Great minds in management: the process of theory development

Author(s)	Smith, Ken G. ; Hitt, Michael A.
Imprint	Oxford ; New York : Oxford University Press, 2005
Extent	xiii, 600 p.
Topic	HD
Subject(s)	Management
Language	English
ISBN	9786610758456, 0199276811
Permalink	http://books.scholarsportal.info/viewdoc.html?id=3866
Pages	143 to 165

CHAPTER 7

GOAL SETTING THEORY

THEORY BUILDING BY INDUCTION

EDWIN A. LOCKE
GARY P. LATHAM

7.1 The Theory

Life is a process of goal-directed action. This applies both to the vegetative level (e.g., one's internal organs) and to the level of purposeful choice (Locke and Latham, 1990). The conscious mind is the active part of one's psychology; one has the power to volitionally focus one's mind at the conceptual level (Binswanger, 1991; Peikoff, 1991). Volition gives one the power to consciously regulate one's thinking and thereby one's actions. Goal setting theory (Locke and Latham, 1990, 2002) rests on the premise that goal-directedness is an essential attribute of human action and that conscious self-regulation of action, though volitional, is the norm.

We do not deny the existence of the subconscious nor its power to affect action. In fact, the subconscious is essential to survival in that only about seven separate elements can be held in focus awareness at the same time. The subconscious operates automatically and serves to store knowledge and skills which are needed

in everyday action. The subconscious is routinely activated by our conscious purposes and also determines our emotional responses (Locke, 1976).

As organizational psychologists, we were concerned mainly with how well people perform work tasks, so that has been the focus of our research. We also chose to focus on conscious performance goals, on the assumption that most human action at work is consciously directed.

1. *Core findings.* The core of goal setting theory asserts that performance goals lead to the highest level of performance when they are both clear (specific) and difficult. Specific, hard goals lead to higher performance than easy or vague goals, such as trying to "do your best."
2. *Mediators of goal effects.* Goal effects are mediated most directly by three relatively automatized mechanisms: (1) focus of attention on the desired end state to the exclusion of other goals, (2) regulation of physical as well as cognitive effort (Wegge and Dibbelt, 2000) in proportion to what is required to attain the goal, and (3) persistence of effort through time until the goal is attained. The role of a fourth mediator, task knowledge or skill, is more complex (Locke, 2000). A goal cannot be attained unless the individual knows how to do so. We will have more to say about this later.
3. *Moderators.* Goal effects are moderated by at least four factors. First, people need feedback regarding their progress in order to see if they are "on target." This not only allows adjustments in level of effort, it may imply the need for modifying their task strategy. Second, for goals to be effective, people must be committed to them (Seijts and Latham, 2000); they must be "real" goals. Commitment is especially important when goals are difficult. This is because hard goals require great effort, and failure and discouragement are more likely than is the case when easy goals are set. Commitment is highest when people have confidence in being able to reach their goal and believe the goal to be important or appropriate. These two factors also affect goal choice.

   There are numerous ways to generate goal commitment, e.g., assignment and supportiveness by a respected leader (Latham and Saari, 1979*b*), affirming the goal in public so as to make it a test of integrity, clarifying outcome expectancies, incentives, etc. (Latham, 2001; Locke and Latham, 1990, 2002). Participation in goal setting was once thought to be a powerful determinant of goal commitment, but as shown below, this is not true.

   Third, the beneficial effects of goal setting are stronger with simple, straightforward tasks than with tasks that are complex for people. On the latter tasks, some people may not perform well despite having high goals because they lack the needed knowledge, though such knowledge may be acquired. Fourth, goal attainment is adversely affected by situational constraints.
4. *Satisfaction.* Goals are at the same time outcomes to attain and standards for judging one's accomplishments. Thus, people are more satisfied when they

attain their goals or make meaningful progress toward them, than when they fail, or make little or no progress. Failure is more likely when goals are hard than when they are easy; so, on average, people are less likely to be satisfied with their performance when their goals are quite difficult. Nevertheless, they work harder for such goals as we explain below.

5. *Goals (and self-efficacy)* may serve as mediators of external incentives and personality. Since performance goals are task and hence situationally specific, it follows that goals are more immediate determinants of performance than are indirect or general determinants. For example, self-set goals, along with self-efficacy (Bandura, 1997), have been found to mediate the effects of assigned goals, feedback, participation, monetary incentives, job enrichment, leadership, and personality variables, particularly conscientiousness, on performance (Locke, 2001). This is not to suggest that conscious goals mediate all incentives; some incentives or traits may operate through one's subconscious (e.g., McClelland's achievement motive; Collins, Hanges, and Locke, 2004).
6. *Levels of analysis.* Goals have been found to affect performance at the individual, group, organizational unit, and organizational levels (Baum, Locke, and Smith, 2001; Latham and Locke, 1975; Locke and Latham, 2002; O'Leary-Kelly, Martoccio, and Frink, 1994; Rogers and Hunter, 1991).
7. *Time.* Our research on goal setting theory has spanned a period of over forty years. The issue of time spent in theory building is an important one that we will return to later in this chapter.
8. *Generality.* Goal setting effects have been found using more than 100 different tasks; in laboratory, simulated and field settings; using time spans ranging from one minute to twenty-five years; using experimental, quasi-experimental and correlational designs; using goals that are assigned, self-set, and set participatively; using over 40,000 participants in eight countries; using sundry dependent variables including quantity, quality, time spent, costs, job behavior of scientists, sales, student grades, and professors' publications. Goal setting is effective on any task where the person has control over his or her performance. A recent evaluation by Miner (2003), based on the assessments of OB scholars, rated goal setting theory first in importance among seventy-three management theories. So—how was this accomplished?

7.2 Genesis: Edwin Locke

In college, I majored in psychology. My first course in motivation was taught by David McClelland (1961), well known for his work on the achievement motive

which he alleged to be subconscious. He measured motivation with the TAT (Thematic Apperception Test) which requires respondents to write stories in responses to pictures. The stories are then coded for achievement imagery. I was not enamored by projective tests, but the course did arouse my interest in the topic of human motivation. My undergraduate advisor was Richard Herrnstein (later to co-author the controversial book, *The Bell Curve*). I told him I did not want to work with rats and pigeons, and that, because of my father's business experience, I had an interest in business, though I did not want to pursue it as a career. He suggested I combine psychology and business by studying industrial psychology, a field that I had never heard of.

I took his advice and entered graduate school at Cornell in 1960. My first textbook was Art Ryan's and Pat Smith's *Principles of Industrial Psychology*, published in 1954. In it was a report, originally published in 1935, of studies on goal setting conducted in the United Kingdom by C. A. Mace. Even though Mace did not do any statistical analyses, his results, which included a comparison of the effects of specific to "do best" goals, fascinated me.

