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motivating strategy development. Goal setting is most likely to improve task performance when the goals are specific and sufficiently challenging; when the subjects have sufficient ability (and ability differences are controlled); when feedback is provided to show progress in relation to the goal; when rewards such as money are given for goal attainment; when the experimenter manager is supportive; and when the assigned goals are actually accepted by the individual. No reliable individual differences have emerged in goal setting studies, probably due to the fact that goals were typically assigned rather than self-set. Need for achievement and self esteem may be the most promising individual difference variables.

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Goal Setting and Task Performance: 1969-1980

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### Abstract

A review of both laboratory and field studies on the effects of setting goals when performing a task found that: specific, challenging goals lead to higher performance than easy goals, "do your best" goals or no goals. This is one of the most robust and replicable findings in the psychological literature with 90% of the studies showing positive or partially positive results. The main mechanisms by which goals affect performance are by: directing attention, mobilizing effort, increasing persistence and motivating strategy development. Goal setting is most likely to improve task performance when: the goals are specific and sufficiently challenging; the subjects have sufficient ability (and ability differences are controlled); feedback is provided to show progress in relation to the goal; rewards such as money are given for goal attainment; the experimenter or manager is supportive; and the assigned goals are actually accepted by the individual. No reliable individual differences have emerged in goal setting studies, probably because goals are typically assigned rather than self-set; need for achievement and self-esteem may be the most promising individual difference variables.

Goal Setting and Task Performance: 1969-1980

Climb high  
Climb far  
Your goal the sky  
Your aim the star.

(Inscription at Williams College, quoted by Masters, Furman and Barden, 1977, p. 217)

The concept of goal setting falls within the broad domain of cognitive psychology and is consistent with recent trends in the field as a whole such as cognitive behavior modification (Meichenbaum, 1977). The present interest of researchers in goal setting has two sources, one academic and the other organizational. The academic source goes back from Ryan (1970) and Miller, Galanter and Pribram (1960), through Lewin to the Wurzburg School, and their concepts of intention, task and set (see Ryan, 1970, for a summary). The organizational source traces from Management by Objectives, a process now widely used in industry (see Odiorne, 1978, for a summary), back to the Scientific Management movement founded by Frederick W. Taylor (1911/1967). Both strains of thought come together in the more recent work of Locke (1968), Latham (Latham & Yukl, 1975a) and others on the relation of goal setting and task performance. Goal setting is also an important component of "social learning theory" (Bandura, 1977),

a theory which has become increasingly influential in recent years. Even the so-called "organizational behavior modification" literature can be interpreted largely within a goal setting framework (Locke, 1977).

Research on goal setting is proliferating so rapidly that recent reviews of the literature (Latham & Yukl, 1975a; Locke, 1968; Steers & Porter, 1974) are now outdated. To provide a longer term perspective, the present review will include goal setting research published since 1968. However, studies which are explicitly clinical and social-psychological in nature are not included (for a detailed review of the latter, see Fishbein and Ajzen, 1975).

#### The Concept of Goal Setting

Goal setting is a cognitive concept. A goal is what the individual is trying to accomplish, the object or aim of an action. It is similar in meaning to the concepts of purpose and intent (Locke, 1969). Other frequently used concepts which are similar in meaning to that of goal include: performance standard (a measuring rod for evaluating performance); quota (a minimum amount of work or production); work norm (a standard of acceptable behavior defined by a work group); task (a piece of work to be accomplished); objective (the ultimate aim of an action or series of actions); deadline (a time limit for completing a task); and budget (a spending goal or limit).

Earlier attempts of behaviorists to reduce concepts like goal and purpose to physical events have been severely criticized (e.g., see Locke, 1969, 1972). Goal setting might be called "stimulus control" by a modern behaviorist, but the key question then becomes: What is the stimulus? If it is an assigned goal only (an environmental event), then it ignores the importance of goal acceptance; an assigned goal which is rejected can hardly regulate performance. If goal acceptance is considered relevant, then the regulating stimulus must be a mental event--ultimately the individual's personal goal. The environment, of course, can influence goal setting as well as goal acceptance, an issue which is dealt with in some of the recent research to be reported below.

The basic assumption of goal setting research is that goals are immediate regulators of much human action. However, no one to one correspondence between goals and action is assumed, since people may make errors, lack sufficient ability to attain their objectives (Locke, 1968), or have subconscious conflicts or premises which subvert their conscious goals. The precise degree of association between goals and action is an empirical question and is the subject of the research to be reviewed here. We shall specifically look for the factors upon which goal-action correspondence is contingent.

A corollary of the premise that goals are immediate regulators of action is that they mediate the effects of extrinsic incentives such as money, feedback and participation (Locke, 1968) on behavior. Research relevant to these incentives is also included in this review.

### Goal Setting Attributes<sup>2</sup>

Mental processes have two major attributes, content and intensity (Rand, 1967). The content of a goal pertains to the objects or results which are being sought. The main dimensions of goal content which have been studied so far are: specificity or clarity, the degree of quantitative precision with which the aim is specified; and difficulty, the degree of proficiency or level of performance sought.

The terms task difficulty and goal difficulty are often used interchangeably, but a distinction between them can be made.

As stated above a task is a piece of work to be accomplished. A difficult task is one which is hard to do. One reason a task can be hard is because it is complex, i.e., it requires a high level of skill and knowledge. For example, writing a book on physics is a harder task than writing a thank you note. A task can also be hard because a great deal of effort is required to complete it. For example, digging the foundation for a pool takes more effort than



digging a hole to plant a flower seed.

A goal is the object or aim of an action. Thus it is possible to have as a goal, the completion of a task. However, as used in most goal setting studies, the term goal refers to attaining a specific standard of proficiency on a task, usually within a specified time limit. For example, two individuals are given the same task (e.g., simple addition), but one is asked to complete a large number of problems within the next 30 minutes while the other is told to complete a small number of problems. In this case the harder goal would be achieved by expending greater effort and attention, as compared to the easy goal. Harder goals, like harder tasks, also can require more knowledge and skill than easier goals (e.g., winning a chess tournament versus coming in next to last).

To summarize the above distinction, the term goal difficulty specifies a certain level of task proficiency, measured against a standard, whereas task difficulty refers simply to the nature of the work to be accomplished. Put more briefly, the task specifies what is to be done, the goal how well or how fast it is to be done.

While greater task difficulty should lead to greater effort (Kahneman, 1973; Kaplan & Rothkopf, 1974; Shapira, Note 5), the relationship of task difficulty to performance

is problematic. If more work is translated into a goal to get more done, task difficulty may be positively related to performance (Sales, 1970). On the other hand, if harder tasks require more ability or knowledge, most people will perform less well on them, even if they try harder, than they would perform on easier tasks (e.g., Shapira, Note 5). However, Campbell and Ilgen (1976) found that training people on a hard task led at first to poorer task performance but subsequently to better performance than training on an easy task. Presumably this effect was due to the greater knowledge and skill developed by initially working on the hard task.

While there has been extensive research on the effects of goal specificity and difficulty on performance, little attention has been paid to two other dimensions of goal content: goal complexity (the number and interrelationship of the results aimed for) and conflict (the degree to which attaining one goal negates or subverts attaining another).

The second attribute, intensity, pertains to the process of setting the goal or the process of determining how to reach it. Intensity would be measured by such factors as: the scope of the cognitive process, the degree of effort required, the importance of the goal, the context in which it is set, etc.

Goal intensity may be related to goal content; for example, a more intense psychological process is needed to set and to figure out how to attain complex goals than simple goals.

Thus far goal intensity has not been studied as such, although a related concept, goal commitment, has been measured in a number of experiments.

#### Relation of Goal Attributes to Performance

##### Goal Difficulty

A previous review of the goal setting literature (Locke, 1968) found strong evidence for a linear relationship between goal difficulty and task performance (assuming sufficient ability), and more recent studies have supported the earlier findings. Four results in three experimental field studies found harder goals led to better performance than easy goals: Latham and Locke (1975) with logging crews; Yukl and Latham (1978) with typists; and a simulated field study by Bassett (1979). In a separate manipulation, Bassett also found that shorter time limits led to a faster work pace than longer time limits.

Twenty five experimental laboratory studies have obtained similar results with a wide variety of tasks: Bavelas (1978) with a figure selection task; Bavelas and Lee (1978) in five of six experiments involving brainstorming,

figure selection and sum estimation tasks; Campbell and Ilgen (1976) with chess; Hannan (1975) with a coding (credit applications) task; LaPorte and Nath (1976) with prose learning; Latham and Saari (1979a) with brainstorming; Locke and Bryan (1969a) with simple addition; Locke, Cartledge and Knerr (1970) in four studies, three with reaction time and one with simple addition; Locke, Mento and Katcher (1978) with perceptual speed; London and Oldham (1976) with card sorting; Masters, Furman and Barden (1977) in two studies of 4 and 5 year old children working on a color discrimination task; Mento, Cartledge and Locke (1980) in two experiments using a perceptual speed task; Rothkopf and Billington (1975) and Rothkopf and Kaplan (1972) in more complex prose learning studies than that of LaPorte and Nath (1976); and Sales (1970) using anagrams in which, strictly speaking, task rather than goal difficulty was manipulated by means of varying the workload given to the subjects. Presumably subjects developed implicit goals based on the amount of work assigned to them. Ness and Patton (1979) also found that a harder task led to better weightlifting performance than an easier task when subjects were deceived as to the actual weights.

