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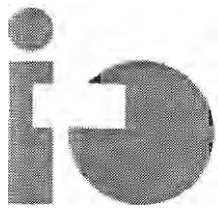
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CHAPTER 3

Motivation Theory and Industrial and Organizational Psychology

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This chapter reviews and evaluates modern developments in motivational psychology as they pertain to individual behavior in organizational settings. Three streams of research are considered integral to the study of motivation and are reviewed in this chapter. First, need-motive-value research focuses on person-based determinants of behavior, such as in need fulfillment theories, intrinsic motivation, and equity and justice theories. Second, cognitive choice research comprises expectancy-value formulations of behavior, such as in VIE theory, attribution theory, and dynamics of action theory. Third, self-regulation-metacognition approaches target cognition-behavior relations, such as in goal setting, social learning, and cybernetic control theories. The main focus of the chapter is to address progress toward a unified perspective of motivation. Theoretical developments aimed at integrating various approaches to motivation in the context of work behavior are also presented. These include (a) Katzell and Thompson's amalgamated model, (b) research directed toward integration of expectancy and goal setting constructs, (c) Naylor, Pritchard, and Ilgen's theory of behavior in organizations, (d) Heckhausen and Kuhl's analysis of the pathway between wishes and action, and (e) Kanfer and Ackerman's integrated resource allocation framework. Two broad themes are proposed to characterize contemporary work: emphasis on the goal construct and self-systems, and the influence of affect and dispositions. Future research is predicted to be associated largely with four key constructs: volition, dispositions, organizational influences, and task characteristics and action strategies.

Overview

THE STUDY OF motivation in American psychology has waxed and waned since the early part of this century. During the 1930s and 1940s, motivation attained a preeminent status in drive-based learning theories. During this period, experimental psychologists conducted numerous studies investigating learning as a function of arousal, incentive, and habit strength. In the 1950s and 1960s, however, motivation lost favor. Enduring problems with drive-based conceptualizations of behavior, combined with a rising interest in information processing, resulted in a deemphasis of classic motivational processes. Among mainstream experimental and cognitive psychologists, attention turned to understanding the influence of cognitive structures on learning and performance (for reviews of these historical issues, see Campbell & Pritchard, 1976; Cofer & Appley, 1964; Weiner, 1980).

Although motivation was no longer in vogue in experimental psychology, it continued to receive steady attention during the 1950s and 1960s in personality, social, clinical, and industrial and organizational psychology. In contrast to the drive-reduction/reinforcement models popular in experimental psychology (e.g., Hull, 1943), Tolman (1932) and Lewin (1938) proposed cognitive formulations that emphasized the role of an individual's aspirations, expectations, and affect. In the cognitive perspective advanced by Tolman and Lewin, motivation referred to key processes influencing an individual's choice among alternative courses of action. This cognitive perspective, further elaborated by achievement motivation theorists such as Atkinson (1957) and McClelland (McClelland, Atkinson, Clark, & Lowell, 1953), and by Ryan (1970), provided the broad context for several still popular theories of motivation advanced in the 1960s (Adams, 1965; Atkinson, 1964; Locke, 1968; Vroom, 1964). In addition, a growing number of behaviorally

trained researchers began investigating cognitively based motivational processes (e.g., Bandura, 1969; Kanfer, 1970; Mischel, 1966). Although the topic of motivation was clearly less captivating than others emerging in cognitive psychology during the 1960s and 1970s, motivation maintained an important status in many specialties of the field.

During the past decade, attempts to coordinate various theories of motivation (e.g., see Bandura, 1986, 1988; Carver & Scheier, 1981; Heckhausen & Kuhl, 1985; Hyland, 1988; Kanfer, 1987; Locke, Motowidlo, & Bobko, 1986; Naylor, Pritchard, & Ilgen, 1980; Nuttin, 1984; Revelle, 1989; Weiner, 1986) have placed an emphasis on goals. In addition, many of these recent integrative theories focus on self-regulation processes, the multiple roles of affect, and on a clarification of the distinction between dispositionally based and situationally based motivational determinants.

Another contemporary trend in motivation theory is the development of theories attempting to unify prevailing motivation constructs and cognitive, information processing psychology (Humphreys & Revelle, 1984; Kanfer & Ackerman, 1989; Kuhl & Kraska, 1989; Schmidt, Kleinbeck, & Brockmann, 1984). This trend is evident in such subdisciplines as educational psychology, clinical psychology, social psychology, personality psychology, and industrial and organizational psychology. Researchers attempting to forge an integration of cognition and motivation have focused on *meta* processes, such as metacognition and metamotivation—that is, the cognitive and motivational processes that presumably govern the coordination of effort and skills.

The focus of this chapter is on contemporary theories and empirical research in motivational psychology. Developments during the past 15 years signal the beginning of a new phase in this area. One indication of change is the increased attention being given to coordination of theoretical approaches whose origins

trace to different subdisciplines of psychology. For example, it is increasingly common to see studies that build on an integration of concepts from clinical self-regulation approaches, behavior modification approaches, goal setting, and cybernetic control theories.

Another harbinger of change is the rapidly growing number of scientists calling for and developing new conceptualizations that specify the role of dispositions and volitional processes on human actions (e.g., Carver & Scheier, 1981; Kuhl, 1984; Pervin, 1983; Revelle, 1989). In particular, these researchers argue that dispositions and volition have been neglected in mainstream motivation research. For example, few motivation theories, with the exception of achievement motivation, have formally incorporated noncognitive individual differences constructs. This has been especially true in industrial and organizational psychology, where noncognitive individual differences have too often been included *only* in studies designed to account for results not readily explained using normative models. Recent advances in personality psychology suggest that noncognitive individual differences as diverse as impulsivity (Revelle, 1989), work orientation (Day & Silverman, 1989; Helmreich, Sawin, & Carsrud, 1986), and dependability (Pulakos, Borman, & Hough, 1988) exert systematic effects on patterns of behavior and, ultimately, productivity. Researchers interested in dispositions have begun to identify the pathways through which these variables exert their effects on the motivational system. Complementing this approach, Atkinson and Birch (1970) and Naylor et al. (1980) proposed that motivational psychologists also reconsider the criterion construct. Specifically, they suggest that emphasis be placed on explaining temporal characteristics of action rather than discrete choice behaviors. The recent empirical pursuit of these issues suggests that a fundamental shift is occurring with respect to what motivation researchers will be studying during the next two decades.

These trends indicate a maturation of the field and come at a particularly useful time. Nonmotivational fields of inquiry appear to be reconsidering the impact that motivational processes may have on cognitive functioning (e.g., see Ackerman & Humphreys, 1990; Kanfer, Ackerman, & Cudeck, 1989; Showers & Cantor, 1985; Snow, 1985). The development of a cohesive perspective within the field of motivation provides a useful rubric for researchers concerned with integrating motivation and cognition. For example, in the applied domain, organizational scientists have long held that both cognitive abilities and motivation represent important interactive influences on performance. Yet the lack of coherence across motivation approaches has made the task of incorporating conative constructs and processes into learning and abilities research difficult. As a consequence, motivation and abilities research on topics such as selection and training tends to be quite disparate. A unified motivation rubric can facilitate convergence of abilities and motivation research so that, for example, it might be possible to specify which motivational processes are more or less affected by individual differences in cognitive abilities.

In the wider context of modern psychology, a discussion of motivation often includes theories other than those typically relevant to the industrial and organizational domain; these theories, such as biological and psychophysiological theories of motivation, are not reviewed in this chapter. Rather, this review focuses on environmental, social, emotional, individual differences, and cognitive determinants of purposive action (e.g., theories grounded in personality, clinical, social, differential, educational, instructional, counseling, and industrial and organizational psychology). In accord with my view of motivational psychology as a coalescing subdiscipline, I emphasize how the different perspectives complement one another, what their potential ramifications are for organizational settings, and how progress in the psychology of motivation relates to advances

in the psychology of work behavior and theories of job performance.

This chapter is presented in six sections. The first section reviews major constructs and terms used in motivational psychology and presents a tripartite heuristic framework with which to organize the literature. The next three sections describe each component of the framework: (a) need-motive-value approaches, (b) cognitive choice approaches, and (c) self-regulation-metacognition approaches. Each of these sections includes a summary of the tenets of influential theories, a selective review of research addressing the adequacy of the theories, and a discussion of the implications for organizational behavior. The fifth section addresses issues involved in developing integrative approaches to motivation in organizational settings and describes recent integrative efforts. The sixth section presents general conclusions and suggests future research directions.

Motivation: Constructs, Theories, and Paradigms

Motivation is not directly observable. What we *observe* is a multidimensional stream of behavior and the products of those behaviors (Atkinson & Birch, 1970). Motivational processes can be inferred only from analysis of this continuing stream of behavior that is determined both by environment and heredity and is observed through their effects on personality, beliefs, knowledge, abilities, and skills.

Numerous definitions of motivation have been proposed. Generally speaking, *motivation* may be defined as intra- and interindividual variability in behavior *not due solely* to individual differences in ability or to overwhelming environmental demands that coerce or force action (Vroom, 1964). From an applied point of view, however, Vroom (1964) points out that this definition is insufficient since it does not specify what *is* involved in motivation. Definitions that are more precise have stemmed

from theoretical formulations often emphasizing different segments of the nomological network. In light of these difficulties in obtaining a comprehensive yet more informative definition than that offered by Vroom (1964), it seems reasonable to focus on the adequacy of those definitions offered in different approaches. For a definition of motivation to be adequate, three elements need to be included:

- First, one must specify the determinants or independent variables that affect the stream of behavior.
- Second, the theory must describe the nomological network of relations between the latent variables and the implications of these relations for observable behavior (Cronbach & Meehl, 1955).
- Third, one must specify the motivational consequences, the dependent variables, or behaviors most likely to be affected by changes in the motivational system.

The selection of sensitive and “clean” behavioral indices of motivation represents a problem of increasing difficulty in contemporary research where complex tasks involving interactive effects of task practice, cognitive abilities, and motivational factors are studied (Kanfer & Ackerman, 1989).

Motivational Consequences: The Dependent Variable

The dependent variables most common in motivation research are *direction* of behavior, *intensity* of action (cognitive effort and/or physical force of action), and *persistence* of direction-specific behaviors over time. Motivation is frequently described in work settings by referring to what a person does (direction), how hard a person works (intensity), and how long a person works (persistence). Both research and lay concepts converge on three critical components

of motivational outcomes—the direction, intensity, and persistence of effort.

The selection or development of measures of the dependent variable is often based on logical analysis or practical constraints in behavioral assessment. Directional measures of work behavior (e.g., absenteeism, job choice, task choice, and voluntary termination) are most often used when investigating choice decisions between mutually exclusive courses of action. For example, a person who accepts a job offer from one company cannot simultaneously accept an alternative offer from another company. Similarly, an employee decides either to attend work or not attend work on a given day.

Intensity measures (e.g., task effort or task performance) are often used in situations where choice of direction has been constrained. For example, in laboratory experiments, persons typically choose between different levels of effort in tasks already assigned by the experimenter. In such studies, levels of task performance are often presumed to reflect a person's choice of *how much* of his or her total cognitive resources (effort) will be directed toward the target task. Use of performance levels as indices of motivation in laboratory experiments has been quite popular, although the use of performance measures of effort allocations requires the assumption that task performance is effort dependent, that is, that a change in effort will bring about a change in performance (see Kanfer, 1987).

Persistence has been a less popular criterion measure in work motivation theories. This measure is most often used in intrinsic motivation, achievement motivation, and self-regulation research. Unlike direction and intensity criteria, persistence criteria capture a pattern of motivational consequences that emerges *only* over time. Despite the infrequent use of these measures in work motivation research, persistence, such as long-term work productivity and cumulative work accomplishments, must be a critical determinant of valued

performance in organizations (Revelle, 1986). In the workplace, notable achievements neither typically involve one-time choices between courses of action (direction) nor typically occur by devoting constant, high levels of attentional effort to a single task (intensity). Instead, organizational accomplishments involve a combination of choices concerning what to do (direction), how much attentional effort to devote to activities (intensity), and when to shift direction and levels of effort. Persistence measures thus encompass elements of direction and intensity, as well as “executive” motivational processes that maintain task activity levels.

Criterion measures also differ in terms of whether changes in resource allocations are measured by time on task or by cognitive effort. Research using intensity measures generally involves performance on speeded tasks or tasks in which rigid time limits are imposed. Thus, performance measures presumably reflect variability in cognitive effort rather than in time allocation, since attention is focused on one task alone and explicit time constraints maximize mobilization of effort. The drawbacks of these measures are the difficulties they pose for generalizing findings to work settings, where improvement in performance may result from changes in both time on task *and* cognitive effort. For example, specific and difficult goal assignments often increase cognitive effort when performing timed tasks. Variance in performance due to differences in direction and persistence of behavior is thus minimized through use of testlike instructions and procedures. However, when performing the task in a natural setting with more flexible time constraints (e.g., persons may choose to work overtime), similar levels of performance can presumably be achieved by increasing time on task instead of increasing cognitive effort.

Naylor et al. (1980) discuss the sensitivity and external validity of intensity measures in organizational settings, suggesting that substantial changes in job performance are more

likely to result from a change in the amount of time allocated to the task than from a sustained increase in cognitive effort. Thus, if an employee is already applying most of his or her cognitive effort to the job, an increase in cognitive effort during the eight-hour workday will probably affect job performance much less than working more hours by taking fewer breaks or working overtime.

Naylor and his colleagues' suggestion is provocative but has not yet received extensive research attention. It seems likely that when faced with long-term work objectives, persons move along some perceived time-on-task and cognitive-effort resource tradeoff function based on perceived availability of each resource, demands of the task, and subjective utilities associated with each resource. For example, a student working on a term paper may exert minimal cognitive effort at any point in time by starting the paper early and working diligently throughout the term. Another student may spend less time on the paper but instead make a substantial cognitive effort when first beginning the paper a few days before the due date.

In contrast to intensity measures, direction and persistence measures usually focus on the effects of motivational phenomena over less constrained time periods. The dynamics of action theory proposed by Atkinson and Birch (1970) highlights the importance of using behavioral criteria that integrate direction and persistence components. Atkinson and Birch argue that the essential task for motivational researchers is to understand what causes *changes* in the direction of behavior over time (e.g., a shift from working on one task to another). To investigate this directional variability, they assess the effects of motivational determinants on length of time spent on a task prior to switching to another task. Although direction and persistence measures focus on behavior over time, they are similarly incomplete because they yield

little explicit evidence of variability in amount of cognitive effort, or how hard an individual tries while performing the task.

Distinction Between Behavior and Performance

The constructs of motivation subsume the determinants and processes underlying the development of intentions, choice behaviors, and volitional activities. The products of these motivational processes are the individual's overt and/or covert *behaviors*. In contrast, *performance* in organizational psychology typically refers to an evaluation of the individual's behaviors. For example, a salesperson motivated to perform his or her job well may make many customer contacts and still perform poorly according to a criterion based only on sales volume. Performance theory differs from motivation theory in that prediction of performance requires consideration of additional factors, including individual differences variables such as abilities and task comprehension, and environmental factors such as situational constraints and task demands.

The distinction between behavior and performance is often disregarded in studies assessing motivation in so-called simple tasks and in laboratory settings. The features of tasks that make them simple versus complex are still not well known. In laboratory experimental settings, the range of behaviors measured is typically very limited. In addition, variance due to persistence and cognitive abilities is minimized through experimental or statistical procedures. Thus, it has been quite common for investigators using a simple task paradigm to report motivational effects on task performance instead of on behavior *per se* (for an exception, see Terborg & Miller, 1978).

The distinction between behavior and performance becomes important when attempting to predict or explain the effects of motivation on the performance of complex tasks or

tasks involving behavior over extended time periods. In such circumstances, correspondence between behavior and performance is seriously weakened by interactive effects between motivational processes, cognitive abilities, and environmental factors. For example, motivational processes may yield higher levels of cognitive effort but may fail to affect performance because effort is misdirected—persons work harder at the wrong things. A lack of correspondence between behavior and performance has serious ramifications for understanding the effects of motivation on learning as well as on employee efficiency.

Many basic research programs emphasize understanding the relationship between motivation and behavior. In such studies, it is desirable to use tasks in which behavior and performance are closely associated. Applied motivation researchers, however, are more likely to emphasize understanding of the motivation-performance relationship by studying the effects of motivation both on specific behaviors and on complex sequences of actions comprising job performance. Unfortunately, such researchers tend to be less attentive to observation and measurement of behavior. The increasing use of more complex, real-world tasks in basic research will require further attention to the behavior-performance relationship. Similarly, investigation of motivational processes in field-based studies of task and job performance requires greater attention to effects on behavioral components of performance.

Heuristic Framework for Motivational Theories

Almost all contemporary theories recognize that motivation refers to dynamic resource allocation processes. Nonetheless, motivation theories differ substantially on which portion of the complex nomological network of motivational constructs they emphasize. To

organize this review, motivation theories were grouped into one of three related paradigms: (a) need-motive-value, (b) cognitive choice, and (c) self-regulation–metacognition. Theories were placed into one of the three paradigms based on their central assumptions about the motivational constructs and processes warranting greatest attention.