My assessment was reinforced by Art Ryan who was, at the time, working on a book, *Intentional Behavior* (Ryan, 1970). He argued that the best way to explain human action was to start with its immediate conscious determinants such as intentions and build "backwards" from there.

In that time period, the field of psychology was dominated by behaviorism. Its basic tenets are that: (1) human action is controlled by the environment and can be understood without reference to consciousness–consciousness is not causal but simply an epiphenomenon of brain activity and environmental conditioning; and (2) consciousness falls outside the realm of science (i.e., it involves dealing with mystical phenomena). This behaviorist *zeitgeist* was an intimidating one, and many scholars who did not agree with behaviorism remained silent.

In the 1970s, behaviorism collapsed as the dominant paradigm in psychology, because it could not explain human action (e.g., see Bandura, 1977*a*, 1977*b*, 1986). Fortunately, I believed from the outset, as did my mentors, Ryan and Smith, that the behaviorists were wrong. First, one can refute behaviorism through introspection (i.e., we can observe that our ideas affect how we act). Second, Ayn Rand, whose philosophy of Objectivism I had been studying (see Peikoff, 1991, for the essentials of her philosophy), demonstrated that consciousness is an irrefutable and irreducible axiom. She also showed, as did other philosophers, that psychological determinism—the denial of free will—is a self-contradiction (Binswanger, 1991). Determinists make a claim of knowledge, implying that they are free to look at the evidence and draw logical conclusions from it, while at the same time claiming that they are mindless individuals who make word sounds as a sole result of conditioned responses. In logic, this is called the fallacy of self-exclusion.

Thus, I proceeded to do my doctoral dissertation on the topic of goal setting confident that it was scientifically appropriate to study conscious goals. I wanted to

see if goal setting could be shown to be effective when analyzed statistically. It could. My first job subsequent to leaving Cornell was at the American Institutes for Research (AIR).

At that point in time, I was unsure how to build a theory. I did have a negative exemplar—an example of what *not* to do. My exemplar was Frederick Herzberg, who with Mausner and Snyderman, published their famous motivator-hygiene theory in 1959, based mainly on two interview studies. My initial skepticism was that two studies are not a sufficient basis for building a theory. I also had doubts, shared by many, about his exclusive reliance on the critical incident technique to elicit the causes of job satisfaction and dissatisfaction.

Herzberg had participated in an APA symposium on his theory while I was in graduate school. Frank Friedlander, Lyman Porter, and Victor Vroom were on the panel. Herzberg reacted angrily to what seemed to be valid criticisms of his theory and/or method. I realized that this was an inappropriate approach to theory building, because it meant putting "ego" ahead of reality (defending one's position in defiance of the facts).

Herzberg's theory was eventually rejected, at least in the form that he initially proposed it (Locke, 1976). Furthermore, his theory remained static. For example, he never used other methods to test this theory and never did a subsequent critical incident study asking for the causes of high and low performance. Nevertheless, to his credit, his work focused the field on the importance of the job itself on a person's job satisfaction (e.g., see Hackman and Oldham, 1980).

I concluded that the first axiom of theory building had to be: "reality first." This was reinforced by Ayn Rand's philosophy, specifically her concept of the "primacy of existence" (Peikoff, 1991) which specifies the proper relationship between two of her three philosophical axioms: existence (existence exists) and consciousness. Existence is primary and the function of consciousness is to perceive it. Facts are what they are regardless of whether one likes them or not.[1]

Thus, I began my work at AIR convinced that I had to do many experiments using a variety of methodologies before I could make any claim to a theory, and that I had to accept the results—and take into account criticisms of my work. After conducting a number of experiments, I published an article in 1968 entitled "Toward a Theory of Task Motivation and Incentives." I deliberately chose the word "toward," because I did not believe there were sufficient data to develop a theory.

Furthermore, there were criticisms of my work. The main one at that time was: "How do you know your findings are not just a laboratory phenomenon with no generalizability to the world of work?" (e.g., Hinrichs, 1970). I had no answer. But fortunately, Gary Latham soon discovered my laboratory results.

[1] Ayn Rand recognized the existence of man-made facts resulting from human choice (the Empire State building). But man-made facts must recognize the metaphysically given (e.g., the laws of nature) or disaster will be the result, e.g., a skyscraper build on a foundation of sand will collapse.

7.3 Gary Latham

Similar to Locke, I majored in experimental psychology. Dalhousie University, where I was an undergraduate student, was a bastion of behaviorism in Canada during the 1960s. My mentor was a clinical psychologist, Dr. H. D. Beach, whose specialty included behavior modification. Unlike Ed, I initially embraced behaviorism because of its emphasis on the careful specification and measurement of action and the proven ability of rewards to affect action.

I was very much influenced in life by my father, whom I loved. Nevertheless, he did not influence my career as such. From my earliest recollections, he would look me in the eye and say, "Son, do your best." Had he assigned me a specific high goal, I undoubtedly would have progressed in my field at a much faster rate!

Similar to Locke, it was my professor, Dr. Beach, who suggested that I pursue graduate studies in I/O psychology, knowing that my interests were in the application of psychology. Like Ed, I had never before heard of this area of psychology.

Georgia Tech, where I obtained my MS degree, embraced the scientist/practitioner model. The faculty there opposed the hypothetico-deductive method. The lifelong—and convoluted—efforts of psychologists such as Clark Hull to develop a theory before gathering data led me to favor induction. My mentor at Tech was Bill Ronan who had studied under John Flanagan, who had developed the critical incident technique (CIT). I used it to identify the behaviors that impact an employee's productivity.

In 1968, the American Pulpwood Association requested Dr. Ronan to help them identify ways to improve the productivity of pulpwood crews in the southern United States. I worked as his assistant. Dr. Ronan advocated induction for categorizing critical incidents whereby similar incidents are grouped together. The pattern of data that I collected revealed that a critical behavior that differentiates the productive from the unproductive pulpwood producer was goal setting.

Upon receiving my MS, I was hired by the American Pulpwood Association as their first staff psychologist. One day I returned to the Tech library to peruse the *Psychological Abstracts* for ways to improve the productivity of pulpwood crews. Soon I was reading a series of abstracts of laboratory experiments which showed that a person who sets a specific high goal performs better on laboratory tasks than do people who are urged to do their best. I quickly called Dr. Ronan. In a factor analysis of our survey data, we too had found that pulpwood crews who set specific high goals have higher productivity than those who don't (Ronan, Latham, and Kinne, 1973). Yet, our previous findings had not captured our attention until that day I was in the library. "Dr. Ronan," I said excitedly, "Locke says . . ."

