AN ABSTRACT OF THE THESIS OF

__J. Chris Graves__ for the _____Master of Science_____

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Title: An Examination of the Effects of Incremental Goal Setting on Task

Performance and Satisfaction

Abstract approved: _~Lisa M. Kelsey_____

Although goal setting researchers have demonstrated that goals are effective for increasing performance, they have also suggested high goal levels are associated with low satisfaction. Since low goal levels are associated with higher satisfaction than high goals, this study hypothesized that small incremental goal increases would lead to higher performance and higher satisfaction levels than large incremental goal increases. Two groups of undergraduate students participated in the study. Word search puzzles served as the task. Goals were the number of words to be located in each puzzle. Feedback was provided that indicated each participant's performance and achievement. Participant's satisfaction was measured after each trial. While methodological problems were encountered during the study, support for the position that small incremental goal setting leads to higher performance without having an adverse effect on satisfaction was demonstrated.

AN EXAMINATION OF THE EFFECTS OF INCREMENTAL GOAL

SETTING ON TASK PERFORMANCE AND SATISFACTION

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A Thesis

Presented to

the Division of Psychology and Special Education
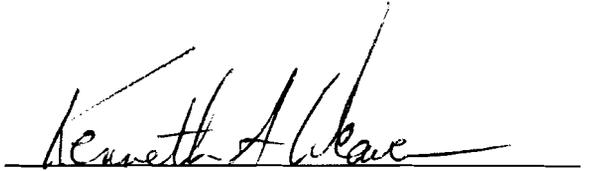
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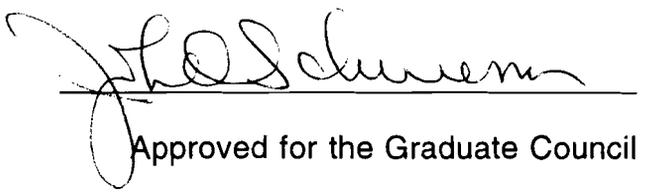
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Master of Science

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by

J. Chris Graves

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Kenneth A. Weaver

Approved for the Division of
Psychology and Special Education

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ACKNOWLEDGMENTS

TABLE OF CONTENTS

v

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

For decades, researchers have investigated employee motivation and satisfaction (Alderfer, 1969; Atkinson & Reitman, 1956; Cannon, 1939; Hull, 1943; Korman, 1970; Locke & Latham, 1984; Maslow, 1943; McClelland, 1965; Thorndike, 1911; Tolman, 1959). The goal of these efforts, in part, is to understand what energizes, channels, and maintains human behavior (Steers & Porter, 1991), as well as to understand the nature of the performance/ satisfaction relationship (Fisher, 1980).

In the attempt to explain motivation, performance, and satisfaction, theories have focused on dispositional, behavioral, and cognitive influences. Since motivational influences cannot be seen directly, their effects can only be inferred (Steers & Porter, 1991). In order for a theory to infer motivation, it must make behavioral predictions which are observable and measurable. Goal setting is a motivational technique which has been demonstrated to be effective for increasing performance (Latham & Locke, 1979). Goal setting theory borrows from social-cognitive theory (Bandura, 1986) and expectancy theory (Vroom, 1964) to explain and predict goal-oriented behavior (Locke & Latham, 1990c) in ways which are observable and measurable.

Goal setting studies in the laboratory have the quality of being generalizable to organizational field settings (Latham & Locke, 1979; Locke, Shaw, Saari & Latham, 1981). This can be attributed to the efficacy of goal setting theory's two main performance predictions. The first is that high goals lead to higher performance than no goals or low goals (Klien, Whitener & Illgen, 1990; Latham & Locke, 1979; Locke, 1968). The second tenet is that goals that

are specific lead to higher performance than vague goals (Locke, 1991; Locke, Shaw, Saari & Latham, 1981). Both predictions are easy to understand. Whether goal setting studies are conducted in the laboratory or in the field, when subjects are committed to achieving goals, naturally the highest attainable goal will be associated with the highest possible performance. Similarly, when the goals are specific, there is less chance for performance discrepancies.

Locke and Latham (1990c) identify a dilemma for those who assign goals in the laboratory and in the field. The problem is in the relationship between performance and satisfaction. When high goals are created, high performance results. However, since high goals take more time and effort to achieve, there is more room for frustration to be encountered. Also, due to the nature of high goals relative to low goals, high goals are rewarded less frequently. Thus, high goals should lead to higher performance but lower satisfaction than low goals. Low goals should lead to lower performance, but higher satisfaction since they are more easily achieved, are rewarded more frequently, and offer less room for frustration. Performance and satisfaction levels have a negative relationship with each other (Locke & Latham, 1990c).

Several possible solutions to this dilemma are suggested by Locke and Latham (1990c). One solution is that if goal levels were incrementally increased, they could lead to the same high performance as a single, high goal, without leading to low satisfaction. Since the performance relationship between low goals to high goals is based on an inequality between the goal levels, increasing small goals up to the high goal level could lead to similar performance results. Thus, satisfaction levels associated with low goals would

be higher than satisfaction levels associated with the high goal. High performance and high satisfaction could be achieved by applying this method of goal setting. Support for this method has been demonstrated in Japan (Imai, 1986).

Within this method of raising goal levels, an un-addressed issue is how different levels of incrementally increasing goals might affect performance and the performance-satisfaction relationship. Specifically, an unanswered question concerns how small and large incremental goal setting would affect performance and satisfaction levels. A review of the relevant literature did not reveal any studies examining these effects. Therefore, this study will attempt to address these relationships. An examination of goal setting research offered suggestions for predictions of performance and satisfaction resulting from this method.

<div align="center">Goal Setting Theory</div>

Goal setting is a motivational technique which frequently demonstrates effectiveness in increasing performance (Latham & Locke, 1979). In the studies reviewed by Locke et al. (1981), goal setting that employed challenging, specific goals led to high performance 90% of the time. Nine years later, continued support for the efficacy of goal setting led Locke and Latham (1990c) to proclaim:

> nearly 400 (mostly experimental) studies have shown that specific, difficult goals lead to better performance than specific, easy goals, vague goals such as "do your best," or no goals. Those results are based on studies conducted in the U.S. and seven other countries. The studies have used more than 40,000 subjects, 88 different tasks, time spans

ranging from one minute to three years, and many different performance criteria. (p. 240)

Goal setting is both effective and robust.

Goal-related Variables in Goal Setting.

It has already been pointed out how goal difficulty and specificity affect performance. Other factors associated with the effects of goals include whether goals are made public or kept private, are assigned by someone, participatively set, or self-set, and whether goal achievement leads to rewards. Also related to goal efficacy is the source of feedback.

Public and private goals. Public goals increase performance (Hollenbeck, Williams & Klien, 1989). Salancik and Pfeffer (1978) stated that people have a disposition to appear rational and consistent in social contexts. Therefore, when goals and feedback are made public, a person is influenced by social forces to work towards the goal. Locke et al. (1981) describe the effects social pressures and competition can have on goal performance. An experimenter/ supervisor and also subjects/coworkers create pressure to accept goals (Erez & Zidon, 1984). Competition between subjects (Locke et al., 1981) or coworkers (Latham & Locke, 1979) is also a type of social force that can affect goal performance.

Hollenbeck et al. (1989) demonstrated the effects of goal publicness on commitment to difficult goals. Their design involved students who either were assigned grade goals or set goals themselves, and then either kept the goal to themselves or had it communicated to significant others (e.g., parents, siblings, spouse, classmates). Their results indicated subjects who had their grade goals made public were more committed to achieving those goals than students

who kept their goals private. Whether goals were assigned or self-set did not have an effect.

Assigned / participative / self-set goals. There is some disagreement in the literature over the most efficacious way for goals to be employed (Locke et al., 1988). In some studies, when goals are assigned to subjects, the result has been high commitment and high performance (Erez & Zidon, 1984; Kernan & Lord, 1988; Latham & Lee, 1986; Locke & Latham, 1990a; Racicot, Day & Lord, 1991). In other studies, when subjects or coworkers are allowed to participate in the goal setting decision, high commitment and high performance can result (Erez, 1986; Erez & Arad, 1986; Latham & Yukl, 1975). Still, in another study, when subjects were allowed to set their own goals, high commitment and high performance resulted (Erez, Gopher & Arzi, 1990). Of course, there are also many demonstrations that the method of goal employment did not differentially affect commitment and performance (Hollenbeck et al., 1989; Kernan, Heimann & Hanges, 1991; Latham & Locke, 1979; Locke et al., 1988).

Locke et al. (1988) concluded participative goal setting is effective for increasing commitment, but there is low agreement as to the effectiveness of assigned goal setting. But given that there is support for assigned goal setting (Locke et al., 1981), one method seems no better than another and assigned goal setting has demonstrated that it can be as effective as participative goal setting (Latham & Locke, 1979; Locke & Latham, 1990c).

Extrinsic and intrinsic rewards. When goal setting is employed, different rewards may result from the achievement of the goal. Rewards contingent upon performance require that the goal be completely achieved, while rewards that are non-contingent either do not require goal achievement or only require some

minimum level of performance (Locke & Latham, 1990c). In both cases, something is received for performance towards the goal. Rewards extrinsic to the individual are superimposed artificial reinforcers, while rewards intrinsic to the individual are naturally occurring reinforcers.

Mowen, Middlemist and Luther (1981) reported that when monetary rewards were made contingent upon goal performance, performance was lower on higher goals and higher on moderate and lower goals. In another subject group, when monetary rewards were not contingent upon goal performance, high goals led to higher performance than moderate or easy goals. In another study, Erez et al. (1990) found self-set goals without contingent monetary rewards led to the highest performance levels. Self-set goals with monetary rewards contingent upon performance were actually detrimental to performance. These studies demonstrate the differential effects that rewards can have on performance.

These differential effects are probably moderated by intrinsic motivation (Deci & Ryan, 1980). When subjects are allowed to set their own goals, they might be creating a need to demonstrate self-determined competence. A monetary reward associated with a goal that was intrinsically determined undermines the motivation to achieve that goal (Deci & Ryan, 1980). Conversely, when a goal is created by external authorities, the contingency of rewards on performance would be accepted in the same way the goal is accepted. In other words, for extrinsic rewards to motivate performance, the goals should be assigned so no discrepancy exists between the reason someone performs and the reason they are rewarded.

The idea of discrepancy between inputs and outputs is borrowed from equity theory (Adams, 1965). Goal setting theory incorporates the idea that individuals appraise their inputs and outputs in comparison to a referent other's inputs and outputs (Locke & Latham, 1990c). Generally, people may appraise the reason for a goal and the reason for a reward based on whether these are within their locus of causality or are influenced by external forces. When a goal and reward are both externally determined, a person chooses whether to accept it and, thus, chooses to perform. When a goal is self-set, people choose the goal because they perceive some outcome as intrinsically satisfying.

Assigned goals do not necessarily require an external reward. Latham and Locke (1979) reported several studies where the assignment of goals without external rewards led to increased performance. Knowing this, offering rewards for performance when goal origin and goal difficulty can influence performance results seems risky (and expensive).

Feedback. Neither goals nor feedback are good motivators when used alone (Locke, 1991; Locke et al., 1981). For goals to be effective, feedback must be provided so people working on a goal can evaluate their performance in relation to that goal (Locke & Latham, 1990c). Also, feedback acts as an indication of reinforcement when a goal is attained, or as an indication that corrective action is necessary when the goal is not attained. While feedback is a necessary condition for goal efficacy, the feedback source does not have differing effects (Kernan et al., 1991). Effective feedback sources can be verbal (Wilk & Redmon, 1990), public posting (Nordstrom, Lorenzi & Hall, 1990), or written (Becker, 1978).