Need-Motive-Value Theories. Motivation theories in the need-motive-value paradigm emphasize the role of personality, stable dispositions, and values as a basis for behavioral variability. Some of the theories in this paradigm, such as Maslow's theory, emphasize innate forces that propel people to seek satisfaction of needs. Other theories emphasize the behavioral effects of a subset of human motives, such as competence and self-determination (Deci, 1975), while still others emphasize environmental conditions that enhance behavioral expression of learned dispositions, such as motive for success (see Atkinson, 1957).

For many of this paradigm's theories, the energizing force for action appears to stem from some type of internal tension or arousal. The extent to which some of the motivational effects in these approaches may be explained by psychic tension or arousal is a long-standing point of controversy. Studies that attempt to distinguish arousal from volitional sources of action, such as choice tendencies, tend to be found less in the applied literature and more in the basic psychology literature. Reviews of the experimental and personality literatures by Eysenck (1982) and Humphreys and Revelle (1984) conclude that arousal and volitional sources of motivation can and should be distinguished, but almost no systematic research in applied motivation has examined the implications of this distinction.

Cognitive Choice Theories. Theories in the cognitive choice paradigm focus on cognitive processes involved in decision making and

choice. Campbell and Pritchard (1976), for example, defined motivation as “a label for the determinants of: (1) choice to initiate effort on a certain task, (2) the choice to expend a certain amount of effort, and (3) the choice to persist in expending effort over time” (p. 65). Naylor, Pritchard, and Ilgen (1980) defined motivation as “the process of allocating personal resources in the form of time and energy to various acts in such a way that the anticipated affect resulting from these acts is maximized” (p. 159).

Expectancy-value theories, including Vroom’s (1964) well-known version in industrial and organizational psychology, represent the dominant framework for understanding the cognitive processes targeted in this paradigm. Research on expectancy-value models in the personality and social psychology domain, for example, as in achievement motivation, has significantly broadened and revised the scope of theories in this paradigm. These new developments stress the temporal, attributional, and emotional determinants of deliberative choice behaviors.

Self-regulation–Metacognition Theories.

Theories in the self-regulation–metacognition paradigm focus on the motivational processes underlying goal-directed behaviors. A common feature is the attention given to metacognitive or executive processes related to self-systems. Carver and Scheier (1981) state that “the concepts of motivation are essentially concepts of self-regulation” (p. 119). Unlike definitions proposed in the previous two paradigms, descriptions of motivation here focus on self-governing cognitive mechanisms that determine the transformation of motivational force into behavior *and* performance. A distinct advantage of this paradigm’s research is the emphasis on links between intentions, goals, behavior, and performance, all of which has potential for clarifying the processes underlying strategy development, learning, and performance of complex, sequential behavior patterns.

Distal and Proximal Motivational Processes

The tripartite organization of motivation theories makes evident differences in the conceptual proximity and relationship of various constructs to behavior and action. *Distal* theories of motivation, which include personality-based theories and expectancy-value theories, emphasize factors that have indirect effects on action—that is, they emphasize motivational constructs and processes affecting goal choice and intended future effort. The dependent variable—goal choice or intended effort—*sets the stage* for availability of resources during task engagement.

Theories of motivation in the self-regulation–metacognition paradigm (and some theories in the cognitive choice paradigm) are *proximal* theories. These goal-directed theories of action, which include goal setting and cybernetic control theory, highlight motivational constructs and mechanisms that control the initiation and execution of actions *during engagement with the task*. Proximal theories of motivation are particularly important when intentions and goals are not readily realized, such as when goals involve acquisition of complex or novel skills or when implementation of an intention requires sustained effort in the face of difficulties or distractions.

An important implication of the distinction between distal and proximal theories is that they focus on fundamentally different but related motivational processes. Thus, the same psychological variable might exert different effects in the distal system than it would in the proximal system. For example, high self-confidence in ability to perform an action may bolster motivation (defined as goal choice in distal theories) through its effects on expectations of success. In the proximal system, however, high self-confidence may exert a dysfunctional effect on motivation (defined as task performance) by reducing the amount of attention given while performing the task or the strategies used to perform the task. Alternatively, differentiation of distal and proximal

processes might reveal basic differences in information processing at different points in the motivational sequence. For example, Gollwitzer and Kinney (1989) found that when persons were engaged in a task, judgments of personal control were less realistic (i.e., more optimistic) than when persons were asked to make the same judgments before beginning the task. Although distal and proximal motivational processes often operate in close temporal association (i.e., attempts to attain a goal often follow soon after a goal is established), the conceptual separation of these processes raises a number of new questions. One question concerns the dynamic nature of deficits in the motivational sequence—Are deficits in distal processes independent of proximal processes, or do deficits in distal processes preempt or otherwise alter proximal processes? Similarly, do deficits in distal and proximal processes have the same origin and effects, or does improvement in the distal system (e.g., increasing self-confidence to bolster goal acceptance) similarly enhance self-regulation?

A fundamental assumption made in this chapter is that distal and proximal theories generate *complementary* knowledge about the motivational system; neither approach alone is sufficient to explain the motivational foundations of behavior and performance. For example, researchers investigating the effects of dispositional tendencies on action must specify the proximal path along which such effects travel. In turn, self-regulation researchers must deal with how dispositional tendencies come to influence proximal motivational processes.

Need-Motive-Value Approaches

This section discusses research on the motivational consequences of individual differences in needs, motives, and values. Theories covered include need approaches, intrinsic motivation, job characteristics theory, and organizational fairness and justice theories, each of which views person-based factors as major

determinants of behavior. Individual differences in needs and values, as well as activation of commonly held intrinsic motives, are held to influence the mediating cognitive processes that result in behavioral variability.

Maslow's need hierarchy theory (Maslow, 1943, 1954) and Alderfer's existence-relatedness-growth theory (Alderfer, 1969) represent an extreme end of the "person" input continuum of theories in this section. Maslow's theory, developed in response to earlier theories in psychoanalytic and drive theory traditions, posits a basic, innate set of human needs, including psychological growth needs. According to the Maslow and Alderfer theories, behavior is naturally mobilized and directed toward satisfaction of unmet needs ordered along a hierarchy. Environments affect behavior to the extent that they provide the context for satisfaction and deprivation of needs.

Maslow and Alderfer propose broad theories of personality and motivation. These need fulfillment theories focus on the relation between need satisfaction and need salience; they do not specify the mediating processes by which motivational energy is transformed and/or directed toward specific behaviors or patterns of action. This lack of specification concerning intermediary processes substantially weakens the power of these approaches to predict work behavior and performance.

In contrast to the wide range of motives identified in need fulfillment theories, the remaining theories in this section concentrate on the operation of a single or small set of psychological motives. Intrinsic motivation and achievement motive research focus on psychological motives such as mastery, control, challenge, and competence—motives that are all regarded as integral to the human condition. Research on justice examines the influence of motives for fairness in social relations. In each of these theories, the instinctive basis of needs is deemphasized and replaced with constructs influenced by personality and experience. In general, these theories also tend to specify some of the cognitive processes by

which the motives influence condition and behavior.

Motives investigated in intrinsic motivation, organizational justice, and achievement behavior research are assumed to represent universal characteristics. Challenge, curiosity, control, and mastery are viewed in intrinsic motivation research as motives integral to the human condition. The motive for fairness in social exchange, whether it be defined in terms of equality or equity, is regarded as fundamental in theories of justice. In each of these theories, environmental factors condition the influence of specific motives on behavior.

Achievement motive theories and research discussed in this section differ from the classic theories in this area, such as that of Atkinson (1957). Traditional theories treat the motive for success as a unitary construct. Alternatively, a number of developmental and educational psychology researchers have recently begun to examine the influence of different types of goal-directed achievement motives. Nicholls (1978, 1984), for example, proposes a distinction between performance motives and learning motives, suggesting that they yield dissimilar behavioral outcomes in achievement contexts. Differential activation of these motives is posited to affect learning and task persistence.

Job characteristics theory, developed by Hackman and Lawler (1971) and further articulated by Hackman and Oldham (1976, 1980), represents growth motives as a mediator of task satisfaction and task performance relations. Although this theory is ostensibly one of individual differences in growth need strength, the major theme of job characteristics research has been to determine the fundamental structure of job characteristics and the normative effects of job structure on affective responses.

Need Fulfillment Theories

Maslow proposed five distinct categories of needs, hypothesized to be arranged in a

hierarchical order: (a) physiological needs, (b) safety needs, (c) belongingness needs, (d) love needs, and (e) self-actualization needs. The hierarchical structure led to the development of a *prepotency process principle*. According to this principle, individuals move upward through the hierarchy, satisfying a lower order need, which leads to increased salience and motivational force for attaining the next higher need.

Alderfer's existence-relatedness-growth (Alderfer, 1969) theory was designed to improve Maslow's theory by taking into account the empirical evidence generated in earlier tests of the Maslow model. Alderfer identified three categories of needs: (a) existence, (b) relatedness, and (c) growth. Existence needs refer to desires relevant to human survival, such as food, water, and air; relatedness needs refer to interpersonal interactions, especially in relation to positive and negative affect and ideas; growth needs refer to interactions with the environment in such a way as to develop potential capacities and abilities. Similar to Maslow's description of self-actualization, growth needs are never fully satisfied.

Alderfer posited a complex but flexible set of processes relating need strength to need satisfaction. Unlike Maslow's prepotency principle, Alderfer proposed that the three need states operate simultaneously (Alderfer, 1969). For example, individuals might focus on satisfaction of growth needs without having previously fulfilled relatedness needs. Alderfer also asserted that, while need strength should be negatively related to need satisfaction, individuals might, when frustrated by their environment in attainment of next higher order needs, place greater importance on lower level needs that have already been satisfied. Thus, the inclusion of a frustration-regression proposition allows for a positive correlation between need strength and need satisfaction.

Although the Maslow and Alderfer formulations were most popular during the 1960s, they currently receive little empirical attention due to methodological problems and lack of empirical support for basic tenets of the

theories. Several researchers noted difficulties in operationalizing higher order need categories and theoretical problems in explaining obvious exceptions to the prepotency principle (see Campbell & Pritchard, 1976). Others have addressed the psychometric problems associated with measuring strength and satisfaction of needs (see Wahba & Bridwell, 1976). Salancik and Pfeffer (1977) suggested that methodological artifacts, such as consistency bias and priming, might account for the positive results obtained in some tests of the theory. Locke (1976) pointed out that need models, even if they could be shown to be valid, are insufficient for predicting the precise behaviors a person would engage in to satisfy a specific need. Wahba and Bridwell (1976) reviewed the research examining the taxonomic structure of need-based models and found little evidence for either a five- or three-factor structure of needs. Finally, several longitudinal studies investigating the validity of the process mechanisms relating need strength to need satisfaction did not demonstrate support for Maslow's model (Hall & Nougaim, 1968; Lawler & Suttle, 1972; see also Lawler, 1973).

Consistent with earlier findings, two more recent studies provide little support for the prepotency principle. Keeping in mind that Maslow posited a general theory of human behavior, Betz (1984) examined the viability of Maslow's theory in predicting life satisfaction and general behavior patterns, such as career choice, among three occupational groups: professional, clerical, and homemaking. She found only partial support for Maslow's theory when examining the relationship between need importance and life satisfactions.

Rauschenberger, Schmitt, and Hunter (1980) examined need hierarchy processes using Markov chain analyses in a two-year longitudinal study of 77 high school seniors. Consistent with earlier findings, need scores across categories were positively rather than negatively correlated, in contradiction with Maslow's principle of need dominance.

In addition, observed changes in need strength over time did not support Alderfer's frustration-regression proposition.

Concluding Comments. Need fulfillment theories attempt to answer broad questions such as the "nature of human nature" (Cofer & Appley, 1964) and the intraindividual conditions under which different motives lose and gain salience with the individual. A central thesis in Maslow's theory is that when persons are left "undisturbed," they will engage in behaviors directed toward progression up the need hierarchy. Recent studies of work goals and desired outcomes provide limited support for the viability of broad need taxonomies, especially when using nonmetric scaling methods (e.g., Billings & Cornelius, 1980; Elizur, 1984; Ronen, Kraut, Lingo, & Aranya, 1979). However, little evidence has been obtained to support the proposed processes underlying changes in need strength, especially with respect to changes at higher need levels (e.g., see Rauschenberger et al., 1980; Weiner, 1980). More conclusive investigations of change in motive class salience over the course of individuals' careers require large-scale research projects that take into account age, sex, and cohort effects.

A far more important issue pertains to how useful these need fulfillment theories may ultimately be in organizational settings. The assumption of a universal structure of motives can potentially explain similarities across individuals in their needs and interests over a lifetime. But in organizational research, motivational theories are often judged in terms of their power to explain and predict differences in behavior between individuals over relatively brief time spans. An individual's needs function as one of several distal determinants of behavior. Prior experience, individual differences in dispositional tendencies, the individual's interpretation of how specific outcomes relate to needs, and environmental events that place constraints on the individual's choice among behaviors represent more immediate determinants of behavior—determinants

that function like filters to attenuate the need-behavior relation. Heeding the warnings of many reviewers, organizational scientists have moved away from explicit tests of need theories and instead have focused on the intermediate processes through which broad classes of motives may influence specific behaviors.

Intrinsic Motivation Theories

Theories and research in intrinsic motivation focus on the influence of specific psychologically based motives. In need fulfillment terms, intrinsic motive theories concentrate on higher order needs. Two taxonomies, one of intrinsic motive theories and one of intrinsically motivated behaviors, have been suggested (Bandura, 1986; Lepper, 1985; Malone & Lepper, 1987). Malone and Lepper (1987) provide a classification scheme that uses type of motive as the basis for sorting intrinsic motive theories into three groups. One group contains theories that emphasize curiosity, incongruity, or discrepancy motives (e.g., Beryline, 1966; Hunt, 1965). In these approaches, intrinsic motivation pertains to enduring needs for moderate levels of stimulation and arousal. A second group of theories stresses competence, mastery, effec-tance, and challenge motives (e.g., White, 1959) and views intrinsic motivation as stemming from needs to demonstrate and exercise personal competencies. The third group of theories emphasizes the impact of motives for personal control over the environment and self-determination (e.g., deCharms, 1968; Deci, 1975). More empirical research has been conducted among theories on the latter two groups than in intrinsic motive theories of stimulation and arousal.

Malone and Lepper's theory classification scheme assumes multidimensionality of the intrinsic motivation construct. An important implication of this assumption is that conclusions about the impact of intrinsic motives on task interest and behavior cannot be drawn without considering the relations between

different motives and their effects. For example, the detrimental effects of extrinsic rewards on intrinsic motivation may be attenuated when task performance also provides optimal levels of stimulation, as may occur in complex and involving tasks such as surgery (cf. Csikszentmihayli, 1975). Unfortunately, relatively little is currently known about the primacy or interactive effects of different classes of intrinsic motives.

Bandura's (1986) behavioral framework of intrinsic motives further bolsters the notion of a multidimensional intrinsic motivation construct. His taxonomy, derived from a social-cognitive approach, distinguishes between different forms of intrinsic and extrinsic motivation based on locus of the outcome and type of behavior-outcome contingency. Two categories of outcome locus and behavior-outcome contingency yield the 2 x 2 matrix shown in Table 1. Outcomes that occur within the person, such as self-satisfaction, are termed *internal*. Incentives that originate in the environment, such as job termination, are termed *external* outcomes. Natural contingencies refer to behavior-outcome relations that occur reliably across situations, such as fatigue (internal outcome) following strenuous physical activity (behavior). Arbitrary contingencies refer to the establishment of behavior-outcome relations via cognitive mechanisms. For example, level of pay is an arbitrary outcome that gains meaning and influence over behavior through intermediate cognitive processes.

Four bases for behavior, three internal and one external, are depicted in Bandura's taxonomy. The three types of intrinsic motivation identified by Bandura may be integrated with Malone and Lepper's taxonomy to further illustrate the disparate nature of lines of inquiry in intrinsic motivation. In Bandura's framework, natural contingencies coupled with internal or external outcomes produce two forms of intrinsically motivated behaviors, which are similar to those targeted in intrinsic motivation theories stressing stimulation and

TABLE 1

Bandura's Taxonomy of Intrinsic and Extrinsic Motivation Based on Origin of Outcomes and Type of Behavior-Outcome Contingency

		<i>Behavior-Outcome Contingency</i>	
		Natural	Arbitrary
<i>Locus</i>	External	Intrinsic	Extrinsic
	Internal	Intrinsic	Intrinsic

From *Social Foundations in Thought and Action: A Social Cognitive Theory* (p. 240) by A. Bandura, 1986, Englewood Cliffs, NJ: Prentice-Hall. Copyright 1986 by Prentice-Hall, Inc. Adapted by permission.

arousal. For example, Bandura refers to dancing as an intrinsically motivated behavior since this behavior naturally produces internal outcomes such as arousal and muscle tension.