Four laboratory studies found conditional<sup>3</sup> support for the goal difficulty-performance relationship. Becker (1978)

with an energy conservation task, Erez (1977) with a clerical task, and Strang, Lawrence and Fowler (1978) with a computation task all found that only subjects who had high goals and who received feedback regarding their performance in relation to those goals during task performance or between trials performed better than subjects with low goals.

This pattern of results seems also to have been present in Frost and Mahoney's (1976) first study using a reading task (see their Table 1). Subjects with high and moderately high goals who apparently received frequent feedback performed better than those with average goals whereas the opposite pattern was obtained for subjects given no feedback during the 42 minute work period (interaction  $p=.11$ , t-tests not performed).

Six experimental laboratory studies found no relationship between goal level and task performance. Bavelas and Lee (1978) allowed only 15 minutes for an addition task and gave subjects no information either before or during the task of how fast they needed to go to attain the goal. Frost and Mahoney (1976) found negative results with a jigsaw puzzle task, although their range of goal difficulty was limited: from medium to hard to very hard (actual probabilities of success were respectively: .50, .135 and .026). The same narrow range of difficulty (very

difficult to moderately difficult) may explain the negative results of Oldham (1975) using a time sheet computation task. Moreover, not all subjects accepted the assigned goals in that study, and it is not clear that ability was controlled when Oldham did his post hoc analysis by personal goal level (1975, pp. 471-472). Organ (1977) too compared moderate with hard goals using an anagram task. However, since no group average reached even the level of the moderate goal, the hard goal may have been totally unrealistic.

The fifth negative study by Motowidlo, Loehr and Dunnette (1978), using a complex computation task, examined the goal difficulty-expectancy (VIE) theory controversy. Goal theory predicts harder goals lead to better performance than easy goals, despite their lower probability of being fully reached. In contrast, VIE theory predicts (other things being equal), a positive relation between expectancy and performance, the opposite of the goal theory prediction. Motowidlo, et al found a positive relationship between expectancy and performance in agreement with VIE theory. One possible confounding factor is that Motowidlo, et al's subjects did not make their expectancy ratings conditional upon trying their hardest to reach the goal or to win (pointed out by Mento, et al , 1980 , based on Yates and Kulick, 1977, among others). Thus low expectancy ratings

could mean that a subject was not planning to exert maximum effort whereas high ratings would mean the opposite. This would yield a spurious positive correlation between expectancy and performance. Furthermore, Motowidlo et al did not provide their subjects with feedback regarding how close they were coming to their goals during task performance. The importance of this factor will be documented below. The two studies by Mento, et al (1980) noted above, which avoided the above errors and which incorporated other methodological improvements, found the usual positive relationship between goal level and performance and no relationship between expectancy and performance.

Forward and Zander (1971) used goals set by groups of high school boys as both independent and dependent variables. Success and failure as well as outside pressures were covertly manipulated in order to influence goal setting, which occurred before each trial of the task. Under these somewhat complex conditions, goal discrepancy (goal minus previous performance level) either was unrelated or negatively related to subsequent performance.

The results of 15 correlational studies were, to varying degrees, supportive of the results of the experimental studies. Andrews and Farris (1972) found time pressure (task difficulty) associated with high performance among scientists and engineers. Hall and Lawler (1971), with a similar sample,

found no relation between time pressure and performance but found significant relationships between both quality and financial pressure and work performance. Ashworth and Mobley (Note 1) found a significant relationship between performance goal level and training performance for Marine recruits. Blumenfeld and Leidy (1969, in what also could be called a natural field experiment) found that soft drink servicemen assigned higher goals serviced more machines than those assigned lower goals. Hamner and Harnett (1974) found that subjects in an experimental study of bargaining who expected (tried ?) to earn a high amount of money earned more than those who expected (tried ?) to earn less money. Locke, et al (1970), in the last of their five studies, found a significant correlation between grade goals on an hourly exam and actual grade earned.

The majority of the correlational studies found only conditional relationships between goal difficulty and performance and/or effort. Carroll and Tosi (1970) found it only for managers who were mature and high in self-assurance; Dachler and Mobley (1973) only for production workers ( studies in two plants) with long (1 or 2 years or more) tenure; Dossett, Latham and Mitchell (1979), in two studies of clerical personnel, only for those who set goals participatively; Hall and Hall (1976) for 2nd - 4th grade students' class performance for those in high



support schools; and Ivancevich and McMahon, in three studies, (1977a, 1977b, 1977c) for skilled technicians who had higher order (growth) need strength, who were white and who had higher levels of education.

Negative results were obtained by Forward and Zander (1971) with United Fund campaign workers; by Hall and Foster (1977) with participants in a simulated management game; and by Steers (1975) with first level supervisors.

All the correlational studies are, of course, open to multiple causal interpretations. For example, Dossett, et al (1979) imply that their results may be an artifact of ability, since ability was considered when setting goals in the participative groups but not in the assigned groups. In fact, none of the correlational studies had controls for ability. Also, many relied on self ratings of goal difficulty and/or performance. The Yukl and Latham (1978) study, referred to earlier, found that only objective goal level, and not subjective goal difficulty, was related to typing performance. None of the correlational studies measured the individual's personal goal level--a measure which Mento, et al (1980) found to be the single best motivational predictor of performance. Their measures of subjective goal difficulty did not explain any variance in performance over and above that explained by objective and personal goal levels.

### Goal Specificity

#### Specific hard goals vs. "do best" goals or no goals.

Previous research found that specific, challenging (difficult) goals led to higher output than vague goals such as "do your best" (Locke, 1968). Subsequent research has strongly supported these results, although in a number of studies no distinction was made between groups told to "do their best" and those assigned no specific goals. The latter were typically labeled "no goal" groups. Since most of the no goal groups were probably trying to "do their best", these groups are considered equivalent for the purpose of comparing them to groups assigned specific, hard goals.

Twenty four field experiments all found that individuals given specific, challenging goals either outperformed those trying to "do their best", or surpassed their own previous performance when they were not trying for specific goals: Bandura and Simon (1977) with dieting; Dockstader (Note 2) with key punching; Dossett, Latham & Mitchell (1979) in two studies, one using a clerical test and the other performance evaluation for clerical workers; Ivancevich (1977) with maintenance technicians; Ivancevich (1974) in two plants with marketing and production workers (for one or more performance criteria); Ivancevich (1976) with sales personnel; Kim and Hamner (1976) with telephone service jobs; Kolb & Boyatzis (1970) with personality change in a T-group; Latham & Baldes (1975) with truck loading; Latham & Kinne (1974) with logging; and Latham and Yukl (1975b) with woods workers who participated

in goal setting; Latham and Yukl (1976) with typing; Latham, Mitchell & Dossett (1978) with engineering and scientific work; Migliore (1977) with canning (press department) and ship loading (two studies); Nemeroff & Cosentino (1979) with performance appraisal activities; Umstot, Bell & Mitchell (1976) with coding land parcels; Wexley & Nemeroff (1975) with managerial training; and White, Mitchell & Bell (1977) with card sorting. The studies by Adam (1975) with die casters, Feeney with customer service workers ("At Emery Air Freight", 1973) and Komaki, Barwick & Scott (1978) with pastry workers are also included in this group. While these latter authors claimed that they were doing "behavior modification", the major technique actually used was goal setting plus feedback regarding goal attainment (Locke, 1977).

A negative result was obtained by Latham and Yukl (1975b) with one sample. Either individual differences or lack of firm organizational support may have been responsible for this failure. (Ivancevich, 1974, also cited differences in organizational support as the reason for obtaining better results in one of his plants than the other.)

Twenty laboratory studies supported the above results either partially or totally: Chung and Vickery (1976; their KR condition included implicit goal setting) with a clerical task; Frost and Mahoney (1976) with a reading task (but only for subjects given frequent feedback) and with a puzzle task; Hannan (1975) with a coding task; Kaplan and Rothkopf (1974) and LaPorte and Nath (1976) with prose

learning; Latham and Saari (1979b) with brainstorming; Latham and Saari (1979a) with brainstorming again (but only for subjects who set goals participatively; however, this may have been an artifact since the assigned goal subjects may not have understood the instructions clearly, according to the authors); Locke and Bryan (1969b) with a driving task; Locke, et al (1978) with perceptual speed (comparing the hard goal vs. "do best" groups only); Mossholder, (1980) using two assembly tasks; Organ (1977) with anagrams; Pritchard and Curtis (1973) with card sorting; Reynolds, Standiford and Anderson (1979) with prose learning; Rosswork (1977) with a sentence construction task used with 6th graders; Rothkopf and Billington (1975) and Rothkopf and Kaplan (1972) with prose learning; Strang, Lawrence and Fowler (1978) with arithmetic computation (but only for hard goal subjects who had feedback); and, Terborg & Miller (1978) with tinker toy assembly.

