavior which is followed by removal of a punishment.

2. Positive reinforcers include primary or unconditioned reinforcers (e.g., food and water) and secondary or conditioned reinforcers (e.g., praise and recognition).

3. Conditioned reinforcers begin as neutral events but become conditioned through repeated pairing with a primary reinforcer (e.g., after several pairings of food with praise, the praise alone can serve as a conditioned reinforcer).

4. Generalized reinforcers (e.g., money) develop from conditioned reinforcers by being associated with a number of other reinforcing events.

Primary reinforcers, such as food and water will reinforce behavior without the organism having any previous experience with them, (Reynolds, 1975). Secondary reinforcers acquire power through their temporal association with primary reinforcers over the lifetime of the organism. As they develop, behavior is determined increasingly by the organism's previous experience with these or similar reinforcing conditions.

Operant conditioning theory leads naturally to an incentive theory of motivation which postulates that behavior is largely activated by

anticipation of reinforcing consequences, (Bandura, 1969). The accomplishment of specific goals has become associated in the individual's reinforcement history beginning at early stages of development with primary reinforcers and later with social (secondary) reinforcers such as praise, approval and love. As the behavior of goal attainment acquires secondary reinforcing properties, the extrinsic incentives set by parents and teachers may be replaced by a self-set and self-monitored reinforcement system.

The individual will also strive to avoid failure, which is associated with the removal of positive reinforcers and with positive punishment such as physical and mental duress, deprivation, or perhaps criticism, isolation and other social sanctions.

Behavioral theory is consistent with the finding that goal levels are positively correlated with performance levels, (cf. Locke, 1966(a)). In behavioral terms the higher goals may also lead to higher performance because of the individual's past association of failure to meet requirements with withdrawal of positive reinforcement or even punishment.

Knowledge of results (KR) has also been found to have a positive effect on both learning and performance, (Ammons, 1956, Vroom, 1964). Locke and Bryan (1969) found that KR had no effect on performance when goal setting was controlled. However, Cummings, Schwab and Rosen, (1971) found that KR influenced goals set for subsequent performance, and also that correct KR increases goal levels significantly above those set with no KR. They also found that the greater the previous performance, the higher the subsequent goal. These findings are also consistent with the theory that the individual tends to strive for the higher goals which are associated with greater rewards in his reinforcement history. Latham

and Kinne, (1974) furnished workers with tables based on a large number of previous workers' production results to aid in setting production goals. They suggested this was valuable because it helped to convince the worker that the goal was attainable and not based either on his own unrealistic expectations or on unreasonable demands of his supervisor.

In reinforcement theory terms, information about other workers' production levels produces behavior effects through association with earlier incidents in the individual's reinforcement history. If these incidents resulted in positive reinforcement through the individual's success in meeting or exceeding other workers' production, then they will tend to produce that successful behavior again. On the other hand, if the association of goals assigned by supervisors is with incidents in which the failure to meet goals has resulted in some form of punishment, supervisory goal setting will tend to result in avoidance behavior such as absenteeism or quitting the job.

Relation to Financial Incentives

The present study arose from consideration of two earlier studies which attempted to measure how financial incentives affected performance on tasks for which goals were set. The first of these consisted of five experiments conducted by Locke, Bryan and Kendall, (1968). They based their study on the assumption that goals were the most immediate determinants of individual behavior and hypothesized that financial incentives would affect task performance only by affecting the individual's goals or intentions. Their findings supported this hypothesis by indicating that the same goal level produced the same performance level regardless of whether financial incentives were offered for performance or not.

When financial incentives seemed to affect behavior, these behavioral differences could be correlated with equivalent differences in behavioral intentions. When goal or intention differences were controlled or partialled out, there was no relationship between the financial incentive condition and behavior.

The second study, by Pritchard and Curts, (1973) begins by pointing out that the Locke et al. findings are in direct contrast with the financial incentive approach to motivation and with expectancy-valence models (cf. Porter and Lawler, 1968). They then draw attention to two possible methodological shortcomings in the Locke et al. experiments. First, the financial incentives offered were quite small, (ranging from 4/10¢ to 5¢ per item), and may have been "washed out" by other types of rewards such as pleasing the experimenter or feelings of achievement. The second problem is that in some of the experimental conditions, subjects were told of the incentive before being asked to set their goals. This raises the possibilitythat because of the prior effect of the incentive, the actual goal setting would have had little or no direct influence on performance.

Pritchard and Curts designed their study to overcome these possible weaknesses. To test whether incentive size was important they offered a 50¢ incentive to one group and a $3 incentive to another. To rule out the possibility that incentives influence subjects in their goal setting and thus their performance, Pritchard and Curts offered incentives only after the goal had been set. Their results did not confirm the Locke, et al. hypothesis that incentives have no effect on performance outside of their effect on goal setting. They did confirm that goal setting enhances performance, but found that incentives without

goal setting can also have positive effects on performance. Moreover, they found that the financial incentive effects are additive and operate independently of the goal setting effects.

Applicability to Industry

Both the studies referred to above are concerned with the integration of goal setting and financial incentives in industry. Locke et al., suggest that although financial incentives do not appear to influence job performance directly, they may do so in other ways. Incentives may influence the nature of intentions; where the pay off is large the worker is more likely to set a harder goal than where it is small. Incentives may persuade workers to accept assigned goals in industrial situations where such cooperation would not otherwise be forthcoming. Incentives may affect the worker's degree of commitment to his goal, thus increasing his persistence and staying power in the face of difficulties and frustration. Locke et al. concluded that incentive programs will not affect behavior automatically; the effect will be a function of the degree to which the individual values money compared with other incentives and the perceived instrumentality of a given behavior in attaining this value.

Pritchard and Curts conclude that goal setting procedures should not replace financial incentives. Organizations should use both factors together for maximum positive effect.

Before organizational applications are considered, however, at least two questions should be answered. Were the results obtained by Pritchard and Curts different from those of Locke et al. because of the two methodological changes described above, or because of other differences in experimental methods and conditions? And were the conditions

under which the experiments took place similar enough to actual field conditions that practical organizational applications can be considered on the basis of these results?