In a field study of residential energy consumption, Becker (1978) demonstrated that feedback was necessary for residents to cut electricity consumption according to goal-related consumption rates. The residents were divided into four treatment groups: 1) a specific, challenging goal with feedback; 2) a specific, challenging goal without feedback; 3) a specific, easy goal with feedback; and 4) a specific, easy goal without feedback. The results indicated that the residents with a difficult goal and feedback performed significantly better than all the other groups. All other groups failed to differ significantly from the control condition that did not have a goal or feedback.

Summary. Based on what has been reviewed concerning the nature of goals, important concepts were used to guide the current study. In the investigation of performance levels associated with incremental goal increases, the influences of goal difficulty, specificity, publicness, origin, feedback, and goal-reward associations were held constant. This study assigned goals and made them public in order to maintain consistency between external influences. All goals are specific and within the same range of difficulty. No rewards for performance were offered directly, except for feedback indicating performance relative to a goal level and other participants' performance. This knowledge is not a reward per se, but has an affect on individuals' perceptions of their performance abilities.

Individual Variables in Goal Setting

In addition to the goal characteristics, individual differences moderate goal effectiveness. In particular, people have different self-efficacy and commitment, both of which affect the goal-performance relationship. A review of several studies will direct the control of these variables in this study.

Self-efficacy. Self-efficacy is defined by Wood and Bandura (1989) as a belief that one has the capabilities necessary to successfully take courses of action. Expectancy is a term used in goal setting to refer to the way people perceive that their efforts will lead to outcomes. Self-efficacy precludes expectancy in that before someone can believe that their efforts will lead to performance, they have to judge themselves able to exert the effort necessary for performance. For the present study, to the extent that people judge themselves as being capable of achieving the goal, they will expect that their skill and efforts will lead to this performance. Other things being equal, subjects in a small, incrementally-increasing, goal difficulty condition should expect that their abilities will provide the effort needed to reach the performance goal to a greater extent than subjects who are faced with larger increments in goal difficulty. This might be because a small increment appears to be less challenging (and hence, results in higher self-efficacy and higher expectancy) than a large increment.

Commitment. Locke, Latham and Erez (1988) defined commitment as "one's attachment to or determination to reach a goal, regardless of the goal's origin" (p.24). In order for goal setting to be effective, there must be commitment to the goal (Erez & Zidon, 1984). This is intuitively obvious as goals have no meaning if someone is not committed to achieving them. Rodgers and Hunter (1991) studied upper-level management commitment in Management by Objective (MBO) programs. MBO involves goal setting, participation in decision making, and objective feedback. When upper-level management was committed to the programs, productivity gains reached 56%. They contrasted this with low commitment, for which productivity gains averaged only 6%.

Commitment is necessary for goal attainment and has been demonstrated to moderate performance (Erez & Zidon, 1984). The Erez and Zidon (1984) study on the effects of goal acceptance on performance has several implications for this study. Even though goal acceptance and commitment refer to slightly different concepts, they are often used interchangeably (Locke et al., 1981). The difference between the two concepts depends on whether goals are assigned or self-set. Assigned goals must be accepted for commitment; self-set or participative goals imply acceptance, and therefore, commitment.

Erez and Zidon (1984) assigned and manipulated goal difficulty levels and measured goal acceptance and performance. They found goal acceptance and performance are: (a) positively related and linear for accepted goals, (b) negatively related and linear for rejected goals, (c) associated with a slope reversal from positive to negative (an inverted "V" pattern) when goal acceptance changes from acceptance to rejection. The design of this study involved the experimenter assigning increasingly difficult goals up to the point where they were no longer attainable.

This study highlights several important relationships. First, since research has shown that an accepted authority can influence behavior (Milgram, 1969), an experimenter can represent the same type of accepted authority. Second, this acceptance of the experimenter, and this person's request to achieve a goal level on a task, can influence subsequent performance towards a goal. Third, the subjects' commitment to achieving increasingly difficult goals will directly influence performance in a positive direction until the goals are no longer attainable, at which point acceptance and performance both drop.

Goal Setting and Performance Hypotheses

Our current knowledge of the relationship between goal difficulty and performance indicates that high, specific goals lead to higher performance than low goals, vague goals, or no goals. The Erez and Zidon (1984) study indicates that when assigned goals are accepted, performance can be increased in incremental units up to the point where goals are no longer attainable. In addition, the incremental goal manipulation used by Erez and Zidon (1984) held goal level and goal level increases constant and equal between groups. Since a search of the literature did not produce any study that attempted to assess the effects of unequal goal difficulty incremental increases on performance, these effects were examined.

In accordance with the goal-related variables and individual variables that affect goal performance, the design of this study controlled, as much as possible, these influences. In particular, performance goals were assigned, specifically defined, of varying difficulty levels, publicly posted, and extrinsically motivated by experimenter request and through within-group competition.

Part one of this study investigated the relationship between goals and performance. All things being equal, it is understood that for any goal difficulty level "X," corresponding performance levels should be "Y." However, a large incremental goal increase should have less of an effect on performance than small incremental goal increases up to the same goal level. This may be due in part to practice effects on the task. In other words, a group of subjects that perform on X goal level and then perform on an increased goal level of X+3 would only have two trials to practice. Another group that performs on the same initial goal level X and then performs on increased goal levels of one unit

increments, up to the X+3 level, would then have had four trials to practice. Also, in accordance with self-efficacy and expectancy, small goal increases should be perceived as easier to achieve than large goal increases. In terms of goal acceptance, successful performance on small goal increments should occur more frequently than for large goal increments and therefore, be accepted more often. It is reasonable to hypothesize that for any trial-specific goal level, the small incremental group will out-perform the large incremental group. These same effects could occur continuously as goal levels increase, up to the point where goals are no longer attainable, at which point performance was hypothesized to be at higher levels for the small incremental group than for the large incremental group.

Hypothesis 1:   Small incremental goal increases were related to higher trial-specific performance than large incremental goal increases.

Hypothesis 2:   Small incremental goal increases were related to higher overall performance than large incremental goal increases.

Goal Setting and Satisfaction Hypotheses

Also of interest to this study were the levels of satisfaction which correspond to task performance. A review of the relevant literature and an examination of the High Performance Cycle (Locke & Latham, 1990b) assisted in making satisfaction predictions.

In studies by Vroom (1964) and Iaffaldano and Muchinsky (1985), the average correlation between performance and satisfaction was .14 and .15, respectively. These low correlations have led some researchers to refer to the

relationship between performance and satisfaction as "an illusory correlation" (Iaffaldano & Muchinsky, 1985; Organ, 1988).

Fisher (1980) described the problem of low correlations between performance and satisfaction as the result of a problem in measuring a behavior in comparison with a measuring an attitude. In particular, the measure of an attitude towards behavior should predict a pattern of behavior over time, not a single-act. Most research tries to correlate a single behavioral measure with general attitude and, thus, very small correlations result. "To predict a more specific behavioral criterion..., one should use a more specific measure of attitude," such as a measure of attitude towards the act itself (Fisher, 1980, p.609). Fisher also raises a question concerning whether an attitude leads to behavior or whether behavior leads to the attitude. Most research has examined how the attitude (satisfaction) influences behavior (performance). It seems tenable (as she suggests) that behavior may be influencing the attitude, or that causality occurs in both directions.

Scarpello and Campbell (1983) compared interview information with job satisfaction ratings on the Minnesota Satisfaction Questionnaire short-form, a one item yes/no question, and a one item 1-5 rating of satisfaction. Their results indicated that the sum of the facets of the MSQ did not provide a reliable measure of overall job satisfaction. Further, subject interviews identified five facets related to job satisfaction that the MSQ did not assess. However, the global measures of satisfaction were found to be reliable, with the 1-5 rating format being the most inclusive measure of job satisfaction.

In accordance with the above research, in examining the relationship between single-act performance and task satisfaction, a single item measure

was used to assess the person's attitude towards their performance. This measure was a ranking of "how happy are you with your performance on the puzzle?", ranging from 1 (very unsatisfied) to 7 (very satisfied). This measure should correlate with performance and be valid for the purpose of this study.

The high performance cycle. The High Performance Cycle (Figure 1) is a motivational model describing how different variables interact in a cyclical manner contributing to high performance. It was designed by Locke and Latham (1990b) to explain certain consistent and inconsistent relationships found in the goal setting literature and to make predictions about how variables are related and, in certain levels and combinations, can lead to high performance through the application of goal setting designs.

In this cycle, the application of high goals leads to high performance given that people pursuing the goals have high expectancy, high self-efficacy, high commitment, and that feedback is provided. When high performance is achieved, rewards lead to satisfaction and influence commitment to future goals. The problem encountered in this cycle, as has been described, concerns the relationship between the level of goal (high vs. low) and the resulting level of satisfaction (high vs. low).

Obviously this relationship poses a problem for goal setting applications. An organization might wish to increase performance of some type, and in accordance with the high performance cycle, would be interested in setting high performance goals. The consequence, as mentioned, should be an adverse effect on satisfaction levels. In worst case scenarios, job dissatisfaction is thought to be related to quitting, absenteeism, grievances, substance abuse,

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Specific,                Mediating Mechanisms        Moderating Factors
High Goals               Effort                      Commitment
High Expectancy ————→    Persistence    ←————————    Feedback
Self Efficacy            Direction                   Ability
                         Task Strategies             Task Complexity
                                                     Situational Constraints
                              │
                              ↓
                         High Performance
                              │
                              ↓
                         Contingent and Non-
                         Contingent Rewards
                              │
                              ↓
                         Satisfaction
                         (and anticipated
                         satisfaction)
                              │
                              ↓
                         Commitment to Goals
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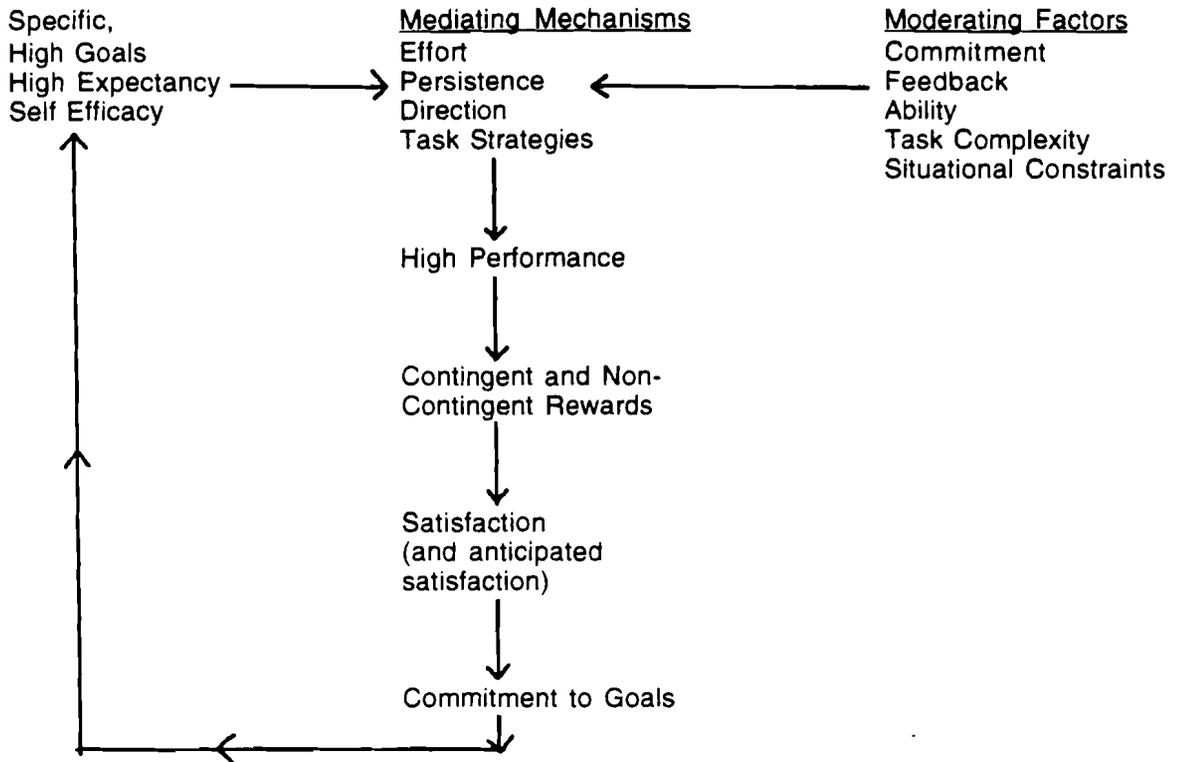
Figure 1. The High Performance Cycle*: The direction and influence of goal-related and individual-related variables involved in high performance goal-setting.