In reading the journals, I repeatedly encountered two other names, Gary Yukl and Ken Wexley. Recognizing that my knowledge was limited, I decided to return to school for my Ph.D. and entered the University of Akron in 1971.

Not much older than I, Yukl and Wexley shared and enhanced my love of application as well as the need for empirical research. Within the year, I devoured the work of Rensis Likert and Ed Lawler and the newly published book by Campbell, et al. (1970). But most of all, I continued to read everything published by Ed Locke.

In 1973, while I was still a doctoral student, the Weyerhaeuser Company hired me as their first staff psychologist and gave me the resources to do my doctoral dissertation. Impressed by the goal setting results I had obtained with uneducated, independent loggers in the South who were paid piece rate (Latham and Kinne, 1974), they wanted to see if I could obtain similar results using goal setting with educated unionized hourly paid loggers in the West. I did (Latham and Baldes, 1975).

Similar to Locke, I too had an exemplar for conducting research, but my exemplar was positive. My lasting "take-away" from my exemplar, however, was the same as Locke's. Ed Fleishman, Locke's first boss, thrilled me by accepting an invitation to speak on the subject of leadership to the Weyerhaeuser Company. As the President of Division 14 (I/O Psychology) and as Editor of the *Journal of Applied Psychology*, Fleishman gave me invaluable advice: "Give your manuscript to your 'enemies' before you submit it to a journal; whereas your friends will tell you how good it is, your 'enemies' will gladly point out its weaknesses." In short, don't be defensive and do look at all the relevant facts. To this day, I heed his advice.

At the end of a 1974 symposium I participated in at the American Psychological Association, Ed Locke came up and introduced himself. At that convention, we became close friends and colleagues, a relationship that has lasted for more than thirty years. This has occurred for a number of reasons.

First, although I have not been influenced by Ayn Rand's philosophy, like Locke, I am influenced by facts, facts derived from rigorous methodological discipline and empirical testing that allow generalizable solutions. 1977 was a watershed year for me. Albert Bandura sent me a preprint of his paper that would soon appear in the *Psychological Review* (1977*a*) as well as a book (1977*b*). His work shattered any remaining beliefs regarding the validity of behaviorism as a philosophy of science. Bandura and I have been citing one another's work to the present day.

Second, Locke and I immediately saw how our strengths complimented one another. On the scientist–practitioner continuum, Locke places himself on the scientist end. I, on the other hand, view myself on the practitioner side of the continuum. We found that we stimulated one another intellectually, and this has led to an enduring collaborative relationship. Locke and I both believe in programmatic research in which there is no conflict between theory and practice. Goal setting studies drove theory, theory drove practice that, in turn, drove the theory. By working together, as scientists and as practitioners, Locke and I were able to build a theory that works in organizations.

7.4 Building the Theory

How did we build the theory? Basically by doing many experiments over a long period of time; by showing that our experiments worked and thereby getting other researchers interested in goal setting research; by coming at the subject of goal setting from many different angles; by examining failures and trying to identify their causes; by resolving contradictions and paradoxes; by integrating valid ideas from other developing theories; by responding to criticisms that seemed to have merit and refuting those that did not; by asking ourselves critical questions; by differentiating the various elements of the theory; and finally by tying them together into a whole when we believed that there was sufficient evidence to do so.

We did not have a grand plan since we did not know at the outset how to actually build a theory, but each study (many of which were done by others) had a purpose, and each outcome led to new knowledge and additional questions. Various aspects of our theory building process can be grouped into a number of categories.

7.4.1 Replicating the Original Laboratory Findings

After leaving graduate school, the first author wanted to replicate the findings from his dissertation regarding the superiority of specific, hard goals to "do best" and easy goals, but with variation. For example, for my dissertation I used tasks that involved generating uses for objects; one of the early experiments done at AIR examined goal setting effects on a complex psychomotor task (Locke and Bryan, 1966).

7.4.2 Conducting Field Studies

Logging crews were matched and randomly assigned by Latham to one of two conditions, specific, high goals as to number of trees to cut down, or "do best" goals. All crews were paid by piece rate. Both productivity and job attendance were significantly higher in the high goal condition (Latham and Kinne, 1974). Challenging goals had provided loggers with excitement. They gave meaning and purpose to what had previously been viewed by them as a relatively meaningless task.

7.4.3 Differentiation of Goal Attributes

People kept saying that goals needed to be specific without mentioning difficulty. We differentiated the effects of goal difficulty from those of goal specificity, by

showing that specificity alone affected performance variance (Locke, et al., 1989), whereas difficulty affected performance level (but most effectively if goals were also specific).

7.4.4 Conflict

We realized that goals could sometimes be in conflict. We found that intra-individual goal conflict undermined performance (Locke, et al., 1994). We also recognized that team members' personal goal(s) could be in conflict with those of a work team. Latham's field observations formed the basis for a laboratory simulation where students working in teams were put in a dilemma by being able to allocate money to a personal account or the group account (Seijts and Latham, 2000). High personal goals that were compatible with the group's goal of maximizing performance enhanced group performance, but personal goals that conflicted with group goals had a detrimental effect on the group's performance.

7.4.5 Understanding the Role of Feedback

The first author conducted a series of studies to examine feedback in relation to goal setting (Locke and Latham, 1990). I found that feedback (knowledge of score) was a mediator of performance; it led to improved performance only to the extent that it led to the setting of goals (e.g., Locke and Bryan, 1968). Years later, Erez (1977) examined feedback from the opposite angle. She discovered that goals which were not accompanied by feedback do not lead to an improvement in performance. Thus, we came to understand that if you start with feedback alone, goals are a mediator of its effects, but if you start with goals alone, feedback is a moderator of its effects. Goals and feedback consistently work better together than either one do alone.

7.4.6 Discovering Goal Mechanisms

We documented the directive effect of goals by showing that when feedback is given for multiple performance dimensions, performance only improves on those dimensions for which goals are set (Locke and Bryan, 1969). The effort dimension was validated implicitly by showing that people with hard goals work harder, and

later others did studies involving direct ratings of effort. LaPorte and Nath (1976) and Latham and Locke (1975) showed that goals affect persistence. Direction, intensity and persistence, of course, are the three aspects of motivated action. Each of these mechanisms is easily verifiable by introspection. Knowledge is another goal mechanism; this is discussed in Section 7.4.11.

7.4.7 Resolving Conflict over how to Get Goal Commitment

We recognized early on, again by introspection, that goal commitment is critical to goal effectiveness. We, like everyone else, knew that most New Year's resolutions are abandoned. Lofty sounding intentions do not necessarily indicate commitment to specific goals.