In addition to the changes in the size and order of presentation of financial incentives, there were a number of other differences between the experimental methods and conditions in the two studies. Using Experiment 2 of Locke et al., which had the largest financial incentive, for comparison, the following tabulation contrasts their approach with that of Pritchard and Curts:

Locke et al. (Experiment 2)	Pritchard and Curts
SUBJECTS	
Paid, male, undergraduate students	Male and female undergraduate students receiving experimental credit for participation plus any money earned during the experiment.
TASK	
Individual assembly of a toy from boxes of like parts supplied	Sorting index cards into stacks according to information on the card. Errors were eliminated by punching the cards in advance in unique patterns for each possible data configuration and providing corresponding patterns of metal spikes on the sorting board.
PROCEDURE AND CONDITIONS	
Study introduced as experiment in development of 'manual dexterity' and 'manipulative abilities.'	Experiment explained as a study of information sorting techniques. Every attempt was made to avoid making the task appear to be related to valued abilities such as creativity and intelligence.
Subject given model assembly and asked to make two practice assemblies. His time was recorded.	Subject asked to sort 24 practice cards, his questions were answered and he was then given 10 minutes sorting practice to establish a

Locke et al. (Experiment 2)	Pritchard and Curts
	baseline performance, then given a two minute rest.
Half the subjects were told they would be paid at the rate of 12¢ per assembly for the next 50 minutes. Using his fastest time for the two practice assemblies, subject was told how many he could make in 50 minutes at that pace. He was then asked to set a goal for number of assemblies and the money he would try to make. The other half of the subjects were told they would earn $3 for participation regardless of performance. They were then asked to set goals in the same manner as the first group. After 25 minutes subjects were given a two minute rest while completed work was counted and subjects set new goals for the second 25 minutes.	Subjects were divided into 5 groups: (1) goal setting-no incentive (2) goal setting-50¢ incentive (3) goal setting-$3 incentive (4) no goal setting-no incentive (5) no goal setting-piece rate incentives Subjects in all goal setting groups were first asked to set a goal of 30% improvement over baseline performance. All agreed to do so, although they were not told they would be on incentive. The 50¢ and $3 incentive groups were told they would receive these sums respectively for meeting or exceeding their goals. Group 5 was told they would receive 3¢ for each 2 cards sorted on a piece rate basis. All groups were then given a second ten minute sorting period.

Some of the above differences make it difficult to evaluate the significance of the disparity in results between the two studies.

1) Giving the students experimental credit in the Pritchard and Curts study is a potentially powerful reinforcer which has no counterpart in the Locke et al. experiment.

2) While the Locke et al. study stressed dexterity and manipulative ability, and did in fact make use of these skills, the Pritchard and Curts study explicitly avoided any suggestion of ability being required. When intelligence and ability are ruled out for a task, it is probable that the effect of nonmonetary incentives such as need for achievement and desire to please the experimenter will be reduced.

3) The elimination of the error factor from the Pritchard and

Curts experiment would make it easier for subjects to take advantage of a large monetary incentive to increase their production. This factor also makes the results less realistic in terms of the real world where errors virtually always affect performance.

4) Locke et al. gave their subjects only 2 practice assemblies, told them their rate of production and then asked them to set their own goals; Pritchard and Curts gave their subjects 10 minutes of practice, but then set their goals for them without giving them any information about their performance. But knowledge of results has been found to influence positively the level of goals set for subsequent task performance (Cummings, Schwab and Rosen, 1971). Thus it is possible that goal setting may have more positive effects on performance in the Locke et al. experiment than for Pritchard and Curts. To what extent this might modify the results attributed to financial incentives in the latter experiment cannot be measured. Nor can the differences due to experimenter goal setting vs. self goal setting, although one could speculate that students receiving experimental credit might tend to set higher goals than those who do not.

5) Pritchard and Curts do not comment on the difference in kind between their all-or-none incentive and the Locke et al. piece rate incentive, but imply from their comparisons between the 50¢ and $3 condition that size of incentive alone was significant. But expectancy theory (Porter and Lawler, 1968) predicts that the individual's belief concerning the likelihood that a particular act will be followed by a particular outcome is an important determinant of his effort and subsequently his performance. One can assume, therefore, a stronger effect on performance when subjects have high expectations than those with low

expectations of reaching the task goal.

In view of the number and importance of the differences between the two studies it is difficult to reach any firm conclusions regarding their relative merits.

The question whether conditions in the two studies resemble real organizational conditions closely enough to permit consideration of practical applications is easier to answer. Incentive payment systems have many and complex effects on employee behavior. Whyte (1955) flatly predicts that when traditional piece rates are introduced, workers will restrict output well below capacity by pretending to work fast when observed, while actually working slowly. The result will be some piece rates that are too hard, while others are too easy, thus causing endless disturbance in intergroup relations. Marriott, (1971) concluded that while in theory incentive systems should increase productivity and benefit workers, employers and customers, actual results have often fallen far short of these goals when production standards could not be attained or maintained because of factors outside the control of the workers, or when output has been deliberately restricted. He has compiled from a number of sources, including studies by the International Labor Office, a list of 31 basic requirements of sound incentive systems, covering such areas as industrial relations, standards and incentives, quality and supervision.

These findings point to the need to consider carefully a number of situational factors before practical applications can be considered, even on a small scale. Since the studies of Locke et al. and Pritchard and Curts dealt with highly artificial conditions, particularly with regard to tasks and methods of payment, it seems doubtful that practical

applications can be considered as the result of this research to date.

Plan of Study

The present study tested the effects of goal setting and financial incentives using a clerical task and working conditions which resemble closely those to be found in industrial organizations. This was done by simulating a task on which part-time temporary employees are often employed in industry. By hiring them through the university placement service at the going rates for this kind of work in the community, their conditions of employment resembled more that of the real world and avoided the confounding motivational effects of using volunteers who are given experimental credit for their services. Motivation patterns should tend to follow those of temporary clerks hired for similar jobs in industry.