A negative result was obtained by Organ (1977) on a proofreading task. Evidently the goals set were moderate rather than hard since they were set at the median scores for pretest subjects and were surpassed by subjects in all conditions. Moderate goals are not predicted to lead to higher performance than "do best" goals. Locke, Mento and Katcher (1978), for example, found that while hard goal subjects exceeded the performance of "do best" subjects (as noted above), moderate goal subjects did not.

Seven correlational field studies also supported or partially supported the superiority of specific hard goals over "do best" goals or no goals: Blumenfeld and Leidy (1969) with soft drink servicemen; Brass and Oldham (1976) and Oldham (1976) with foremen; Burke and Wilcox (1969) with telephone operators; Ronan, Latham and Kinne (1973) with pulpwood producers; Steers (1975) with supervisors (but only those high on need for achievement); and Terborg (1976) with studying programmed texts.

Clear vs. unclear goals or intentions. Relatively few studies have been concerned with the effect of goal clarity on performance. Two experimental studies (Kaplan and Rothkopf, 1974; Rothkopf and Kaplan, 1972) found that specific prose learning goals led to more learning than generally stated goals. Carroll and Tosi (1970) found that goal clarity correlated with increased effort only for managers who were mature and decisive, and who had low job interest and low support from their managers. Ivancevich and McMahon (1977a,b,c) found that goal clarity correlated with performance mainly for technicians who were black, less educated and high on higher order need strength. These correlational studies seem to provide no consistent pattern, a finding which is not surprising in view of the problems inherent in concurrent, self-report designs.

The borderline and negative results of Hall and Hall (1976) and Hall and Foster (1977) with respect to goal difficulty and performance may have been due to the fact that their "goals" did not consist of clear objectives but of the self rated strength of the subjects' intentions to perform well.

The findings of the above studies involving vague intentions can be contrasted with the organizational studies by Miller, Katerberg and Hulin (1979); Mobley, Horner and Hollingsworth (1978); and Mobley, Hand, Baker and Meglino (1979). They found significant longitudinal correlations between the specific intention to remain in or leave the organization and the corresponding action.

### Conclusions

Overall, forty eight studies partly or wholly supported the hypothesis that hard goals lead to better performance than medium or easy goals, and nine studies failed to support it. Fifty one studies partially or wholly supported the view that specific hard goals lead to better performance than "do your best" or no goals, while two studies did not support it. Combining these two sets of studies, we find that ninety nine out of 110 studies found specific hard goals produced better performance than medium, easy, "do your best" or no goals. This represents a success rate of 90%.

### Mechanisms for Goal Setting Effects

There are at least four interrelated mechanisms by which goals regulate task performance:

1. Direction. Most fundamentally goals direct attention and action. Perhaps the most obvious demonstration of this mechanism is the study by Locke and Bryan (1969b) in which drivers were given feedback regarding five different dimensions of driving performance but were assigned goals with respect to only one dimension. The dimension for which a goal was assigned showed significantly more improvement than the remaining dimensions. Similarly, Locke, et al (1970) found that subjects modified their speed of reaction (to make it faster or slower) on a simple reaction time task in the direction of their overall objective. Reynolds, Standiford and Anderson (1979) found that subjects spent more time reading prose passages that were relevant to their "goals" (consisting of questions inserted in the text) than to parts that were not relevant. Terborg (1976) found that subjects with specific goals spent a greater percentage of the time looking at the text material to be learned than subjects with non-specific goals or no goals. (Terborg labeled this measure "effort" in his study.) Rothkopf and Billington (1979) found that subjects with specific learning goals spent more time inspecting goal relevant passages than passages incidental to their goal; compared to subjects with no specific learning goals ("do your best"

instructions), those with specific goals spent an equal or greater amount of time inspecting passages with goal relevant material and significantly less time looking at incidental passages.

2. Effort. Since different goals may require different amounts of effort, effort is mobilized simultaneously with direction in proportion to the perceived requirements of the goal or task. Thus, as Kahneman (1973) and Shapira (Note 5) have argued, more effort is mobilized to work on hard tasks (which are accepted) than easy tasks. Sales (1970) found that higher work loads produce higher subjective effort, faster heart rates, and higher output per unit time than lower work loads. Latham and Locke (1975) and Bassett (1979) found that people work faster under shorter than under longer time limits. In short, higher goals produce higher performance than lower goals or no goals because people simply work harder for the former (Locke, 1968; Terborg, 1976; Terborg & Miller, 1978; for earlier documentation see Locke and Bryan, 1966).

Observe that this hypothesis of a positive linear relationship between motivation or effort and performance (also stated in Locke, 1968, and Yates and Kulick 1977), contradicts the Yerkes-Dodson inverted-U "law" which claims that performance is maximal at moderate levels of motivation. While it is true that with any given subject, performance eventually will level off as the limit of capacity or



ability is reached (Bavelas & Lee, 1978; Kahneman, 1973), this is a separate issue from that of motivation. Of course, subjects may abandon their goals if they become too difficult, but the linear function specified above assumes goal commitment. Performance may also drop if subjects become highly anxious, especially on a complex or underlearned task. But a state of high anxiety should not be labeled "high motivation" in the positive sense, because it represents a state of conflict rather than one of single-minded goal pursuit.

3. Persistence. Persistence is nothing more than directed effort extended over time; thus it is a combination of the previous two mechanisms. Most laboratory experiments on goal setting have not been designed to allow for the measurement of persistence effects since time limits have been typically imposed; and field studies to date have measured only the end results of goal setting rather than how they were obtained. LaPorte and Nath (1976) allowed some subjects unlimited time to read a prose passage. Those asked to read the passage so as to get 90% of 20 post-reading questions correct spent more time on the passage than subjects asked to get 25% of the post-reading questions correct. Rothkopf and Billington (1979), in the study noted earlier, found that more time was spent on goal relevant than on incidental passages. More studies of this type would be highly desirable.

4. Strategy Development. While the above three mechanisms are relatively direct in their effects, this last mechanism is indirect. It involves developing strategies or action plans for attaining one's goals. While strategy development is motivated by goals, the mechanism itself is cognitive in essence; it involves skill development and/or creative problem solving.

Bandura and Simon (1977), for example, found that dieting subjects with specific quotas for number of mouthfuls eaten changed their eating patterns, such as by eating more low calorie foods which did not count in their quotas. They also engaged in more planning, such as saving up mouthfuls before they went out for dinner. Latham and Baldes (1975) observed that some of the truck drivers assigned specific hard goals with respect to truck weight recommended minor modifications of their trucks to help them increase the accuracy of their judgments regarding weight.

In Terborg's (1976) study, the subjects who set specific goals were more likely to employ relevant learning strategies (e.g., writing notes in the margins) than those who did not set goals. A unique aspect of Terborg's design was that he was able to obtain separate measures of direction of effort (which he called effort) and of strategy use (which he called direction). He found that when these mechanisms were partialled

out, there was no relationship between goals and task performance. This supports the argument that these are (at least some of) the mechanisms by which goals affect performance.

In a similar vein, Kolb and Boyatzis (1970) found that behavior change in a T-group was greatest for participants who developed plans for evaluating their performance in relation to their goals. Such plans evidently were developed only for behavior dimensions which the subjects were trying to change.

Bavelas and Lee (1978) made detailed analyses in three experiments to determine the strategies used by subjects to attain hard goals. They found that subjects would frequently redefine the task in a way that would permit them to give "looser" or lower quality answers. For example, subjects asked to list very large numbers of "white, hard, edible objects", were more likely to list objects which were white but not very hard or hard but not very edible than subjects given easier goals. Similarly, with appropriate training, subjects given hard addition goals would more often "estimate" rather than calculate their answers as compared to subjects with easy goals.

Rosswork's (1977) hard goal subjects simply wrote shorter sentences in order to try to meet their quota which was expressed in terms of total sentences written. The subjects in Sales' (1970) study given a high work load

made more errors, presumably by lowering their standards, than those given a low work load. Christensen-Szalanski (1980) found subjects given a short time limit in problem solving used less complex and less adequate strategies than subjects given a longer time limit.

### Conclusions

There are four known mechanisms by which goals affect task performance. They direct attention and actions. They mobilize effort. They increase persistence. And they motivate the individual to develop appropriate action plans or performance strategies. This latter mechanism seems especially important in complex tasks; if the requisite strategies are not developed, the increased motivation provided by the goals will not be translated into effective performance.

### Knowledge of Results (Feedback)

Early goal setting studies attempted to separate the effects of feedback (i.e., knowledge of results [KR]) from the effects of goal setting in order to determine whether KR directly influenced performance or whether its effects were mediated by goal setting activity (Locke, 1967; Locke & Bryan, 1968, 1969a, 1969b; Locke, Cartledge & Koeppel, 1968). The results of these studies led to Locke's proposition that goals mediate the relationship between incentives (e.g., feedback) and performance (Locke, 1968). While Locke concluded that KR is not sufficient to improve

performance, his studies did not test the thesis that KR may be necessary for goals to affect performance. In each of the above laboratory studies, all subjects received knowledge of their performance in relation to their goals. Individuals in the KR conditions simply received additional KR (in the form of knowledge of their actual scores). Thus, although these studies demonstrate the insufficiency of additional KR to improve performance, they do not rule out KR as a necessary condition for improving performance.