Bandura's third type of intrinsic motivation is characterized by arbitrary behavior-outcome contingencies and internal incentives. This is the form of motivation targeted by intrinsic motivation theories of competence and control and is the type of intrinsic motivation traditionally of most interest in industrial and organizational psychology. As noted previously, the distinction between this form of intrinsic motivation and extrinsic motivation rests on the locus of the outcome—whether the source of the outcome is internal or external. In job settings, however, more than one arbitrary contingency often exists between a behavior and different types of outcomes. Achieving a sales quota, for example, might yield both a sense of accomplishment (internal outcome) and a promotion (external outcome). Thus, an event may cue both intrinsic and extrinsic forms of motivation. In Deci's cognitive evaluation theory (CET), this fundamental problem is dealt with by assuming that persons adopt either an intrinsic or extrinsic motivational orientation. The thrust of cognitive evaluation research then focuses on identifying the conditions that induce shifts from one orientation to the other.

CET does not, however, specify the process by which arbitrary behavior-internal outcome contingencies develop in the first place, for example, why a salesperson might experience a positive sense of mastery after having met a particular sales goal. Recent interest in understanding the mechanisms by which intrinsic motivation is cultivated has led to research that coordinates concepts from intrinsic motivation, social learning, and self-regulation approaches. This new trend, permitting more precise predictions of behavior, permeates contemporary research in the intrinsic motivation domain.

Cognitive evaluation theory (Deci, 1975, 1976, 1980) and job characteristics theory (JCT; Hackman & Lawler, 1971; Hackman & Oldham, 1976, 1980) are the most well-known intrinsic motivation theories in the organizational literature. Both theories view a sense of mastery and perceptions of personal control as critical psychological states that are affected by the perceived environment. These psychological states are posited, in turn, to influence affective and behavioral responses.

Despite conceptual similarities between CET and JCT, direct comparison of these two research perspectives is impractical. CET takes a microanalytic perspective that concentrates on how features of environmental

events, such as the type of reward contingency or type of performance feedback, influence perceived mastery and control, task interest, and behavior. To provide evidence for the basic tenets of CET theory, care is taken to isolate the influence of an event from other features of the task, such as task difficulty.

In contrast, JCT considers the job as a whole and seeks to identify the aggregate job characteristics that influence critical psychological states. In this theory, the determinants of critical psychological states are job characteristics such as task variety, rather than specific events. Thus, the thrust of JCT research is to demonstrate links between structural facets of the job, intrinsic outcomes, and work outcomes—for example, links between task variety, job meaningfulness, and level of work performance.

The level of analysis difference between CET and JCT suggests that these theories should be viewed as complementary rather than competing. JCT stresses the aggregate cumulative effects of specific structural features of the job; CET emphasizes discrete process features of environmental events. Findings obtained from CET research appear to have their most direct implications for enhancing intrinsic interest and behavior in tasks with a fixed structure; research in JCT appears to have strongest implications for job design.

The Malone and Lepper (1987) and Bandura (1986) classification schemes provide the context for the following review of the intrinsic motivation literature. The discussion addresses two convergent lines of inquiry: (a) research derived from CET and JCT and (b) emerging research topics and an overview of the domain.

Cognitive Evaluation Theory

Intrinsic motivation is typically viewed as the determinant of behaviors performed for their own sake. In addition, intrinsic motivation has often been defined as behavior performed in

the absence of any apparent external reward. Interest in intrinsic motivation grew rapidly with reports by Deci, Lepper, and their colleagues demonstrating the detrimental effects of extrinsic rewards, such as pay, on intrinsic interest and task persistence (e.g., Calder & Staw, 1975; Deci, 1971, 1972; Lepper, Greene, & Nisbett, 1973). In many of these studies, persons were offered extrinsic rewards for continued performance of an interesting task. The effect of extrinsic rewards on subsequent intrinsic motivation was assessed by self-reports of task interest and the amount of time spent on the task during a free-choice period (following removal of the explicit reward contingency). Persons offered rewards usually spent less time on the task during the free-choice period than persons in the no-reward condition. This *overjustification effect* (Lepper et al., 1973) was explained as occurring when persons, in seeking an explanation for their behavior, perceived the external reward to be the *cause* of their behavior. According to Deci (1975), the change from an internal to external perceived locus of causality reflects a shift in the motivational processes guiding behavior.

The undermining effects of extrinsic rewards on task interest and free-choice behavior have been shown in numerous studies (see reviews by Condry, 1977; Deci & Ryan, 1980; Lepper & Greene, 1978; Notz, 1975). Findings over the past decade, however, clearly indicate that the presence of rewards does not automatically decrease intrinsic motivation (Deci & Ryan, 1980; Fisher, 1978; Guzzo, 1979). Fisher (1978), for example, showed that financial rewards did not affect intrinsic motivation in situations consistent with societal norms about the role of pay for time and effort in real jobs.

In more recent theoretical developments, Deci (1975) explained the occasional failure to obtain the overjustification effect as due in part to the relative salience of the “controlling” and “informational” properties of the reward. Rewards perceived as controlling were posited

to be associated with perceptions of an external locus of causality and a shift to extrinsic motivational processes. Rewards perceived as informational, however, supported an internal locus of causality. Because persons maintain enduring motives for control and mastery, intrinsic motivation is optimized when events are perceived as providing information about one's competencies and permit a sense of personal control. Consistent with Dyer and Parker's (1975) suggestion that rewards in a work setting signal personal accomplishments, CET predicts no reduction in intrinsic motivation when extrinsic rewards are judged to be informative rather than controlling.

Deci's theorizing provides the foundation for a number of recent studies investigating intrinsic task interest. In these studies, tenets of CET are used to examine how organizational events such as rewards, feedback, goal setting, and modeling may affect task interest, enjoyment, and behavior. The following material highlights some recent work in this direction.

Rewards. Harackiewicz, Manderlink, and Sansone (1984) conceptualized performance-contingent rewards as consisting of three components: evaluation, performance feedback, and reward value. They hypothesized that (a) evaluation (the presence of a contingency) would enhance perceptions of external control and thus reduce intrinsic motivation, (b) that feedback would enhance perceptions of competence and thus exert an informational influence, and (c) that reward value (the incentive itself as a symbolic cue of achievement) would sensitize the individual to information about competence and thus enhance intrinsic motivation. Based on this analysis, Harackiewicz et al. (1984) predicted that the evaluative (controlling) and positive feedback (informational) properties of performance situations would offset each other if both components were of roughly equivalent salience. However, performance-contingent rewards symbolizing positive

competencies would tip the balance in favor of enhancing intrinsic motivation.

Results obtained in three laboratory experiments by Harackiewicz et al. (1984) support this analysis. College men played a pinball game under varying evaluation, feedback, and reward value conditions. Intrinsic motivation was assessed on the basis of self-report interest measures and behavioral measures of pinball play during a free-choice period. In the first experiment, intrinsic interest among subjects who received both feedback and evaluation was lower than among subjects who received only performance feedback. Positive performance feedback in this situation appeared insufficient to overcome the controlling aspects of an evaluative contingency. In additional experiments, however, the authors found that the detrimental effect of evaluation on task interest was attenuated when evaluation was combined with an additional informational component: receipt of rewards that symbolized high achievement. Similar results were obtained by Enzle and Ross (1978) in a study investigating the effects of evaluation contingencies and rewards on performance.

The Harackiewicz et al. analysis provides a CET-based explanation for why performance-contingent rewards may enhance rather than impair intrinsic interest. Rewards that symbolize achievement make competence motives more salient and enhance intrinsic interest. In work settings, this effect should be more pronounced because the controlling features of evaluative contingencies are likely to be less salient due to widespread beliefs about the appropriateness of such evaluations in the workplace. Thus, rewards symbolizing competency should enhance intrinsic motivation. Further study of the factors that determine the strength of rewards as symbolic cues of competence in real jobs will help clarify when and which extrinsic rewards should be provided to enhance intrinsic motivation.

Feedback. In work settings, persons seek and receive many different types of feedback. In intrinsic motivation theory, the influence of feedback depends on what type of information is provided and whether the information is viewed as positive or negative. In CET, informational feedback refers to events that allow the individual to assess his or her personal competency. Informative, positive feedback, such as feedback that indicates competencies, promotes intrinsic interest and persistence. Studies by Enzle and Ross (1978), Harackiewicz (1979), and Ryan, Mims, and Koestner (1983) show that positive performance feedback enhances intrinsic motivation compared to a no feedback, control condition. However, studies by Boggiano, Ruble, and Pittman (1982) and Dollinger and Thelen (1978) show that positive performance feedback either has no effect or a detrimental effect. One possible explanation for this inconsistency in findings may have to do with the extent to which feedback provides sufficient information for assessing *personal competency* and thereby influencing motivational orientation.

Sansone (1986) explored this explanation by examining the effects of objective performance feedback devoid of competency information compared to performance feedback that enabled judgments of one's competency relative to others. In two experiments, subjects performed a word puzzle task. In the first experiment, Sansone compared three feedback procedures: (a) task feedback alone (i.e., correct solution), (b) positive normative performance feedback (i.e., performance relative to others), and (c) no feedback. She hypothesized that normative feedback providing unambiguous and positive information about one's competence relative to others would result in the highest levels of perceived competence and task enjoyment. As predicted, she found that perceived competence was highest in the normative feedback condition, followed by the task feedback alone condition, and that both procedures contributed to task enjoyment. The

beneficial effects of task feedback alone on enjoyment were unexpected because CET predicts a causal relation between perceptions of competence and task enjoyment in self-determining environments. These findings suggest that intrinsic interest may be maintained independent of competence feedback.

Sansone then hypothesized that persons in the task feedback alone condition may have reported enjoyment because the feedback *reduced* attention to concerns about competence. In a follow-up experiment, Sansone (1986) heightened competence orientation using an ego involvement manipulation by telling subjects that task performance was associated with intellectual abilities. As predicted, perceptions of competence were positively related to task enjoyment in the high competence orientation condition (when competence was salient at the onset of the task). When competence was not made salient (neutral instructions), however, personal valuation of performance enhanced task enjoyment regardless of the valence of task feedback. These findings suggest that an individual's orientation to the task moderates the operation of CET processes on intrinsic interest. In tasks perceived as tests of competency, competency motives are made salient and persons who perceive themselves as competent report greater enjoyment. In these instances, the impact of individual differences in valuation of task performance is attenuated. In contrast, when competency motives are not made salient, task enjoyment is more strongly determined by individual differences in valuation of performance than perceptions of competence. Sansone concluded that an individual's goals for participation in the task (e.g., to demonstrate competencies) represent an important boundary condition for CET.

Harackiewicz and Larson (1986) extended CET to explore the influence of supervisory feedback on subordinate task interest, involvement, and intrinsic motivation. In this laboratory study, the authors manipulated supervisory feedback styles through reward structures and examined the effects of the different

supervisor feedback styles on subordinate perceptions of competence and task interest. Results showed that subordinate perceptions of competence were highest when supervisors provided feedback containing positive competence information. Unexpectedly, supervisor feedback styles characterized as controlling also enhanced subordinate perceptions of competence in the no-reward conditions. The authors suggest that the supervisor's controlling behavior might exert beneficial effects on perceived competence when such behavior is the norm and paired with positive competence information.

As suggested by Dyer and Parker (1975), normative beliefs associated with the broader context in which behavior occurs appear to influence the interpretation of events and intrinsic motivation. In the Harackiewicz and Larson (1986) study, subordinates performing a novel task might have construed the situation as one in which the supervisor's feedback was designed to help the subordinate master the task, thus reducing the perception that the feedback was controlling.

Goal Assignments. Several studies have examined the effects of explicit goal assignments on task performance and intrinsic task interest. One group of studies has focused on the effects of proximal versus distal goal assignments. For example, *proximal* goal assignments to telephone salespersons might involve daily instruction on the specific number of orders they are to obtain—say, 10 orders a day; a *distal* goal assignment of the same level of difficulty would be 50 orders by the end of the week. Extrapolating from CET, proximal goal assignments might enhance intrinsic motivation by providing more frequent competence information but might reduce intrinsic motivation if the individual perceives the goals to be controlling. Distal goal assignments provide less frequent competence information, but might also be perceived as less controlling. In the telephone sales example, for instance, proximal goal assignments enable salespersons to

assess their competence daily; distal goal assignments, however, do not specify the pace of order-taking throughout the week and thus provide no clear benchmarks for assessing competence prior to the end of the week. Because CET suggests that self-determination takes precedence over competence, intrinsic motivation should be higher in distal than proximal goal assignment conditions.

Results obtained in three studies (Bandura & Schunk, 1981; Manderlink & Harackiewicz, 1984; Phillips & Freedman, 1988) provide evidence indicating a considerably more complex picture of goal assignment effects than that suggested from a CET-based analysis. Bandura and Schunk (1981) examined goal assignment proximity effects among children enrolled in a remedial math program. They found that proximal goal assignments enhanced perceptions of competence and increased intrinsic task interest and task behavior compared to students who were given distal goal assignments. Similarly, in a laboratory study involving college students, Manderlink and Harackiewicz (1984) found that perceptions of competence were higher among subjects in the proximal goal assignment condition than in the distal goal assignment condition. Yet in this study, task interest was lower among subjects in the proximal goal condition. Phillips and Freedman (1988) extended the investigation by including boring as well as interesting task assignments and obtained similar results. Manderlink and Harackiewicz (1984) suggest that the informational features of proximal goals facilitate performance during early stages of skill acquisition by strengthening perceptions of competence and building intrinsic interest. As competence develops over trials, however, the controlling features of proximal goal assignments become more salient and so reduce intrinsic interest. If the Manderlink and Harackiewicz hypothesis is correct, theoretical explanations of intrinsic motivation must take into account how person characteristics, such as skill, affect the salience of informational and controlling properties of goals and rewards.

Additional evidence concerning the effects of goal assignments on intrinsic interest is provided by studies examining routine and challenging tasks (Amabile, DeJong, & Lepper, 1976; Bryan & Locke, 1967; Locke & Bryan, 1969; Mossholder, 1980). In routine tasks, difficult goal assignments appear to enhance rather than reduce intrinsic motivation by providing cues for assessment of personal competencies in an otherwise uninformative task context. Bryan and Locke (1967), Locke and Bryan (1969), and Mossholder (1980) found that goal assignments enhanced task interest in routine tasks. In Mossholder's (1980) study, goal assignments given when the task was made more interesting resulted in reduced task interest.

Modeling. Cellar and his colleagues (Cellar & Barrett, 1987; Cellar & Wade, 1988) examined the cognitive sets associated with intrinsic and extrinsic motivational orientations. For example, Cellar and Wade (1988) examined the impact of modeling on intrinsic interest and persistence. In this experiment, male subjects watched one of two videotapes of a model constructing a figure out of an Erector set. Motivational orientation was varied by having the model verbalize and behave in ways consistent with either an intrinsic or extrinsic orientation. Dependent measures of subjects' behavior during a free choice period and task interest were taken following a performance period. Although the model's motivational orientation influenced free-choice behavior, the manipulation did not influence task interest. Cellar and Wade (1988) and others (e.g., Bandura, 1986) note that failure to obtain immediate effects on self-report measures of task interest is not surprising, since intrinsic interest in initially neutral activities is likely to lag behind behaviors that build perceptions of competence and mastery. The demonstration of a social learning influence on free-choice behavior, however, indicates that training procedures may serve a motivational as well as an informational function in developing task competencies.

Concluding Comments. Research in CET illustrates the complexity of motivational processes underlying intrinsically motivated behavior. Results obtained since the mid-1970s clearly show that extrinsic rewards and other organizational procedures may enhance, impair, or fail to affect task interest, enjoyment, and persistence. Recent CET research suggests that one reason for these diverse findings lies in the broader context in which an activity is performed. The individual's purpose for task engagement, normative beliefs about the reason for the event (e.g., rewards), the symbolic cue value of extrinsic rewards, the individual's skill level, and timing and frequency of the event represent some of the factors that may influence interpretation of events. In CET, interpretation of events represents the primary determinant of the individual's motivational orientation. Overall, the ultimate usefulness of the CET framework appears to depend on the extent to which the variables that determine the interpretation of events overcomplicate or too narrowly define the scope of the theory.

In addition to affecting the interpretation of events, contextual factors appear to influence the importance of self-determination and mastery motives. Findings by Harackiewicz and her colleagues (e.g., Harackiewicz, Sansone, & Manderlink, 1985; Manderlink & Harackiewicz, 1984; Sansone, 1986) suggest that the influence of these motives on task interest depends on the individual and the context of action. Instead of asserting that self-determination and mastery motives exert a dominant influence on cognitive processing, it seems more reasonable to assume that the individual's perception of the environment influences the salience of intrinsic motives. That is, intrinsic motives may be universal in that they reside latently within all persons, but they may only influence cognitive processes and behavior when activated.