Subjects were instructed by the experimenter as they might be by a supervisor and the task was one that is performed in many industrial and commercial organizations. Because this kind of clerical work is almost always performed by females, no males were used in the subject sample.

At the same time it was realized there are severe restrictions in simulating a real work setting. There was no attempt to pretend that the task was bona fide clerical work. The subjects were told that this was an experiment undertaken in order to determine the effect of different conditions on work performance. The object was to simulate actual work tasks and conditions as much as possible without losing the degree of control of variables which an experimental situation affords.

In order to eliminate group incentive effects, subjects were tested one at a time. To reduce subject-experimenter interaction to a minimum,

the experimenter left the room as soon as the subject had demonstrated she could perform the task correctly and remained in a separate room for the duration of the experiment except when administering further job instructions and supplying additional forms.

With regard to quality of work, it was felt essential to measure performance by standards similar to those used in industry. Industrial work goals are usually specified in terms of acceptable units produced and incentive bonuses or piece rates are paid only on production which meets quality control standards. For that reason the subjects were instructed that only correct items would be counted as part of their completed work.

With regard to goal setting and financial incentives, the study attempted to answer the following questions:

1) Will goal setting improve performance on a typical clerical task?

2) Does a financial incentive improve performance in the absence of any goals set by the experimenter and when no standards or knowledge of results can be used by the subject to set her own goal?

3) Are the effects of goal setting and financial incentives additive?

4) When both goal setting and financial incentives are used, does the order of presentation of the incentive affect the performance and if so, which is the best order for optimum performance?

Hypotheses

The hypotheses investigated in the present study are listed below:

Hypothesis 1: Goal setting without financial incentives will improve

performance. Bryan and Locke, (1967) found that setting specific goals for a simple addition task resulted in higher production and Locke and Bryan, (1967) found that specific "hard" goals for a range of tasks led to better task performance than when subjects were given only the general instruction to "do your best." Pritchard and Curts, (1973) confirmed these results on a card sorting task. Moreover, reaching a goal is a conditioned reinforcer in itself, (Kazdin, 1975) and should therefore be associated with an increase in the frequency of the work behavior which it follows.

Hypothesis 2: Financial incentives for increased production without goal setting will improve performance. Expectancy theory, (Vroom, 1964, Porter and Lawler, 1968) predicts that the motivation to perform a task will vary with the individuals' perception of the valence of outcomes and the instrumentality of performance for attainment of these outcomes. Although the subjects were not given specific goals they were assigned a general objective of performing better than another group doing the same task without any financial incentive. Money is a powerful generalized reinforcer, (Skinner, 1953) and should be effective, even when incentive amounts are not known, with individuals whose need for it is relatively high.

Hypothesis 3: When goal setting is followed by an offer of a financial incentive, performance will be improved more than by either goal setting or financial incentive alone, but less than the total improvement for the two variables when they are offered separately. Operant conditioning theory holds that both money and goal attainment are conditioned reinforcers and their effects should therefore tend to be additive. However, since the total potential improvement is limited

by each subject's capacity to increase working speed while controlling errors, the performance improvement from the combined incentives will be less than the total of the increases when the two incentives are offered separately.

Hypothesis 4: Financial incentives offered before goal setting commitments are made will result in a greater increase in performance than when they are offered after goals have been set. In this regard, Pritchard and Curts' argument is persuasive that a subject who knows of a financial incentive before the goal is set may be positively influenced by it in his goal setting behavior and, subsequently, his performance.

METHOD

Subjects

Subjects for the study were female undergraduate students recruited through the placement center at Michigan State University. They were paid $4.50 for participation at the end of the experiment for approximately two hours work. In addition, subjects working under financial incentive conditions were eligible to receive bonuses as explained below.

Task

The task was similar to a typical job for which temporary part-time clerical workers are hired by business organizations. It consisted of pricing and valuing inventory items on simulated inventory sheets such as those which might be used in taking inventory of stationery and office supplies. Item prices were obtained by the subjects from a separate price list, entered on the inventory sheet opposite the proper item and multiplied by the quantity in the "inventory count" column to give the item value when was then entered on the sheet.

Experimental Procedure

To ensure that each subject received the same initial briefing, she first read a set of instructions. These described the work setting, the forms to be used and the first two parts of the task, consisting of the learning and practice phases (Appendix A). She was then asked if she understood the instructions and if she had any questions. There were very few questions; when those came they were answered by referring back

to the instructions or by stating that the question should be answered by the demonstration of the use of the forms which was to follow or by further instructions she would receive at a later stage.

When all questions had been dealt with, the subject was given the inventory price list (for sample sheet of price list, see Appendix B) and a sample completed inventory sheet (Appendix C). By reference to the written instructions and the price list, she was shown how the sample sheet had been completed. Any questions were answered and she was given an uncompleted inventory sheet and told to price and value the items on it to demonstrate that she knew how to do the task correctly.

At this stage some subjects asked questions about completing the work on the first sheet. These were answered, the completed work was checked by the experimenter and any errors were shown to the subject. Each subject was asked if she believed she could now complete the next stage of timed practice without further help and all of them indicated that they could.

For the practice phase each subject was given a small supply of inventory forms (Appendix D), and asked to practice the task in order to familiarize herself with it and improve her rate of job performance. She was asked to do her best with regard to speed, but to remember that only correct items would be counted as part of her completed work. She was told that the experimenter would not be in the room during most of the remaining work time. She was told not to waste time over figures or items she could not understand, but instead go on to the next item. The experimenter then left the subject alone until just before the end of the practice period.

Each subject was timed for a 15 minute practice period, following

which her work was checked and the gross total, number of errors and net total of completed items were compiled. Subjects were then randomly assigned to one of five conditions for the work phase, as explained below:

Condition 1: No Goal Setting-No Financial Incentive

Subjects were not told the practice results. They were given written instructions (Appendix E1) directing them to continue working at the same task for a further period of 1 1/2 hours. They were asked to do their best with regard to both quality and quantity of work performed.