At the time of the Latham and Yukl review (1975a), ~~no studies~~ had been conducted to test the mediating hypothesis. Since that time many such studies have been completed both in the laboratory and in the field. Figure 1 illustrates the conditions of interest. Cell 1 represents specific, hard goals combined with KR; cell 2, specific, hard goals without KR; cell 3, KR with no specific goals (or "do best" goals which have been found to be equivalent to no assigned goals); and, cell 4 involves neither specific goals nor KR.

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Insert Figure 1 about here

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The studies reviewed here are those which included at least three of the four cells in Figure 1. Table 1 summarizes the results of these comparisons.

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Insert Table 1 about here

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Two types of studies are evident in Table 1. The first set consists of comparisons between cells 1, 3 and 4. Consistent with Locke's (1968) mediating hypothesis, these studies indicate that while KR alone is not sufficient to improve performance (3=4), KR plus goals results in performance increases (1>3).

In a study of overweight clients participating in a weight clinic, participants who kept daily records of all the food they consumed but did not set goals to reduce food intake, did not alter their eating habits and performed no differently than a control group who kept no records and set no specific goals (Bandura & Simon, 1977). However, participants who set goals based on their daily records significantly decreased food consumption compared to the KR-only group.

Dockstader (Note 2) found no apparent effect of KR alone on the performance of key punch operators, but those who were provided with KR and a performance standard significantly exceeded their own previous performance and that of the KR-only group.

Latham, et al (1978) found no differences between engineers and scientists with "do best" goals who were provided with feedback concerning their performance on certain appraisal criteria and those engineers and scientists who received no feedback; but the subjects who set or were assigned specific, hard goals in response to the feedback

performed significantly better than those in the "do best" and control groups.

Nemeroff and Cosentino (1979) found that supervisors who were provided with feedback concerning their behavior during performance appraisal sessions but who did not use the KR to set specific goals did not improve subsequent performance. Those supervisors who set specific goals in response to the feedback performed significantly better on the 12 behaviors for which they set goals and conducted significantly more successful appraisal interviews.

This first set of studies demonstrates that KR without goals is not sufficient to improve performance (3=4); but given KR, goals are sufficient for performance to be improved (1>3). Thus, goals seem necessary for KR to improve performance.

The second set of studies consists of comparisons between cells 1, 2 and 4. In a so-called "positive reinforcement" program ("At Emery Air Freight", 1973), employees in the customer service department and on the shipping docks were given a group performance target, progress toward the target was posted, and each employee also kept a personal record of performance. Performance levels increased markedly, but when KR was removed and self reports were not kept, employee performance returned to baseline levels "or was almost as bad" (p. 45), even though the performance target remained in effect (1>2, 2=4).

In another so-called "behavior modification" program (which was actually a goals and KR study, see Locke, 1980), Komaki, Barwick and Scott (1978) examined safe behavior in the making and wrapping of pastry products. The authors introduced a specific, hard safety goal and displayed performance results on a graph in view of all the workers. Substantial performance improvements occurred but when the KR was eliminated in a reversal phase, performance returned to baseline levels.

In a study of residential electricity use, Becker (1978) manipulated specific goals and KR. Families included in his study represent cells 1, 2, and 4 of Figure 1; he also included easy goal groups with and without KR. The only families whose conservation performance improved significantly from baseline levels were those with hard goals plus KR. All other groups performed no better than a control group. Strang, Lawrence and Fowler (1978) conducted a laboratory study utilizing a design similar to Becker's (cells 1, 2 & 4 plus the same two easy goal conditions as above). Subjects worked on an arithmetic computation task. Results show that the performance of subjects with hard goals and feedback was significantly better than that of the goals-only subjects ( $1 > 2$ ). Using time to finish as a criterion, there were no differences between the performance of the goals-only subjects and that of control group subjects ( $2 = 4$ ). In terms of number of errors, however, the control



group's performance was significantly better than that, of the goals-only group ( $4 > 2$ ), suggesting that goals without KR may even inhibit accurate performance.

The results of this second group of studies indicate that goals without KR are not sufficient to improve performance ( $2 = 4$ ); but given goals, KR is sufficient to effect performance improvement ( $1 > 2$ ). Thus KR seems necessary for goals to affect performance.

While not included in the table, because she used a correlational analysis, Erez (1977) was the first to demonstrate, through statistical tests of significance, that KR is a necessary condition in the goals-performance relationship. In her laboratory study, subjects worked on a number comparison task. At the end of one performance trial, they set goals for a second trial. Half of the subjects were provided with KR at the end of the first trial and half were not. Erez utilized a multiple regression analysis in order to identify the unique contribution of the goal x KR interaction. The regression equation included stage 1 performance, the two main effects variables (goals, KR), and the goal x KR interaction. When all four variables were placed in the regression simultaneously, the interaction effect was significant, but beta weights for goals and KR were not significantly different from zero. The goal-performance correlation in the KR group was .60 and

in the No KR group, .01. Erez concluded that KR is necessary for goals to affect performance.

Kim and Hamner's (1976) study of goals and feedback was not included in this analysis, because they acknowledged that their "goals only" group actually may have received informal feedback. Thus their study only includes two cells: cell 1 with different groups having different amounts and types of feedback, and cell 4, which comprised the "before" scores of the various groups. In this study, as in the one by Frost and Mahoney (1976, Task A), providing more explicit or frequent feedback clearly facilitated performance.

### Conclusions

Integrating the two sets of studies points to one unequivocal conclusion: neither KR alone nor goals alone is sufficient to affect performance. Both are necessary. Together they appear sufficient to improve task performance (given the obvious contextual variables such as adequate ability and lack of external blocks to performance). Phrased in broader terms, the studies demonstrate that action is regulated by both cognition (knowledge) and motivation.

In examining Table 1 it is interesting to note that not a single study was designed to allow each of the four possible comparisons. In other words, no study involved a complete 2x2 design with KR/No KR and Specific,

Hard Goals/Do Best or No Goals as the variables. Even the studies reported did not always involve total control over the variables, e.g., spontaneous goal setting among KR only subjects was not always prevented. Such a complete, controlled study is now being conducted by two of the present authors. It is predicted that, cell 1 (see Figure 1) will show better performance than the remaining cells, which should not differ among themselves. This would parallel the results of Becker (1978) and Strang et al (1978) using KR/No KR and Hard/Easy Goal conditions.

Other issues remain to be explored regarding the role of KR. For example, Cummings, Schwab and Rosen (1971) found that providing KR can lead to higher goals being set than no KR, indicating that subjects may underestimate their capacity without correct information as to their previous performance. Related to this, Greller (1980) found that supervisors incorrectly estimated the importance of various sources of feedback to subordinates. These issues deserve further study.

One issue that would not seem to deserve further study is that of feedback as a reinforcer. The findings and arguments of Annett (1969) and Locke (1977,1980) speak convincingly against the thesis that feedback "conditions" behavior. It seems more useful and valid

to treat feedback or KR as information, the effect of which depends upon how it is processed (e.g., see Locke, et al, 1968).

A recent paper (Ilgen, Fisher & Taylor, 1979) specifies several dimensions along which KR can vary: amount, type, frequency, specificity, timing, source, sign and recency. Experimental studies of these dimensions could reveal the most effective form in which to provide KR in conjunction with goals. Unfortunately, the studies to date have not been systematic enough to allow any conclusions about these dimensions.

Our major conclusion, that both goals and KR are necessary in order to improve performance, provides a clear prescription for task management. Not only should specific, hard goals be established but KR should be provided to show performance in relation to these goals. The Emery Air Freight ("At Emery Air Freight," 1973), Komaki, et al (1978), and Latham and Baldes (1975) studies emphasize how inexpensive such goals-plus-KR programs can be, even in field settings, relative to their benefits.

### Monetary Rewards

It is known that money is a powerful motivator of performance. Locke, Feren, McCaleb, Shaw and Denny (in press), for example, found that individual money incentives increased worker job performance by a median of 30%. Locke (1968) argued that goal setting might be one mechanism by which money affected task performance.

There are several possible ways that this might occur. First, money might affect the level at which goals are set or the level at which intentions are established. Five earlier studies by Locke, Bryan and Kendall (1968) found that in some cases money did affect goal or intention level. Furthermore, in line with the mediating hypothesis, goals and intentions affected performance even when the effects of incentives were partialled out, while incentives were unrelated to performance when goal and intention level were controlled.