Early CET research showed a reduction in task interest and behavioral persistence when providing extrinsic rewards for performance of already interesting tasks. Contemporary

CET research has concentrated more on the antecedents of task interest, the relationship between external and internal outcomes, and the potential benefits of extrinsic events in developing intrinsic task interest. In Deci's theory, the perceived controlling and informational properties of an event provide the pathway by which external outcomes exert intrinsic motivation effects. Using the framework suggested by Bandura (1986), recent CET research may be seen as attempting to explain the dynamics by which persons move back and forth between extrinsic and intrinsic forms of motivation. Studies assessing the component properties of rewards (Harackiewicz et al., 1984), for example, indicate a relationship between components of an external outcome and intrinsic incentives. Additional research is needed to further define these relationships and what determines the waxing and waning of these intrinsic and extrinsic forms of motivation.

Research demonstrating the boundary conditions of CET also has important implications for work settings. For example, Manderlink and Harackiewicz (1984) suggest that controlling feedback may enhance intrinsic motivation if given during the initial stage of task acquisition but may exert a detrimental effect on interest if continued over time. The notion that a person's interpretation of feedback changes as a function of task competencies suggests that optimal interventions to enhance intrinsic motivation will differ as a function of the individual's skill level. Cellar and Wade's (1988) findings further suggest that motivational orientation established in the context of training may influence subsequent task behavior.

Finally, a notable trend in CET research concerns the declining use of task *behavior* as the primary dependent measure. Recent research on events other than rewards has examined the effects of competence and control perceptions on *task interest* and *enjoyment*. As with other need-motive-value theories, the move away from the use of task

behavior measures appears to reflect growing recognition that CET predicts cognitive and affective responses rather than specific actions. Proximal motivational concepts such as those found in self-regulation theories are needed to further explain how an individual's motivational orientation determines task behavior.

Job Characteristics Theory

Job characteristics theory concerns the joint effects of individual differences in growth need strength and job characteristics on job satisfaction and work motivation. In this theory, Hackman and his colleagues identified the critical features of jobs that affect intrinsic motivation in the workplace. In the Hackman and Oldham model, five characteristics of tasks—skill variety, task identity, task significance, autonomy, and feedback—are posited to determine the *motivating potential* of a given job (Hackman & Oldham, 1980). Individual differences in growth need strength reflect stable person characteristics that interact with the job's motivating potential to affect three critical psychological states—meaningfulness, responsibility, and knowledge of results—and, ultimately, job responses.

The job characteristics model predicts affective and behavioral responses to jobs. Most empirical investigations of the job characteristics model have examined how job characteristics and individual differences in strength of growth needs affect job satisfaction. Loher, Noe, Moeller, and Fitzgerald (1985) conducted a meta-analysis of the job characteristic–job satisfaction relation based on 28 studies published in the late 1970s and early 1980s. Perceptions of the five core job characteristics were found to be positively related to job satisfaction. Loher et al. (1985) reported an approximate “true” $r = .39$ between composite job characteristics and job satisfaction. In addition, they obtained evidence consistent with the notion that growth need strength moderates the job

characteristic–job satisfaction relation in the predicted direction.

Loher et al. (1985) and others (e.g., Arnold & House, 1980; Hulin & Roznowski, 1985; Pierce & Dunham, 1976; Roberts & Glick, 1981), however, noted that conceptual and methodological difficulties plague empirical research on job characteristics. These problems include concerns about the mapping of objective task characteristics to perceived task characteristics (Rousseau, 1977; Weiss & Shaw, 1979); the factorial adequacy of job characteristics measures (Harvey, Billings, & Nilan, 1985; Kulik, Oldham, & Langner, 1988); common method bias in assessment of independent and dependent measures (Campion, 1988; Loher et al., 1985; Spector, 1987), and the appropriateness of various criterion outcome measures (Griffin, 1982). However, no firm conclusions can be yet drawn from the research. From a motivational perspective, the problem of mapping objective job characteristics to perceived characteristics is critical for understanding the motivational processes underlying the JCT concept of internalized motivation outcomes.

Internalized work motivation and job effectiveness is expected to be highest among persons who are high in growth need strength and who perform jobs high in motivating potential. Empirical evidence for the job characteristic–performance relation is meager and inconclusive (see Griffin, Welsh, & Moorhead, 1981, for a review).

In summary, the focus of JCT theory and research on *measurement of perceived job characteristics* and their relations to affective responses has greatly overshadowed research on the motivational processes implied by the theory. Substantially less research has been directed toward understanding how structural features of work can influence work motivation and behavior. This can have important practical implications. For example, technological innovations have altered the tasks performed in many occupations, such as railroad engineers and aircraft pilots. In these jobs, many tasks

previously performed by the employee have been automated. With automation, the employee's role has often shifted from that of active responding to that of monitoring automated systems and responding actively only when problems arise. Accidents and poor performance in these kinds of jobs are often attributed to the employee's failure to remain attentive to the task over extended time periods (cf. Haber & Haber, 1988). Both motivational and cognitive processes are likely to contribute to the boredom and performance problems brought about through technological innovations. Empirical research is sorely needed to indicate the role of motivational and volitional processes on performance problems in these kinds of jobs. It may be, for example, that job redesign interventions targeted at sustaining self-regulatory processes (e.g., through elaboration of feedback signals) are as effective, more practical, and more readily accepted by employees than interventions directed at enhancing intentions (e.g., through changes in task variety). Systematic research in this direction is needed before JCT can be regarded as a tractable theory of motivation in the workplace rather than a heuristic perspective.

Current Topics in Intrinsic Motivation

Research guided by CET and JCT has focused primarily on mastery and control motives. As noted previously, however, other motives and forms of intrinsic motivation affect interest and task persistence. Although researchers continue to test basic principles of CET, there also has been substantial research concerning intrinsic motivation processes in specific settings. During the past 15 years, three new lines of research have emerged. One line of inquiry concerns the influence of intrinsic motivation processes during learning. Lepper and his colleagues (Lepper, 1985; Lepper & Chabay, 1985; Lepper & Malone, 1987) have begun to describe the precise features of educational environments that promote intrinsic task interest, sustained

task effort, and learning. Although in its early stages, this work has important implications for understanding motivation in the context of training and complex skill acquisition.

A second line of research pertains to the correlates of sustained task interest among expert performers. Csikszentmihayli's (1975) research program investigating correlates of long-term intrinsic task interest and persistence in a variety of jobs suggests a unique set of characteristics associated with intrinsic motivation among skilled performers.

Finally, several researchers have begun to examine intrinsic motivation in achievement contexts. Dweck and Leggett (1988) and Nicholls (1984) have outlined differences in motivational processes associated with intrinsic and extrinsic orientations, while Helmreich and Spence (1978; Spence & Helmreich, 1983) have focused on developing a measure to independently assess individual differences in strength of distinct components of the achievement construct. The following discussion will examine each of the three areas.

Intrinsic Motivation in Skill Acquisition.

There is widespread agreement from both animal and human research perspectives that motivation plays an important role in learning. Nonetheless, the demise of classic learning theories and the rise of cognitively based theories during the 1960s substantially reduced research on the motivational bases of learning. In motivational psychology, the growth of cognitive models of motivation, which emphasize choice, reduced interest in learning per se and encouraged research on determinants of choice processes. The emphasis on choice processes led many researchers to presume that motivational processes exert their most powerful effects on learning by influencing the *preenactment decision*—the individual's decision to work on the task rather than to do something else and/or the level of effort he or she intends to put forth. As Bandura (1986), Dweck (1986), Kanfer and Ackerman (1989), and Lepper (1985)

assert, however, motivational processes operating *during* task engagement importantly affect rate and asymptotic level of skill acquisition.

In the learning domain, interest in cognitive processes all but eclipsed interest in motivational processes. The incomplete success of "pure" cognitive models in predicting learning outcomes (cf. Snow, 1986), however, has led to a reconsideration of the role of motivation in skill acquisition. Specifically, there has been increasing formal recognition that complex skill acquisition requires sustained task attention and practice—effort that is affected by an individual's interest in the task. Clarification of how intrinsic interest develops, interacts with cognitive processes, and affects behavior during skill acquisition is the focus of a growing body of related research being conducted by developmental, educational, learning, and instructional psychologists.

The integration of intrinsic motivation concepts in the learning domain has been recently articulated by Lepper (1985; Malone & Lepper 1987) and Dweck (1986). Lepper (1985) points out two reasons for this integration. First, he notes that most educators believe that mastery control, challenge, and curiosity contribute to effective learning. In spite of this belief, little empirical research exists on the relationship between instructional methods and activation of these different motives. Second, Lepper notes that little is known about what triggers different intrinsic motives during skill acquisition or even when motivational interventions should be implemented. Certain forms of feedback, for example, exert different effects on intrinsic task interest. Feedback regarding an individual's progress can heighten perceptions of mastery, while normative feedback can trigger motives to demonstrate competence (cf. Bandura, 1986). Normative feedback given before an individual has developed resilient perceptions of his or her competence, however, can reduce interest in the task and debilitate learning. Thus, progress feedback may be

more useful during the early phase of skill acquisition or with persons likely to perform more poorly compared to others. In contrast, normative feedback may be more useful during later phases of skill acquisition (Kanfer, 1990).

Malone and Lepper (1987) identified seven distinct forms of motivation that may influence learning. These motivations are further clustered into two groups—individual and interpersonal. Challenge, curiosity, control, and fantasy comprise the *individual* motivation group; they are deemed intrinsic motives because the source of the outcome is internal, although the motive may be activated by arbitrary behavior-outcome contingencies. Intrinsic motivation theory and research has focused primarily on these types of motivation.

Competition, cooperation, and recognition comprise the *interpersonal* motivation group. In these types of motivation, the outcomes depend on other persons and are considered intrinsic, extrinsic, or both. In competitive activities, for example, prize money might constitute the external outcome and sense of accomplishment the internal outcome.

The Malone and Lepper (1987) taxonomy emphasizes the consequences of different *forms* of motivation rather than the consequences of different motives. As with other recent theorizing, Malone and Lepper view the impact of universal motives as indirect and dependent on whether the motive is activated by the situation—that is, they espouse an *interactionist* perspective. As applied to the instructional environment, Lepper and colleagues suggest that effective learning environments stimulate different forms of motivation at different points during the skill acquisition process.

The potential applicability of this taxonomy is demonstrated in a study by Lepper et al. (1988), who used protocol analysis to categorize the motivational statements of skilled tutors working individually with children needing remedial help with math problems. They

found that feedback given during problem solving was frequently directed toward prompting the child's curiosity. In contrast, feedback given immediately after solving the problem was primarily directed toward enhancing the child's feelings of competence. These findings support the notion that effective training involves systematic evocation of different forms of motivation at different points in the training process.

A related research issue involves the equivalence of effects that different forms of motivation exert on learning and intrinsic task interest. Deci's theory, for example, emphasizes only two of Malone and Lepper's seven forms of motivation, control and challenge. Other forms of motivation stimulated in the instructional environment might yield similar or possibly more beneficial results. For example, instructional methods designed to stimulate curiosity might be especially beneficial during later phases of skill acquisition when on-task effort may decline as performance improves (Kanfer, 1990). Introduction of unusual events or opportunities that induce curiosity may help to sustain the effort given to the task.

Investigation of motivational processes during learning also raises the question of whether individuals differ in their responsiveness to instructional environments containing specific motivational embellishments. Lepper and Malone (1987) propose that intrinsic interest and behavior may come about more through the conjunction of specific person-environment matches than from particular normative motivational treatments. Adopting Bandura's (1986) framework, for example, one might speculate that forms of intrinsic motivation involving natural behavior-outcome (internal or external) contingencies might be less susceptible to individual differences in motive strength than forms of motivation based on arbitrary contingencies. For example, we might expect bell-and-whistle computerized training procedures to exert a main effect on task interest, but a person-training interaction to be

obtained in programs emphasizing mastery outcomes.

Theorizing about the effects of different forms of motivation during learning has even more immediate practical ramifications (Dweck, 1986; Lepper and Malone, 1987). The growing use of computerized instructional methods provides numerous opportunities for building in motivational features, such as fantasy or challenge in the form of individualized, continuously changing goals. To be useful to the educational and training community, further work along the lines of Lepper and colleagues is needed. Specifically, research should clarify the motivational processes underlying differences between passive and active learners, how different forms of motivation affect interest and rate of skill acquisition, and how timing of motivational embellishments influences learning in computerized skill training (e.g., see Dweck, 1986; Kanfer & Ackerman, 1989; Lepper, 1985).

Intrinsic Motivation in Expert Performance Contexts. Csikszentmihayli (1975, 1978) has sought, through an inductive approach, to identify the joint job-person features that uniquely characterize intrinsically motivated behaviors over time. In *Beyond Boredom and Anxiety*, Csikszentmihayli (1975) describes results obtained in semi-structured interviews with well-practiced rock climbers and chess players and with professional composers, dancers, basketball players, and surgeons, in which he asked them to describe what made their work enjoyable. The term *flow experience* was used to denote intrinsic motivation among highly skilled persons and was defined as experiences characterized by undivided attention to the task, an organized set of action opportunities, a limited stimulus field, clear goals and feedback, and perceptions of control over the activity.

Csikszentmihayli's concept of flow experience differs from previous conceptualizations of intrinsic motivation. First, unlike concepts

found in JCT and CET, flow experiences depict a psychological state that results from the *integration* of cognitive processes, characteristics of the task, and multiple intrinsic motives. Flow experiences focus one's attention toward regulation of action for the sole purpose of task accomplishment. In contrast to other intrinsic motivation theories, perceptions of control and competence appear to represent necessary but insufficient conditions for initiation of flow experiences. Other essential features, such as opportunity to limit the stimulus field, depend on the nature of the task. Once the flow experience is engaged, however, superordinate cognitive processes appear to provide at least temporary protection against competing demands for attention. Consistent with this conceptualization, Csikszentmihayli (1975) notes that persons engaged in flow experiences frequently report perceptual distortions of time while engaged in the activity.

Csikszentmihayli's approach represents a radical departure from previous work on intrinsic motivation in the organizational behavior literature. Previous approaches have assumed a static representation of intrinsic motivation. In Deci's theory, persons are either intrinsically or extrinsically motivated. In JCT, person-task interactions yield a presumably stable degree of intrinsic motivation. In Csikszentmihayli's theory, persons and tasks provide the requisite conditions for intrinsic motivation, but flow experiences—periods of intrinsically motivated behavior—represent dynamic states that ebb and flow over time. Furthermore, the interview methodology used to capture the requisite features of intrinsically motivating activities permits identification of the unique person-environment interactions and cognitive schemas associated with these periods of high intrinsic motivation.

In further studies, Csikszentmihayli and LeFevre (1989) examined the incidence of flow conditions in leisure and work settings among 78 employed adults. Participants provided self-reports on their current activities with respect

to flow conditions, motivation, and quality of experience seven times per day (at random intervals within two hour periods) in response to a pager signal. Csikszentmihayli and LeFevre found that more flowlike experiences were reported in work contexts than in leisure contexts. Interestingly, however, motivation as assessed through the question, "Did you wish you had been doing something else?" was more strongly influenced by the nature of the activity (work or leisure) than the experience of flow or nonflow.

Future research adopting Csikszentmihayli's approach and methodology for examining intrinsic motivation in work settings should be quite informative. His perspective, for example, implies that opportunities for flow experience prevail in a wide range of jobs and that intrinsic motivation might be best assessed through analysis of subtle changes in thought and action patterns rather than through use of cumulative performance criteria. Csikszentmihayli's findings also indicate that the occurrence of these experiences depends in part on the individual's cognitive schemas and work goals, a notion similar to that proposed by Cellar and his colleagues (e.g., Cellar & Barrett, 1987) in the CET domain. If this notion is supported by further research, we might expect that cognitive forms of training rather than job redesign might be used to remedy chronically low levels of intrinsic work motivation among some workers. Although Csikszentmihayli's formulation may ultimately prove incomplete, it certainly merits further exploration.

Intrinsic Motivation in Achievement Contexts.

Research in CET provides evidence for the importance of goals in determining motivated behavior. A relatively new approach to understanding intrinsic motivation stems from the assumption that intrinsic motives may be represented in cognitive processing by an individual's goals. Differences in goals are thus

viewed as reflections of individual differences in the salience of various intrinsic motives. Based on this assumption, researchers have begun to examine the effects of different types of personal goals on behavior in achievement contexts (e.g., Dweck & Leggett, 1988; Nicholls, 1984; Nolen, 1988; Pervin, 1983; Sansone, Sachau, & Weir, 1989; see also Kanfer, 1990).

Different goals or motives, such as the desire to demonstrate ability, are said to influence the direction and persistence of behavior through their effects on the individual's interpretation of events. For example, a person whose goal is to demonstrate ability is proposed to interpret and react differently to feedback than a person engaged in the same task whose goal is to increase competence (Dweck & Leggett, 1988).

Goal Orientation. The motive distinction most widely investigated to date concerns the differential influence of ego versus task orientation on interest and behavior (Dweck 1986; Dweck & Leggett, 1988; Helmreich & Spence, 1978; Nicholls, 1978, 1984). Nicholls (1978, 1984) identified two forms of achievement orientation: task and ego. Task orientation involves self-evaluation of performance for the purpose of assessing and facilitating personal mastery. According to Nicholls (1978, 1984; Nicholls & Miller, 1984), persons with task or mastery goals focus on the task rather than the self and tend to perceive a positive correlation between effort and mastery. Persons with mastery goals prefer difficult tasks because they permit opportunities to demonstrate mastery through alterations in effort. Intrinsic motivation, as indexed by task interest and persistence, should be high when persons with mastery goals are engaged in moderately difficult tasks.