Condition 2: No Goal Setting-Financial Incentive

Subjects were not told the practice results. They were given written instructions (Appendix E2) telling them they could earn a bonus during the following work phase of 1 1/2 hours if they completed more items than the average number completed by another group doing the same work without bonus. For each item in excess of the other group's average they would receive a bonus of 25% of the clerical cost saved. However, the other group's average could not be compiled until all work was completed and therefore the bonus payments could not be computed or made until the end of the experiment. They were asked to do their best with regard to both quality and quantity of work performed.

Condition 3: Goal Setting-No Financial Incentive

Subjects were told their practice results. They were asked through written instructions (Appendix E3) and verbally, to commit themselves to a goal of improving their rate of performance by 25% during the following work period of 1 1/2 hours. All of them agreed to this commitment which was written down by the experimenter and left with them.

Condition 4: Goal Setting Followed by Financial Incentive

Subjects were told their practice results, then given written instructions (Appendix E4) asking them for the same goal commitment as in Condition 3. Similarly, their commitments were written down and left with them. When goal setting was completed this group was given a second written instruction (Appendix E5) with the same information concerning financial incentives as that given to subjects in Condition 2.

Condition 5: Financial Incentive Followed by Goal Setting

Subjects were not told their practice results initially. They were given a written instruction (Appendix E6) containing the same information as that furnished to subjects under Condition 2. When subjects agreed they understood the financial incentive, they were told their practice results, then given a second written instruction (Appendix E7) asking them for the same goal commitment as in Condition 3. Again their commitments were written down and left with them.

All subjects were timed for the work period of 1 1/2 hours. They were asked for any comments and suggestions they might have to offer, then paid and allowed to leave.

RESULTS

Performances during the work periods were compiled for all subjects and used to calculate the means and standard deviations for each experimental condition presented in Table 1. Gross figures are the mean total scores for each condition of items completed. Error figures are the means of incorrect item scores in each condition. Net means reflect the scores for correct performance which are used for further analysis. It is worth noting that the error rate as a percentage of gross mean scores, which is an indication of work quality, remained virtually unchanged from the practice period to the work period.

Equivalence of net scores between experimental conditions before introduction of incentive conditions was tested by a one-way analysis of variance among the practice scores and found to be nonsignificant, $\underline{F}$ (4, 35) = .73, $\underline{P}$ < .58.

Net work scores were tested by analysis of covariance, using the net practice scores as covariates. The incentive conditions showed increases from the no-incentive condition but failed to reach significance, $\underline{F}$ (4, 34) = 2.57, $\underline{P}$ < .055.

Table 1. Group Means and Standard Deviations for Performance During the Practice and Work* Periods

	No Goal Setting- No Financial Incentive	No Goal Setting- Financial Incentive	Goal Setting- No Financial Incentive	Goal Setting Followed by Financial Incentive	Financial Incentive Followed By Goal Setting	TOTAL
Group No.	1	2	3	4	5	
			Practice Period			
n	8	8	8	8	8	
Group means						
Gross	66.00	61.50	59.13	62.12	74.00	64.55
Errors	2.75	1.25	1.38	2.00	2.25	1.93
Net	63.25	60.25	57.75	60.12	71.75	62.62
Standard Deviation	15.20	17.95	20.21	16.75	19.90	17.85
			Work Period			
n	8	8	8	8	8	
Group means						
Gross	74.30	75.87	72.79	87.60	87.38	79.59
Errors	2.92	1.41	1.84	2.86	2.50	2.31
Net	71.38	74.46	70.95	84.74	84.88	77.28
Standard Deviation	18.36	20.04	20.39	22.90	22.81	20.86

*To facilitate comparison with the results of the 15 minute practice period, the work period results were obtained by dividing the original scores for the 1 1/2 hour work period by six.

DISCUSSION

Comparison of Results with Earlier Research

The results do not confirm any of the findings reported by Locke et al. or Pritchard and Curts. Part of the explanation for the discrepant findings stems from differences in the type of data used for analysis. Both of the earlier studies used the improvements in performance from the first to the second trial (gain scores) as the basic data. Use of gain scores for analysis of variance in this study would have yielded significant results, F (4, 35) = 2.65, $P < .05$. But some authorities hold that analysis of gain scores is a poorer method than analysis of covariance. Cronhach and Furby (1970) prefer analysis of covariance, stating that there appears to be no need to use measures of change as dependent variables and no virtue in using them. Assuming that errors of measurement of posttest scores are random, these scores constitute an entirely suitable dependent variable. Kirk (1968) and Campbell and Stanley (1966) state that gain scores yield less precise results than the use of analysis of covariance on pretest and posttest scores.

Confirmation of results from earlier research was also made more difficult because of the smaller number of subjects employed in the present study. Both Locke et al. and Pritchard and Curts used approximately twice the number of subjects in each condition, thus giving them more powerful tests.

The effort to ensure that financial incentives were completely

separated from goal setting probably also weakened their effect on performance. Subjects were not given any performance level at which bonus payments would start nor any means of calculating or even estimating the extra amounts they might earn. This approach contrasts with the piece work and specific goal-linked bonuses offered by Locke et al. and Pritchard and Curts which permitted subjects to anticipate the rewards available for improved performance.

The goal setting incentive was also weakened by being completely separated from the financial incentive in order to measure the effect of the order of presentation when both incentives were offered to subjects. In the Locke et al. experiment, subjects who were offered a financial incentive had to choose their production goals and their money goals at one time. In the Pritchard and Curts experiment, the subjects were told they could earn the financial incentive only by reaching the minimum goal set for them. This close linkage of incentives could be expected to contribute to better performance.

Another factor tending to reduce incentive performance in the present study was the arrangement to pay a regular hourly rate to all subjects before they were introduced to any incentives. This was part of the simulation of industrial employment conditions, but it may also have reduced the drive for results demonstrated under the conditions in earlier experiments in which piece-rates or all-or-nothing bonuses constituted the sole financial rewards.

The information given subjects in the financial incentive conditions that any bonus earnings would not be paid until a later date may also have weakened performance. The purpose of informing them was to ensure that no one worked under the mistaken impression that a bonus

might be received at the end of the work trial. But the effect of weakening anticipation of reward would tend to reduce incentive by comparison with the Locke et al. and Pritchard and Curts experiments in which bonuses were paid immediately following the final trial.