*From "Work Motivation and Satisfaction: Light at the end of the tunnel," by E. A. Locke and G. P. Latham, 1990b, *Psychological Science*, Vol. 4, No. 4, p.244.

joining unions, striking, and/or reduced effort (Locke & Latham, 1990c). These are risks that an organization would want to avoid when applying goal setting.

Incrementally raising goal levels might provide a solution to this problem (Locke & Latham, 1990c). Knowing that small goals are associated with high satisfaction, the small incrementally increasing goal difficulty design should be associated with constant, high satisfaction levels with the task itself. Since the high performance cycle predicts that satisfaction will influence commitment which will influence goal performance, in accordance with Erez and Zidon (1984), satisfaction should remain high until goals are no longer attainable, at which point goal commitment, goal performance, and satisfaction are predicted to drop. Conversely, in knowing that high goals and satisfaction are negatively related, it is reasonable to hypothesize that as goal levels increase in large increments, satisfaction levels will decrease over trials.

Hypothesis 3:   Small incremental goal increases were related to higher overall levels of trial-specific task satisfaction than large incremental goal increases.

Hypothesis 4:   Small incremental goal increases were related to higher overall levels of task satisfaction.

CHAPTER 2

METHOD

Participants

The participants were students enrolled in two undergraduate psychology classes at a midwestern university. The two treatment groups consisted of the students in these classes. There was a total of 51 participants. The participants were divided into a group of 36 in the large incremental condition and another group of 15 in the small incremental condition. There were 39 females and 12 males. The average age was 22.5 (SD = 6.21 yrs.). Due to limitations in the availability of participants, two groups of unequal size resulted. The participants were randomly assigned into one of the two treatment groups.

Performance on word search puzzles served as the task. Word search puzzles are matrices of letters arranged so that identifiable words are embedded within the letters. The objective is to scan through the letters and locate the words. Altogether, 10 different puzzles were utilized.

Design

Independent Variables

Goal. The level of a goal is defined as a predetermined number of words to be located. Goals are of varying degrees either higher or lower than the average score on a puzzle completed without any goals. Goals are set and defined along a continuum ranging from easy to very difficult. Goal levels ranged from -3 words below the average to +6 words above the average, with goal level 0 representing the average number of words found on a puzzle without any goals. Since goal setting can lead to higher performance than a

control group without goals (Latham & Locke, 1979), a control group was not necessary.

Goal increment. Participant Group 1 was the large increment increasing goal difficulty condition. There were four goal trials where each subsequent goal condition represents an increase of four words. The puzzles used for these trials had averages of 9, 10, 11, and 12 for goal conditions -3, 0, +3, and +6. This equates to four goals levels of 6, 10, 14, and 18 words.

Participant Group 2 was the small incremental increasing goal difficulty condition. There were 10 goal trials where each subsequent goal condition represents an increase of one word. The puzzles used for these trials had averages of 9, 9, 10, 10, 10, 11, 11, 11, 11, and 12 for goal conditions -3, -2, -1, 0, +1, +2, +3, +4, +5, and +6. This equates to 10 goal levels of 6, 7, 9, 10, 11, 13, 14, 15, 16, and 18 words. Both groups received the same puzzles for goal levels 6, 10, 14, and 18.

Dependent Variables

Performance, achievement, and satisfaction. Performance levels, defined as the number of words identified on each puzzle, were measured. Achievement levels, defined categorically as goal achievement or non-achievement, were measured. Task satisfaction levels, defined as the participant's self-reported feelings of satisfaction in performing the task, were also measured. The satisfaction questionnaire was a single item question in accordance with Fisher (1980) and Scarpello and Campbell (1983) (Appendix A).

Procedure

A convenient sample of eight graduate students completed 15 puzzles before the experiment began. They completed the puzzles without any type of goals to work towards. From this set of 15 puzzles, the 10 puzzles with the most similar averages were selected for use in the study.

The results of the pilot study that determined the average for each puzzle are printed in Table 1. The means for the puzzles ranged from nine to twelve. The goal conditions ranged from -3 to +6. Goal levels ranged from 6 to 18 words. The goal levels did not increase in equal amounts because the goal levels did not perfectly coincide with the means. The goal level was determined by adding the goal condition to the means.

Both treatment groups were informed at the initial trial that the purpose for this study was to "examine the effects of eye wear on perceptual skills." At the initial trial, demographic information concerning names, age, gender, and eye wear type was collected. The students' last four digits of their social security numbers were used in identifying participants and their puzzles, as well as for identification on a feedback poster.

The puzzles were administered and completed at the beginning of each class, over the next 4 or 10 class periods. The participants were allowed three minutes to complete each puzzle. At each trial the experimenter instructed the subjects to "do your very best to find _X_ words." After the three minute period, the puzzles were collected and tabulated during the class period. At the end of the class period, the experimenter re-entered the class and posted a list with each participant's identification number. Next to each number was listed each person's performance that day, as well as whether they

Table 1

Means, Goals, and Treatment Conditions from the Pilot Study

Puzzle	Mean	Goal	Condition
1	9	6	-3
2	9	7	-2
3	10	9	-1
4	10	10	0
5	10	11	+1
6	11	13	+2
7	11	14	+3
8	11	15	+4
9	11	16	+5
10	12	18	+6

Note. Means and goals are expressed as a number of words.

individually achieved the goal. This feedback stayed posted continuously to provide immediate feedback on that day's goal, and also to provide a frame of reference so performance could be viewed over the course of the trials.

The satisfaction questionnaires were administered after the feedback was posted. In this way, task satisfaction levels reflected the most immediate response to performance that day. The administration of this measure did not take more than a couple of minutes.

CHAPTER 3

RESULTS

Tests of the Hypotheses

The first group of analyses tested Hypotheses 1, 2, 3, and 4. Before these

analyses were conducted, the data set was altered in two ways. First, the

statistics reported reflect data collected for both increment conditions from goal

conditions 0, 3, 6. Goal condition -3 was not used as this condition represented

the first trial for both groups, and therefore the treatment effect could not be

present. Also, an equipment malfunction on the first day of trials caused these

data to be invalid. Second, the data set was edited so that equal cell sizes

could be achieved. Complete data from 15 participants in the small increment

condition was collected. In the large increment condition, complete data from

36 participants was obtained. Data from 21 of these participants were randomly

removed by deleting every other participant from the feedback poster. Thus,

both groups had an equal number of participants.

Descriptive Statistics

Table 2 reports the averages for performance and satisfaction over trials.

Means for performance are presented in Figure 2. Performance levels for the

large increment condition remained constant over trials. Performance levels

for the small increment condition dropped and rose over trials. Means

for satisfaction are presented in Figure 3. Satisfaction levels for the large

increment condition remained nearly constant over trials. Satisfaction levels for

the small increment condition dropped and then rose over trials.

Table 3 is a correlation matrix including the variables involved in

Table 2

Performance and Satisfaction Means, by Level of Goal, Increment Condition, and Achievement

	Performance Means	Satisfaction Means
Goal = 10 words	10.33	4.93
Small Increment	10.40	5.00
Goal Not Achieved	8.75	3.75
Goal Achieved	11.00	5.46
Large Increment	10.27	4.87
Goal Not Achieved	7.00	3.40
Goal Achieved	11.90	5.60
Goal = 14 words	9.97	4.00
Small Increment	9.60	3.47
Goal Not Achieved	8.92	3.23
Goal Achieved	14.00	5.00
Large Increment	10.30	4.53
Goal Not Achieved	10.00	4.36
Goal Achieved	15.00	7.00
Goal = 18 words	11.30	4.37
Small Increment	12.27	4.13
Goal Not Achieved	12.27	4.13
Goal Achieved	N/A	

Table 2 (continued)