In contrast, persons who maintain an ego orientation toward task engagement employ a differentiated conception of ability. With an ego orientation, individuals seek to demonstrate their ability (i.e., capacity at a fixed or

maximum level of effort) via superior task performance relative to others. Persons who hold an ego orientation are posited to view effort and ability as inversely related; putting in more effort than others to reach a similar level of performance indicates lower ability. In intrinsic motivation terms, persons with performance goals are less interested in the task than they are in the outcome of task performance as an index of their competency relative to others. Furthermore, sustained task persistence in the face of difficulties should be lower among persons holding performance goals than mastery goals.

Nicholls (1984) identified several features of the task environment which should directly influence the engagement of ego versus task orientation. Moderate task difficulty, absence of stress, nonsalient extrinsic incentives for behavior, and nonsalient normative information characterize mastery-oriented achievement situations. Performance on skill-dependent tasks, competition, and tasks performed for the express purpose of demonstrating capabilities are expected to reduce mastery concerns and raise self-awareness about one's performance relative to others. In these evaluative contexts, task preferences are posited to depend on perceived ability. Thus, an individual may prefer a difficult task in a situation that emphasizes task goals but an easier task in situations that stress ego goals, or demonstration of one's abilities. Empirical evidence for these propositions is reviewed by Nicholls (1984).

Dweck and her colleagues (Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988) offered a similar distinction between learning and performance goals. Leggett and Dweck (1988, cited in Dweck & Leggett, 1988) hypothesized that the cognitive, affective, and behavioral patterns of helplessness demonstrated by children experiencing failure were due to motivational processes associated with distinct goal orientations. In a study manipulating personal goals for task engagement and self-perceived ability, they found that when

children were assigned performance goals, behavior depended on the child's assessment of his or her ability to do the task. Children with low self-perceived ability demonstrated a pattern of helplessness and poorer performance than children with high self-perceived ability. In contrast, children holding learning-or mastery-oriented goals demonstrated an effective pattern of achievement behavior when confronted with failure, regardless of self-assessment of ability.

Dweck and Leggett (1988) suggest that preferences for learning versus performance goals among children stem from the child's conceptualization about the controllability of intelligence. That is, children who perceive intelligence to be personally controllable hold to the *incremental theory*, while children who perceive intelligence to be an internal but uncontrollable trait hold to the *entity theory*. Bandura and Dweck (1985) found that children who subscribed to the incremental theory were more likely to adopt learning goals in an achievement task than children who held the entity view.

Both Dweck and Leggett (1988) and Nicholls (1984) have stressed the importance of the individual's conception of his or her ability and attributional patterns associated with learning and performance goals. In the Nicholls formulation, an ego orientation renders an attributional pattern that equates high effort with low capabilities. Similarly, the Dweck and Leggett framework implies that among persons who hold a performance goal, effort is viewed as compensatory for a fixed ability level. In both frameworks, failed attempts to attain performance goals lead persons with low self-perceived ability to avoid the task. In contrast, learning goals are associated with internal, controllable (via effort) perceptions of ability. Among persons with learning goals, failure may be attributed to lack of effort and a currently low, but modifiable, level of capability. When adopting a learning goal, one's assessment of *potential* capabilities for outcome attainment become

more influential than current level of self-perceived ability.

Individual Differences in Achievement Motives. A different line of inquiry stems from work by researchers interested in knowing when stable dispositional tendencies with motivational properties, such as achievement orientation, might help to predict work performance (e.g., Day & Silverman, 1989; Helmreich et al., 1986). The underlying assumption is that individual differences in dispositional tendencies may influence variability in job performance when persistence is an important component of successful performance. For example, Helmreich et al. (1986) used the *Work and Family Orientation Questionnaire* (Helmreich & Spence, 1978) to assess three types of achievement motive strength among a group of airline telephone reservation agents at the onset of training. Two dependent measures of performance—percentage of time spent on the telephone with customers and percentage of time agents were available to receive calls (i.e., time agents were not on break or engaged in off-task activity)—were obtained at one to three months, four to six months, and seven to eight months following hire. They found that motive orientation was uncorrelated with job performance at one to three months following hire; work and mastery achievement motives, however, correlated significantly with job performance at later periods of job tenure.

Day and Silverman (1989) used measures constructed from the *Jackson Personality Research Form* (Jackson, 1974) to assess the extent to which dispositional tendencies predicted dimensions of job performance among accountants (beyond that predicted by cognitive ability measures). They found that work orientation added significantly to the prediction of client relation performance ratings. Taken together, the Helmreich et al. (1986) and Day and Silverman (1989) findings suggest that stable individual differences in achievement motives might systematically

affect long-term job behavior, at least in some types of jobs.

Concluding Comments. Two major differences are apparent between the new streams of research and CET or JCT research. First, newer lines of inquiry focus on understanding and predicting behavior in specific settings of central interest to learning, educational, instructional, and training personnel. Focusing on these settings facilitates opportunities for developing more comprehensive, cross-disciplinary models of motivation. The advantage of this approach is seen, for example, in the learning arena with its trend toward identifying intrinsic motivation conceptualizations other than competence and mastery. Second, recent theorizing has been largely inductive rather than deductive. Although there are advantages and disadvantages to both approaches, a mixture of approaches in this area seems desirable. Csikszentmihayli's inductive protocol method, for example, suggests a new episodic conceptualization of intrinsically motivated behaviors in and out of the workplace.

Recent lines of inquiry may also be used to extend CET. The assumption that an individual's goals represent salient intrinsic motives permits assessment of which intrinsic outcomes guide information processing and behavior. Also, contemporary findings indicate that differential activation of particular motive states depends on the individual's previous history and environmental factors. Although it is not clear exactly how many different goals may exist in achievement contexts or what the interrelations might be, it is clear that environmental conditions may cause goals and motives to become more or less salient.

Overall, recent research has concentrated on (a) development of interest in tasks, (b) the cognitive, affective, and behavioral correlates of intrinsic motivation episodes, and (c) the influence of different goals on behavior in

performance contexts. Most investigators agree that changes in intrinsic task interest and behavior are associated with alterations in how information is processed. Unlike earlier theory, the emphasis in current research is on the factors that influence the way information is processed, that is, changes in motivational orientation rather than on the influence of specific motives *per se*.

The focus on goals also provides a rubric for linking the intrinsic motivation domain with theory and research in self-regulation, goal setting, and social learning. By defining motivational orientation in terms of the individual's goals for task engagement, lingering questions about the intermediate processes by which intrinsic outcomes influence behavior may be more easily and systematically addressed (see the section on self-regulation and metacognition later in this chapter).

The coordination of this research domain with goal setting has two further implications for future research. One implication is that an individual's orientation is at least partially under his or her conscious control, since goals are typically thought to be under volitional control. When viewed in this way, questions arise concerning the amount of control and types of strategies that persons use to maintain interest and persist at a task. For example, we might attempt to identify strategies that persons use to maintain interest and persistence in boring jobs or during learning. Answers to these questions will clearly require further consideration of how individual differences in temperament and cognitive abilities affect goal selection.

The second implication of contemporary work in this area is that greater attention be given to the diversity and flexibility of goals that individuals hold for task engagement. As several researchers have noted (e.g., Bandura, 1986; Lepper, 1985), an intrinsic orientation refers generally to conditions in which internal outcomes are salient. Positing an intrinsic

motivation orientation does not specify, however, which of many possible internal outcomes are most salient, nor does it define the interdependence of internal and external outcomes or the extent to which salience of internal and external outcomes shifts over time. Further mapping of the internal outcome domain, similar to the taxonomic approach taken by Malone and Lepper (1987) and the experimental research by Harackiewicz et al. (1984), is needed.

The analysis of learning outcomes with respect to an individual's goals is particularly intriguing. In learning or achievement contexts, the adoption of an intrinsic orientation, at least initially, is thought to enhance learning. Nicholls (1978, 1984) and Dweck and Leggett (1988) have suggested a specific set of intermediate cognitive processes that contribute to this beneficial effect. For example, persons who hold learning goals for task engagement may interpret feedback as informative for identifying optimal task strategies. In contrast, persons holding performance goals may interpret feedback as informative about one's abilities. Interpreting feedback as instructive can reduce the likelihood that failure feedback will result in distracting affective responses that weaken fragile perceptions of competence. In terms of attributional theories (e.g., Weiner, 1985), persons with learning goals would view performance outcomes as internal, controllable, and changeable (i.e., persons view performance feedback as a consequence of personal capabilities that may be enhanced by applying more effort). In contrast, persons who hold performance goals would be posited to view performance outcomes as internal but unchangeable (i.e., persons view performance as a consequence of personal capabilities such that more effort might increase performance but implies lower ability).

Finally, recent studies of achievement-related dispositions and job performance indicate that industrial and organizational researchers have shifted away from need-based

models in favor of dispositional models linking specific personality constructs with specific dimensions of performance criteria. To date, empirical research of this type has focused primarily on demonstrating the existence of a disposition-performance relation. From a motivational perspective, future research will need to explicate the intermediate motivational mechanisms involved in these empirical relationships. For example, one might speculate that certain dispositional tendencies, such as goal orientation, affect job performance through influence on goal choice, self-regulation processes, or both. Similarly, personality traits such as endurance might differently affect distal and proximal motivational processes. Although there are many problems associated with validating motivational models that formally incorporate relevant individual differences in personality, such problems may be less formidable given recent advances in personality psychology and greater emphasis on the criterion domain.

In summary, theory and research in this section appears to have taken on a new look, in which intrinsic motivation is viewed more as an episodic or temporally bounded phenomenon influenced by specific motives and environments that affect an individual's goals. Consistent with this perspective, research on motivationally relevant dispositions has focused on the effects of such traits on specific facets of job performance. Exploration of the multiple types of goals an individual may hold recasts questions of whether an individual is intrinsically or extrinsically motivated to questions of how interest in tasks (sufficient to warrant resource allocation) can be encouraged. It also suggests questions related to the identification of the dispositional mechanisms involved in sustaining on-task behavior.

Organizational Justice and Fairness Theories

The central theme in justice theories is that fairness in organizational procedures, for

example, selecting work strategies, establishing task goals, evaluating job performance, and allocating organizationally controlled outcomes, constitutes an important determinant of work attitudes and behaviors. Justice, or fairness, may be conceptualized as *equity*—distribution of outcomes across persons in proportion to their input—or *equality*—equal distribution of outcomes across persons irrespective of their input. Regardless of the specific form of justice invoked, fairness is viewed as a universal motive (Lind & Tyler, 1988).

The following section reviews theories and research pertaining to the effects of fairness perceptions on motivational processes and workplace behavior. The review begins with Adams' equity theory (Adams, 1963, 1965), highlights recent associated research, and discusses problems associated with Adams' formulation. I then address fairness theories developed in the broader area of social justice. These newer approaches, developed partly in response to issues raised in previous research on Adams' model, extend the conceptualization of justice to examine individual reactions to a variety of organizational practices. The section concludes with a discussion of the implications of recent formulations for understanding motivational processes in response to organizational procedures such as performance evaluation.

Adams' Equity Theory. Adams' equity theory (Adams, 1963, 1965), a cognitive, social exchange theory of distributive justice, assumes that individuals value and seek fairness in employee-employer exchange relationships. Adams proposed that fairness is maintained when an individual perceives that his or her outcomes, such as pay, are allocated in proportion to his or her perceived contributions in the form of, say, task behaviors. Because distributive justice addresses the allocation of outcomes across persons, social comparisons are necessary to determine equity. Persons

make these comparisons by contrasting their perceived inputs and outcomes with their perceptions of others' inputs and outcomes. When the ratio is seen as unequal, the individual experiences *inequity tension*.

The perception of inequity in the employee-employer relationship is assumed to generate an aversive tension state. This negative tension provides the motivational basis for cognitive and behavioral responses directed toward reducing felt tension and restoring perceptions of equity. Persons may reduce perceived inequity in a number of ways: (a) by altering their perceptions of their own or others' inputs or outcomes, (b) by inducing others to alter their inputs or outcomes, (c) by changing one's own inputs or outcomes, or (d) by withdrawing from the situation (Campbell & Pritchard, 1976). As Adams (1963) notes, the specific method of equity restoration chosen and the magnitude of the response depends on (a) the strength of the perceived injustice, (b) situational and individual constraints on action, and (c) the individual's perception of and choice among strategies that restore equity and maximize personal outcomes. The multiple determinants of strategy choice further complicate the prediction of behavior change in the workplace.

Research Evidence. Tests of Adams' theory have concentrated largely on the effects of perceived pay inequity on quality and quantity of work performance under hourly and performance-contingent incentive conditions. The cumulative findings of this research have been reviewed elsewhere (e.g., Campbell & Pritchard, 1976; Carrell & Dittrich, 1978; Greenberg, 1982; Pritchard, 1969). In general, empirical findings on the effects of underpayment are consistent with Adams' model (e.g., see Campbell & Pritchard, 1976; Greenberg, 1982). That is, persons in piece-rate incentive conditions who perceive that they are underpaid relative to certain others typically reduce the quality and increase the quantity of their work. Persons perceiving underpayment in straight, hourly

pay tend to reduce both work quantity and quality.

Studies of overpayment inequity, however, provide mixed support for Adams' theory. The theory predicts an increase in performance under conditions of perceived overpayment; yet overpayment inequity does not consistently result in higher quantity or quality performance (see Campbell & Pritchard, 1976, and Greenberg, 1982, for reviews). Several researchers have suggested that findings in studies of overpayment inequity are difficult to interpret due to potential effects associated with the type of induction procedure used (Lawler, 1968; Pritchard, 1969). For example, in studies where persons are led to believe that they are unqualified for the pay they receive, overpayment effects may be due to unintentional threats to the person's self-esteem. In an attempt to separate self-esteem and inequity explanations, Garland (1973) manipulated perceptions of overpayment inequity through "incidental" statements made by co-workers about their pay, rather than through information provided by the experimenter that would reduce the opportunity for unintentional threats to self-esteem. Results obtained in this study support equity theory predictions.

Campbell and Pritchard (1976) suggest another explanation to account for the inconsistent evidence in overpayment equity research. They suggest that some persons alter their perceptions of outcome deservedness as pay is increased over time. This explanation implies that ratios triggering inequity tension may vary over time and across situations and perhaps asymmetrically. Their explanation also implies that performance effects due to overpayment inequity are likely to be temporal. From an applied perspective, overpayment as a method for stimulating performance may be problematic in the long run, since persons may reduce inequity through changes in their belief about deservedness rather than changes in behavior. In a pair of laboratory experiments investigating allocation practices used by

persons assigned a supervisory role, Greenberg and Leventhal (1976) found that persons tended to use an overreward strategy to motivate poor performers. Studies of allocation practices in field settings, however, provide little evidence for the use of this strategy (e.g., Kipnis & Cosentino, 1969). Greenberg (1982) suggests that use of overpayment strategies in organizations is most likely to occur (a) in "emergencies" in which supervisors are concerned about short-term rather than long-term outcomes, (b) with poorer performing employees, and (c) with persons not working in highly interdependent groups (where others in the group may react negatively).

During the past decade, several studies have examined the viability of equity theory predictions with respect to outcomes other than pay (e.g., Greenberg & Ornstein, 1983). In Greenberg and Ornstein's laboratory study, subjects were assigned to one of three conditions. Subjects in the first group were led to believe that they received a high job status title (i.e., outcome) because of their high level of performance (earned); subjects in the second group were led to believe that they received a high job status title noncontingent on performance (unearned); subjects in the third group were instructed to perform additional duties associated with the high-status title but without receiving the title. Consistent with equity theory predictions, receipt of an unearned title ("overpayment" condition) resulted in an initial increase in performance in the second group. More interesting, however, is that performance in this group declined over trials. The decline in performance over trials compared to other groups suggests a reactivity to this manipulation over time. Consistent with the "sham" effect discussed by Lind and Tyler (1988), persons who believe that they have been "tricked" into exerting higher levels of effort may view the procedure as manipulative and may subsequently reduce task effort.

Discussion. The Greenberg and Ornstein (1983) study shows that the effects of perceived inequity can change over time. Adams' equity theory, however, does not specify how time influences either the directionality or intensity of responses to inequity. Cosier and Dalton (1983) and Vecchio (1982) have developed mathematical models that take into account the effects of time. Unfortunately, there has been insufficient research to determine how well these models predict longer-term responses to perceived inequity. Nonetheless, the viability of the equity perspective in explaining work behavior seems to rest in part on whether these models accurately predict the duration and direction of responses to inequity.

Longitudinal process models of inequity effects might also provide a framework for examining a number of questions about the effects of perceived inequity in applied settings. For example, it is not clear how persons respond when faced with repeated episodes of perceived inequity, or whether potential individual differences in the method used to reduce perceived inequity affect behavioral responses to perceived inequity at later points in time.