The question was: How do you get goal commitment? Our initial belief was: through participation. Participation in decision making (pdm) was a popular topic of study following World War II. Locke (1968) predicted that participation would enhance goal commitment. We did not pursue this matter for some time; then, starting in the 1970s, there was chaos in the literature on this topic. The reason was largely political (Wagner and Gooding, 1987). For many scholars participation was viewed not only as a potentially useful managerial technique, but as a "moral imperative." Because it was considered a "democratic" practice and an antidote to fascism, the results simply *had* to be supportive of the former ideology.

Locke and Schweiger (1979) conducted a literature review. They discovered that the interpretation of many pdm studies had been distorted to make the results appear supportive. When the data were interpreted objectively, pdm only had a minimal effect on performance. Strongly worded arguments on this issue went back and forth in the literature for years; heated debates took place at professional meetings.

Latham and I, however, stuck to our core principle: "reality (facts) first." We had no "moral" bias either for or against pdm. As noted, we both initially *expected* pdm to lead to higher goal commitment, because the positive effects of pdm had been touted so much in the earlier literature.

The thrill of inductive, programmatic research is akin to that of being a detective. Latham's doctoral dissertation involving logging crews revealed that productivity was highest in those who were randomly assigned to the participatively set goal condition and less educated (Latham and Yukl, 1975). This supported the value of pdm—but there was a confound. It turned out that goal difficulty was also significantly higher in that condition. The same result was obtained in a field experiment (Latham, Mitchell and Dossett, 1978). Then a series of laboratory experiments showed that when goal difficulty was held constant, participation in goal setting had no effect on goal commitment or performance (Latham and

Marshall, 1982; Latham and Saari, 1979*a*; Latham and Steele, 1983). All this seemed to indicate that the initial pdm effects had simply been goal effects. The issue of pdm was momentarily settled.

Soon, however, a series of studies by Miriam Erez and her colleagues appeared (e.g., Earley and Kanfer, 1985; Erez, Earley and Hulin, 1985). The results of this work can be summarized in a single sentence: Latham is wrong; participatively set goals work better than assigned goals. Instead of attacking Erez, Latham posed the question: why the differences?

When competent researchers obtain contradictory findings, the explanation may lie in differences in methodology. We decided to resolve the conflict in a revolutionary way. Latham and Erez would design experiments with Locke, who was a close and respected friend of both parties, agreeing to serve as a helper and a mediator between us. The result was a series of experiments jointly designed by the three of us.

It turned out that the main cause of the differences in results was how goals were set in the assigned and pdm conditions. Latham gave a rationale for the assigned goal (e.g., Weyerhaeuser needs ideas on ways to increase log exports to Asia), the goals were described as attainable, and the assignments were given in a supportive manner. In Erez's studies, the goals were assigned tersely (e.g., "do this") with no rationale and no implication that they could be attained. Also, only Erez's pdm subjects were given efficacy enhancing instructions. When all these factors were controlled, pdm had no advantage over assigned goals.

This was the first paper in psychology that was based on the collaboration of two antagonists who worked with a neutral party to resolve their differences. It won a best paper award from the Academy of Management OB division (Latham, Erez, and Locke, 1988).

But the story did not end there. Pdm might yet be beneficial in a nonmotivational way—through cognition. This hypothesis originated in part from Latham observing quality circles at Weyerhaeuser where the objective is to generate ways to "work smarter rather than harder." Consequently, Latham, Winters, and Locke (1994) randomly assigned people to an assigned or a participative goal condition in which people worked in a group (pdm) or alone on a task that was complex for them. No main effect was obtained for goal setting as the two conditions were yoked. But, there was a main effect for decision making with performance significantly higher in the pdm than in the individual decision making condition. The pdm subjects gave each other useful task strategy information. This main effect of pdm on performance was completely mediated by self-efficacy and task strategy.

In 1997, Locke, Alavi, and Wagner reviewed all the reviews and controversies regarding pdm. They concluded that pdm is more fruitfully conceived as a method of information exchange or information sharing rather than as a method of gaining goal commitment. Since that time, the controversy over pdm has died down.

Meanwhile, researchers were discovering other factors that affected goal commitment. We were able to classify most of the factors into those that made the goal important vs. those that increased confidence in being able to reach the goal (Locke and Latham, 1990).

Hollenbeck, Williams, and Klein (1989) developed a useful measure of goal commitment, which they have subsequently refined. They and others found that goal commitment was most important when goals are difficult. This suggests that commitment acts in two different ways: as a moderator when there is a range of goal difficulty, and as a main effect when goal level is held constant at a high level.

7.4.8 Reconciling "Conflicting" Theories about Expectancy and Performance

Atkinson (1958), a student of McClelland, predicted that one's motivation is highest when task (goals were not part of his model) difficulty is .50. This suggested a possible curvilinear (inverted-U) relationship between goal difficulty and performance.

In contrast, expectancy theory (Vroom, 1964) states that the force to act is a multiplicative function of valence, instrumentality, and effort–performance expectancy. Holding the first two factors constant, the theory predicts a positive, linear association between expectancy and performance. However, difficult goals are harder to attain than easy goals, thus we had found a negative linear relationship between expectancy of success (high expectancy meant easy goals) and performance (Locke, 1968).

All three theories could not be correct. Aided by an insight by Howard Garland, Locke, Motowidlo, and Bobko (1986) resolved the puzzle. When goal level is held constant, that is, *within* any given goal group, the positive linear relationship asserted by expectancy theory is correct. Between groups, when goal level is varied, the relationship is negative. This does not contradict expectancy theory, because expectancy theory assumes that the referent is fixed. When Bandura's self-efficacy measure is used (which averages a person's confidence estimates *across* multiple performance outcome levels) both the within and between group associations are positive. The curvilinear relationship between expectancy, or goal difficulty, and performance as suggested by Atkinson replicates only when there are a substantial number of people in the hard goal condition who reject their goals (Erez and Zidon, 1984; Locke and Latham, 1990).

Measures of expectancy (except as a correlate of goal difficulty) and self-efficacy were not initially a part of goal setting theory. We incorporated self-efficacy into our theorizing after recognizing the importance of the concept (Bandura, 1986).

People with high self-efficacy are more likely to be committed to difficult goals when goals are assigned, to set high goals when goals are self set, to respond with renewed effort when feedback shows that they are not attaining their goals, and to develop effective strategies for goal attainment (Latham and Seijts, 1999; Locke and Latham, 2002; Locke, et al., 1984; Seijts and Latham 2001).