Performance and Satisfaction Means, by Level of Goal, Increment Condition,

and Achievement

	Performance Means	Satisfaction Means
Large Increment	10.33	4.60
Goal not Achieved	10.33	4.60
Goal Achieved	N/A	
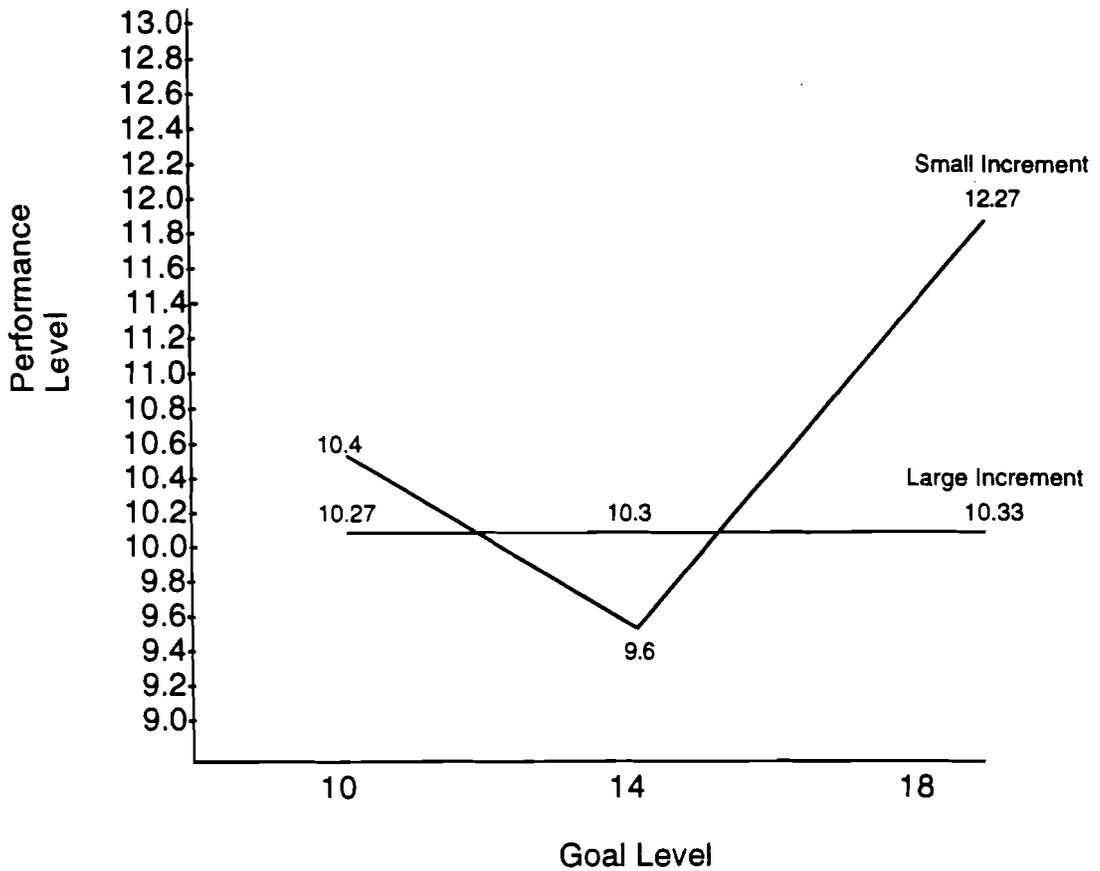
Figure 2. Performance means for both increment conditions over goals.
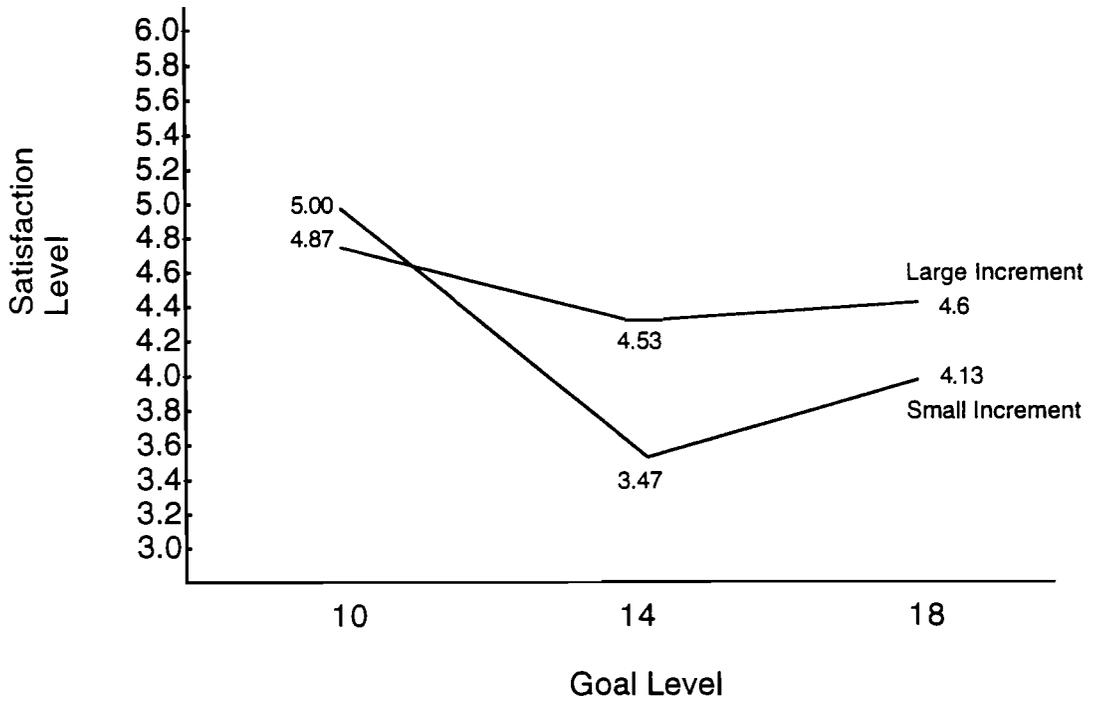
Figure 3. Satisfaction Means for Both Increment Conditions Over Goals.

Table 3

Correlations for Variables Involved with Hypotheses 1 and 3

	Goal	Performance	Achievement	Satisfaction
Performance	.16			
Achievement	-.65**	.30**		
Satisfaction	-.15	.42**	.43**	
Increment	.00	-.09	-.05	.15

Note. Goal = the goal level; Performance = performance measured as the number of words found on a puzzle; Achievement = achievement coded +1 for goal achievement, -1 for non-achievement; Satisfaction = satisfaction level; Increment = incremental condition coded +1 for large increment group, -1 for small increment group.

*$p < .05$

**$p < .01$

Hypotheses 1 and 3. The variables used include goal level, performance level, satisfaction level, goal achievement, and incremental condition. The variable "achievement" was coded a +1 when a goal level was achieved and -1 when it was not achieved. The variable "increment" was coded as +1 for the participants in the large incremental condition, and -1 for the participants in the small incremental condition.

Table 4 is a correlation matrix related to the variables involved with Hypotheses 2 and 4. The variables used include overall satisfaction, overall performance, overall achievement, and incremental condition. These variables were computed by adding the data collected at goal conditions 0, +3, and +6, and then dividing by 3.

The correlations in Tables 3 & 4 reveal several relationships. There is a positive correlation between performance and satisfaction ($r = .42$) and between overall performance and overall satisfaction ($r = .55$). There is a positive correlation between satisfaction and achievement ($r = .43$) and between overall satisfaction and overall achievement ($r = .41$). There is also a positive correlation between performance and achievement ($r = .30$) and between overall performance and overall achievement ($r = .76$). In each case, these relationships indicate as one variable increased or decreased, the other variable did likewise. There is a negative correlation between goal and achievement ($r = -.65$). Therefore, as goal level increased, achievement of the goals decreased. Other correlations were not indicative of strong associations.

Hypotheses 1 and 2

Hypothesis 1 was tested by regressing the variables for goal level,

Table 4

Correlations for Variables Involved with Hypotheses 2 and 4

	Overall Performance	Overall Satisfaction	Increment
Overall Satisfaction	.55**		
Increment	-.11	.21	
Overall Satisfaction	.76**	.41**	-.11

*p < .05

**p < .01

incremental condition, and an interaction variable for goal and increment onto performance. The interaction variable, increment/goal, was computed by multiplying goal levels by increment condition. From this equation, trial specific performance differences indicative of the small incremental condition out-performing the large incremental condition, would be reflected in a significant negative beta for the variable increment, since the small increment condition was coded with -1s. Table 5, which includes the results of this regression analysis, indicates this hypothesis was not supported. The equation failed to predict any variance in performance, and all variables, including increment, were not significant.

Hypothesis 2 was tested by regressing incremental condition, overall satisfaction, and overall achievement onto overall performance. From this equation, overall performance differences that would indicate that the small incremental condition out-performed the large incremental condition would be reflected in a significant negative beta for the variable increment. Table 6, the results of this regression analysis, indicates this hypothesis was not supported. While the equation predicted 66% of the variance in overall performance ($\underline{F}$ = 16.55, $\underline{p} < .0001$), increment failed to be significant.

Based on the goal setting performance theories, overall satisfaction and overall achievement should be influenced by performance and goal levels. However, with reference to the High Performance Cycle (refer to Figure 1), performance, achievement, and satisfaction are variables which might influence each other in a cyclical manner. In this case, overall satisfaction and overall achievement would be predictors of performance. In the Hypothesis 1 analysis, satisfaction and achievement were not entered as predictors because of their

Table 5

Results of Trial-Specific Performance Regression Analysis (Hypothesis 1)

Multiple R   .23

R Square   .05

Adjusted R Square   .02

Standard Error   2.51

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	3	30.61	10.20	1.62	.19
Residual	86	541.80	6.30		

Variable	B	SE B	Beta	T	Sig T
Increment	1.35	1.17	.54	1.16	.25
Goal	.12	.08	.16	1.49	.14
Increment/Goal	-.11	.08	-.64	-1.39	.17
(Constant)	8.84	1.17		7.59	.00

Table 6

Results of Overall Performance Regression Analysis (Hypothesis 2)

Multiple R   .81

R Square   .66

Adjusted R Square   .62

Standard Error   1.25

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	3	77.82	25.94	16.55	.00
Residual	26	40.75	1.57		

Variable	B	SE B	Beta	T	Sig T
Overall Achievement	3.08	.64	.62	4.80	.00
Increment	-.22	.24	-.11	-.92	.37
Overall Satisfaction	.58	.24	.32	2.43	.02
(Constant)	9.39	1.24		7.55	.00

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trial-specific purpose. They were included in this analysis because their overall effects may be predictors of performance as trials progress. In fact, both overall satisfaction and overall achievement predicted a significant portion of the overall performance variance.

<div align="center">Hypotheses 3 and 4</div>

Hypothesis 3 was tested by regressing the variables for goal level, performance, achievement, incremental condition, and the interaction variable for goal and increment onto satisfaction. From this equation, trial specific satisfaction differences that would indicate the small increment group was more satisfied with their performance than the large increment group would be reflected in a significant negative beta for increment. Table 7, the results of this regression analysis, indicates this hypothesis was not supported. While the equation predicted 34% of the variance in satisfaction ($\underline{F}$ = 8.45, $\underline{p}$ < .0001), increment failed to be significant.

According to the theory behind this hypothesis, satisfaction levels were thought to be influenced by feedback about performance and achievement. The large and small incremental groups were used to compare trial-specific satisfaction levels (for which there was no difference), and for predicting the variance in satisfaction. Results from the regression analysis support this idea. Performance and achievement were the only two significant predictors of satisfaction.

Hypothesis 4 was tested by regressing the variables for overall performance, overall achievement, and incremental condition onto overall satisfaction. From this equation, differences that would indicate the small

Table 7

Results of Trial-Specific Satisfaction Regression Analysis (Hypothesis 3)

Multiple R   .58

R Square   .34

Adjusted R Square   .30

Standard Error   1.31

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	5	72.29	14.46	8.45	.00
Residual	84	143.81	1.71		

Variable	B	SE B	Beta	T	Sig T
Increment/Goal	.06	.04	.53	1.32	.19
Goal	.00	.06	.02	.12	.91
Performance	.22	.07	.35	3.25	.00
Achievement	.60	.24	.34	2.45	.02
Increment	.49	.62	-.32	-.79	.43
(Constant)	2.32	.80		2.89	.01

increment group had a higher overall satisfaction level than the large increment group, would be reflected in a significant negative beta for increment. Table 8, the results of this regression analysis, indicates this hypothesis was not supported. While the equation predicted 37% of the variance in overall satisfaction ($\underline{F}$ = 5.17, $\underline{p}$ < .01), increment failed to be significant. No differences in overall satisfaction were found between the incremental groups, but overall performance did predict overall satisfaction.

<div align="center">Supplementary Analyses</div>

The results of the four regression analyses used to test the specific hypotheses of this study raised some concerns. While the statistics were run on equal cell sizes for the purpose of equal weight between treatment groups, the small number of subjects that were used could have affected statistical power. Due to the low statistical power in each of the four tests, beta errors might have occurred. That is, the null hypothesis was accepted when it may be false.

In order to investigate this possibility, several additional regression analyses were run so that the full set of data might be utilized and better understood. This includes 36 participants with performance and satisfaction measures for goals 6, 10, 14, and 18, from the large increment group. It also includes performance and satisfaction measures at goals 7, 9, 10, 11, 13, 14, 15, 16, and 18 for the 15 participants in the small increment group. This equates to a sample size of 144 performance and satisfaction measures for the large increment condition (36 participants X 4 goals), and 135 performance and satisfaction measures for the small increment condition (15 participants X 9 goals). A difference of 9 participants should be recognized

Table 8

<u>Results of Overall Satisfaction Regression Analysis (Hypothesis 4)</u>

Multiple R   .61

R Square   .37

Adjusted R Square   .30

Standard Error   .93

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	3	13.30	4.43	5.17	.01
Residual	26	22.29	.86		

Variable	B	SE B	Beta	T	Sig T
Overall Achievement	-.02	.65	-.01	-.02	.98
Increment	.30	.17	.28	1.78	.09
Overall Performance	.32	.13	.58	2.43	.02
(Constant)	1.08	1.63		.66	.51

even though multiple regression is robust to unequal sample size.