Another persistent problem in equity research concerns the incompleteness of the theory in predicting specific task behaviors following activation of inequity distress. In laboratory and other highly controlled and time-constrained studies, strategies for reducing inequity are often so limited that changes in behavior provide the only readily identifiable means by which to restore equity. In real work contexts, however, there may be numerous viable strategies for restoring equity, such as asking for a raise. Changing task effort on the job may represent one of the most personally costly of these strategies (Greenberg, 1982). Thus, the determinants of an individual's *choice* among strategies in responding to perceived inequity take on critical importance. Unfortunately, equity

theory is not precise in this regard. As Goodman and Friedman (1971) stated 18 years ago, the principal contribution of equity formulations is in identification of work situations that goad the individual toward cognitive and behavioral changes, not its ability to predict specific behaviors.

Adams' (1963, 1965) equity model posits *drive reduction* as the primary process by which action is instigated. Contemporary theories of justice avoid this problematic explanation by highlighting the attractiveness, or instrumental value, of perceived fairness in a variety of organizational practices. Recent approaches stemming from advances in social justice theories further distinguish between perceived unfairness in the procedures used to allocate rewards and perceived unfairness in outcome allocation. The following section briefly reviews several new developments in organizational justice.

Distributive and Procedural Fairness. From an organizational perspective, the most noteworthy advance in justice research stems from the distinction between distributive and procedural fairness. Thibaut and Walker (1975, 1978) and Leventhal, Karuza, and Fry (1980) suggest that researchers focus on identifying the features of organizational procedures that affect perceptions of fairness, work attitudes, and behavior.

Greenberg's Taxonomy. In a review of organizational justice theories, Greenberg (1987b) proposed two independent conceptual dimensions to distinguish between organizational justice theories: a content-process dimension and a reactive-proactive dimension. The first dimension, content versus process, distinguishes between theories that focus on the fairness of the outcome (distributive justice) and those that focus on the procedures used to determine the outcome (procedural justice). The reactive-proactive dimension distinguishes

between theories that focus on the restoration of justice and those that focus on how persons seek to attain justice. In proactive approaches, the motivation for cognitive and behavioral change stems from the attractiveness or instrumentality of fairness rather than from a perceived lack of fairness. Greenberg's taxonomy is shown in Table 2.

Note that equity theory, which focuses on fairness in the distribution of outcomes and how persons respond to perceptions of unfairness, represents the content side of the content-process dimension and the reactive side of the reactive-proactive dimension. Thibaut and Walker's (1975) theory of procedural justice, with its emphasis on fairness in the procedures used to determine the outcome and its concern with how persons respond to perceptions of unfairness, represents the process side of the content-process dimension and the reactive side of the reactive-proactive dimensions. Leventhal's (1980) allocation preference theory, with its emphasis on the determinants of procedural fairness judgments and the effects of justice factors on the decision-making process, falls on the process side of the content-process dimension and the proactive side of the reactive-proactive dimension.

Greenberg's taxonomy clarifies fundamental differences between the rapidly growing number of organizational justice models. In addition, the taxonomy broadens the domain of determinants and consequences of fairness to include decision-making behavior and the effects of individual differences in fairness motives. From a motivational perspective, the most direct implication of the taxonomy for understanding behavioral consequences of unfairness is the identification of components of organizational procedures that contribute to perceptions of fairness.

Components of Procedures That Contribute to Perceptions of Fairness. Findings from studies in legal settings indicate that procedural fairness

TABLE 2

**Greenberg's Taxonomy of Organizational Justice Theories
Based on Content-Process and Reactive-Proactive Dimensions
With Examples From Each Class**

		<i>Content-Process Dimension</i>	
		Content	Process
<i>Reactive-Proactive Dimension</i>	Reactive	Equity theory (Adams, 1965)	Procedural justice theory (Thibaut & Walker, 1975)
	Proactive	Justice judgment theory (Leventhal, 1980)	Allocation preference theory (Leventhal et al., 1980)

From "A Taxonomy of Organizational Justice Theories" by J. Greenberg, 1987, *Academy of Management Review*, 12, p. 10.
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is enhanced when persons are given the opportunity to provide input into the decision-making process (see Lind & Tyler, 1988). In these studies, *process control*, or the opportunity to provide relevant information to the decision maker, enhanced perceptions of fairness independent of the outcome obtained. Similarly, procedures for allocating organizational rewards, for example, performance appraisal and performance evaluation, are more likely to be perceived as fair if they include opportunities for the employee to provide influential information to the decision maker.

Several studies document the relationship between components of evaluation procedures and perceptions of fairness in organizational settings. Landy, Barnes, and Murphy (1978) found that employees' perceptions of fairness in performance evaluation were significantly related to a number of procedural variables, such as the frequency of evaluation and the opportunity to express one's opinions during the evaluation. Landy, Barnes-Farrell, and Cleveland (1980) replicated these findings and demonstrated that perceptions of fairness

were independent of the level of performance rating obtained. Greenberg (1986a, 1987a) has shown that perceptions of procedural and distributive fairness are enhanced by the use of performance diaries and accurate evaluation procedures. Kanfer, Sawyer, Earley, and Lind (1987) found that persons given the opportunity to provide information about their performance prior to the performance evaluation showed increased perceptions of fairness.

Greenberg (1986a) analyzed open-ended survey responses to questions about what determines fairness in performance evaluation. The results indicated two types of factors, procedural and distributive. Important procedural factors included consistency in the application of evaluation standards and opportunity to provide influential input prior to evaluation. Important distributive factors included perceptions of a performance-rating contingency and perceptions of a rating-outcome contingency. Alexander and Ruderman (1983) obtained similar results in a factor analysis of 20 fairness items taken from self-report data obtained from a sample of 2,822 federal

employees. In addition, Alexander and Ruderman examined the relationship between each factor and several outcome variables. They found that both distributive and procedural fairness factors were related to turnover intentions.

The demonstration of a "fair process" effect in organizational settings (i.e., the facilitative effect of opportunities to provide input into the decision-making process on satisfaction and perceptions of fairness) has prompted researchers to examine the effects of procedural components on motivational processes (see Greenberg, 1986b; Lind & Tyler, 1988).

Effects of Perceptions of Fairness on Behavior. A few studies have examined the effects of variations in performance appraisal on task performance (e.g., Earley & Kanfer, 1985; Kanfer et al., 1987). Kanfer et al. (1987) examined the effects of information input on attitudes and performance among subjects performing a marketing simulation task. Before performance evaluation, subjects in the input condition were allowed to tell the decision maker why their performance was worthy of reward. As expected, opportunity to express an opinion prior to evaluation was positively correlated with perceptions of procedural fairness independently of the reward outcome. Unexpectedly, however, subsequent task performance was negatively correlated with input opportunity. These results suggest that although input opportunity enhanced perceived fairness, it also provided subjects with a means of supplementing the effects of their work (via persuasion) and perhaps weakened perceptions of a performance-reward contingency. The performance findings suggest a potential disadvantage associated with some types of preevaluation influence opportunities. Persons who perceive the input opportunity as a means of compensating for poor performances may be less inclined to exert high levels of effort than persons who perceive that

reward is determined by task performance alone.

A Conceptual Framework for Understanding Fairness Perceptions Effects on Behavior. Greenberg (1986b) provides a framework for linking procedural variations to specific cognitive variables and motivational processes. Integrating expectancy and procedural/distributive justice research, Greenberg's framework tackles the thorny issue of classifying evaluation decisions as inputs or outcomes. He proposes that procedural fairness comes into play when performance evaluations are considered as "ends in themselves." In this situation, procedural fairness is reflected in the perceived validity of performance measurement procedures and the opportunity for supervisees to provide a complete picture of their performance to the supervisor before their evaluation. Thus, behaviors and components of job performance that contribute to the evaluation rating represent inputs (first-level outcomes). The performance rating, as well as supervisory-controlled outcomes such as praise and recognition, represent the salient outcomes (second-level outcomes).

Distributive justice comes into play when evaluation decisions are emphasized as a means to an end—for example, when persons view performance ratings as a means of obtaining desired salaries and promotions. In this instance, performance evaluations reflect the individual's inputs (first-level outcomes in expectancy terms); organizationally dispensed rewards, such as promotions and salary increases, comprise the salient outcomes (second-level outcomes in expectancy terms). Distributive fairness is reflected in equitable distribution of salary and promotion outcomes across persons rather than in the determination of performance ratings.

Greenberg's (1986b) distinction between procedural and distributive fairness concerns in organizational settings suggests several hypotheses for future research. For example,

Greenberg's (1986b) model implies that perceptions of inputs and outcomes are influenced by an individual's current concerns or goals. Models of organizational socialization suggest that the major focus of attention among new employees is fitting in, learning the (performance evaluation) ropes, and publicly demonstrating their performance competencies (Van Maanen & Schein, 1979; Wanous, 1980). The common concerns among members of this group suggests that they are more likely to view task behaviors as inputs and supervisory recognition and performance ratings as outcomes. In contrast, seasoned employees, familiar with the performance measurement system and having previously demonstrated performance competencies, are likely to perceive job performance ratings as inputs instead of terminal outcomes. Among members of this group, salient outcomes are likely to involve organizationally dispensed rewards such as pay and promotion. In sum, deviations from equity in the distribution of second-level rewards, such as pay increases, should be more salient to experienced employees than to new employees.

Another hypothesis derived from Greenberg's model concerns the specificity of unfairness perceptions. First-level outcomes such as performance ratings and recognition are typically under the supervisor's control. In contrast, second-level outcomes are often distributed in accord with organizational policies and are less likely to be under the supervisor's control. One might hypothesize that perceptions of procedural unfairness are more closely associated with attitudes toward supervision than perceptions of distributive fairness. In direct evidence to support this hypothesis has been obtained by Greenberg (1982) and others (see Lind & Tyler, 1988). Further examination of the procedural justice-supervision satisfaction-behavior links is needed to increase our understanding of how various supervisory strategies gain their motivational influence.

Yet another implication of Greenberg's model is that perceptions of procedural and distributive unfairness are cognitively represented as deviations from justice norms held for either the behavior-performance rating relation or the performance rating-outcome relation. In an expectancy theory formulation, justice norms can be represented as proportional, monotonically increasing functions between inputs and outcomes. Similar to Adams' theory, if fairness is operationally defined as a preferred functional relation between performance and outcomes (i.e., a contingency), unfairness can be defined as a deviation from the preferred relation. Deviations from the preferred relation, especially those that weaken the contingency between variables, should result in lower motivational force. Whether performance changes with perceptions of unfairness, and which types of behaviors are affected, depends on which function is most salient to the individual (i.e., behavior-performance rating or performance rating-outcome functions) and whether a deviation in the salient function is detected (i.e., a deviation from a function that represents fairness). For example, persons who focus on the performance rating-outcome function may not detect a deviation in fairness associated with the behavior-performance rating function. Similarly, new employees who focus on the behavior-performance rating outcome may not perceive deviations in the performance rating-outcome function as readily as longer tenured employees.

Defining justice and deviations from justice in terms of the characteristics of functional relationships provides a potential theoretical link between perceptions of fairness and subsequent behavior. Consistent with expectancy formulations of motivation, alteration of contingency perceptions should influence work activity. The influence of unfairness perceptions on behavior, however, depends on whether the unfairness is seen as procedural or distributive. For example, if the problem in

perceptions of distributive unfairness lies in the relation between performance ratings and outcomes, one might expect to see behavioral consequences such as intentions to quit and job withdrawal (e.g., absenteeism) rather than changes in task effort. Similarly, perceptions of procedural unfairness are likely to have their strongest behavioral effects on daily work behaviors and task effort. Thus, one might hypothesize that motivational consequences of distributive and procedural unfairness would be manifest in global patterns of work activity and task effort, respectively.

Research on procedural and distributive justice poses a number of basic questions for future work. First, which variations in evaluation procedures are associated with changes in perceptions of procedural and distributive fairness? Second, can we identify different contingency relations that correspond to the instantiation of procedures interpreted as fair and unfair? Third, which behavioral variables are most likely to be associated with perceived unfairness in which procedural components?

Fairness and Participation Research. Participative decision making (PDM) refers to a cluster of organizational procedures characterized by interaction between persons of unequal power within the organization for the purpose of arriving at a specific decision, such as establishing performance objectives. A central feature of PDM is the opportunity for employees to provide input prior to a decision that will affect them. In the American workplace, this feature appears to be part of what constitutes a fair procedure as well as an instrumental opportunity to advance one's own objectives.

PDM procedures vary greatly in the extent to which employees are permitted to influence the decision-making process and/or control the final decision. In many settings, PDM signifies the employee's opportunity to *influence* the decision maker; control over the decision tends to remain with the decision maker. Participative procedures also vary in the extent and type

of *information* shared during the interaction. In the participative transaction, information exchange may alter knowledge, attitudes, and behavior of one or both parties.

Justice theories suggest that the opportunity for employee input should enhance satisfaction with the procedure. Reviews of the PDM literature indicate that these procedures do tend to enhance job satisfaction (Locke & Schweiger, 1979; Schweiger & Leana, 1986). The effects of PDM on task performance, however, are inconclusive (see Locke & Schweiger, 1979; Schweiger & Leana, 1986). Explanations of how participative procedures influence task performance can be roughly classified into three categories: cognitive, motivational, and social (Erez & Arad, 1986).

Cognitive Explanations. Cognitive explanations posit that PDM facilitates task performance by promoting information exchange between supervisors and supervisees (Bartlem & Locke, 1981; Locke & Schweiger, 1979; Maier, 1963). During information exchange, supervisors may communicate knowledge and skills that enhance their employees' capabilities for attaining specific objectives. Knowledgeable employees may also communicate information that influences the supervisor and results in a change in the objective that is ultimately established.

Evidence for the cognitive effects of participative procedures on performance comes from several studies. Earley (1985), for example, found that task information provided by the supervisor during participative goal setting enhanced task performance relative to a no-information condition. Campbell and Gingrich (1986) compared assigned and participative goal setting in simple and complex programming tasks. In the complex task, the provision of task-related information to the employee during the participative goal-setting process facilitated performance compared to participative procedures in simple task performance.

It is important to note that cognitive explanations presume that changes in an employee's

performance are due to changes in knowledge and skills brought about by information exchange. Tests of the cognitive effects of participative procedures on performance require that care be taken to ensure that changes in performance are not due to other factors, such as a change in the individual's goal. During information exchange, for example, information may be obtained that does not affect the employee's capability to perform the task but rather increases his or her commitment to the goal. While such an effect may be viewed positively from an organizational perspective, the failure to untangle cognitive and motivational components of such information-sharing procedures contributes to the mixed findings reported in the PDM literature. To test for cognitive explanations of performance improvement, it is necessary to ensure that the effects of information exchange on motivational mechanisms that could also affect performance are tested separately from cognitive effects.

Motivational Explanations. A second explanation for the effects of participation on task performance emphasizes the motivational effects of participative goal-setting procedures. Locke, Latham, and colleagues (e.g., Lee, Locke, & Latham, 1989; Locke & Schweiger, 1979) suggest that participative procedures can enhance task performance by increasing goal commitment, acceptance, and difficulty. Tests of motivational explanations typically tend to operationalize PDM using procedures that emphasize the motivational system—that is, employees are typically allowed to influence or select the goal level to be attained. Tests of the motivational effects of participative procedures show that such procedures enhance performance through their effects on goal properties (e.g., Erez, Earley, & Hulin, 1985).

Social Explanations. Social explanations of participative effects on performance have been advanced by several researchers (e.g., Latham

& Saari, 1979b). In this explanation, social influences, such as the presence of others or persuasive communications by peers or supervisors, are said to influence performance directly—through their effects on arousal—and indirectly—through their influence on variables that affect goal choice and commitment, such as through perceptions of contingencies. Adopting an expectancy framework, Neider (1980) found that participative goal setting resulted in higher perceived effort-performance relations than in the assigned goal-setting group. Along similar lines, Latham and Saari (1979a) found that participative procedures enhanced perceptions of supervisor supportiveness. Hollenbeck, Williams, and Klein (1989) found that commitment to assigned goals was higher when assignments were made public rather than private. Erez and Arad (1986) examined the independent and joint effects of information sharing and group interaction on quantity and quality of performance among subjects engaged in a simulated personnel selection task. Subjects in the group setting demonstrated higher performance quantity and incidental task learning compared to persons in the individual task setting. The authors suggest that group processes per se may increase performance motivation by increasing the proportion of total resources an individual is willing to commit to the task. It is not clear, however, which social psychological factors embedded in the group context contribute to the facilitative effect of group procedures on task performance. It may be, for example, that both group settings and stating a goal publicly enhance performance through their influence on arousal. Locke, Latham, and Erez (1988) and Lee et al. (1989) note, however, that the effects of social influence on performance tend to be small compared to motivational effects associated with goal level.