Generally these results have not been replicated. For example, Pritchard and Curts (1973) found that there was no difference in the performance effects of no incentive vs. a small incentive, but even when goal level was controlled, subjects offered high incentives performed better on a sorting task than those offered small or no incentives. Similarly, Terborg (1976) found that partialing out the effects of self-set goals in a programmed learning task failed to vitiate the difference between contingent and non-contingent pay on performance. Terborg and Miller

(1978) found similar results using a toy assembly task, assigned goals and piece-rate vs. hourly pay. Latham, Mitchell and Dossett (1978) found a significant effect of an anticipated monetary bonus independent of a significant goal level effect on the job performance of engineers and scientists. In all four of these studies goals and money had independent effects on performance. This was also the case in London and Oldham's (1976) study, although their incentive effects were not easily interpretable. Chung and Vickery (1976) also found independent effects for money and goals (their "KR" condition was a goal setting treatment).

A second possibility is that money might induce more spontaneous goal setting than would occur without incentives. In support of this hypothesis, Saari and Latham (Note 4) found that the introduction of an incentive system led mountain beaver trappers to set specific goals for themselves. However, incentive pay was not found to lead to more specific goal setting than hourly pay in the laboratory studies by Terborg (1976) and Terborg and Miller (1978).

A third possibility (stressed by Locke, 1968) is that incentives, rather than increasing the likelihood of spontaneous goal setting or increasing the level at which goals are set (an hypothesis which has as yet not been fully tested), affect the subject's degree of goal commitment. In other

words, money may arouse the willingness to expend more effort to attain a given objective than not offering money. This is our interpretation of the results obtained by Latham, et al (1978), London and Oldham (1976), Pritchard and Curts (1973), Terborg (1976) and Terborg and Miller (1978).

Attempts to measure this commitment effect through self reports regarding degree of goal commitment have not been successful (e.g., Latham, Mitchell & Dossett, 1978; Pritchard & Curts, 1973). The whole issue of why goal commitment measures have not been related to performance in goal setting research will be discussed at length in a later section of this paper.

The effectiveness of money in mobilizing effort no doubt depends on the amount of money offered. Pritchard and Curts (1973) found an incentive effect only when \$3 was offered (for 10 minutes of work, as compared to 50¢ or 0¢). Similarly, Rosswork (1977) found a substantial goal effect but no incentive effect when school children were offered between 0¢ and 6¢ for each sentence composed during two 5 minute periods.

### Conclusions

Money can affect task performance independently of goal level. The most plausible mechanism for this effect appears to be goal commitment, with the degree of increased commitment depending on the amount of the incentive offered.

While direct questions regarding commitment used in a couple of studies do not support this interpretation, the fault may lie in poor experimental design or poor introspection by subjects (issues to be taken up later in this paper).

While incentives may also increase the likelihood of spontaneous goal setting or of setting high goals, there has not been enough research to provide support for these mechanisms thus far.

#### Participation and Supportiveness

Participation has long been recommended by social scientists as a means of getting subordinates or workers committed to organizational goals and/or of reducing resistance to change. However, an extensive review of the participation in decision-making literature by Locke and Schweiger (1979), found no consistent difference in the effectiveness of top-down ("autocratic") decision making and decisions made with subordinate participation. Let us consider specifically the studies which involved participation in goal setting.

Carroll and Tosi (1970) included a measure of perceived participation in goal setting in a questionnaire administered in a manufacturing firm which had an MBO program. The results indicated that participation did not correlate significantly with employee perceptions of goal attainment or employee perception of increases in effort.

Negative results were also obtained in a field experiment by Ivancevich (1976). This study compared participative and



assigned goal setting for sales personnel. Goals were set for each of four quantitative performance criteria. While both goal setting groups showed performance increases, no significant differences in performance were found between the participative and assigned goal conditions.

In a second study by Ivancevich (1977), mixed results were obtained with maintenance department technicians. Four performance variables were measured. With regard to service complaints and costs, the assigned goal setting group showed more improvement than the participative group; whereas for safety the participative goal group performed better than the assigned group. There was no significant difference between the two goal setting groups with regard to absenteeism.

A possible drawback of the above studies was that goal difficulty levels were not assessed for the different goal groups. This is important because goal setting theory states that the higher the goal the higher the performance. The following studies all included measurements of goal difficulty. In a field experiment involving logging crews, Latham and Yukl (1975b) found that participative goal setting resulted in higher performance than assigned goal setting for uneducated (less than nine years of education) loggers in the South. The superiority of participative goal setting may have been due in part to the fact that higher goals were set in the participative than in the assigned condition.

In a second field experiment, Latham and Yukl (1976) found no significant differences in the performance of typists with participative and assigned goals. Both groups improved their performance significantly after specific goals had been set. Consistent with the above results there was no difference in the difficulty levels of the goals in each condition.

Latham, et al (1978) found that engineers and scientists in a participative goal condition set more difficult goals than their peers who had assigned goals. However, the perceptions of goal difficulty did not differ between those with participative versus assigned goals and no significant differences in goal acceptance were found between the two goal conditions. The participative and assigned groups did not differ significantly in performance, although the former group performed better in relation to the control group than the latter.

The findings of the above three studies indicate that participation in goal setting may affect performance through its influence on goal difficulty. Thus if goal difficulty is held constant, participation should not affect performance. Participation may affect performance only if it leads to higher goals being set than is the case when a supervisor assigns them unilaterally.

Latham and Saari (1979b) systematically tested this hypothesis in a laboratory study using a brainstorming task.

Goal difficulty levels were held constant across the participative and assigned goal conditions. As predicted, no significant differences in performance were found between the two goal setting groups. Moreover, no difference on a measure of goal acceptance was found.

Dossett, Latham and Mitchell (1979) replicated the above finding in two field experiments involving testing and performance appraisal. In the first experiment, Dossett, et al found that employees who participated in setting their goals on a test attained the same performance level as individuals who were assigned goals of the same difficulty level. This same finding was obtained in their second study which involved setting goals on a performance appraisal form.

Hannan (1975), using a simulated credit application evaluation task, also found that assigned and participatively set goals led to the same level of performance when goal level was controlled (there was a small goal x participation interaction, however.)

Likert (Note 3) has pointed out that when assigned goal setting is effective as in the above studies, it may be because the supervisors who assign the goals behave in a supportive manner. Latham and Saari (1979a) tested this assumption in a second laboratory study using a brainstorming task. Goal difficulty again was held constant between the

participative and assigned goal groups. However, the supportiveness of the experimenter was varied. The results indicated that supportiveness led to higher goals being set than a non-supportive supervisory style. It was also found that it took significantly longer to set goals in the participative goal conditions than in the assigned conditions which may have accounted for the higher performance of this group. The authors concluded that the importance of participation in goal setting may be that it not only leads to the setting of high goals, but it can lead to increased understanding of how to attain them--two variables that can have a direct impact on performance.

### Conclusions

There seem to be few consistent differences between assigned and participatively set goals with respect to task performance. However, several tentative conclusions regarding the influence of participation can be made.

There appear to be two possible mechanisms by which participation could affect task motivation. First, participation can lead to the setting of higher goals than would be the case without participation, although, of course, in theory assigned goals can be assigned at any level the supervisor or experimenter chooses. Second, participation could, in some cases, lead to greater goal acceptance than assigned goals. The first effect has been found twice (Latham and Yukl, 1975b; Latham, et al, 1978).

The second effect is discussed in the section on goal acceptance below.

It may be that supportiveness, as discussed in Latham and Saari (1979a) as well as in Hall and Hall (1976), and Ivancevich (1974), who called it "reinforcement") is more crucial than participation in achieving goal acceptance. Participation itself, of course, may entail supportiveness. Other factors, such as the power of the supervisors and the rewards and punishments given for goal attainment and non attainment, may also be important, but these have not been systematically investigated.

Further, it is possible that the motivational effects of participation are not as important in gaining performance improvement as are its cognitive effects. Locke, et al (in press) found that the single most successful field experiment on participation to date stressed the cognitive benefits; participation was used to get good ideas from workers as to how to improve performance efficiency (Bragg & Andrews, 1973). The potential cognitive benefits of participation are discussed in some detail in Locke and Schweiger (1979) and were implied in the Latham and Saari (1979a) study.

#### Individual Differences

To date individual differences have received minimal attention in the goal setting literature. However, several variables have been examined in one or more studies.

### Demographic Variables

Of the few studies that have investigated demographic variables as potential moderators of goal setting, most have dealt with the effects of education, race and job tenure on the goal setting process.

Education. In a study involving electronics technicians, Ivancevich & McMahon (1977c) found that perceived goal challenge was significantly related to performance only for educated technicians (12 years or more of education). In contrast perceived goal clarity and goal feedback were significantly related to performance only for less educated (fewer than 12 years of education) technicians.

In a field experiment with loggers, Latham and Yukl (1975b) compared assigned, participative and "do best" goal setting conditions for educated white (12 to 16 years of education) and uneducated black (0 to 9 years of education) logging crews. They found that participative goal setting significantly affected the performance of the uneducated crews but did not affect the performance of the educated crews. The goal setting program may not have been administered effectively in the latter sample, however, and, of course, education was confounded with race.

These findings were not replicated in a second field experiment by the same authors on female typists (Latham & Yukl, 1976). In that study education did not moderate the effects of either participative or assigned goal setting.

Similarly, Steers (1975) found no moderating effect of education on goal setting in a study of 113 female supervisors.