It is also worth noting that goal 6 is being used in the large increment group's data while it is not being used in the small increment group's data (the equipment malfunction occurred only once during goal 6 of the small increment group). Even though the treatment effect for incremental increases is not present at this goal level, the effects of goal-setting on performance and satisfaction are. Also, at goal level 18, no one in either group achieved the goal. This means that in the previous analyses, of the three trials that data were used from the large incremental group, this goal level (or one-third of the data) was restricted to non-achievement. This, in turn, might have had the hypothesized effects on satisfaction. It is possible the regression equation was biased due to this.

At this point it is not feasible to re-test the four hypotheses of this study. The methods used to test the hypotheses were determined *a priori* based on theory, and, therefore, are essential to the integrity of the study. These same theories will also be used to guide the post hoc examination of the entire data set.

In accordance with the High Performance Cycle (refer to Figure 1), goal level should predict variance in performance which together with achievement should predict variance in satisfaction, and overall satisfaction should predict overall performance.

Hypothesis 5:   Goal level predicts performance.

Hypothesis 6:   Performance and achievement predict satisfaction.

Hypothesis 7:   Overall satisfaction levels predict overall performance.

Also, while trial-specific performance and satisfaction comparisons are not

possible, in accordance with the first analyses, the hypothesized differences between incremental groups on performance and satisfaction will be tested.

Hypothesis 8:   Small incremental goal increases are more strongly associated with higher performance levels than large incremental increases.

Hypothesis 9:   Small incremental goal increases are more strongly associated with higher satisfaction levels than large incremental increases.

Table 9 contains the averages for performance and satisfaction over all trials. Means for performance are presented in Figure 4. Several factors are noticeable from a visual inspection of Figure 4. The performance trend for the large increment condition appears to be increasing over trials. The data added for goal level six makes this pattern more obvious than in the previous analysis. The small incremental condition appears to show a pattern of increasing and then decreasing performance on alternate trials. While this pattern appears inconsistent with the hypothesized pattern, the trend does seem to be heading towards increased performance over trials.

Satisfaction means for both increment conditions are presented in Figure 5. A visual inspection of this figure suggests that satisfaction levels for the large incremental condition slightly decreased over trials. For the small incremental condition, satisfaction levels appear to follow the same inconsistent pattern of rising and falling, similar to the performance levels. In fact, when Figure 4 and Figure 5 are compared, performance and satisfaction levels for the small increment condition rise and fall on the same goal trials. This is indicitive of a

Table 9

Performance and Satisfaction Means, by Level of Goal, Increment Condition, and Achievement, for the Entire Data Set

Variable	Performance Means	Satisfaction Means
Goal = 6 Words	8.89	5.17
Large Increment	8.89	5.17
Goal Not Achieved	5.00	1.00
Goal Achieved	9.00	5.29
Goal = 7 Words	7.20	4.00
Small Increment	7.20	4.00
Goal Not Achieved	5.33	2.67
Goal Achieved	8.44	4.89
Goal = 9 Words	9.33	4.60
Small Increment	9.33	4.60
Goal Not Achieved	6.75	2.75
Goal Achieved	10.27	5.27
Goal = 10 Words	10.00	4.77
Small Increment	10.40	5.00
Goal Not Achieved	8.75	3.75
Goal Achieved	11.00	5.46

Table 9 (continued)

Performance and Satisfaction Means, by Level of Goal, Increment Condition, and Achievement, for the Entire Data Set

Variable	Performance Means	Satisfaction Means
Large Increment	9.83	4.67
Goal Not Achieved	7.12	3.47
Goal Achieved	12.26	5.74
Goal = 11 Words	9.07	3.87
Small Increment	9.07	3.87
Goal Not Achieved	7.44	3.22
Goal Achieved	11.50	4.83
Goal = 13 Words	11.13	4.00
Small Increment	11.13	4.00
Goal Not Achieved	9.50	3.67
Goal Achieved	17.67	5.33
Goal = 14 Words	9.77	4.02
Small Increment	9.60	3.47
Goal Not Achieved	8.92	3.23
Goal Achieved	14.00	5.00

Table 9 (continued)

Performance and Satisfaction Means, by Level of Goal, Increment Condition, and Achievement, for the Entire Data Set

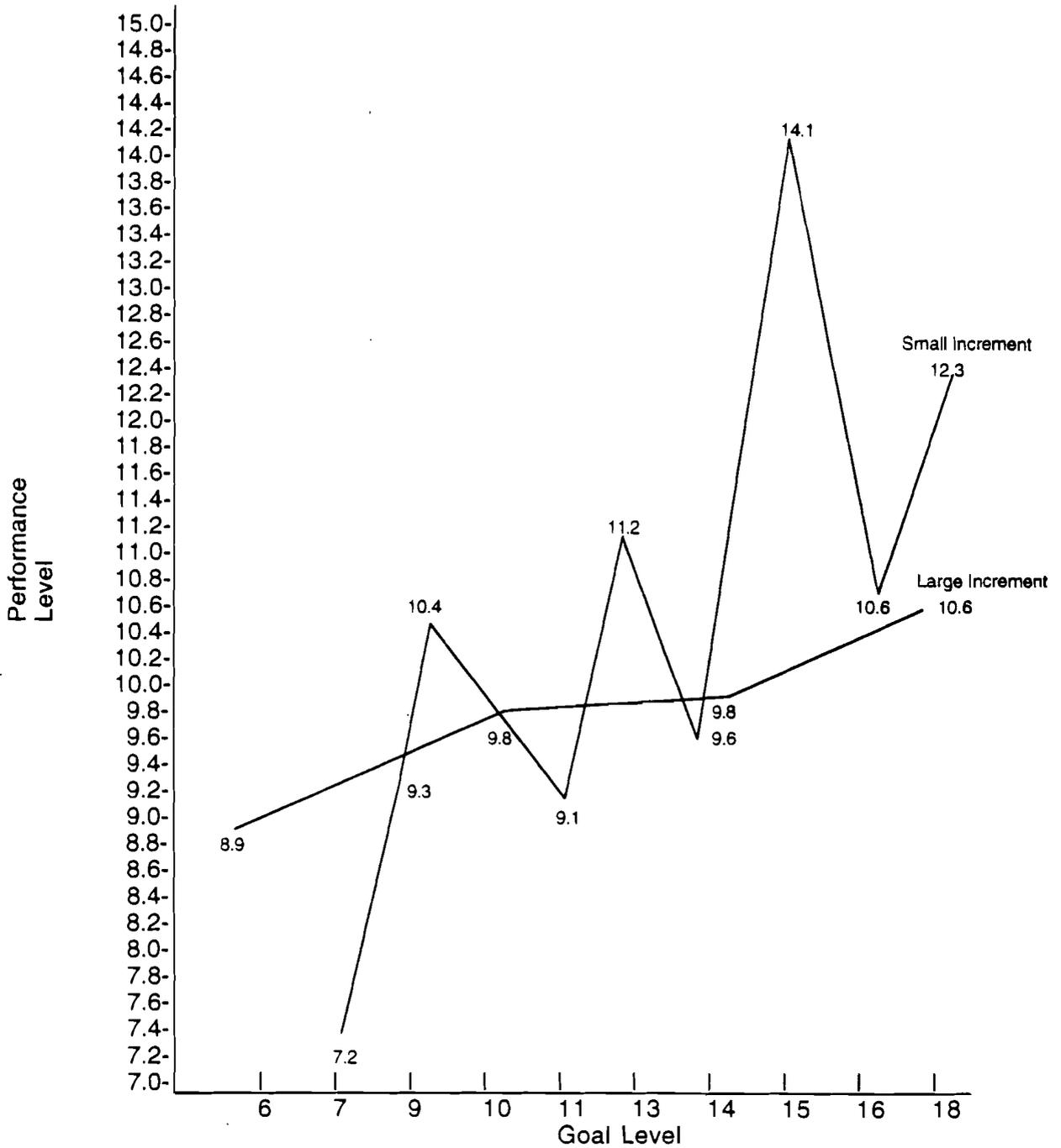| Variable	Performance Means	Satisfaction Means
Large Increment	9.83	4.25
Goal Not Achieved	9.30	4.03
Goal Achieved	15.67	6.67
Goal = 15 Words	14.07	4.67
Small Increment	14.07	4.67
Goal Not Achieved	11.25	3.88
Goal Achieved	17.29	5.57
Goal = 16 Words	10.67	3.73
Small Increment	10.67	3.73
Goal Not Achieved	10.67	3.73
Goal = 18 Words	11.12	4.31
Small Increment	12.27	4.13
Goal Not Achieved	12.27	4.13
Large Increment	10.64	4.39
Goal Not Achieved	10.64	4.39

Figure 4. Performance means for both increment conditions over goals using the entire data set
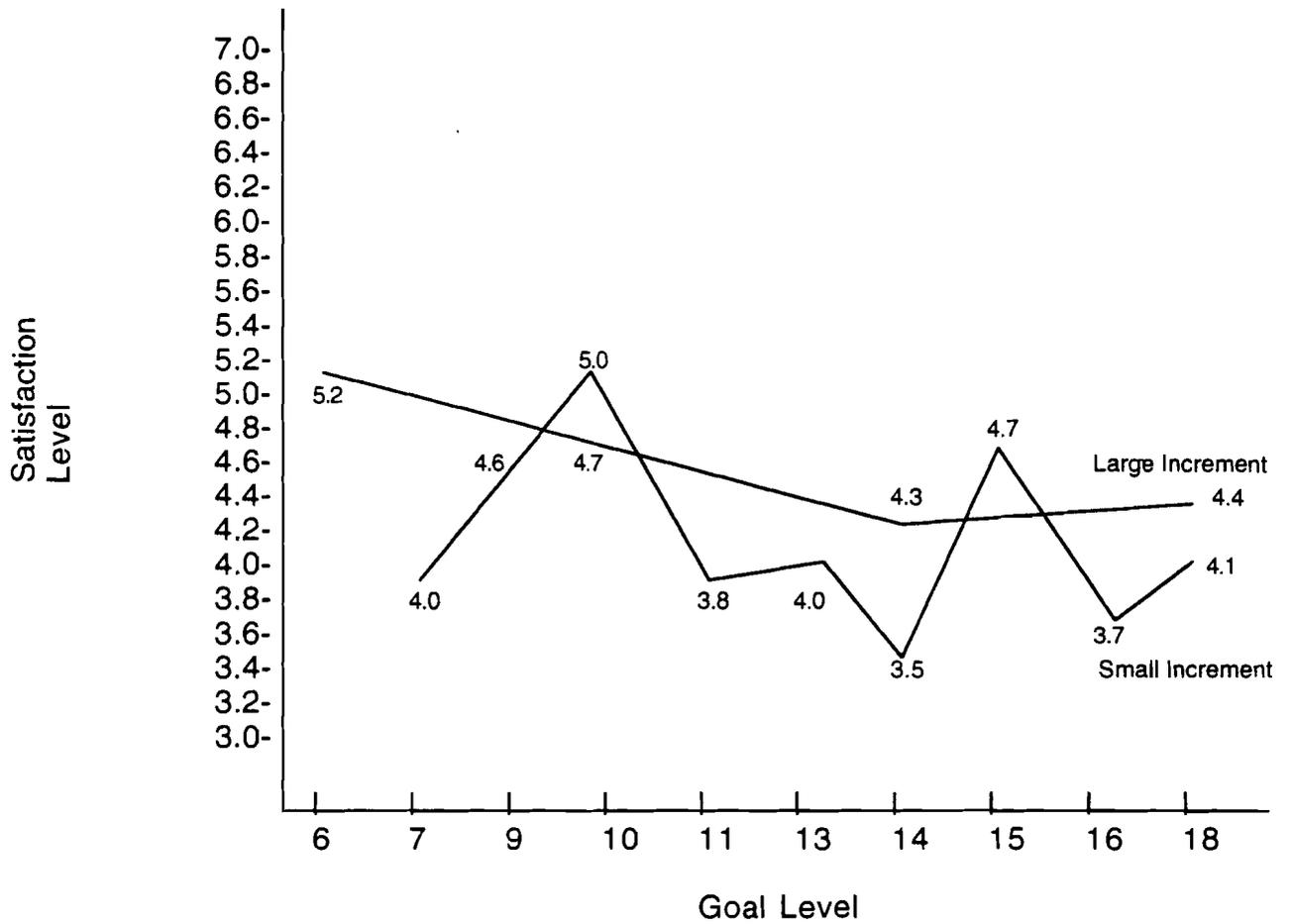
<u>Figure 5</u>.   Satisfaction means for both incremental conditions over goals using the entire