Concluding Comments. In the work motivation domain, PDM is usually discussed in the broader context of goal setting and leadership

(e.g., Locke et al., 1988; Vroom & Yetton, 1973). Nonetheless, PDM and organizational justice research findings complement one another in several ways. When procedures used to determine an outcome are perceived as fair, persons tend to report higher levels of satisfaction even when the outcome is not in their favor. Studies in the justice literature indicate that a potent feature of PDM, providing employees with the opportunity to influence a decision that will affect them, is frequently associated with enhanced perceptions of fairness and satisfaction. Similarly, PDM research from the goal-setting perspective indicates that providing employees with opportunities to influence or control outcomes by influencing the goal decision exerts positive attitudinal effects. Findings from the procedural justice domain further delineate other features of procedures that may enhance perceived fairness and satisfaction.

However, evidence from both goal-setting and justice areas regarding the effects of PDM on task performance is inconsistent. Most research in the goal-setting literature suggests that PDM procedures enhance performance through their influence on commitment to and choice of goals. If expectancy constructs influence goal choice and commitment (cf. Hollenbeck & Klein, 1987), then changes in perceived contingency relations associated with unfair procedures should affect performance indirectly through their influence on goal choice and commitment. In performance evaluation contexts, for example, opportunities to provide input to the decision maker can help strengthen the perception of a positive contingency between one's performance and the evaluation. Integration of the justice and goal-setting areas permits delineation of the intermediate processes by which fairness attitudes influence actions. The practical advantages of such an integration for goal-setting approaches lies in the potential for mapping the effects of specific procedural variations on performance through their influence on goal properties. For example, one might hypothesize that certain

information-sharing procedures that permit employees to obtain desired outcomes through processes other than task effort (e.g., persuasion) would weaken perceived performance-evaluation contingencies and reduce commitment to goals. Reductions in this commitment, in turn, would be expected to reduce task effort and performance.

The richness and diversity of PDM procedures in terms of the opportunities they provide for exerting beneficial cognitive, motivational, and social influences make it difficult to determine *when* these procedures will enhance performance. All else being equal, it is clear that information-sharing procedures that enhance an individual's capabilities for performing a task will enhance performance. From a motivational perspective, however, the fundamental question is how certain features of such procedures enhance on-task effort. The findings to date suggest two routes: through goal properties and through arousal-mediated changes in on-task effort allocations. In addition to these processes, further understanding of how PDM procedures influence performance will require greater attention to dynamic processes. As Lind and Tyler (1988) note, repeated opportunities to provide input that clearly has no impact on the decision or makes no difference to employees' outcomes are quickly interpreted by employees as shams. Similarly, the advantages of PDM procedures that benefit performance by increasing arousal may dissipate if used too frequently. The potential advantage of PDM used in goal-setting studies may be that such procedures shift the emphasis to internal outcomes, such as pride in one's accomplishments over time. When the outcome of performance is primarily internal, goal commitment is much more likely to remain high over time.

Summary of Need-Motive-Value Approaches

The most striking observation about approaches in the need-motive-value paradigm is the trend toward conceptualizing needs,

motives, and values as flexible personal goals that vary in accordance with the individual's dispositional makeup and cognitive construction of the environment. In need-based models, research has focused on the developmental and structural characteristics of individuals' goals over time and across work contexts. Evidence in the intrinsic motivation domain suggests a new conceptualization of motives based on an individual's goal orientation before and during task engagement. An individual's goals for task engagement appear to set the stage for how information is processed. In addition, Csikszentmihayli's research suggests that goals during task engagement influence affect and task performance. Research in the organizational justice domain suggests that responses to deviations from fairness depend on the individual's goals or most salient concerns. Whereas earlier theories emphasized the effects of stable, ubiquitous motives and values on cognitive processing, recent theories stress the effects of selective stimulation of motives and values on motivational processing. For example, an individual's goals for task engagement may heighten the salience of mastery motives. Activation of mastery motives in turn affects cognitive processing of task-relevant information.

Contemporary research in this paradigm supports the conclusion that motives play an important role in motivation. Specifically, motives influence human information processing and affect throughout the motivational sequence leading to behavioral change. Research in this paradigm focuses primarily on the effects of motives as antecedents to goal choice and as determinants of how feedback is interpreted. As such, this research contributes to understanding the role of "hot" cognitions and complements theoretical formulations that predict behavioral choices and execution of action; absent, however, is convincing evidence that motive models are sufficient for predicting behavior. Some mediating process or constructs are needed to improve behavior

prediction. Recognizing this inadequacy, several researchers have moved away from overt measures of behavior and task performance altogether. Although some view this development as evidence for the ineffectiveness of these models, a more optimistic view is that these models provide essential but incomplete information needed for the development of comprehensive motivation theories. Indeed, failure to take account of findings from this paradigm will limit the effectiveness of choice and action control models discussed in later sections.

The number of empirical studies testing the validity of traditional theories in this paradigm has declined substantially over the past decade. Only a few studies have investigated the validity of need fulfillment theories, Adams' equity theory, and motivational processes proposed in job characteristics theory. Instead, research has been conducted in new areas such as organizational justice and motives in achievement contexts. Research programs, such as Csikszentmihayli's studies on characteristics of enjoyable task activities and Lepper's work on motivational processing during learning, cross theoretical boundaries, focus on issues with widespread practical implications, and emphasize an inductive approach to theory development. The diminished interest in traditional formulations and the increasing use of new frameworks and methods suggests a period of reformulation and potentially important growth in this paradigm. In particular, one topic with substantial implications for industrial and organizational psychology concerns the relationship between goal orientation and individual differences in dispositional tendencies. Although motives can be made more or less salient to the individual through environmental manipulations, it is unclear whether and how individual differences in related dispositional tendencies, such as work orientation, affect the boundaries of motive manipulations (see Kanfer, 1990). Pragmatically, such knowledge would be very helpful

in understanding who might benefit most from which types of training programs and forms of performance feedback.

Cognitive Choice Approaches

Choice theories have enjoyed great popularity over the past twenty years. Decisional choice theories found in industrial and organizational psychology are part of a larger family of Expectancy $\times$ Value ($E \times V$) theories that have their roots in the cognitive theories proposed by Edwards (1961), Lewin, Dembo, Festinger, and Sears (1944), Rotter (1954), and Tolman (1955). $E \times V$ theories emphasize two key determinants of choice and action: (a) subjective expectations and (b) subjective valuation of expected consequences associated with various alternative actions.

A variety of $E \times V$ theories have been formulated. Subjective expected utility theories, common in decision-making research, focus on how expectations and perceived utilities for alternative courses of action develop and are integrated (e.g., see Mitchell & Beach, 1977; Stevenson, Busemeyer, & Naylor, 1990). In social psychology, Fishbein and Ajzen (1975) and Triandis (1979) have developed and tested $E \times V$ models that highlight social and interpersonal determinants of expectations and valences. In industrial and organizational psychology, Vroom's (1964) model represents the best known $E \times V$ model. Expansions and modifications of this model during the 1960s and 1970s by Campbell and Pritchard (1976), Graen (1969), Porter and Lawler (1968), and others (see Mitchell, 1982b) generated a large body of research concerned with predicting task performance and occupational choice (see Campbell and Pritchard, 1976; Mitchell, 1974, 1982a; Schwab, Olian-Gottlieb, & Heneman, 1979; Wanous, Keon, & Latack, 1983 for reviews). In achievement motivation, Atkinson's (1957) model of risk-taking behavior and recent elaborations

of this model (Atkinson & Birch, 1970; Atkinson & Feather, 1966; Heckhausen, 1977; Heckhausen, Schmalt, & Schneider, 1985) continue to have an important influence on behavior in a wide range of achievement contexts.

Various $E \times V$ theories share several assumptions. $E \times V$ formulations hold that persons behave hedonistically when choosing between tasks and/or levels of effort. That is, persons strive to maximize positive affect and minimize negative affect by engaging in behaviors to attain outcomes associated with the greatest perceived positive overall value or utility. Although disagreement persists regarding whether persons attempt to maximize or rather simply "satisfice," the hedonic basis for choice is found in all $E \times V$ models.

$E \times V$ models are individual, purposive choice models used to predict individual *decisions* or choice instead of *task* behavior or performance. Effects of an individual's choice on subsequent action depend on other factors such as situational constraints and ease of implementing the choice. $E \times V$ models cannot easily handle situations in which the choice of options is either perceived to be, or is objectively, severely constrained (Mitchell, 1982a).

Most $E \times V$ formulations, including Vroom's, are episodic and focus on the individual's expectancies and valences for specific behaviors in specific situations. As noted by Atkinson and Birch (1970), episodic models cannot account for either individual behavior in response to a pattern of events or changes in behavior that occur when expectancies and incentives have not changed (see Kuhl & Atkinson, 1984). The episodic nature of $E \times V$ models has proved to be a major limitation in both their theoretical and practical utility.

Another problem with these models concerns their underlying mathematical properties. In particular, evidence suggests that the proposition of a multiplicative integration of expectancies and valences does not hold for all individuals and even changes within individuals. Harrell and Stahl (1986) and Stahl and

Harrell (1981), for example, found that a majority of persons integrated expectancy and valence information in ways consistent with an additive model instead of a multiplicative model; both studies showed differences between individuals in their use of additive or multiplicative strategies. Shiflett and Cohen (cited in Landy & Becker, 1987) found that within individuals, type of criterion affected the combinatorial strategy used.

Individuals also apparently differ in the extent to which they use expectancy and instrumentality information. For example, Rynes and Lawler (1983), using a policy-capturing method to investigate decision processes in job choice, found that individuals differed in the extent to which they used this information during decision making. Similar results were reported by Harrell and Stahl (1986) in a reanalysis of their data.

These findings suggest that both individual differences and situational factors can systematically affect which strategy persons use when choosing between effort levels, tasks, or jobs. Individual differences in intellectual abilities, for example, might affect the use of strategies that vary in their cognitive demands on memory structures. Use of different strategies, in turn, might yield different levels of motivational force. Future study of situational factors and individual differences variables that influence use of particular strategies might yield interesting results.

Kuhl and Atkinson (1984) suggested grouping $E \times V$ theories into three broad categories: (a) the classic cognitive-interactional approach, (b) the elaborated cognitive-episodic approach, and (c) the dynamics of action approach.

The *classic cognitive-interactional approach* includes theories emphasizing the role of individual differences and person-situation interaction effects on behavior. Two influential theories in this category are Rotter's (1954) social learning theory and Atkinson's (1957) risk-taking model of achievement striving.

The *elaborated cognitive-episodic approach* derives from classical theories and focuses on identifying the cognitive variables and processes involved in motivation. Elaborations of achievement motivation theory by Heckhausen (1977; Heckhausen et al., 1985), Raynor (1969, 1978; Raynor & Entin, 1982; Raynor & Roeder, 1987), Weiner (1985, 1986), and Vroom's VIE theory are included in this category. The majority of $E \times V$ research in organizational behavior falls in this category. Finally, the *dynamics of action approach* taken by Atkinson and Birch (1970, 1974, 1978) represents a distinct theoretical development in motivational psychology that emphasizes the multiple, dynamic effects of motivational tendencies as manifested in the direction and duration of actions. The following section highlights advances and issues raised in each of Kuhl and Atkinson's (1984) three groupings.

The Classic Cognitive-Interactional Approach

Atkinson's (1957) original theory of achievement motivation proposed that both an individual's choice among tasks and task persistence are determined by stable individual differences, expectations of task success, and the perceived valence of success. For Atkinson, motives to achieve success and avoid failure represent the fundamental individual differences variables. Because many contemporary motivation theories build upon Atkinson's model, a brief review of the basic elements of the original theory will follow (see Atkinson, 1957, Atkinson & Feather, 1966, Feather, 1982, and Kuhl, 1982, for more extensive reviews of the early achievement motivation literature).

Atkinson's Theory of Achievement Motivation. Atkinson (1957) proposed that an individual's tendency to approach a task (T_j) was determined by four elements: (a) motive to achieve success (M_s); (b) motive to avoid failure (M_f); (c) perceived probability of task success

(P_s); and (d) the incentive value of task success (I_s). The value of success is positively correlated with the difficulty of the task. Thus, the incentive value of success is represented as the complement of the probability of success ($I_s = 1 - P_s$). Combining these elements, Atkinson proposed the following formula:

$$T_r = \sum (M_s - M_f) \times P_s \times I_s$$

As implied by the formula, persons differ in the extent to which motives for success are stronger than motives to avoid failure. The theory predicts that persons classified as success oriented (i.e., $M_s > M_f$) prefer and perform best on tasks of intermediate difficulty and persist longer at the task in the face of failure than persons classified as failure-oriented (i.e., $M_f > M_s$). Conversely, failure-oriented persons prefer tasks considered either easy or difficult.

Although investigations of Atkinson's original model are reviewed elsewhere (see Atkinson & Feather, 1966; Campbell & Pritchard, 1976), findings generally tend to support basic predictions of Atkinson's model in carefully designed achievement contexts, but less robust support for the model is obtained in less constrained settings. Problems associated with motive assessment and other limitations of Atkinson's original model are described in Heckhausen (1977), Miner (1980), and Weiner (1980, 1986).

The Cognitive-Episodic Approach

Theories in this category extend Atkinson's 1957 formulation and attempt to address difficulties with the original model. Two notable elaborations in these theories are the conceptualization of the valence term and the effects of an individual's future goals on choice behavior.

By defining valence as inversely related to subjective probability of success, Atkinson's

original need achievement model limited predictions of behavior to contexts in which self-evaluation outcomes were most salient—that is, to pure achievement situations. Two influential theories addressing this limitation were proposed by Heckhausen (1977) and Vroom (1964). Because Vroom's model is best known in organizational psychology, the following discussion will focus on Vroom's formulation.

Atkinson's original need achievement theory and Vroom's model differ in the way that instrumentality is conceptualized. In Atkinson's theory, incentives are defined solely as the probability of task success or failure; in Vroom's model, valence of outcomes is assessed independently of expectations of task success. (Similar to Vroom, Heckhausen [1977] conceptualized valence as an expectancy of the relationship between an outcome and various consequences of differing incentive values.)

Vroom's Valence-Instrumentality-Expectancy Theory. Vroom (1964) developed a theory—valence-instrumentality-expectancy (VIE) theory—to predict choices between jobs, tasks, and effort levels that yield the highest perceived benefits. According to Vroom (1964), an individual's choice depends on three sets of variables: (a) perceived effort-performance expectancies, (b) perceived instrumentalities, and (c) evaluation of outcomes on the basis of valences. Effort-performance expectancies reflect the individual's perceptions about the relationship between levels of effort and performance (Ilgen, Nebeker, & Pritchard, 1981). *Performance* is often referred to as a first-level outcome. *Instrumentalities* refer to perceived relationships between levels of performance and second-level outcomes such as pay, promotion, praise, or feelings of accomplishment. *Valence* refers to the anticipated attractiveness of each second-level outcome.

Motivational force and choice result from the combination of perceived expectancies, instrumentalities, and valences. For example,

motivational force, or choice among levels of effort, is expected to be greatest when high levels of effort are perceived to be associated with high levels of performance, which in turn lead to valued outcomes such as pay. When predicting job choice using the valence model, the expectancy variable plays no role because the relation between effort and performance, for example, accepting a job offer, is always high. Vroom further proposed a multiplicative relation between expectancies and instrumentalities. Thus, perceptions of either a noncontingency in the relation between effort and performance or correlations near zero between performance and outcomes would result in zero or near zero motivational force for the task in question (see Vroom, 1964).

Numerous studies conducted on Vroom's theory during the 1960s and 1970s provide general support for his formulations (see reviews by Campbell & Pritchard, 1976; Mitchell, 1974, 1982a; Wanous, Keon, & Latack, 1983). However, stronger support has been shown for predictions of job choice than for predictions of task effort or job performance (Mitchell, 1982a). Over the years a number of methodological and theoretical problems were identified (see Campbell & Pritchard, 1976; Kopelman, 1977; Mitchell, 1982a; Schwab et al., 1979). Research on these problems resulted in revisions to the original Vroom formulations that emphasized the distinction between valences associated with first-level outcomes and second-level outcomes (Campbell & Pritchard, 1976; Galbraith & Cummings, 1967; Graen, 1969). Porter and Lawler (1968; Lawler, 1973) also expanded Vroom's force model to account for the historical effects of performance on expectations and instrumentalities in future choice contexts. Nonetheless, the basic parameters of Vroom's model are present in virtually all revisions and elaborations of VIE theory.

In addition to revisions of VIE theory, identification of problems has also markedly influenced the direction of expectancy theory

research in industrial and organizational psychology. During the past 10 years, for example, the preponderance of research on E x V theory in organizational psychology has focused on methodological problems and tests of specific E x V propositions. Research on these issues may be classified in to four categories: (a) the use of within-versus between-subject research designs, (b) measurement of model components, (c) information integration strategies, and (d) individual differences.

Between-subject Versus Within-subject Designs. Tests of the predictive validity of E x V models have generally shown correlations of less than .30 between individuals' predicted effort and their actual effort (Mitchell, 1982a). Studies conducted before the mid-1970s typically used a between-subject analytic strategy where motivational forcescores for each behavior were correlated across subjects with an effort criterion. Vroom's theory, however, conceptualizes force as a within-subject choice between alternative courses of action. Thus, between-subject analyses misrepresent the theory. In response to this problem, recent studies adopted a within-subject strategy or have compared the two strategies. Kennedy, Fossum, and White (1983) and Muchinsky (1977) compared between- and within-subject methods and found that the highest predictive validity coefficients were obtained using the within-subject procedure. Matsui and his colleagues (Matsui, Kagawa, Nagamatsu, & Ohtsuka, 1977; Matsui & Ohtsuka, 1978) used a within-subject procedure to obtain mean predictive validity coefficients in the .50 to .70 range.