Shortcomings and Possible Improvements

The main purpose of this research was to explore the effects of goal setting and financial incentives when used in combination and to do so under conditions which would give a better indication of their applicability to clerical work in industry. The results indicate that perhaps too much was attempted. In order to control and measure variables, some conditions quite unlike those in industry were imposed, while the simulation of industrial conditions tended to confound the measurement of some variables. This is perhaps best exemplified by the effort to separate goal setting and related factors such as knowledge of results and incentive work standards, from financial incentives. To do so effectively requires the establishment of highly artificial work conditions and the resulting performance has probably little if any applicability to industrial work. Similarly the use of hourly rates of pay to eliminate the artificial course credit incentive and to simulate industrial conditions precludes the proper measurement of performance-contingent financial incentives.

An improved approach would require that any questions raised by previous studies be investigated first under purely experimental conditions. The outcome could then serve to confirm or reject previous experimental results concerning the nature and effect of goal setting and financial incentives. The question of industrial application of

research findings could be investigated later by field studies in which the effect of experimental conditions on subjects' motivation and performance could be eliminated. This may be quite important; a number of subjects in the present study spoke of their interest in participating in an experiment and it seems probable that desire to please the experimenter is a powerful incentive in contributing to improvement from pretest to posttest measurements. There is probably no way to eliminate this experimenter effect completely without going to a field study carried out under normal working conditions in which the experimenter would have no contact with the subjects.

There are, however, some possible improvements in goal setting which should be considered and perhaps tested before a field study is attempted. In the present research, although the goal setting level used was based on a pilot study, it is evident from the results that a higher level might have furnished a better incentive. All subjects had a mean increase of 23.4% from practice trial to the work trial and the ten best performers had a mean increase of 48.2%. It might also be better to devise a means by which the subjects can set their own goals instead of accepting an assigned goal. During a pilot test, subjects did not seem able or willing to set their own goals, but this reluctance might be overcome by offering them a choice of several specific goal levels. If available levels ranged from the pretest average performance to the highest performance achieved, the theory that "hard" goals produce greater improvement than "easy" goals could also be tested (Locke and Bryan, 1969). There is also some evidence (Latham and Yukl, 1975), that participative goal setting conditions, in which workers and supervisors discuss and agree on goals, result in

improved productivity over assigned or "do your best" conditions. The effect seems to result in part from higher goals being set and in part from greater acceptance of the higher goals by workers. However, the admittedly tentative nature of the explanations for the results of this field study points to the necessity for further experimental investigation of goal setting.

With regard to financial incentives, the weaknesses discussed earlier can be largely overcome by recognizing that the method by which bonuses are calculated should be clearly explained to the subjects, even though this may allow them to set personal goals. In industry, work standards and knowledge of results are virtually always available to employees working under financial incentive conditions. They are able to set their own goals and link them directly to desired levels of earnings.

Although not significant, the results from this study suggest that the effects of financial incentives may be additive to those of goal setting, but that the reverse may not be true. It may be that goal setting followed by financial incentives is more effective because it conforms to the subjects' own learning patterns. It seems probable that their reinforcement history would contain many experiences in which parents and other authority figures had set goals first and offered financial incentives only after goals were assigned. In relatively few instances would the financial incentive be offered before the goal was set and the individual may not be conditioned to respond to this pattern. Further investigation needs to be undertaken to test for significance of the order of presentation of incentives.

The measurement of financial incentives effects could also be

facilitated by using several levels of incentive bonuses and observing whether performance tends to vary with the anticipated level of earnings. The use of different bonus levels in conjunction with different goal levels would also yield data which could help establish the optimum combination of the two incentives from the standpoint of performance improvement.

APPENDICES

APPENDIX A

You have been hired to perform a simple clerical job under experimental conditions. The instructions which follow give an outline of the setting, the forms to be used and the various phases of the task itself. Please follow them as closely as possible.

Setting

You will work by yourself in a separate room for approximately two hours. You should leave the room only for personal needs or to consult the experimenter, who will be in a room nearby. You will be furnished with a pen, scratch paper and the forms required for your work. To reduce distraction from hallway traffic it is suggested you leave the room door closed or slightly ajar.

Forms

You will use two forms to complete your task:

1. Inventory Price List - comprised of 22 pages of inventory items showing for each item the stock number, description, unit of issue (box-bx; pad-pd., etc.) and price per unit.

2. Inventory Sheets - comprised of 22 sheets with columns for stock number, description, unit of issue, inventory count, price and value.

Clerical Task

Each inventory sheet has a quantity in the inventory count column for each item. Your first step will be to find the price on the

inventory price list for an item and enter it on the inventory sheet. Next, you must multiply the quantity times the price to obtain the inventory value, which should then be entered in the value column.

A sample sheet, showing in red the figures to be inserted in the clerical operation, has been completed for your guidance.

The task is comprised of three phases:

I. Learning Phase:

After reading the instructions, you will have the opportunity to ask questions concerning any part of them which you do not fully understand. You will then be asked to price and value the items on a specimen inventory sheet to demonstrate that you can perform the task correctly. You should show this work to the experimenter after completing it as accurately as possible.

II. Practice Phase:

When you have completed phase I satisfactorily, you will be given a supply of sheets and asked to practice the task for 15 minutes in order to familiarize yourself with it and to improve your rate of performance. You will be asked to do your best with regard to both speed and accuracy of your work. In this phase and phase III which follows, only correct items will be counted as part of your completed work.