data set

positive correlation. When performance and satisfaction levels for the large incremental condition are compared, there appears to be a negative correlation. The actual correlations between performance and satisfaction for each incremental group, are presented in Table 10. The correlation is $r = .42$ for the small increment group and $r = .22$ for the large increment group. Both correlations are positive, and therefore as performance increased or decreased, satisfaction likewise increased or decreased.

Table 11 presents the correlation matrix for the variables involved in the regression analyses for Hypotheses 5, 6, 7, 8, and 9. In comparison to the correlations from the first analysis (Table 3), all correlations from the full data set are similar with one exception. In the first analysis, performance was weakly associated with goal level ($r = .16$). With the inclusion of all performance data in these additional analyses, the correlation between goal level and performance is more meaningful ($r = .31$). This positive correlation indicates that as goal level increased, performance increased.

It is also worth noting the negative correlation between goal level and satisfaction ($r = -.15$). This association is weak, and suggests that goal level and satisfaction are not significantly influencing each other. This is important because it was this association, reported in past research, that was the impetus for this study. The purpose of this thesis was to investigate a method of raising performance without lowering satisfaction. This correlation gives support for the contention that incremental goal setting can increase performance without affecting satisfaction.

More importantly, the two incremental conditions were supposed to have

Table 10

Correlations Separated by Incremental Condition

	Large Increment Condition		
	Performance	Satisfaction	Achievement
Satisfaction	.41**		
Achievement	.19**	.45**	
Goal Level	.22**	-.19**	-.77**

	Small Increment Condition		
	Performance	Satisfaction	Achievement
Satisfaction	.42**		
Achievement	.32**	.51**	
Goal Level	.42**	-.08	-.48**

*$p < .05$

**$p < .01$

Table 11

Correlations for Variables Involved with Hypotheses 5, 6, 7, 8, and 9

	Goal	Performance	Achievement	Increment	Increment/Goal
Performance	.31**				
Achievement	-.65**	.25**			
Increment	-.07	-.10*	.034		
Increment/Goal	.028	-.12*	-.05	.95**	
Satisfaction	-.15**	.40**	.47**	.14**	.11*

Note. Goal = the goal level; Performance = performance measured as the number of words found on a puzzle; Achievement = achievement coded as +1 for achieved or -1 for non-achievement of the goal; Satisfaction = participant's reported satisfaction; Increment = incremental condition coded either +1 for large or -1 for small; Increment/Goal = the interaction between increment condition and goal level.

*$p < .05$

**$p < .01$

different effects on this relationship. Notice in Table 10 that in the small incremental condition, goal level and satisfaction are correlated $r = -.079$, and in the large incremental condition the correlation is $r = -.19$. The correlation for the small incremental condition is insignificant. The -.19 correlation is somewhat significant. Therefore, the small increment group's satisfaction was not associated to goal increases, while the large incremental group's satisfaction slightly decreased as goal level increased.

Hypotheses 5 and 8 were tested by regressing variables for goal level, increment condition, and the interaction, onto performance. The results of this analysis are presented in Table 12. Notice in this analysis, the interaction variable (increment/goal) is significant. This precludes interpreting the main effects for goal and increment. The significance of the interaction indicates that goal levels and the increment condition are having different effects on performance. The negative beta for this variable indicates the small incremental condition out-performed the large incremental group. This supports Hypothesis 8. Accordingly, two additional analyses were run for the purpose of separating the increment groups. In this way, the effects of goal level on performance may be understood within the framework of each separate treatment condition.

Table 13 presents the results of the separate regression analyses. Goal levels in the small increment condition predict 18% of the variance in performance. Goal levels in the large incremental condition predict 5% of the variance in performance. Since the variables in both analyses are in the same units of measurement, the betas for the two equations are directly comparable.

Table 12

Results of the Regression onto Performance using the Entire Data Set

Multiple R   .36

R Square   .13

Adjusted R Square   .12

Standard Error   2.89

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	3	345.62	115.21	13.81	.00
Residual	275	2294.77	8.35		

Variable	B	SE B	Beta	T	Sig T
Increment/Goal	-.14	.05	-.60	-3.15	.00
Goal	.28	.05	.36	6.03	.00
Increment	1.54	.59	.50	2.60	.01
(Constant)	6.69	.59		11.32	.00

Table 13

Results of Goal Regression onto Performance for Separate Increment
Conditions

Small Increment Condition

Multiple R	.42				
R Square	.18				
Adjusted R Square	.17				
Standard Error	3.10				

	df	Sum of Squares	Mean Square	F	Sig F
Regression	1	269.55	269.55	28.11	.00
Residual	133	1275.22	9.59		

Variable	B	SE B	Beta	T	Sig T
Goal	.42	.08	.42	5.30	.00

Large Incremental Condition

Multiple R	.21				
R Square	.05				
Adjusted R Square	.04				
Standard Error	2.68				

	df	Sum of Squares	Mean Square	F	Sig F
Regression	1	49.61	49.61	6.91	.01
Residual	142	1019.55	7.18		

Variable	B	SE B	Beta	T	Sig T
Goal	.13	.05	.22	2.63	.01

The beta in the small increment condition equals .42, while the beta in the large increment condition equals .13. This translates into performance increases of .42 and .13 words as goal level increases one unit. In other words, when goal level increases one word, performance on the trial increased .42 words and .13 words for the small and large increment conditions, respectively. Therefore Hypothesis 5, that goal level predicts performance, is supported for both conditions. Hypothesis 8, that the small incremental condition is associated with higher performance levels than the large incremental condition, is also supported.

Hypotheses 6 and 9 were tested by regressing variables for performance, achievement, goal level, increment condition, and the interaction variable onto satisfaction. The results of this analysis are presented in Table 14. The results indicate 33% of the variance in satisfaction was predicted by the model. Hypothesis 6 was supported. Both performance and achievement were predictors of satisfaction. The variables increment/goal, goal, and increment were insignificant in this equation. In this case, further analyses are not required to look for any differing effects between the incremental conditions. It can therefore be concluded that large and small incremental goal increases do not have differing effects of satisfaction. Hypothesis 9 was not supported. As was mentioned earlier, no control group was used in this study. There is no way to gauge whether these satisfaction levels are any higher or lower than satisfaction levels associated with doing the puzzles in the absence of goals. This study was limited to satisfaction differences which might have occurred as a result of the treatment effect.

Table 14

Results of the Regression onto Satisfaction using the Entire Data Set

Multiple R   .58

R Square   .33

Adjusted R Square   .32

Standard Error   1.34

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	5	242.69	48.54	27.15	.00
Residual	273	488.15	1.79		

Variable	B	SE B	Beta	T	Sig T
Increment/Goal	.02	.02	.14	.82	.41
Goal Level	.01	.04	.03	.30	.76
Performance	.16	.04	.30	4.43	.00
Achievement	.70	.14	.42	5.08	.00
Increment	.04	.28	.02	.14	.89
(Constant)	2.84	.34		8.36	.00

Hypothesis 7, that overall satisfaction is a predictor of performance, was tested by regressing all satisfaction measures onto all performance measures. No attempt was made to differentiate between the two incremental conditions. The results of this analysis are presented in Table 15. They indicate that overall satisfaction predicted 21% of the variance in overall performance. This supports Hypothesis 7.

Table 15

Results of the Regression of Overall Satisfaction onto Overall Performance

Multiple R   .45

R Square   .21

Adjusted R Square   .19

Standard Error   1.95

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Sig F
Regression	1	48.09	48.09	12.68	.00
Residual	49	185.88	3.79		

Variable	B	SE B	Beta	T	Sig T
Overall Satisfaction	.87	.24	.45	3.56	.00
(Constant)	6.08	1.13		5.39	.00

CHAPTER 4

DISCUSSION

Purpose

The purpose of the study was to investigate incremental goal setting and its effects on performance and satisfaction. The problem identified in the goal setting literature involved a negative relationship between goal levels and satisfaction levels (Locke & Latham, 1990c). Under the premise that goal setting leads to high performance and guided by the theory that incremental goal increases would have a beneficial effect on performance without an adverse effect on satisfaction, this study tested these effects in an effort to provide support for a solution to the problem.

Hypotheses 1 through 4

Hypotheses 1 through 4 represent the original intent of the study. The failure to find support for these hypotheses, as well as for the basic tenets of goal setting, prompted a re-assessment of the entire design of the study and especially the data set. Because of a small participant population and a restricted range of goal levels, errors occurred in the analyses. With the realization that most of the entire data set could be utilized, the decision was then made to re-assess certain performance and satisfaction relationships within the framework of the high performance cycle, and to also re-test the basic hypothesized differences between the two incremental conditions.

While the rest of this discussion focuses on these post hoc analyses, consideration is first given to the methodological problems encountered in the first part of the study. In future studies involving incremental goal setting, it would be advisable to utilize participant populations greater than 15

participants per condition. Pedhazur (1982) recommends 30 participants per independent variable. With equal cell sizes of at least 30 participants, tests of trial-specific performance and satisfaction could be reliably conducted.

Range restriction was the other methodological problem. The independent variable, goal level, was restricted in the analyses to just levels 10, 14, and 18. The full range should include both ends of the goal continuum (6 and 18), as well as all goals in between. Future studies should analyze all goal levels, allocate participants accordingly (i.e., more participants in conditions with fewer goals), and consider employing a wider range of goals than in this study. In realizing that no one achieved Goal 18, the element of time restrictions also should be considered. Additional time to work on the puzzles would allow for a wider range of goal levels and possibly a greater variance of scores.

<div align="center">Hypotheses 5 and 8</div>

Hypothesis 5 was created in accordance with, and for the purpose of testing, the principles of the high performance cycle. This acted as a type of manipulation check. Since there is wide support for the contention that goal setting increases performance, if goal setting in this study did not affect performance (as was the case with the Hypothesis 1 analysis), then it would indicate that there were methodological problems.