7.4.9 Puzzling over Satisfaction

It came as no surprise that goal success led to satisfaction, but we were at first baffled by repeated findings (the first from Howard Garland) that, despite the positive effects of goals on performance, valence (anticipated performance satisfaction in expectancy theory) was lower at every level of performance for people with high goals than for people with low goals. We finally realized that the reason high goals are more effective than low goals is that people set the bar for their satisfaction higher. Thus, people who have high goals must do more to be pleased with their performance.

This raised another question: If anticipated performance satisfaction for high goals is less, why do people set high goals? We discovered the answer in another experiment (reported in Mento, Locke, and Klein, 1992). People expect more practical and psychological benefits from trying for high goals. For example, when undergraduate students consider attaining high grade goals, they expect to experience more pride in their performance than from low grades and also expect to attain better academic outcomes (admission to a graduate school), better job offers and more career success. Ambitious people are willing to set the bar high, both because they feel pride in leaping over the bar and because practical life benefits typically accrue to those who try for more rather than less.

7.4.10 Dealing with Failures

A relatively unique feature of our 1990 book was the analysis of *every single goal setting study which we could find that failed to obtain the predicted results.* If a study fails, either the theory is wrong or incomplete, or the study itself was not conducted properly. Thus, we tried to determine the causes of each failure by references to goal theory tenets. Because these analyses were after the fact, we could not prove that our explanations were correct. However, any or all the studies can now be repeated with the hypothesized flaws corrected as a means of validating our interpretation. Some of the studies even suggested new theoretical ideas.

7.4.11 Discovering the Need for Knowledge, Skill, or Task Strategies

The goal setting studies we conducted in the early years either used simple tasks (e.g., giving uses for objects) that everyone knew how to do or somewhat more complex tasks that people also knew how to do based on their previous experience (e.g., addition). We knew that the effect size of goals was smaller on complex tasks than on simple tasks (Wood, Mento, and Locke, 1987). This implied that on some complex tasks, some people lacked the requisite skill or knowledge. Goal effects are often delayed on such tasks, because learning is required. The passage of time, however, does not guarantee that everyone will learn how to perform a task effectively.

The results of studies which assessed knowledge or ability were puzzling. Some showed direct effects of both goals and ability. Others showed knowledge to be a moderator of goal effects, with the highest performance being shown by people with high task knowledge and high goals. Still others showed that knowledge mediated goal effects. Sorting this out was complicated. Task knowledge is stored in the subconscious (tacit knowledge), it is also held consciously; some is brought to the experiment and some is learned during the experiment itself. In some experiments, knowledge is provided directly by the experimenter. Furthermore, the knowledge acquisition is dynamic in that new learning may be occurring continuously. This makes measurement of knowledge difficult, especially the part that is held subconsciously.

Ten years after our 1990 book was published, the first author tried to integrate these results (Locke, 2000). My conclusion was that *all* goal effects are mediated by task knowledge. Motivation without cognition is useless. Motivation may energize a person, but such an individual will not be able to get anything done unless the person knows how to do so. Conversely, cognition in the absence of motivation is also useless because the individual will have no desire to act on what is known. I suggested that the inconsistent results in the literature were a result of either not measuring all the relevant knowledge or of people acting on their knowledge motivated by factors other than their task goals.

7.4.11.1 *Learning Goals*

On tasks that are complex, people often have to acquire the requisite knowledge on their own. Latham puzzled as to how people could be helped to do this. Several studies had shown that specific hard goals not only fail to enhance performance in comparison to "do best" goals, they may make it worse (e.g., Earley, Connolly, and Ekegren, 1989.) In do best conditions, people often took the time to systematically test different task strategies, whereas those with difficult outcome goals frantically switched from one strategy to another without being systematic.

Latham hypothesized that when tasks are new and difficult for people, the best idea is not to set performance goals but rather to set learning goals. To test this hypothesis, Winters and Latham (1996) used a complex class scheduling task developed by Chris Earley. Consistent with the findings of Kanfer and Ackerman, there was a decrease in performance when a specific high outcome goal was set regarding the number of schedules to be produced relative to simply urging people to do their best. But, when a high learning goal was set in terms of discovering a specific number of ways to solve the task, performance was significantly higher in this condition than it was when people were either urged to do their best or had set an outcome goal. Higher performance is not always the result of greater effort, but rather, of greater understanding (Frese and Zapf, 1994; Latham and Saari, 1979*b*).

7.4.11.2 *Proximal Goals*

Among the biggest impediments to the usual positive benefits of goal setting is environmental uncertainty (Locke and Latham, 1990). The information required to set goals may be unavailable or may become obsolete due to rapid changes in the environment. Thus, as uncertainty increases, it becomes increasingly difficult to set and commit to a long-term outcome goal. Latham and Seijts (1999) used a business game in which students were paid to make toys, and the dollar amounts paid for the toys changed continuously without warning. Setting specific, difficult outcome goals resulted in profits that were significantly worse than urging the students to do their best. But when proximal outcome goals were set in addition to the distal outcome goals, self-efficacy as well as profits were significantly higher than in the other two conditions. This is because in highly dynamic situations, it is important to actively search for feedback and react quickly to it (Frese and Zapf, 1994). In addition, Dorner (1991) has found that performance errors on a dynamic task are often due to deficient decomposition of a distal goal into proximal goals.

In a follow-up study, Seijts and Latham (2001) examined the effect of setting proximal goals in conjunction with either a distal learning or a distal outcome goal on a task that required new. Setting proximal, learning goals resulted in the greatest number of strategies generated. The number of task relevant strategies, in turn, correlated positively with performance.

7.4.12 Protecting Goal Theory from Materialists

In the 1970s, behaviorists attempted to incorporate goal setting into their domain by relabeling the goal setting process. Thus, goals were labeled as "controlling" or "discriminative" stimuli, and feedback was alleged to be a "reinforcer." They denied

that how goals function depends on mental processes. They unsuccessfully attempted to externalize what is, in reality, internal (Locke, 1977).

In the 1980s, control theory, a neo-behavioristic theory derived from cybernetic engineering (e.g., physical systems with feedback loops), became popular. The theory relabels goal concepts in the language of machinery. Thus goals are called "reference standards." Goal failures are called "deviations." A person who acts to attain the goal is called an "effector." Commitment is "error sensitivity." Decision making is done by a "selector."

The problem with this relabeling is that the goal concepts are no longer cognitive processes when they are debased by machine terminology. A thermostat setting (a reference standard) has nothing in common with a consciously held goal. This relabeling fosters the illusion of reductionism. Control theorists, based on the concept of a negative feedback loop, state that people seek only to eliminate goal-performance discrepancies. People are not thermostats (Binswanger 1991, see n. 1). Human life involves the constant creation of discrepancies, that is, the setting of new goals. Goal directed action is required for survival.