Although Latham, et al (1978) did not examine education as a moderator variable, the study is mentioned here because of the education level of the subjects studied. They found that goal setting had a significant effect on the performance of engineers and scientists with master's and doctoral degrees.

We must conclude that there is no consistent evidence for the effect of education as a moderator of goal setting. Nor is there any convincing theoretical reason why there should be. Goal setting appears to be effective for all educational levels of employees, ranging from elementary school children (Masters, et al, 1977) to loggers with a mean education of 7.2 years (Latham & Yukl, 1975b) to engineers and scientists (Latham, et al, 1978) with advanced degrees.

Race. As noted in the previous section, Latham and Yukl (1975b), found that less educated black loggers who participated in setting their goals were more productive and attained their goals more frequently than crews who were assigned goals by their supervisors or told to "do your best." However, for the more educated white loggers there were no significant differences among the goal setting conditions.

A study involving technicians by Ivancevich and McMahon (1977b) supported these findings. Perceived participation

in goal setting was related to several measures of performance for black technicians but not for whites. Goal clarity and feedback were also related to performance for blacks only. However, goal challenge was found to be related to performance for the whites only. Perhaps goal clarity, feedback, and participation affected the performance of blacks because, as Ivancevich and McMahon (1977b) state, "...it has been found that blacks have a higher need for security in performing their jobs.... One way to derive more security in a goal setting program is to have goal clarity, receive feedback, and participate in the process" (p. 298). Clearly more studies are needed before this interpretation can be verified. If it is valid, then the racial factor would be reducible to a personality attribute which presumably would cut across racial lines.

Job Tenure. Five studies have examined tenure as a moderator variable in the goal setting process. Three of them (Ivancevich and McMahon, 1977b; Latham and Yukl, 1976; Steers, 1975) found no moderating effect. Two studies by Dachler and Mobley (1973), however, found no significant relationship between stated goals and performance of short tenured (less than one to two years) employees, while there was a significant relationship between stated goals and productivity for long tenured (one to two or more years) employees. This was explained by the fact that longer tenured employees have more accurate perceptions of their chances of reaching



various levels of performance and of performance-outcome contingencies. However, it is not clear why it would take one or more years for these perceptions to become accurate.

In sum, the evidence to date does not show much promise with respect to tenure as a moderator.

Age. In the study by Ivancevich and McMahon (1977c) on technicians, age was not found to be related to goal setting or performance. To the authors' knowledge no other studies have investigated the moderating effects of age. However, in addition to the studies cited regarding adults, goal setting has also been shown to be effective for children (e.g., Masters, et al, 1977; Rosswork, 1977).

Sex. No study has systematically examined sex differences as a moderator of goal setting. However, goal setting has been shown to significantly increase the performance of both males (Ivancevich & McMahon, 1977c; Latham & Yukl, 1975b) and females (Latham & Yukl, 1976; Steers, 1975).

#### Personality Variables

Need for Achievement. Steers (1975), in his study of female supervisors, found that performance was related to feedback and goal specificity only for high need achievement individuals. Participation in goal setting, on the other hand, was related to performance only among low need achievement supervisors. These findings indicate that high need achievers perform best when they are assigned specific

goals and receive feedback on their progress toward these goals. Conversely, low need achievers (who are perhaps less confident) perform best when they are allowed to participate in the setting of their goals.

In a laboratory experiment, Singh (1972) found that students with high need for achievement set higher goals for themselves over repeated trials of a mathematical clerical type task than did low need achievers. Yukl and Latham (1978) obtained comparable results in their study involving typists. High need achievers who were allowed to participate in the goal setting process set more difficult goals than did low need achievement typists. However, they did not perform any better than low need achievers, perhaps because ability was not controlled.

In two experiments involving word processing operators, Dossett, et al (1979) found no moderating effects of need for achievement on performance appraisal measures or on performance on a selection test measuring mathematical ability. Goal difficulty was not examined in these studies because it was held constant across goal setting conditions.

Overall, the results again are inconsistent and unreliable.

Need for Independence. An earlier study by French, Kay and Meyer (1966) had found that employees with a high need for independence had greater goal acceptance when participation in goal setting was increased than when participation was reduced or not changed. Goal acceptance was not affected by changes in participation for employees with a low need for independence.

The moderating effect of need for independence has not been found by other researchers. For example, Searfoss and Monczka (1973) found no moderating effect of need for independence on the relationship between perceived participation on the part of managers in setting specific budgetary goals and subsequent motivation to achieve those goals. Similarly, in their study with typists, Latham and Yukl (1976) found that need for independence did not moderate the effects of either participative or assigned goal setting on performance. Dossett, et al (1979) also found no moderating effects of need for independence on the performance of word processing operators.

Higher Order Need Strength. Higher order need strength is defined as the degree to which a person desires enriched work (variety, autonomy, task identity and feedback; Hackman & Lawler, 1971). To our knowledge, only one study has examined this need as a possible moderator of goal setting.

In the study by Ivancevich and McMahon (1977a) involving technicians, initial analyses revealed no consistent relationships between various goal attributes and performance measures. However, when higher order need strength was used as a moderator, goal clarity , feedback and challenge were found to be related to effort (toward quantity and quality) and attendance for technicians with high higher order need strength. Conversely, for technicians with low higher order need strength, goal acceptance was found to be related to effort (toward quality) and attendance. No obvious interpretation can be made of this finding.

Self-Esteem. In the study involving typists (Latham & Yukl, 1976), self-esteem did not moderate the effects of participative and assigned goal setting on performance. However, it was found that self-esteem and goal instrumentality interacted in their effects on performance (Yukl & Latham, 1978). Instrumentality was defined as "The extent to which desirable outcomes [e.g., job security, pay, promotion] are perceived to be contingent upon goal attainment" (Yukl & Latham, 1978, p. 312). Specifically, when goal instrumentality was low (goal attainment not perceived as linked to important outcomes), typists with high self-esteem showed greater performance improvement than individuals with low self-esteem. There was no self-esteem effect when instrumentality was high. When self-esteem was low, typists who perceived high goal instrumentality showed greater performance improvement than

those with low goal instrumentality; when self-esteem was high, there was no instrumentality effect.

The integrating principle here may be that people with high self-esteem will work hard without practical rewards (for pride?) whereas people with low self-esteem will not.

Carroll and Tosi (1970) found in a correlational study that individuals with high self-assurance increased effort in the face of increasingly difficult goals whereas those with low self-assurance worked less hard as goals became harder. It is likely that different self perceptions regarding ability underlie the self-assurance measure.

Dossett, et al (1979) found that word processing operators with high self-esteem who were given performance feedback attained their goals significantly more often than individuals with low self-esteem. These results are consistent with those of Shrauger and Rosenberg (1970) who found that shifts in performance following feedback depend on the self-esteem of the individual. Specifically, high self-esteem people improved their performance more than low self-esteem people following positive feedback; the performance of low self-esteem individuals decreased more than high self-esteem individuals following negative feedback. Thus, high self-esteem individuals are influenced more by positives, low self-esteem people by negatives.

These results are congruent with Korman's (1970) thesis which asserts that individuals are motivated to behave in a

manner which is congruent with their self-concept. Thus, people respond more to feedback that agrees with their self-concept, be it positive or negative, than they do to feedback that is inconsistent with their self-concept.

Internal Versus External Control. In the study of typists (Latham & Yukl, 1976), belief in internal versus external control was found to have no moderating effect on performance. Dossett, et al (1979) also found no moderating effects for locus of control on job performance appraisal measures or on test performance for word processors. However, Latham and Yukl (1976) found that typists with participatively set goals who were "internals" set more difficult goals than "externals."

### Conclusions

The only consistent thing about the studies of individual differences in goal setting is their inconsistency. There are a number of reasons that can be offered for this.

First, virtually none of the studies was designed specifically to look for individual difference effects. The very fact that most studies assigned goals to the subjects means that any individual differences that did exist were probably masked by the demand characteristics of the design. When goals are assigned, subjects typically respond to situational demands rather than acting in accordance with their own styles and preferences. The best design for revealing individual differences would be one in which there is free (or a considerable amount of) goal choice rather than assigned goals. Note that the personality variables in the goal

setting studies reviewed above were most likely to emerge in the participative conditions (where the subject has some input into the decision) or in the self-set goal conditions.

Second, most of the individual difference variables included in the studies were not based on any clear theoretical rationale; thus even when differences were found, they were hard to explain. Perhaps the most theoretically plausible of the variables discussed above is that of need for achievement. Need for achievement theory (e.g., McClelland & Winter, 1971) would predict, for example, that people high in *n ach* would (a) choose moderate goals; and (b) work hardest when probabilities of success were moderate; when task performance was in their control; when there was performance feedback; and when intrinsic rather than extrinsic rewards were emphasized. While there is some support for these predictions in the *n ach* literature, goal setting studies have not been designed to test them.

The results for self-esteem are also intriguing. This variable seems worthy of further study since it is logical to expect that one's self concept would affect the goals one chooses. Self-esteem, of course, must be carefully separated from ability.