Hypothesis 5, that goal level predicts performance, was supported. Reference to Table 11 indicates goal levels and performance levels were positively correlated, and Table 12 confirms that goal level predicts performance. These results give further support to the goal setting research that claims goals increase performance.

These results support goal setting theory but do not address the importance of incremental goal setting as a method of increasing performance. In other words, from the regression analysis (Table 12), is the prediction of 13% of performance variance practically useful? While 13% is statistically significant, it also means that 87% of performance variance is attributed to residual variance (or error). Other factors are obviously involved in affecting performance.

The practical significance of incremental goal setting for the purpose of increasing performance gains clarity when Hypothesis 8 and Table 13 are considered. Hypothesis 8, that small incremental goal increases are associated with higher performance than large incremental goal increases, was supported. When the increment conditions were separated, the small goal condition predicted 18% of performance variance and the large goal condition predicted 5%. While both portions are significant, the small goal condition had a three times greater effect than the large goal condition. Therefore, while both methods are effective for increasing performance, small incremental goal increases are more effective.

Goal Setting and Performance

The reasons why the small increment condition out-performed the large increment condition can be attributed to the goal-related and individual-related variables as discussed in the Introduction. In particular, it was hypothesized that smaller goals are associated with higher self-efficacy and higher expectancy, since a small goal appears easier to achieve than a large goal. This is a plausible explanation, although further research is necessary to support this.

The other possible reason why the small increment condition out-performed the large increment condition concerns practice effects. The large increment condition had four trials to practice, while the small increment condition had ten trials. The six extra goal trials may explain the performance differences between the two groups.

The topic of task complexity is relevant to understanding practice effects. The nature of the difference between a complex task and a simple task is, by definition, that a complex task involves more variance in the skills and strategies used to accomplish it. If word search puzzles are a simple task, then individual variances in skill and strategy were minimal. In this case, performance differences are more attributable to simple effort differences. If effort levels are a reflection of individual motivation, the effects of incremental goal setting, since goal setting affected increased performance, is more attributable to motivated efforts than the learning of improved skills or strategies that result from practice. At the very least, performance differences in incremental goal setting for a simple task are more attributable to self-efficacy and expectancy than practice effects.

<center>Methodological Concerns and Recommendations</center>

While the previous discussion of performance offers support for aspects of goal setting, several methodological concerns need consideration. With reference to Table 1, the results of the pilot study, the averages for each puzzle used in this study may be either too high, arranged improperly, or both. In comparing the means for each puzzle used at a certain goal level with the mean performance of the participants in the goal setting study (Figure 4), the averages from the pilot study are greater than the performance levels of the large

increment condition in all cases, and are both greater than and less than performance levels of the small increment condition. In other words even though incremental goal setting increased performance, the large increment group performed lower than average and the small increment group was not any better than average.

This is misleading for two reasons. First, a control group was not used in this study. Drawing parallels between the pilot study performance and goal setting performance is inappropriate since the pilot group was not intended for this purpose. Second, the pilot group was small ($n = 8$) and consisted of graduate students. While this small number indicates that the means might not be accurate, the graduate students in the pilot study were a more serious problem because the goal setting subjects were mostly undergraduates. There may be extraneous variables associated with graduate students that affect performance and are not present with undergraduate students (e.g., higher education level, intelligence quotient, scholastic commitment).

Future goal setting studies should be designed to ensure accurate means before the study begins. A sample of at least 30 subjects in a pilot study should suffice. Also, steps should be taken to ensure that the pilot sample and study sample are of the same population.

In addition, the puzzles from the pilot study were chosen and arranged because of the similarity of their means and also to match the requirements of the goal conditions. A confounding variable might have been inadvertently created in this procedure. If the means from the pilot study are accurate, then they are arranged in a decreasing order of difficulty over trials. The puzzles with a mean of 9 are one word more difficult than the next puzzles with means of 10,

11, and so forth. What this translates into is that the puzzles themselves are arranged so that mean performance levels increase over trials. Therefore, increasing performance levels that have been attributed to incremental goal setting may possibly be nothing more than a spurious association between the puzzles themselves and their use over trials. This appears to be a problem for the performance investigations, but it is impossible to tell if this occurred because the pilot means are possibly inaccurate. Future research should select puzzles that all have the same difficulty level.

In the previous paragraphs methodological issues were discussed. While conclusions concerning the goal setting and performance aspects of the study are questionable, the results of the satisfaction relationships are more sound. With the inclusion of the entire data set, range restriction and small sample size are less of an issue. Also, the problems with the pilot study concern performance issues, and do not have implications for satisfaction. The satisfaction data that were collected and analyzed are entirely relevant to incremental goal setting.

<div align="center">Goal Setting and Satisfaction</div>

Hypotheses 6 and 7 were created in accordance with, and for the purpose of testing, the high performance cycle. As was shown in the Results chapter, performance and achievement predicted satisfaction (Hypothesis 6), and overall satisfaction predicted overall performance (Hypothesis 7). Hypothesis 9 was created to assess whether satisfaction differences exist between the two incremental groups. While the results of the regression analysis did not support the hypothesized differences, the correlations between goal level and

satisfaction do indicate that the treatment effects had different associations in the two incremental conditions.

The support for Hypotheses 6 and 7 has value for research of the performance/satisfaction relationship. The research cited in the literature review claimed that the correlation between performance and satisfaction was roughly $r = .15$ (Iaffaldano & Muchinsky, 1985; Vroom, 1964). In this study, the correlation was $r = .40$. This would support Fisher's (1980) contention that in order to predict a specific behavior, a specific measure of the attitude towards that behavior should be used. The satisfaction questionnaire was designed in accordance with this, and given the results, may therefore be recognized as a valid instrument in this study. Future studies should also design satisfaction measures with Fisher's guidance.

While this study revealed a strong association between performance and satisfaction, the correlation between achievement and satisfaction was stronger. Achievement and satisfaction were correlated $r = .47$. In recognizing that achievement was a categorical variable entered into this study as a part of the feedback, and in recognizing that this variable is not explicitly described in the high performance cycle, its importance needs clarification.

Achievement feedback was provided for a "yes/no" response to whether a subject's performance met the goal level. Achievement was entirely dependent upon performance, which was the true dependent variable being measured. However, the stronger association between achievement and satisfaction, as well as the finding that achievement is a predictor of satisfaction, may be serendipitously indicating that feedback has more influence on satisfaction than actual performance levels. The issue of covariation between performance and

achievement is relevant to understanding this. Obviously the two variables are correlated. But without knowing the actual importance of each variable in the regression onto satisfaction, it is impossible to tell which variable was more important. Since goal setting research has never really identified achievement as a dependent variable and assumes this effect to be part of performance, future research may try to differentiate between these effects under the theory that achievement feedback may be a more important variable in determining satisfaction.

Hypothesis 7 was tested in accordance with Fisher's (1980) contention that an attitude should predict a pattern of behavior over time and not a single behavioral act. This theory was supported as overall satisfaction predicted 21% of overall performance. When this result is combined with the support for Hypothesis 6 (performance predicts satisfaction), it gives support to the idea that performance and satisfaction influence each other in a cyclical manner. This is in accordance with Fisher (1980) and also supports the design of the High Performance Cycle (Locke & Latham, 1990b).

Hypothesis 9 was posited for its relation to the true purpose of this thesis. The most useful information for goal setting research would be provided by support for a method of goal setting that did not have adverse effects on satisfaction. Incremental goal setting was a method theorized to not have these effects on satisfaction. While the results of regression analysis for Hypothesis 9 did not detect any differences between the large and small incremental groups, it also indicates that these variables did not affect satisfaction. The findings presented in Table 14 indicate goal level, increment condition, and the interaction of goal and increment, were not significant variables in the prediction

of satisfaction. This translates into support for the theory that incremental goal setting does not have effects on satisfaction, and that the method of incremental goal setting (small v. large) does not make a difference.

This is both disappointing and encouraging. While the field of goal setting research would have gained better understanding of satisfaction if there were control groups to gauge whether satisfaction levels were any higher or lower than groups that were performing under other goal setting conditions, or no goal setting conditions, it will benefit from the support this study offers that incremental goal setting does not affect satisfaction. In other words, at the very least there is support for using incremental goal setting for the purpose of raising performance without affecting satisfaction.

There is some evidence, however, that the two increment conditions were associated with satisfaction to different extents. While the overall correlation between goal level and satisfaction was weakly significant, the correlations between goal level and satisfaction were different when the incremental conditions were separated. In particular, the small incremental goal condition had a meaningless and insignificant association to satisfaction. The large incremental goal condition was associated with satisfaction in a weak and negative relationship. Therefore, based on correlations, there is some support for the idea that small incremental goal increases do not affect satisfaction, while large incremental goal increases are associated with decreasing satisfaction. This interpretation warrants caution, however, until future research can elaborate on these relationships.

Research Implications

During the course of this study, several methodological issues related to incremental goal setting were uncovered. Future research in this area would do well to take note of the following issues: When conducting a pilot study, use the largest sample possible ($\underline{n}$ > 30) and use participants from the same population as the study participants; if word search puzzles are to be used, choose only puzzles which have the same difficulty; ensure that the treatment conditions contain at least 30 participants per level of independent variable, and then estimate cell sizes according to the number of participants in each condition over the number of trials they will participate in; include, as much as possible, all data for all goal levels and participants in the analyses; use control groups with and without goal setting methods. In addition, future research would advance understanding of incremental goal setting if it were to include any of the following: additional time, additional goal levels, measures of self-efficacy, expectancy, and commitment, other tasks (simple, complex, or combinations), and/or diversified participant populations.

Practical Implications

This study has very restricted generalizability for several reasons. Due to a limited participant pool, these results should not be applied to any other population except students. Additional studies with student populations are first necessary before there can be enough support to take incremental goal setting applications into the field with any degree of confidence.

This study involved task performance and task-related satisfaction. The simple task which was used is much different than actual job performance, which involves multiple simple and complex tasks. Therefore, no parallels

should be made between task performance and task satisfaction to job performance and job satisfaction.

Theoretical Implications

The most useful implications of this study involve the development and elaboration of goal setting theory. Theoretical support and a possible discovery emerged in the results. These concepts should advance our knowledge and could possibly lead to new theoretical developments in goal setting.

To this author's knowledge, this is the only study which has attempted to assess the effects of incremental goal setting on satisfaction. The Erez and Zidon study (1984) examined the effects of incremental goal setting on performance and goal acceptance. With the addition of these results, the effects of incremental goal setting on performance gains support, while the effects on satisfaction are described for the first time.

Regardless of the performance issues associated with the pilot study, incremental goal setting was effective for increasing performance. Small incremental goal setting was more effective for increasing performance and may be associated with higher self-efficacy and expectancy than large incremental goal setting.

With reference to Figure 4, the graph of performance means over trials, a unique aspect of this study appeared which has not been discussed. While the large increment group's performance remained fairly consistent, the small increment group's performance fluctuated on alternate trials. This may be consistent or inconsistent with the results of the Erez and Zidon (1984) study, depending on how it is interpreted.

Erez and Zidon claimed incremental goal increases are associated with performance in a positive and linear direction for accepted goals, and in a negative and linear direction for non-accepted goals. If this is correct, the participants in the small increment condition accepted goals on one trial, then did not accept goals on the next trial, then accepted, then did not accept, etc. This seems theoretically and intuitively unreasonable, however.