Some control theorists also deny the causal role of self-efficacy in human action. We have responded vigorously to attempts to evade the axiom of consciousness, and thereby deny its causal efficacy (e.g., Bandura and Locke, 2003; Locke and Latham, 1990).

7.5 Implications for Theory Building

Our approach to theory building effort is *inductive*. Induction means going from the particular to the general. This is in contrast to the "hypothetico-deductive" method. The latter view stems from a long line of philosophical skeptics, from Hume to Kant to Popper to Kuhn. The core premise of this view is that knowledge of reality is impossible. Popper, believed that because theories are not based on observations of reality, they can start, arbitrarily, from anywhere. Thus, theories cannot be proven, they can only be falsified by testing deductions from them. Even falsification, Popper asserted, never gets at truth. Induction is rejected. If Popper were correct, scientific discovery would be impossible. But history refutes this view.

The history of science is the history of discoveries made by observations of reality, and integrated into laws and principles. Subsequent discoveries do not necessarily invalidate previous ones, unless errors of observation or context-dropping were made. They simply add to knowledge. Mankind did not get from

the swamps to the stars by eschewing the search for knowledge and seeking only to disprove arbitrary hypotheses.

Galileo, for example, did numerous experiments with freely falling objects, objects rolling down inclined planes, swinging pendulums, and trajectories of objects and induced the law of intertia, the constancy of gravity, and the laws governing horizontal and vertical motion. He also invented an improved telescope and discovered four moons of Jupiter. He proved that Venus orbits the sun—giving further credence to Copernicus's heliocentric theory. Newton discovered that white light is composed of different colors by doing experiments with prisms. He drew upon the observations of Kepler and Galileo to discover the laws of motion. Especially revolutionary was the idea that all bodies are attracted to one another by a force (gravity) whose magnitude is proportional to the masses of the bodies, and inversely proportional to the square of the distance separating them. With this knowledge, including his invention of calculus, he was able to explain the actions not only of the planets but of the tides. Both Galileo and Newton used observation to gather data, conduct experiments, and then integrated their observations into a theory.

Einstein agreed: "Turning to the subject of the theory of [special] relativity, I want to emphasize that this theory has no speculative origin, it rather owes its discovery only to the desire to adapt theoretical physics to observable facts as closely as possible" (Einstein, 2002: 238).

Contrast Galileo, Newton, and Einstein to Descartes who argued that one can deduce the components of matter, the nature of the planets, moons, and comets, the cause of movement, the formation of the solar system, the nature of light and of sunspots, the formation of the stars, the explanation of tides and earthquakes, the formation of mountains, magnetism, the nature of static electricity and chemical interactions—all from what he claimed were innate ideas discovered intuitively. Not surprisingly, every single one of his theories was wrong.[2]

Of course, theory building does include deduction. But, the major premises that form the beginning of any syllogism (e.g., "all men are mortal") have to be established by induction, or else the conclusion, even if valid in "form," will be false.

What then does induction involve?

7.5.1 Data Gathering

Accumulating facts related to some issue or question—based on observations of reality. In our case, this meant conducting studies, including laboratory and

[2] The comments about Galileo, Newton, and Descartes were based on portions of a forthcoming book by David Harriman. These portions were published in *The Intellectual Activist*, vol. 14, nos. 3–5 (2000) and vol. 16, no. 11 (2002). The authors are indebted also to Stephen Speicher for providing the information on Einstein.

field experiments. (We were very fortunate that many other researchers conducted goal setting experiments as well.) However, in the case of theories which are psychological in nature, using introspection is also critical. In fact, we have argued that it should be acknowledged candidly by scientists building theories of motivation (Locke and Latham, 2004). No psychological concept can be grasped without the use of introspection, and it was clearly an aid to our thinking.

7.5.2 Differentiating

Proper differentiation begins with a clear definition of the concept(s) in question (e.g., a goal is the object or aim of an action; Locke and Latham, 1990). Definitions tie concepts to reality and distinguish them from other concepts (Locke, 2003; Rand, 1990). Data also have to be differentiated before they can be integrated. For example we had to differentiate the various goal attributes (specificity and difficulty) and the various elements from one another (e.g., mediators, moderators), and we had to differentiate within each of these categories. (e.g., direction, effort, feedback, commitment). We also had to differentiate goal theory from other theories (expectancy theory, behavior modification, control theory). Differentiation is a key step involved in organizing data.

7.5.3 Integrating

To make an inductive theory, the differentiated data have to be integrated into an organized whole. A key law of logic involved in integration is Aristotle's law of contradiction. A thing cannot be *A* and non-*A* at the same time and in the same respect. If two or more theories are contradictory, at least one of them must be wrong. If data contradict a theory, then either the data or the theory, or both, must be wrong. Hegelian mumbo-jumbo aside, contradictions cannot be integrated; they have to be resolved. For example, the conflict over the importance of participation in setting a goal between Latham and Erez noted earlier was resolved by discovering that the two types of studies used somewhat different methodologies, and by verifying that these differences made a difference by means of a new set of experiments. The conflict between goal and expectancy theories was resolved by distinguishing between within vs. between goal conditions. We have also attempted to integrate goal theory with other theories of motivation (Locke, 1997; Latham, Locke, and Fassina, 2002).

7.5.4 Identifying Causal Relationships

Integration, if it is to be useful, must lead to the establishment of laws or general principles. Identifying generalizable principles requires identifying *causal* relationships. Induction is more than enumeration (counting). It is more than meta-analysis, which is enumeration that includes mean effect sizes. When using enumeration alone, there is no answer to the skeptics' query: "How do you know that the relationship will come out the next time?"

This was an issue we did not fully understand when developing goal theory. We thought that the more types of tasks, subjects, settings, performance measures used, etc., the better—that is, the more confidence one could have in the theory. Although variation in conditions is beneficial (e.g., to discover moderators), we did not see that *identifying causal relationships* (which we subsequently did identify) *was the fundamental issue*. For example, we can have confidence that goals work when we know the means by which they work (mediators) and the relevant context factors (moderators). Similarly, by understanding that emotions were implicit value judgments (Locke, 1976; Locke and Latham, 1990) and that a goal is a specific type of value, we now understand why goal success causes satisfaction.

7.5.5 Taking Time

Inductive theory building takes time, especially when starting from scratch. It is much harder than deduction. The present authors worked for twenty-five years before we were ready to claim we had a theory. We had to integrate the results of several hundred studies conducted by ourselves and others. We had to resolve many contradictions and paradoxes. We had to relate many different parts to the whole. And we had to understand many causal relationships. There is no law that says twenty-five years is the "right" amount of time. But, that was the time taken for us to have something substantial before we could make claims for a meaningful theory.