APPENDIX B

INVENTORY PRICE LIST

OFFICE AND PAPER SUPPLIES

Stock Number	Description	Unit of Issue	Price
	APPOINTMENT BOOKS		
140 0014	APPT BOOK DAY AT GLANCE 8 X 4 7/8 BLK	EA	2.25
140 0028	APPT BOOK DAY AT GLANCE 8 X 4 7/8 BROWN	EA	2.25
140 0029	APPT BOOK DAY AT GLANCE 8 X 4 7/8 GREEN	EA	2.08
140 0030	APPT BOOK DAY AT GLANCE 8 X 4 7/8 RED	EA	2.25
140 0042	APPT BOOK MONTH AT GLANCE 9 X 7	EA	1.25
140 0056	APPT BOOK NATL SCHOOL CALENDAR JULY TO JUNE BLUE	EA	1.34
140 0069	APPT BOOK WK AT GLANCE 8 X 4 7/8 ASST COLORS NO75	EA	.92
140 0070	APPT BOOK WK AT GLANCE 8 X 4 7/8	EA	1.14
140 0084	APPT BOOK WK/GL 6 1/8 X 3 1/4	EA	1.03
140 0098	APPT BOOK WK/GL 6 1/8X3 1/4 REFILL	EA	1.03
	ASH TRAYS		
140 0112	ASH TRAYS BEAN BAG BLACK 4 IN DIA	EA	.83
140 0126	ASH TRAYS BEAN BAG BLUE 4 IN DIA	EA	.83
140 0140	ASH TRAYS BEAN BAG BROWN 4 IN DIA	EA	.83
140 0154	ASH TRAYS BEAN BAG GOLD 4 IN DIA	EA	.83
140 0168	ASH TRAYS BEAN BAG GREEN 4 IN DIA	EA	.83
140 0182	ASH TRAYS BEAN BAG RED 4 IN DIA	EA	.83
	BADGES		
140 0196	BADGE CARD HOLDER CLEAR PLST 2 X 3 W/PIN 100/BX	BX	3.31
	BADGE INSERTS		
140 0210	BADGE INSERT 2 X 3 WHT MSU SPARTAN 50/PAD	PD	.19
140 0224	BADGE NAME SELF-STICK 3 1/2 X 2 1/2 SPARTY 100PKG	PG	2.50
	BAGS PAPER		
140 0238	BAG PAPER 1 LB 3 1/2X6 3/4 BRN KRAFT 250/BD BDU	BD	.72
140 0252	BAG PAPER 2 LB 4 1/4X7 3/8 BRN KRAFT 250/BD BDU	BD	.72
140 0266	BAG PAPER 3 LB 4 3/4X8 3/8 BRN KRAFT 250/BD BDU	BD	.72
140 0280	BAG PAPER 5 LB 5 1/4X11 BRN KRAFT 250/BD BDU	BD	.72
140 0294	BAG PAPER 10 LB 6 1/2X13 3/8 BRN KRAFT 250/BD BDU	BD	.72
140 0308	BAG PAPER 20 LB 8 1/4X15 3/8 BRN KRAFT 250/BD BDU	BD	.72
140 0322	BAG PAPER MAILING PADDED A 1/2X14 1/2 NO3 100/CS	CS	4.49
140 0336	BAG PAPER MAILING PADDED B 1/2X14 1/2 NO4 100/CS	CS	4.89
140 0350	BAG PAPER MAILING PADDED 10 1/2X16 NO5 100/CS	CS	6.36
140 0364	BAG PAPER MAILING PADDED 12 1/2X19 NO6 50/CS	CS	4.28
	BANDS RUBBER		
140 0378	BAND RUBBER 1 1/4 X 1/16 NO10 1/4LB APPX 1400 PCS	BX	.34
140 0392	BAND RUBBER 1 3/4 X 1/16 NO12 1/4LB APPX 950 PCS	BX	.34
140 0406	BAND RUBBER 2 X 1/16 NO14 1/4LB APPX 650 PCS	BX	.34

-- ITEM LISTING CONTINUED ON NEXT PAGE --

APPENDIX C

SAMPLE COMPLETED INVENTORY SHEET

OFFICE AND PAPER SUPPLIES

Stock Number	Description	Unit of Issue	Ink Count	Price	VALUE $	VALUE ¢
	APPOINTMENT BOOKS					
140 0014	APPT BOOK DAY AT GLANCE 8 X 4 7/8 BLK	EA	3	225	7	50
140 0028	APPT BOOK DAY AT GLANCE 8 X 4 7/8 BROWN	EA	8	208	16	64
140 0029	APPT BOOK DAY AT GLANCE 8 X 4 7/8 GREEN	EA				
140 0030	APPT BOOK DAY AT GLANCE 8 X 4 7/8 RED	EA				
140 0042	APPT BOOK MONTH AT GLANCE 9 X 7	EA	2	134	2	68
140 0056	APPT BOOK NATL SCHOOL CALENDAR JULY TO JUNE BLUE	EA	6	125	7	50
140 0069	APPT BOOK WK AT GLANCE 8 X 4 7/8 ASST COLORS NO75	EA				
140 0070	APPT BOOK WK AT GLANCE 8 X 4 7/8	EA				
140 0084	APPT BOOK WK/GL 6 1/8 X 3 1/4	EA	20	103	20	60
140 009H	APPT BOOK WK/GL 6 1/8X3 1/4 REFILL	EA				
	ASH TRAYS					
140 0112	ASH TRAYS BEAN BAG BLACK 4 IN DIA	EA	9	83	7	47
140 0126	ASH TRAYS BEAN BAG BLUE 4 IN DIA	EA				
140 0140	ASH TRAYS BEAN BAG BROWN 4 IN DIA	EA				
140 0154	ASH TRAYS BEAN BAG GOLD 4 IN DIA	EA				
140 0168	ASH TRAYS BEAN BAG GREEN 4 IN DIA	EA	4	83	3	32
140 0182	ASH TRAYS BEAN BAG RED 4 IN DIA	EA				
	BADGES					
140 0196	BADGE CARD HOLDER CLEAR PLST 2 X 3 W/PIN 100/BX	BX	3	331	9	93
	BADGE INSERTS					
140 0210	BADGE INSERT 2 X 3 WHT MSU SPARTAN 50/PAD	PD	8	19	1	52
140 0224	BADGE NAME SELF-STICK 3 1/2 X 2 1/2 SPARTY 100PKG	PG				
	BAGS PAPER					
140 023H	BAG PAPER 1 LH 4 1/2X6 3/4 BRN KRAFT 250/HD MDU	HD				
140 0252	BAG PAPER 2 LH 4 1/4X7 3/4 BRN KRAFT 250/HD MDU	HD	9	72	6	48
140 026A	BAG PAPER 3 LH 4 3/4X8 3/4 BRN KRAFT 250/HD MDU	HD				
140 028D	BAG PAPER 5 LH 5 1/4X11 BRN KRAFT 250/HD MDU	HD				
140 029G	BAG PAPER 10 LH 6 1/2X13 3/4 BRN KRAFT 250/HD MDU	HD				
140 030M	BAG PAPER 20 LH 8 1/4X15 3/4 BRN KRAFT 250/HD MDU	HD				
140 032Z	BAG PAPER MAILING PADDED 8 1/2X14 1/2 NO3 100/CS	CS	9	449	40	41
140 033N	BAG PAPER MAILING PADDED 9 1/2X14 1/2 NO4 100/CS	CS				
140 035D	BAG PAPER MAILING PADDED 10 1/2X16 NO5 100/CS	CS				
140 03NG	BAG PAPER MAILING PADDED 12 1/2X19 NO6 50/CS	CS				
	BANDS RUBBER					
140 037C	BAND RUBBER 1 1/4 X 1/16 NO10 1/4LB APRX 1400 PCS	BX				
140 034J	BAND RUBBER 1 3/4 X 1/16 NO12 1/4LB APRX 950 PCS	BX	7	34	2	38
140 040P	BAND RUBBER 2 X 1/16 NO14 1/4LB APRX 650 PCS	BX				
	-- ITEM LISTING CONTINUED ON NEXT PAGE --					