Third, there are difficulties with regard to the measures used for assessing personality variables. The personality measures used were not consistent across studies. Steers (1975) used the Gough-Heilbrum Adjective Check List (1965) to measure need for achievement, whereas Latham and Yukl

(1976) modified a questionnaire developed by Hermans (1970). Therefore, it cannot be determined whether the different results obtained in these two studies were due to differences in the measures or in the population. Further, the reliability and validity of personality measures are often inadequate or not reported. In addition, some personality measures were administered after the experimental manipulations had taken place. This procedure can result in a confounding of responses to the personality measures with the experimental treatment.

Fourth, there may be confounding of individual differences in some studies. In order to draw firm conclusions regarding an individual difference variable, it must be independent of other individual difference variables of interest. Researchers often do not report the intercorrelations of individual differences, yet they draw conclusions on various individual difference variables obtained from the same sample.

Fifth, many studies report that an individual difference variable correlates with performance for people who score high on that variable, but not for those who score low. However, generally no test of significance between the two correlations is reported. In order to establish a moderating effect, a test of significant differences between correlation coefficients should be made (Zedeck, 1971).

Future research must overcome these difficulties before any clear conclusions can be drawn regarding the role of individual differences in goal setting.



### Goal Acceptance, Commitment and Choice

Most recent studies of goal setting have used goals as an independent variable. However, since it is assumed that assigned goals must be accepted before they will affect task performance, it is also relevant to examine the determinants of goal choice or goal acceptance. Generally attempts to measure degree of goal commitment or goal acceptance in a manner which will differentiate between experimental treatments and/or relate to task performance have failed. None of the experimental conditions in the studies by Latham and Saari (1979a, 1979b), Latham, et al (1978), Dossett et al's Study 1 (1979), or Yukl and Latham (1978) affected direct measures of goal acceptance. Dossett, et al's (1979) Study 2 found an initial difference with assigned goals showing greater acceptance than participatively set goals, a prediction contrary to expectations. However, this difference had washed out by the end of the experiment. Frost and Mahoney (1976); London & Oldham (1976); Mento, Cartledge and Locke (1980, two studies); Oldham (1975) and Yukl & Latham (1978) found no relationship between measures of goal acceptance and performance. Organ (1977) found that goal acceptance correlated with performance within some of his assigned goal subgroups but the pattern of correlations was uninterpretable theoretically.

There are several possible reasons for these negative results: (a) The measures of goal acceptance (which consisted

typically of direct, "face-valid" questions such as ("How committed are you to attaining the goal?") may not have been valid. Some evidence that the measures of goal acceptance may be at fault was obtained in a study by Hannan (1975) in the credit application evaluation task noted earlier. He measured goal acceptance not by a rating scale but by the degree of difference between the subject's external (i.e., assigned or participatively agreed upon) goal and his or her personal goal (as determined from a questionnaire given after external goals were set). Hannan found that participation did lead to greater goal acceptance (though not to better performance) than assigning goals, and that the effects of participation became progressively stronger as the difficulty of the external goal increased. The goal acceptance measure was related to one measure of performance. Hannan also found that personal goals predicted performance better than assigned goals, as did Mento, et al ( 1980 ). These findings suggest that indirect measures of goal acceptance may be more effective than direct measures.

(b) In most of the studies where acceptance was measured, nearly all subjects showed complete or substantial goal commitment; thus the range of scores was quite limited. Small differences on the scales typically used may not accurately reflect differences in psychological states.

(c) Due to limitations in introspective ability, most (untrained) subjects may not be able to discriminate small differences in psychological commitment (see Nisbett and Wilson, 1977 ; but see also Leiberman, 1979 , for a more sanguine view of <sup>the</sup> usefulness of introspection). Recall that in the studies by Latham, et al (1978 ) and Pritchard and Curts (1973) described earlier, there appeared to be significant commitment effects for monetary incentives based upon actual performance, but these were not reflected in the direct goal commitment questions.

The solution to the last two problems may be a change in the design of the typical goal setting experiment. Designs which encourage a wide range of goal commitment, such as those with a choice of various possible goals with commitment to each being measured after choice, may reduce the introspective burden and increase the variance of the answers on the commitment scale. Within-subject designs, which involve assigning different goals (under different conditions) to the same subjects at different times, might also make the commitment responses more accurate by providing a clearer frame of reference for the subject. In addition, when a subject is less than fully committed to a given goal, it is important to determine what other goals he or she is committed to. For example, a subject who is not fully committed to a moderately difficult goal could be trying for a harder goal, an easier goal or no specific

goal. Each alternative choice would have different implications for performance.

Goal acceptance or commitment can be considered a form of choice, i.e., the choice between accepting or rejecting an assigned or participatively set goal. In this sense these studies tie in with the more traditional studies of what is called "level of aspiration" which allowed subjects to freely choose their own goals after each of a series of trials on a task (e.g., see Frank, 1941; Hilgard, 1958). The categories of factors which affect goal acceptance and goal choice would seem to be basically the same. They fit easily into two major categories, which are the main components of expectancy theory (Vroom, 1964):

(a) Expectations of success. Other things being equal, individuals are more likely to accept or choose a given goal when they have high rather than low expectations of reaching it (Mento, et al, 1980 ). Such expectations evidently stem from self-perceptions about ability on the task in question (Mento, et al, 1980 ). Presumably these perceptions are inferences from past performance. Past performance has been found consistently to predict future goals (Ashworth and Mobley, Note 1; Cummings, et al, 1971; Lopes, 1976; Wilsted & Hand, 1974). Generally individuals are more likely to become more confident and to set higher goals after success and to become less confident and to set lower goals after failure

(Lewin, 1958), although failure may lead to higher goals in pressure situations (Zander, Forward & Albert, 1969; Forward & Zander, 1971) or even due to self-induced pressure (Hilgard, 1958). Generalized self-confidence may also affect goal acceptance and choice.

(b) Values. When the perceived value of attaining or trying for a goal is higher, the goal is more likely to be accepted than when the perceived value is low (Mento, et al, 1980). The valued outcomes involved may range from intrinsic rewards like the pleasure of achievement, to extrinsic rewards which follow performance such as money, recognition and promotion. The belief that goal acceptance or goal attainment will lead to value attainment is called instrumentality in expectancy theory. Theoretically goal choice and goal acceptance should be predictable from the expectancies, values and instrumentalities the subject holds with regard to the various choices (Dachler & Mobley, 1973).

This is clearly a maximization of satisfaction model, of course, a model which is not without its critics (e.g., Locke, 1975). However, treating expectancy theory concepts as factors which predict an individual's goal choices does suggest a way of integrating the expectancy and goal setting literatures (Dachler & Mobley, 1973; Mento, et al, 1980).

While external factors such as rewards and pressures presumably affect the individual through their effects on expectancies, instrumentalities and values, it is worth emphasizing pressures because they have played a major role in most of the goal setting studies. For example, the typical laboratory goal setting study simply involves asking the subject to try to reach a certain goal. The subject typically complies because of the "demand characteristics" of the experiment (probably reducible to beliefs regarding the value of extra credit and the desire to help the experimenter). Similarly, in field settings subjects are typically asked to try for goals by their supervisor. The supervisor, of course, is in a position to reward or punish the employee; furthermore, employees know they are being paid to do what the organization asks them to do. Ronan, Latham and Kinne (1973) found that goal setting among woods workers was only effective when the supervisor stayed on the job with the employees. The mere presence of the supervisor could be considered a form of pressure in this context. In the studies by Forward and Zander (1971) and Zander, Forward & Albert (1969) competitive or community pressures led to setting goals that were unrealistically high.

While pressure is something that social scientists have been generally against, Hall and Lawler (1971) argue that if

used appropriately, for example, by combining it with responsibility, it can facilitate both high commitment and high performance.

Pressure, of course, also can be self imposed as, for example, in the case of the Type A personality who appears to be a compulsive goal achiever (Friedman and Rosenman, 1974).

### Conclusions

Based on the findings to date, the following conclusions about goal setting seem warranted:

1. The beneficial effect of goal setting on task performance is one of the most robust and replicable findings in the psychological literature. Ninety percent of the studies showed positive or partially positive effects. Furthermore, the beneficial effects of goal setting are found just as reliably in field settings as in the laboratory.
2. There are at least four mechanisms by which goals affect task performance: (a) by directing attention and action; (b) by mobilizing energy expenditure or effort; (c) by prolonging effort over time (persistence); and (d) by motivating the individual to develop relevant strategies for goal attainment.
3. Goals are most likely to affect performance under the following conditions:
  - (a) Range of Goals. Individuals with specific and hard or challenging goals outperform individuals with specific easy goals, "do best" goals, or no assigned goals. People with specific moderate goals show performance levels between those

of people with easy and hard goals but may not perform better than individuals with "do best" goals. A common problem with easy goal subjects is that their goals are so easy that once they are reached, they set new, higher goals in order to have something to do--which means that they are no longer genuine "easy goal" subjects. Perhaps easy goal subjects should be told not to try to exceed their goals or/<sup>not</sup> to set new goals when the easy goals are reached. The wider the range of goal difficulty, the more likely goal setting is to affect performance (e.g., compare Locke, et al, 1978, with Frost and Mahoney, 1976). It is probable that longer time spans will progressively increase the difference between hard goals and non-hard goal subjects.