7.5.6 Keeping Theories Open-Ended

Although we presented our theory in 1990, after twenty-five years of research, we did not close the theory to further development. Today, some forty years after we started, we are still accumulating knowledge about goal setting. For example, since publication of the 1990 book, we have learned about the benefits of learning goals (Winters and Latham, 1996) as noted earlier; we have found that goals affect

small venture growth over two and six year periods (Baum, Locke, and Smith, 2001; Baum and Locke, 2004)—the first macro level studies; we have studied the effects of goals on risk-taking (Knight, Durham, and Locke, 2001), and we have discovered an interactive relationship between subconsciously primed and consciously assigned goals (Stajkovic, Locke and Blair, 2004; see also Locke and Latham, 2004). We have also learned that goals may tempt some people to cheat (Schweitzer, Ordóñez, and Douma, 2004). These discoveries do not contradict earlier findings; they add knowledge.

Our advice for scholars who want to build a theory: Do it inductively and be prepared to spend years doing it. We also believe that both the history of science and our own success has implications for the *Academy of Management Review*. We encourage the editorial staff to discourage hypothetico-deductive theorizing and to promote more inductive theorizing.

References

Atkinson, J. (1958). Towards experimental analysis of human motivation in terms of motives, expectancies and incentives. In J. W. Atkinson (ed.), *Motives in Fantasy, Action and Society*. Princeton: Van Nostrand.

Bandura, A. (1977*a*). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84: 191–215.

—— (1977*b*). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice-Hall.

—— (1986). *Social Foundations of Thought and Action: A Social-Cognitive Theory*. Englewood Cliffs, NJ: Prentice Hall.

—— (1997). *Self-Efficacy: The Exercise of Control*. New York: Freeman.

—— and Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, 88: 87–99.

Baum, R. J., Locke, E. A., and Smith, K. G. (2001). A multi-dimensional model of venture growth. *Academy of Management Journal*, 44: 292–303.

—— —— (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89: 587–598.

Binswanger, H. (1991). Volition as cognitive self-regulation. *Organizational Behavior and Human Decision Processes*, 50: 154–178.

Campbell, J. P., Dunnette, M. D., Lawler, E. E., and Weick, K. E. (1970). *Managerial Behavior, Performance, and Effectiveness*. NY: McGraw-Hill.

Collins, C., Hanges, P., and Locke, E. (2004). The relationship of achievement motivation to entrepreneurial behavior: A meta-analysis. *Human Performance*, 17: 95–117.

Dorner, D. (1991). The investigation of action regulation in uncertain and complex situations. In J. Rasmussen and B. Brehmer (eds.), *Distributed Decision Making: Cognitive Models for Cooperative Work*: 349–354. Oxford: Wiley.

Earley, P. C., Connolly, T., and Ekegren, G. (1989). Goals, strategy development and task performance: Some limits on the efficacy of goal setting. *Journal of Applied Psychology*, 74: 24–33.

—— and Kanfer, R. (1985). The influence of component participation and role models on goal acceptance, goal satisfaction, and performance. *Organizational Behavior and Human Decision Processes*, 36: 378–390.

Einstein, A. (2002). King Albert College lecture, June 13, 1921. In *The Collected Papers of Albert Einstein: The Berlin years: Writings 1918–1921*, vol. 7, doc. 58.

Erez, M. (1977). Feedback: A necessary condition for the goal-performance relationship. *Journal of Applied Psychology*, 62: 624–627.

—— Earley, C. P., and Hulin, C. L. (1985). The impact of participation on goal acceptance and performance: A two-step model. *Academy of Management Journal*, 28: 50–66.

—— and Zidon, I. (1984). Effects of goal acceptance on the relationship of goal setting and task performance. *Journal of Applied Psychology*, 69: 69–78.

Frese, M., and Zapf, D. (1994). Action as the core of work psychology: A German approach. In H. C. Triandis and M. D. Dunnette (eds.), *Handbook of Industrial and Organizational Psychology*: 4. 271–340. Palo Alto, Calif.: Consulting Psychologists Press.

Hackman, J., and Oldham, G. (1980). *Work Redesign*, Reading, Mass.: Addison-Wesley.

Herzberg, F., Mausner, B., and Snyderman, B. (1959). *The Motivation to Work*. New York: Wiley.

Hinrichs, J. R. (1970). Psychology of men at work. *Annual Review of Psychology*, 21: 519–554.

Hollenbeck, J. R., Williams, C. R., and Klein, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology*, 74: 18–23.

Knight, D., Durham, C., and Locke, E. A. (2001). The relationship of team goals, incentives, and efficacy to strategic risk, tactical implementation, and performance. *Academy of Management Journal*, 44: 326–338.

LaPorte, R. E., and Nath, R. (1976). Role of performance goals in prose learning. *Journal of Educational Psychology*, 68: 260–264.

Latham, G. P. (2001). The importance of understanding and changing employee outcome expectancies for gaining commitment to an organizational goal. *Personnel Psychology*, 54: 707–716.

—— and Baldes, J. J. (1975). The "practical significance" of Locke's theory of goal setting. *Journal of Applied Psychology*, 60: 122–124.

—— Erez, M., and Locke, E. A. (1988). Resolving scientific disputes by the joint design of crucial experiments by the antagonists: Application to the Erez-Latham dispute regarding participation in goal setting. *Journal of Applied Psychology*, 73: 753–772.

—— and Kinne, S. B. (1974). Improving job performance through training in goal setting. *Journal of Applied Psychology*, 59: 187–191.

—— and Locke, E. A. (1975). Increasing productivity with decreasing time limits: A field replication of Parkinson's law. *Journal of Applied Psychology*, 60: 524–526.

—— —— and Fassina, N. E. (2002). The high performance cycle: Standing the test of time. In S. Sonnentag (ed.), *The Psychological Management of Individual Performance. A Handbook in the Psychology of Management in Organizations*: 201–228. Chichester, UK: Wiley.

—— and Marshall, H. A. (1982). The effects of self set, participatively set, and assigned goals on the performance of government employees. *Personnel Psychology*, 35: 399–404.

—— Mitchell, T. R., and Dossett, D. L. (1978). The importance of participative goal setting and anticipated rewards on goal difficulty and job performance. *Journal of Applied Psychology*, 63: 163–171.