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APPENDIX D

INVENTORY FORM

OFFICE AND PAPER SUPPLIES

Stock Number	Description	Unit of Issue	Inv. Count	Price	VALUE $	VALUE ¢
	CALENDAR BASES					
140 0728	CALENDAR BASE-DESK PLS 8 X 7 MIST GREEN	EA	3			
140 0742	CALENDAR BASE-DESK PLS 8 X 7 GRAY	EA	3			
140 0790	CALENDAR BASE-DESK PLS 8 1/4 X 7 3/4 GRAY	EA	8			
140 0798	CALENDAR WALL DAILY BLOCK 20 1/2 X 27 1 MO/PAGE	EA	1			
	CALENDAR REFILLS					
140 0812	CALENDAR REFILL 3 X 4 MFG NO 81 313 1/2	EA	9			
140 0826	CALENDAR REFILL 3 X 3 3/4 MFG NO 81 919 1/2	EA	6			
140 0840	CALENDAR REFILL 3 3/4 X 6 3/4 MFG NO 55 739	EA	8			
140 0854	CALENDAR REFILL 3 1/2 X 6 MFG NO 717 1/2	EA	4			
140 0868	CALENDAR REFILL 4 X 6 3/4 MFG NO 46 1/2	EA	6			
140 0882	CALENDAR REFILL 5 X 8 FOR BASE MFG NO 458 1/2	EA	1			
140 0896	CALENDAR REFILL 6 1/4 X 10 MFG NO 81 610 1/2	EA				
	CARDS-NAME					
140 0930	TABLE CARD NAME OR PLACE 2 1/8 X 5 100/PKG	PK	5			
	CARDS-POSTAL					
140 0910	CARD POSTAL PLAIN 3 1/2 X 5 1/2 STAMPED 6 CENTS	EA	7			
	CHALK					
140 0938	CHALK 24 ASST COLORS 3 1/4X3/8 STKS 144PCS/BX	BX	10			
140 0952	CHALK WHITE BOX OF 144 3 1/4X3/8 STKS DUSTLESS	BX	4			
	CLAMPS-PAPER					
140 0966	CLAMPS 1IN WIDE PINCH TYPE CAPACITY 3/8 IN	EA	2			
140 0980	CLAMPS 2IN WIDE PINCH TYPE CAPACITY 9/16 IN	EA	5			
140 0994	CLAMPS 3IN WIDE PINCH TYPE CAPACITY 15/16 IN	EA	1			
	CLEANERS					
140 1008	CLEANER HAND WATERLESS CLEAR LOTION 12 OZ BTL	BT	7			
140 1022	CLEANER HAND WATERLESS LOTION 1/2GAL BTL W/DI	BT	9			
140 1036	CLEANER TRI-CHLOROTHENE GEN PWP OFC MACH IND SOL	GL	1			
140 1050	CLEANER TYPEWRITER 4 1/2X11 3 SHTS/PKG	PG	2			
140 1064	CLEANER TYPEWRITER FLUID 4 OZ/BTL W/BRUSH	BT	8			
140 1078	CLEANER TYPEWRITER DOUGH 2 1/4 X 1 3/4 PC	BX	4			
140 1091	CLEANER 3M MELT THERMOFAX 9OZ W/6 1/4 X 3 1/8 PAD	CN	4			
140 1092	CLEANER ARMOR WEB DRUM 6 OZ/CTN	CT	9			

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APPENDIX E1

III. Work Phase

Following completion of the practice phase you will be asked to continue working at the task for a further period of 1 1/2 hours. You will be asked to do your best with regard to quality and quantity of work performed. At the end of the work period you will be paid and permitted to leave.

APPENDIX E2

III. Work Phase

Following completion of the practice phase you will be told to continue working at the task for a further period of 1 1/2 hours. You will receive additional bonus earnings during the following work phase if you can complete more items than the average number completed by another group which is doing the same work without bonus. For each item you complete in excess of the other group's average, you will receive a bonus of 25% of the clerical cost saved per item. Since the performance of the other group cannot be obtained until all subjects have completed their work, the bonus payments cannot be calculated until all the work is finished.

At the end of 1 1/2 hours work you will be told what your production has been in terms of completed items. You will be paid for your time and permitted to leave. When the work of the other group is completed, their average production rate will be calculated. If your

production exceeds this average you will receive payment of the bonus you have earned.

APPENDIX E3

III. Work Phase

Following completion of the practice phase you will be told how many items you have completed correctly. You will then be asked to commit yourself to increasing your output rate by 25% during the work phase which follows and your commitment will be recorded. At the end of the work period, you will be told how you have performed. You will then be paid and permitted to leave.