(b) Goal Specificity. Goals seem to regulate performance most predictably when they are expressed in specific quantitative terms (or as specific intentions to take a certain action, such as quitting a job) rather than as vague intentions to "try hard" or as subjective estimates of task or goal difficulty.

(c) Ability. Individuals must have the ability to attain or at least approach their goals. (In complex tasks they must choose appropriate strategies as noted above.) Putting out more effort will not improve task performance (even though more effort may be expended) if improvement is totally beyond the individual's capacity. Goal setting studies should carefully control for ability (such as by a work sample pre-test)



in order to isolate the variance in performance due to goals from that due to ability. If ability is not controlled, it becomes error variance when testing for a motivation effect. The most practical way to set goals may be to base them on each individual's ability on the task in question as measured by a pre-experimental work sample. This usually insures ready goal acceptance and makes it easy to control for ability when comparing different goals.

(d) Knowledge of Results (Feedback). Some knowledge of performance in relation to the goal appears to be a necessary condition for goals to improve performance (just as goals are a necessary condition for feedback to motivate performance). Feedback is probably most helpful as an adjunct to goal setting when the task is divided into trials and feedback is provided after each one, although the ideal frequency is not known. Feedforward, telling the subjects how fast they need to work to reach their goals as compared to an immediately preceding practice trial, may be a partial substitute in some cases (e.g., see Mento, et al, 1980 , Study 1). Knowledge and feedback, of course, may have purely cognitive (learning) effects on performance (see Locke, et al, 1968, for a discussion of this issue), but they are not the concern of this review.

(e) Monetary Rewards. Money paid for goal attainment seems to be an effective method of further improving performance in relation to a given goal (presumably through increased commitment), but the amounts involved must be "large" rather than

"small" (e.g., \$3.00 rather than 3¢ in a typical laboratory experiment).

(f) Participation and Supportiveness. There is no consistent evidence that participation in goal setting leads to greater goal commitment or better task performance than assigned goals when goal level is controlled. Sometimes participation leads to setting higher goals than the supervisor would have assigned. One study found that participation facilitated the acceptance of hard goals (Hannan, 1975).

It may be that supportiveness in goal setting is a more important variable than participation, although more work needs to be done on defining this concept clearly. Latham and Saari (1979a) defined it as: friendliness, listening to subjects' opinions about the goal, encouraging questions, and asking rather than telling the subject what to do.

(g) Individual Differences. No reliable individual difference factors (other than ability) have emerged in the goal setting literature. The probable reason is that most of the studies have used assigned goals; thus the situational constraints have prevented personal styles and preferences from affecting performance. In free choice situations individual personality traits should play a more substantial role. Subjects high in need for achievement should prefer to set moderate goals, while those low in n ach should be more likely to set easy or very hard goals. Individuals with high self-esteem should

be more likely to accept and try for challenging goals than those with low self-esteem. However, it is not clear whether a generalized self-esteem measure would show as much of an effect as a more task specific measure of perceived competence. Mento, et al ( 1980 , based on Motowidlo, 1976) found that self perception of ability added unique variance to performance even when expectancy, valence, and goal level were controlled.

(h) Goal Acceptance and Choice. The effects of goals on task performance described above assume that the individual accepts (is actually trying for) the goal that was assigned or was set. Personal goals usually predict performance better than related measures such as assigned (or objective) goal difficulty or subjective goal difficulty. Direct measures of goal acceptance have been found to be generally unrelated to either experimental treatments or task performance. For example, rewards such as money may affect performance, with goal difficulty controlled, even though goal acceptance questions do not indicate increased commitment. Indirect measures (such as the difference between the personal and the assigned goal) show more promise. However, better experimental designs (e.g., within-subject designs and designs which allow free choice of goals) may show effects even using direct questions.

Goal choice and acceptance are influenced by numerous factors, including pressure, all of which may work through influencing the individual's expectancies, values and perceived

instrumentalities. For goal setting programs in organizations, support on the part of higher management seems critical for success, as is the case for most social science interventions (e.g., see Hinrichs, 1978; Ivancevich, 1974; Woodward, Koss and Hatry, Note 7). In an organizational context support may include insuring or securing the commitment of middle and lower managers. It is likely that the degree of continuing support for goal setting programs will determine the duration of its effects. The Latham and Baldes (1975) study with truck drivers has continued to be successful for the past seven years (reported in Latham and Locke, 1979, Figure 1, footnote b).

On each of the above points, of course, there are many issues needing further clarification and not mentioned in the above list is the effect of type of task. These writers do not agree with those who claim that goal setting might only work on certain types of tasks. However, it will undoubtedly be the case that the four mechanisms noted earlier are differentially important in different tasks. For example, where more effort leads to immediate results, goals may work as long as they lead the subject to work harder. On the other hand, where the task is complex, hard goals may only improve performance if they lead to effective strategies.

A very intriguing finding by Masters, Furman and Barden (1977) was that children who were told to evaluate their performance after each trial block while speaking into a tape recorder (e.g., "I did very good" [sic]; "I didn't do very good" [sic]) all reached asymptote on the task regardless of their assigned goals. "Self reward" ultimately vitiated what had been highly significant goal effects. This finding is clearly worthy of future study.

Competition in relation to goal setting has not been systematically studied. Both Latham and Baldes (1975) and Komaki, et al (1978) found that goal setting plus feedback led to spontaneous competition among subjects. White, et al (1977) found that telling subjects that their performance would be compared to that of others ("evaluation apprehension" in their terminology) had a powerful effect on task performance independent of a separate goal manipulation. However, spontaneous goal setting within the evaluation apprehension condition was not measured. It is likely that competition could lead people to set higher goals than they would otherwise (other people's performance becoming the goal) and/or lead to greater goal commitment (Locke, 1968).

Another issue that has not been studied is whether hard goals combined with high pressure might lead to a conflict situation and therefore high anxiety. It has been shown that anxiety disrupts performance on complex tasks when it leads

subjects to "worry" rather than concentrate on the task (Wine, 1971). As noted earlier, conflicts may also occur among different goals, although this has not been studied. Conflicting pressures in goal setting may vitiate the usual goal-performance relationship (Forward & Zander, 1971). Nor has the issue of individual versus group goal setting received much attention. (Group goals are discussed in Zander, 1971).

A final note is in order with respect to the practical significance of the technique of goal setting. A review of all available experimental field studies of goal setting by Locke, Feren, McCaleb, Shaw and Denny (in press) found that the median improvement in "hard" performance (e.g., productivity, quality) which resulted from goal setting was 16%. In one company the use of goal setting on just one job saved a company \$250,000 (Latham & Baldes, 1975). Combined with the use of monetary incentives, Locke, et al (in press) found that goal setting improved performance by a median of more than 40%--a finding of enormous practical significance.

A model for the use of goal setting in field settings has been developed by Latham and Locke (1979). White and Locke (Note 6) have documented the frequency with which goals actually regulate productivity in business settings. Locke (1978) has argued that goal setting is recognized explicitly or implicitly in virtually every theory of and approach to work motivation.

Of course, goal setting is a very simple, if not obvious, technique--and perhaps that is why it works so well.

Footnotes

1. Preparation of this manuscript was supported by ONR contract N00014-79-C-0680 between the office of Naval Research, the University of Maryland and the University of Washington (subcontractor).

2. Our view of what constitutes a goal attribute differs from that of Steers and Porter (1974) who, for example, called participation an attribute of goals. We treat participation as a mechanism which may affect goal content or goal acceptance.

3. Partially or conditionally supportive studies were distinguished from non-supportive studies as follows: a study was called partially supportive if the treatment was significant for one sub-sample of the full sample of subjects or for one of several experimental treatments or criteria. If an entire sample or study found no significant effects, it was called non-supportive.



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Figure 1

## Model for Analyzing Goal-KR Studies

	KR	NO KR
SPECIFIC HARD GOAL	1	2
NO SPECIFIC GOAL OR DO-BEST GOAL	3	4

**Table 1**  
**Studies Comparing the Effects of Goals and**  
**KR on Performance**

STUDY	COMPARISONS PERFORMED			
	1 vs. 2	1 vs. 3	2 vs. 4	3 vs. 4
Bandura & Simon (1977)		1 > 3		3 = 4
Dockstader (Note 2)		1 > 3		3 = 4
Latham, Mitchell & Dossett (1978)		1 > 3		3 = 4
Nemeroff & Cosentino (1979)		1 > 3		3 = 4
"At Emery Air Freight" (1973)	1 > 2		2 = 4	
Komaki, Barwick & Scott (1978)	1 > 2		2 = 4	
Becker (1978) <sup>a</sup>	1 > 2		2 = 4	
Strang, Lawrence & Fowler (1978) <sup>a</sup>	1 > 2		2 = 4 2 < 4 <sup>b</sup>	

a These studies included both hard and easy goal plus KR conditions. The performance of easy goal subjects was no better than that in the control condition.

b Results differed, depending upon performance criterion utilized.