—— and Saari, L. M. (1979*a*). The effects of holding goal difficulty constant on assigned and participatively set goals. *Academy of Management Journal*, 22: 163–168.
—— —— (1979*b*). The importance of supportive relationships in goal setting. *Journal of Applied Psychology*, 64, 151–156.
—— and Seijts, G. H. (1999). The effects of proximal and distal goals on performance on a moderately complex task. *Journal of Organizational Behavior*, 20: 1–429.
—— and Steele, T. P. (1983). The motivational effects of participation versus goal setting on performance. *Academy of Management Journal*, 26: 406–417.
—— —— and Saari, L. M. (1982). The effects of participation and goal difficulty on performance. *Personnel Psychology*, 35: 677–686.
—— Winters, D. C., and Locke, E. A. (1994). Cognitive and motivational effects of participation: A mediator study. *Journal of Organizational Behavior*, 15: 49–63.
—— and Yukl, G. A. (1975). Assigned versus participative goal setting with educated and uneducated woods workers. *Journal of Applied Psychology*, 60: 299–302.
Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance*, 3: 157–189.
—— (1976). The nature and causes of job satisfaction. In M. Dunnette (ed.), *Handbook of Industrial and Organizational Psychology*. Chicago: Rand-McNally.
—— (1977). The myths of behavior mod in organizations. *Academy of Management Review*, 2: 543–553.
—— (1997). The motivation to work: What we know. In M. Maehr and P. Pintrich (eds.), *Advances in Motivation and Achievement*, vol. 10. Greenwich, Conn.: JAI Press.
—— (2000). Motivation, cognition and action: An analysis of studies of task goals and knowledge. *Applied Psychology: An International Review*, 49: 408–429.
—— (2001). Self-set goals and self-efficacy as mediators of incentives and personality. In M. Erez, U. Kleinbeck, and H. Thierry (eds.), *Work Motivation in the Context of a Globalizing Economy*. Mahwah, NJ: L. Erlbaum.
—— (2003). Good definitions: The epistemological foundation of scientific progress. In J. Greenberg (ed.), *Organizational Behavior: The State of the Science*. Mahwah, NJ: L. Erlbaum.
—— Alavi, M. and Wagner, J. (1997). Participation in decision making: An information exchange perspective. In G. Ferris (ed.), *Research in Personnel and Human Resource Management*, vol. 15. Greenwich, Conn.: JAI Press.
—— and Bryan, J. F. (1966). Cognitive aspects of psychomotor performance. *Journal of Applied Psychology*, 50: 286–291.
—— —— (1968). Goal setting as a determinant of the effect of knowledge of score on performance. *American Journal of Psychology*, 81: 398–407.
—— —— (1969). The directing function of goals in task performance. *Organizational Behavior and Human Performance*, 4: 35–42.
—— Chah, D. O., Harrison, S., and Lustgarten, N. (1989). Separating the effects of goal specificity from goal level. *Organizational Behavior and Human Performance*, 43: 270–287.
—— Frederick, E., Lee, C., and Bobko, P. (1984). The effects of self-efficacy, goals and task strategies on task performance. *Journal of Applied Psychology*, 69: 241–251.
—— and Latham, G. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
—— —— (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57: 705–717.

Locke, E. A., and Latham, G. (2004). What should we do about motivation theory? Six recommendations for the twenty-first century. *Academy of Management Review*, 29: 388–403.

—— Motowidlo, S., and Bobko, P. (1986). Using self-efficacy theory to resolve the conflict between goal setting theory and expectancy theory in organizational behavior and industrial/organizational psychology. *Journal of Social and Clinical Psychology*, 4: 328–338.

—— and Schweiger, D. M. (1979). Participation in decision-making: One more look. In B. M. Staw (ed.), *Research in Organizational Behavior*. Greenwich, Conn.: JAI Press.

—— Smith, K. G., Erez, M., Chah, D. O., and Schaffer, A. (1994). The effects of intra-individual goal conflict on performance. *Journal of Management*, 20: 67–91.

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

McClelland, D. C. (1961). *The Achieving Society.* Princeton: D. Van Nostrand.

Mento, A. Locke, E. A., and Klein, H. (1992). Relationship of goal level to valence and instrumentality. *Journal of Applied Psychology*, 77: 395–405.

Miner, J. B. (2003). The rated importance, scientific validity, and practical usefulness of organizational behavior theories. *Academy of Management Learning and Education*, 2: 250–268.

O'Leary-Kelly, A., Martocchio, J., and Frink, D. (1994). A review of the influence of group goals on group performance. *Academy of Management Journal*, 37: 1285–1301.

Peikoff, L. (1991). *Objectivism: The Philosophy of Ayn Rand.* New York: Dutton.

Rand, A. (1990). *Introduction of Objectivist Epistemology.* New York: NAL.

Rogers, R., and Hunter, J. (1991). Impact of management by objectives on organizational productivity. *Journal of Applied Psychology*, 76: 322–336.

Ronan, W. W., Latham, G. P., and Kinne, S. B. (1973). The effects of goal setting and supervision on worker behavior in an industrial situation. *Journal of Applied Psychology*, 58: 302–307.

Ryan, T. A. (1970). *Intentional Behavior.* New York: Ronald.

—— and Smith, P. C. (1954). *Principles of Industrial Psychology.* New York: Ronald.

Seijts, G. H., and Latham, G. P. (2000). The construct of goal commitment: Measurement and relationships with task performance. In R. Goffin and E. Helmes (eds.), *Problems and Solutions in Human Assessment.* Dordrecht: Kluwer Academic.

—— —— (2001). The effect of learning, outcome, and proximal goals on a moderately complex task. *Journal of Organizational Behavior*, 22: 291–307.

Schweitzer, M. E., Ordóñez, L., and Douma, B. (2004). Goal setting as a motivator of unethical behavior. *Academy of Management Journal*, 47: 422–432.

Stajkovic, A. D., Locke, E. A., and Blair, E. S. (2004). A first examination of the relationship between subconscious (primed) goals, time delay, conscious goals and task performance. Ms. under review.

Vroom, V. H. (1964). *Work and Motivation.* New York: Wiley.

Wagner, J., and Gooding, R. (1987). Effects of social trends on participation research. *Administrative Science Quarterly*, 32: 241–262.

Wegge, J., and Dibbelt, S. (2000). Zur wirkung von Zielsetzungen auf die Informationsverarbeitung bei Buchstabenvergleichsaufgaben [Effects of goal setting on information processing in letter-matching tasks]. *Zeitschrift für Experimentelle Psychologie*, 47: 89–114.

Winters, D., and Latham, G. P. (1996). The effect of learning versus outcome goals on a simple versus a complex task. *Group and Organization Management,* 21: 236–250.

Wood, R. E., Mento, A. J., and Locke, E. A. (1987). Task complexity as a moderator of goal effects. *Journal of Applied Psychology*, 17: 416–425.