Goal setting theory describes commitment both in terms of the effects of previous satisfaction with goal performance, and in terms of the appearance of goal levels as being possible to achieve. In terms of the appearance of possible goal achievement, it is not logical to assume subjects would perform on a particular goal level, then not accept the next goal (because it appeared non-achievable or unreasonable), but then decide on the next trial that this even higher goal is achievable and reasonable. Once goal levels become too high to appear reasonable or achievable, then from that point on, increasing goal difficulty should be associated with continued non-acceptance.

In terms of satisfaction influencing commitment, goal setting theory contends satisfaction with performance leads to commitment to future goals, which then corresponds with future high performance. Dissatisfaction influences lessened commitment, which would correspond with decreased performance in the future. This explanation is also illogical for this study. With reference to the satisfaction means over trials (Figure 5), satisfaction levels rose and fell on the corresponding trials where performance fluctuated. Therefore, if on any trial performance did not reach the goal level, satisfaction was lowered and commitment to the next goal should have been lessened. This would have appeared as lowered performance on each successive trial thereafter.

With the apparent failure of goal setting theory and the Erez and Zidon theory to explain these results, a new interpretation is required. This author believes the social information processing theory developed by Salancik and Pfeffer (1978) offers the most applicable explanation for these performance results. Social information processing emphasizes that behaviors and attitudes are influenced by the information which individuals receive from the social context surrounding them (Salancik & Pfeffer, 1978). When an individual is part of a group, they are to some extent bound with and committed to the norms and expectations of the group. When this information is cognitively processed, it will have effects on future behavior and attitudes. Salancik and Pfeffer (1978) also claim that when behaviors are evaluated, rationalization and justification processes are activated. If behavior cannot be justified by external forces, then it is attributed to personal motives, attitudes, and needs (Salancik & Pfeffer, 1978, p. 234).

The context of the social environment in which the study was conducted may explain the rising and falling pattern of performance. Both participant groups in this study were selected from, and tested within, the particular classes for which the students were enrolled. The study was conducted during April and May which is the end of the semester and the end of the school year. Participants were familiar with each other at this point. To some extent they shared their experiences together not only for their performance in the class, but also for their performance in the study.

Each day, as the trials progressed, the students may have been discussing their performance with each other and in doing so, were putting themselves under social pressures to perform as well if not better than their peers. The

inability to perform at a commensurate level with the study's goals and the rest of the class might make them appear to be non-able or not skilled enough to do a simple word search puzzle (a consequence which might be somewhat embarrassing). When performance on a given trial was commensurate with the goal level and other students' performance, this would have hypothetically influenced their attitude (higher satisfaction) that day. As it happened, on the next day's trial, the group's performance was identified by the feedback to have dropped and/or fallen below the goal level. When this information was processed, it had the associated effects on satisfaction levels. Come the next trial after poor performance, there might have been social pressures within the group which motivated an increased effort to perform better than they had on the previous trial. Hence, increased performance and increased satisfaction resulted. What might be concluded is these subjects were motivated to perform on alternate trials due to the consequences associated with a previous trial. This is what is reflected in the fluctuating performance levels.

This appears to have occurred in the small increment group and not in the large increment group possibly because of two variables: homogeneity and size of the group. The large increment group was more than twice the size of the small increment group, and therefore the social bonds might not have been as strong. Also, the average age in the large group was 23.34, and ranged from 19 to 42 years. In the small group the average age was 20.51 and ranged from 18 to 39. However, in the small group, one person was 39, another was 22, and a third was 20. The other students were all under 20 years, with the median and modal age being 19 years. Also, the small group consisted of a 13/2 female-to-male ratio. The larger group contained a 13/5 female-to-male ratio.

Therefore, the small increment group consisted of a smaller size and a more homogenous age and gender group. In terms of the social environment, it is possible that pressure to perform was more influential within a smaller group of people of more similar age and gender.

The finding that satisfaction levels are not related to incremental goal setting is theoretically important. It is the first real support for a goal setting method which does not adversely affect satisfaction. It should be utilized to guide and develop future research and our present understanding in this area.

The finding that achievement is a variable which may have a greater influence on satisfaction than performance is a possible theoretical discovery which certainly needs additional attention. While this study did not produce any real support for this position, there was reason to believe that it may have occurred. If this discovery is valid, it would not only have implications for goal setting research and applications, but would also benefit our understanding of the performance/satisfaction relationship.

REFERENCES

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), Advances in experimental social psychology (pp. 267-299). New York: Academic Press.

Alderfer, C. D. (1969). An empirical test of a new theory of human needs. Organizational Behavior and Human Performance, 4, 142-175.

Atkinson, J. W., & Reitman, W. R. (1956). Performance as a function of motive strength and expectancy of goal attainment. Journal of Abnormal Social Psychology, 53, 361-366.

Bandura, A. (1986). Social foundations of thought and action: A social-cognitive view. Englewood Cliffs, NJ: Prentice Hall.

Becker, L. J. (1978). Joint effect of feedback and goal setting on performance: a field study of residential energy conservation. Journal of Applied Psychology, 63, 428-433.

Cannon, W. B. (1939). The wisdom of the body. In R. M. Steers & L. W. Porter (Ed.), Motivation and Work Behavior (pp. 3-24). New York: McGraw-Hill.

Deci, E. L., & Ryan, R. M. (1980). The empirical explanation of intrinsic motivational processes. Advances in Experimental Social Psychology, 13, 39-80.

Erez, M. (1986). The congruence of goal setting strategies with socio-cultural values, and its effects on performance. Journal of Management, 12, 83-90.

Erez, M., & Arad, R. (1986). Participative goal setting: social, motivational and cognitive factors. Journal of Applied Psychology, 71, 591-597.

Erez, M., Gopher, D., & Arzi, N. (1990). Effects of goal difficulty, self-set goals, and monetary rewards on dual task performance. Organizational Behavior and Human Decision Processes, 47, 247-269.

Erez, M., & Zidon, I. (1984). Effect of goal acceptance on the relationship of goal difficulty to performance. Journal of Applied Psychology, 69, 69-78.

Fisher, C. D. (1980). On the dubious wisdom of expecting job satisfaction to correlate with performance. Academy of Management Review, 5, 607-612.

Hollenbeck, J. R., Williams, C. R., & Klien, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. Journal of Applied Psychology, 74, 18-23.

Hull, C. L. (1943). Principles of behavior. In R. M. Steers & L. W. Porter (Ed.), Motivation and Work Behavior (pp. 3-24). New York: McGraw-Hill.

Iaffaldano, M. T., & Muchinsky, P. M. (1985). Job satisfaction and job performance: a meta-analysis. Psychological Bulletin, 97, 251-273.

Imai, M. (1986). Kaizen: The key to Japan's competitive success. New York: Random House.

Kernan, M. C., Heimann, B., & Hanges, P. J. (1991). Effects of goal choice, strategy choice, and feedback source on goal acceptance, performance, and subsequent goals. Journal of Applied Social Psychology, 21, 713-733.

Kernan, M. C., & Lord, R. G. (1988). Effects of participative vs assigned goals and feedback in a multitrial task. Motivation and Emotion, 12, 75-86.

Klien, H. J., Whitener, E. M., & Illgen, D. R. (1990). The role of goal specificity in the goal setting process. Motivation and Emotion, 14, 179-193.

Korman, A. K. (1970). Toward a hypothesis of work behavior. Journal of Applied Psychology, 54, 31-41.

Latham, G. P., & Lee, T. W. (1986). Goal setting. In E. A. Locke (Ed.), Generalizing from laboratory to field settings (pp. 101-117). Lexington, MA: Lexington.

Latham, G. P., & Locke, E. A. (1979). Goal-setting: a motivational technique that works. Organizational Dynamics, 8, 68-80.

Locke, E. A. (1968). Effects of knowledge of results, feedback in relation to standards, and goals on reaction-time performance. American Journal of Psychology, 81, 566-574.

Locke, E. A. (1991). Goal theory vs. control theory: contrasting approaches to understanding work motivation. Motivation and Emotion, 15, 9-28.

Locke, E. A., & Latham, G. P. (1984). Goal setting: A motivational technique that works. Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A., & Latham, G. P. (1990a). A theory of goal setting and task performance. Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A., & Latham, G. P. (1990b). Work motivation: The high performance cycle. In U. Kleinbeck, H. Quast, H. Thierry, & H. Hacker (Eds.), Work motivation (pp. 97-113). Hillsdale, NJ: L. Erlbaum.

Locke, E. A., & Latham, G. P. (1990c). Work motivation and satisfaction: Light at the end of the tunnel. Psychological Science, 1, 240-245.

Locke, E. A., Latham, G. P., & Erez, M. (1988). The determinants of goal commitment. Academy of Management Review, 13, 23-39.

Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. Psychological Bulletin, 90, 125-142.

Maslow, A. H. (1943). A theory of human motivation. Psychological Review, 50, 370-396.

McClelland, D. C. (1965). Toward a theory of motive acquisition. American Psychologist, 20, 321-333.

Milgram, S. (1969). Obedience to authority. New York: Harper & Row.

Mowen, J. C., Middlemist, R. D., & Luther, D. (1981). Joint effects of assigned goal level and incentive structure on task performance: A laboratory study. Journal of Applied Psychology, 66, 598-603.

Nordstrom, R. R., Lorenzi, P., & Hall, R. V. (1990). A review of public posting of performance feedback in work settings. Journal of Organizational Behavioral Management, 11, 101-123.

Organ, D. W. (1988). A restatement of the satisfaction-performance hypothesis. Journal of Management, 14, 547-557.

Pedhazur, E. J. (1982). Multiple regression in behavioral research. Fort Worth: Harcourt Brace Jovanovich.

Racicot, B. M., Day, D. V., & Lord, R. G. (1991). Type A behavior pattern and goal setting under different conditions of choice. Motivation and Emotion, 15, 67-79.

Rodgers, R., & Hunter, J, E. (1991). Impact of management by objectives on organizational productivity. Journal of Applied Psychology, 76, 322-336.

Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. Administrative Science Quarterly, 23, 224-253.

Scarpello, V., & Campbell J. R. (1983). Job satisfaction: are all the parts there? Personnel Psychology, 36, 577-599.

Steers, R. M., & Porter, L. W. (1991). Motivation and work behavior. New York: McGraw-Hill.

Thorndike, E. L. (1911). Animal Intelligence: Experimental studies. In R. M. Steers & L. W. Porter (Ed.), <u>Motivation and Work Behavior</u> (pp. 3-24). New York: McGraw-Hill.

Tolman, E. C. (1959). Principles of purposive behavior. In R. M. Steers & L. W. Porter (Ed.), <u>Motivation and Work Behavior</u> (pp. 3-24). New York: McGraw-Hill.

Vroom, V. H. (1964). Work and Motivation (pp. 8-28). NY: Wiley.

Wilk, L. A., & Redmon, W. K. (1990). A daily-adjusted goal setting and feedback procedure for improving productivity in a university admissions department. Special issue: promoting excellence through performance management. <u>Journal of Organizational Behavior Management, 11,</u> 55-75.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. <u>Academy of Management Review, 14,</u> 361-384.

APPENDIX A

Satisfaction Questionnaire

Code # _____

HOW HAPPY ARE YOU WITH YOUR PERFORMANCE ON THIS PUZZLE?

| |_____|_____|_____|_____|_____|_____|

| extremely | very | moderately | neither | moderately | very | extremely |
| unsatisfied | unsatisfied | unsatisfied | | satisfied | satisfied | satisfied |

J. Chris Graves
Signature of Author

_5/6/97_
Date

An Examination of the Effects

of Incremental Goal Setting

on Task Performance and Satisfaction
Title of Thesis

Amy Cooper
Signature of Graduate Office Staff

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