APPENDIX E4

III. Work Phase

Following completion of the practice phase, you will be told how many items you have completed correctly. You will then be asked to commit yourself to increasing your output rate by 25% during the work phase which follows, and the commitment rate will be recorded.

APPENDIX E5

III. Work Phase

Next, it will be explained that you will receive additional bonus earnings during the following work phase if you can complete more items than the average number completed by another group which is doing the same work without bonus. For each item you can complete in excess of the other group's average you will receive a bonus of 25% of the clerical cost saved per item.

Since the performance of the other group cannot be obtained until all subjects have completed their work, the bonus payment cannot be calculated until all the work is finished.

At the end of 1 1/2 hours work you will be told what your production has been in terms of completed items. You will be paid for your time and permitted to leave. When the work of the other group is completed, their average production rate will be calculated. If your production exceeds this average you will receive payment of the bonus you have earned.

APPENDIX E6

III. Work Phase

Following completion of the practice phase you will be told to continue working at the task for a further period of 1 1/2 hours. You will receive additional bonus earnings during the following work phase if you can complete more items than the average number completed by another group which is doing the same work without bonus. For each item you complete in excess of the other group's average, you will receive a bonus of 25% of the clerical cost saved per item. Since the performance of the other group cannot be obtained until all subjects have completed their work, the bonus payments cannot be calculated until all the work is finished.

APPENDIX E7

III. Work Phase

You will then be told how many items you have completed correctly and asked to commit yourself to increasing your output rate by 25%

during the work phase which follows and your commitment will be recorded.

At the end of 1 1/2 hours work you will be told what your production has been in terms of completed items. You will be paid for your time and permitted to leave. When the work of the other group is completed, their average production rate will be calculated. If your production exceeds this average you will receive payment of the bonus you have earned.

REFERENCES

REFERENCES

Ammons, R. B. Effects of Knowledge of performance: A survey and tentative theoretical formulation. Journal of General Psychology, 1956, 54, 279-299.

Bandura, A. Principles of behavior modifications. New York: Holt, Rinehart and Winston, 1969.

Bryan, J. F. & Locke, E. A. Goal setting as a means of increasing motivation. Journal of Applied Psychology, 1967, 51, 274-277.

Campbell, D. T. and Stanley, J. C. Experimental and quasi-experimental designs for research. Chicago: Rand, McNally, 1966.

Cronbach, L. J. & Furby, L. How we should measure "change"--or should we? Psychological Bulletin, 1970, 74, 68-80.

Cummings, L. L., Schwab, D. P. & Rosen, M. Performance and knowledge of results as determinants of goal setting, Journal of Applied Psychology, 1971, 55, 526-530.

Festinger, L. A. A theoretical interpretation of shifts of level of aspiration. Psychological Review, 1942, 49, 235-250.

Fryer, F. W. An evaluation of aspiration as a training procedure. Englewood Cliffs, N.J.: Prentice-Hall, 1964.

Kazdin, A. E. Behavior modification in applied settings. Homewood, Ill.: The Dorsey Press, 1975.

Kirk, R. E. Experimental Design: Procedures for the behavioral sciences. Belmont, Cal: Brooks/Cole, 1968.

Latham, G.P. & Blades, J.J. The "practical significance" of Locke's theory of goal setting. Journal of Applied Psychology, 1975, 60, 122-124.

* Latham, G.P. & Kinne, S.B. Improving job performance through training in goal setting. Journal of Applied Psychology, 1974, 59, 187-191.

Latham, G.P. & Yukl, G.A. Assigned versus participative goal setting with educated and uneducated woods workers. Journal of Applied Psychology, 1975, 60, 299-302.

Locke, E.A. A closer look at level of aspiration as a training procedure: A reanalysis of Fryer's data. Journal of Applied Psychology, 1966, 50, 417-420. (a).

Locke, E. A. Motivational effects of knowledge of results: knowledge or goal setting? Journal of Applied Psychology, 1967, 51, 324-329.

Locke, E. A. The relationship of intentions to level of performance. Journal of Applied Psychology, 1966, 50, 60-66 (b).

Locke, E. A. & Bryan, J. F. Cognitive aspects of psycho-motor performance: The effects of performance goals on level of performance. Journal of Applied Psychology, 1966, 50, 286-291.

Locke, E. A. & Bryan, J. F. Knowledge of score and goal levels as determinants of work rate. Journal of Applied Psychology, 1969, 53, 59-65.

Locke, E. A. & Bryan, J. F. Performance goals as determinants of level of performance and boredom. Journal of Applied Psychology, 1967, 51, 120-130.

Locke, E. A., Bryan, J. F. & Kendall, L. M. Goals and intentions as mediators of the effects of monetary inventives on behavior. Journal of Applied Psychology, 1968, 52, 104-121.

Mace, C. A. Incentives: Some experimental studies. Industrial Health Research Board (Great Britain), 1935, Report No. 72.

Marriott, R. Incentive payment systems. London: Staples Press, 1971.

McClelland, D.C. The achieving society. New York: Van Nostrand, 1961.

Orne, M. T. On the social psychology of the psychological experiment with particular reference to demand characteristics. American Psychologist, 1962, 17, 776-783.

Porter, L. V. & Lawler, E. E. Managerial attitudes and performance. Homewood, Ill.: Irwin-Dorsey, 1968.

Pritchard, R.D. & Curts, M.I. The influence of goal setting and financial incentives on task performance. Organizational Behavior and Human Performance, 1973, 10, 175-183.

Reynodls, G. S. A primer of operant conditioning. Glenview, Ill.: Scott, Foresman, 1975.

Skinner, B. F. The behavior of organisms. New York: Appleton-Century, 1938.

Skinner, B. F. Science and human behavior. New York: Macmillan, 1953.

Thorndike, E. L. Animal intelligence. New York: Macmillan, 1911.

Vroom, V. H. Work and motivation. New York: Wiley, 1964.

Whyte, W. F. Money and motivation. New York: Harper and Row, 1955.