Measurement of Model Components. Another issue receiving attention involves the measurement of expectancy, instrumentality, and valence variables. Ilgen, Nebeker, and Pritchard (1981), in a study designed to identify the advantages and disadvantages of various formats for measuring the components of

Vroom's model, established a simulated work setting with 40 temporary employees performing clerical tasks. Fifteen scale measures were administered at different points in time. Test-retest reliabilities were obtained by having employees complete measures twice, one week apart; validity was assessed by comparing the effects of two types of pay systems (instrumentality) and two levels of task difficulty (expectancy) on ratings obtained for each component.

The study revealed that the most stable and reliable measure for assessing expectancy was a frequency format, that is, how frequently a given level of effort would result in each of six different levels of performance. In addition, the authors found that asking persons about performance at only the highest level of effort also provided a highly reliable expectancy measure. They suggested that this "maximal effort" expectancy measure might be just as effective as the more complicated frequency and probability formats. Moreover, they found that task difficulty had a significant effect on the validity of frequency and probability measures of expectancy.

Ilgen et al. (1981) also compared four instrumentality and seven valence measures. Unlike the results for expectancy measures, frequency and probability formats were found to be the best for instrumentality measures. Of the valence measures, the attractiveness format, that is, ratings of the attractiveness of different levels and different types of outcomes, and the behavioral anchor format, that is, ratings of different levels and types of outcomes using a behaviorally anchored five-point rating scale, yielded the most reliable results. Of these two valence measures, Ilgen et al. preferred the attractiveness format because of its ease of administration and comparability across studies.

Raynor's Theory of Future Orientation Effects and Achievement Motivation. Raynor (1969, 1978; Raynor & Entin, 1982;

Raynor & Roeder, 1987) expanded Atkinson's original formulation to deal with the effects of future orientation on motivation in immediate task activity. Raynor asserted that motivation for an immediate activity is partly determined by the individual's perception of how immediate task success will affect his or her opportunity to attain related future goals. Raynor further suggested that many personal goals, such as career advancement, require performance of a hierarchical series of tasks in which success at each task serves as a prerequisite for proceeding to the next task. In these *contingent-path* situations, an individual's motivation to perform depends not only on motives and incentives for the immediate task, but also on the number of steps and the position of the task in the goal path.

In Raynor's (1969) theory, Atkinson's task choice predictions represent the most simple case: a *noncontingent* path in which persons perceive that performance on each task is unrelated to the opportunity to proceed to the next task in a series. Raynor and Entin (1982) represented the influence of future orientation and achievement motivation in the following formula:

$$T_r = \sum [(M_s - M_f) \times \sum (P_{s_{1,n}} \times I_{s_n})]$$

The individual's tendency to engage in the task (T_r) is represented as the product of achievement striving ($M_s - M_f$) and the sum of the perceived probabilities of success (P_s) by the incentive value of success (I_s) for *each* task in the path.

Raynor's theory leads to several interesting hypotheses (see Raynor & Entin, 1982, for further discussion of implications of the theory). First, motivation for first-step, immediate task performance in contingent paths should be higher than motivation in noncontingent paths because of the contribution of motivational tendencies from steps further along the path. Second, success-oriented individuals should

prefer easy as opposed to more difficult tasks in contingent path situations, and that (similar to Atkinson's [1957] original model) achievement-oriented subjects should prefer moderately difficult tasks in laboratory settings where task performance typically is unrelated to the opportunity to proceed to the next task. Third, as the number of steps in a path increase, individual differences in achievement motives should exert stronger effects on task performance. As a consequence, achievement-oriented persons should demonstrate higher levels of motivation than failure-oriented persons on the first step in longer contingent paths. Raynor and Roeder (1987) term this the *task effect* and depicted it with the equation $T_r = (M_s - M_f) \times N$, where N is the number of steps in the contingent path.

Raynor and his colleagues (e.g., see Raynor & Entin, 1982; Raynor & Roeder, 1987) conducted several studies investigating predictions of his extended model with respect to task choice, intensity of task performance, and persistence. In many of these studies, individual differences in achievement motives were assessed using a modified form of the *Thematic Apperception Test* (McClelland, Atkinson, Clark, & Lowell, 1953) as well as a measure of test anxiety (e.g., *Test Anxiety Questionnaire*, Mandler & Sarason, 1952). Raynor and Entin (1982), for example, examined the effects of contingent and noncontingent paths on task persistence by asking subjects to perform three sets of arithmetic tasks after telling them that each set was of increasing difficulty. To create a contingent path condition, they instructed half the subjects to attempt as many problems in each set as they wished but that they must correctly complete the attempted problems before continuing to the next set. Subjects in the noncontingent path condition were told they could proceed to a set with more difficult problems even if they failed problems in an earlier set. Persistence was assessed by computing the number of problems subjects attempted before advancing to the next set of more difficult

problems. Consistent with the theory, success-oriented subjects in the contingent path condition tried more problems in the initial set of problems than did success-oriented subjects in the noncontingent path condition.

The effects of number of task steps on the motive-performance relation may be easily confounded with the time required to complete the task sequence. As the number of steps increases, anticipated time to achieve the future goal also increases. Raynor and Roeder (1987) call this the *time effect*, asserting that it can be predicted from the equation $T_r = (M_s - M_f)/T$, where T is the anticipated time to complete the objective. The time effect indicates that increasing the time it takes to achieve a goal should decrease the influence of motive orientation. When considered along with the task effect, increasing the number of contingent steps required to attain an objective should enhance motivation but increasing the anticipated time required to achieve the goal should decrease motivation (Raynor & Roeder, 1987)—that is, the beneficial effects of contingent paths on initial motivation may be offset by the length of time required to achieve the ultimate goal.

Support for this proposition was obtained by Gjesme (1974, 1981) and Pearlson (1982). Pearlson, for example, decomposed the effects of time and task influences in a laboratory study of performance on cognitive ability measures among male college students. Pearlson found evidence supporting the task effect for temporally short contingent paths but not for paths involving longer time to future goal attainment.

Raynor's theory implies that future goals provide a structure for outcome relations in organizational $E \times V$ models. Raynor's work also suggests that findings obtained in laboratory studies characterized by noncontingent path activities may often underestimate the role of individual differences in motive orientation. The cumulative research findings on future orientation indicate that motive effects can be attenuated or accentuated depending on

environmental and cognitive structuring of tasks requisite for attaining personal goals. For example, individual differences in achievement might be more pronounced in work settings where personal goals are characterized by a series of contingent task performances.

Other aspects of Raynor's theory and associated research also have interesting organizational implications. For example, Raynor's approach suggests that achievement-oriented persons choose less difficult tasks (in the first step of a path) when success is required for continued pursuit of a goal. It also suggests that intrinsic outcomes play a more central role early in a contingent path, but that extrinsic outcomes become more dominant as the person moves closer to attaining a goal (see Raynor & Entin, 1982).

Comparison of Raynor's and Vroom's Models. Raynor's contingent-noncontingent path concepts can be conceptually integrated with Vroom's model. In particular, Raynor's distinction appears to emphasize a special case of Vroom's theory when the perceived instrumentality of performance is either zero (performance is insufficient for proceeding to the next task required for goal attainment) or one (performance on a task permits an opportunity for advancing to the next stage in goal attainment). Analogous to the input-outcome concepts discussed in justice theories, persons may view performance success as necessary for attaining distal outcomes such as promotions and desirable work assignments.

Weiner's Attribution Theory. Another area of theoretical activity stems from work on the role of attributions within cognitive choice models (e.g., Weiner, 1974). In these formulations, attributional phenomena influence behavior through their effects on expectancies. Emphasis is also placed on the diversity of affective states stemming from distinct attributional patterns.

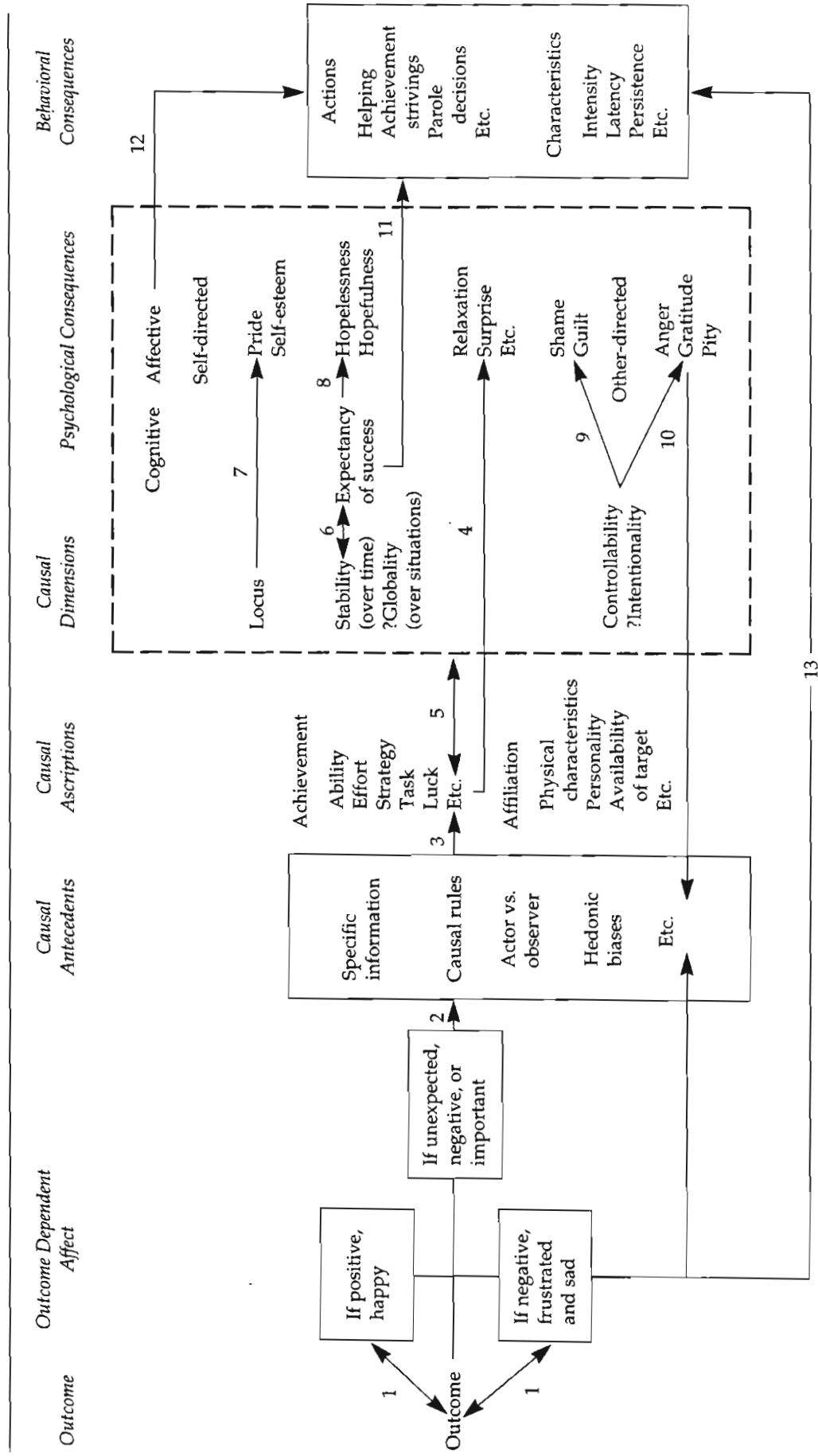
Original Model. Attribution research focuses on the causal explanations persons make about past behaviors. People are posited to explain their own behavior in terms of four causal categories—effort, ability, task difficulty, and luck—which are then distinguished along two dimensions: control and stability (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971). Effort and ability attributions represent internal (control) explanations, while task difficulty and luck represent external (control) explanations. Also, effort and luck represent internal and external *unstable* causes, respectively, while ability and task difficulty represent internal and external *stable* causes, respectively.

A number of studies using correlational and experimental methods show that attributional patterns affect expectancies for future performance (for a review, see Weiner, 1986). Many studies have concentrated on the effects of attributions following task failure. Failure attributed to unstable causes (i.e., effort and bad luck) has been shown to be positively related to higher expectations for subsequent performance. On the other hand, attributions to stable causes (i.e., ability and task difficulty) following failure are associated with lower expectancies for future performance. When encountering task success, attributions to stable causes enhance future performance expectancies; attributions to unstable causes tend to lower performance expectancies.

Expanded Model. Recently, Weiner (1985, 1986) proposed an expanded attributional theory of motivation and emotion. Two unique features of this formulation involve revision of the dimensional structure underlying causal explanations and further specification of the link between attributional patterns, affect, and behavior. Weiner's (1985, 1986) attributional theory of motivation and emotion is represented in Figure 1. The following discussion is limited to the causal dimensions of the model because of their novel implications for work

FIGURE 1

Weiner's Attributional Theory of Motivation and Emotion



motivation research (see Weiner, 1986, for a full review).

Weiner reviewed evidence from multidimensional scaling, factor-analytic, and concept formation literatures and concluded that three causal dimensions, rather than two, are needed to explain the data. According to Weiner, information gained from performance feedback and rewards is filtered through three causal attributional dimensions: (a) locus of causality, (b) stability of outcomes, and (c) perceived controllability. Consistent with earlier attributional models, *locus of causality* refers to the extent to which outcomes are perceived as internally or externally mediated. *Stability* is defined as the extent to which outcomes are viewed as enduring across time and situations. *Controllability* refers to the extent to which outcomes are perceived to be under volitional control. These three causes are located in dimensional space to yield perceived causes with different profiles (Weiner, 1986).

The inclusion of a controllability dimension suggests that outcomes may be perceived to have internal and unstable causes yet may fall within the individual's volitional control. For example, a new salesperson may perceive his or her failure to persuade a client to buy a company product as due to lack of adequate preparation (internal, unstable, and controllable). According to Weiner's theory, the perception of the cause as unstable should protect expectations for success with future clients and lead the salesperson to be hopeful, despite lowered self-esteem and possible feelings of guilt for not having prepared. Given such a pattern, performance motivation is expected to be enhanced with the next client.

On the other hand, long-tenured employees who repeatedly fail to close a sale are more likely to ascribe the cause of their failure with a prospective client as due to ability. This causal ascription is characterized by stability, internality, and uncontrollability. Following Weiner's model, these employees are likely to anticipate repeated failure in the future,

hopelessness, diminished self-esteem, and shame.

The three-dimensional structure yields a number of interesting hypotheses about the effects of attributional patterns on expectations of success and behavior change. Weiner suggests that changes in expectancies for future success are influenced primarily by perceived stability of outcome causes. Attributions with high perceived stability, such as might be made when task difficulty is fixed, imply increased certainty that the same outcome will be repeated in future trials. Outcome certainty strengthens expectations that future performance will be in the same direction as past performance (see Weiner, 1986, for a review of empirical evidence on this point). Furthermore, as implied in the preceding example, attributions of instability should lead to outcome uncertainty and reduce the impact of prior success and/or failure on future expectations for success. Extrapolating from Weiner's analysis, enhancing perceptions of outcome instability among poorer performers, perhaps through feedback emphasizing performance improvement instead of failure or varying task difficulty, should strengthen performance motivation by reducing certainty of failure.

Weiner's theory indicates that differing perceptions of causality influence motivation through changes in expectations and changes in the valence of goal attainment. An important determinant of changes in the latter stems from the effects of attributions on affect. According to Weiner, attributional processes lead to expression of differentiated self- and other-directed emotions, such as anger, pity, guilt, gratitude, and shame. These affects are distinguished from basic or "primitive" emotional evaluations, generated upon receipt of the outcome (happiness for positive outcomes; sadness for negative outcomes). Attributional processes have their greatest import when outcomes are negative, unexpected, or important. More differentiated emotions, contributing to performance motivation, result from

causal ascriptions to locus of causality and controllability. In the case of anger, for example, Weiner (1986) suggests that negative outcomes elicit anger when the outcome is perceived to be due to factors controllable by others. Such affective responses may decrease subsequent performance motivation. Weiner's model indicates that affective responses help determine subsequent motivation in achievement settings. In this perspective, an individual's pattern of affective responses represents important psychological determinants of action that require further attention. More broadly, Weiner's theory suggests that investigators should look for and expect to observe variability in the attractiveness of outcomes across occasions based on the individual's performance history in specific achievement settings.

Implications for Organizational Behavior. Several studies have investigated the role of attributional patterns on task interest and work performance (Campbell & Pritchard, 1976; Pinder, 1984). Much of this work has examined the effects of the internal-external/stable-unstable pattern of attributions for task outcomes. Both Weiner's (1985, 1986) theory and Dweck and Leggett's (1988) social-cognitive theory of personality and motivation suggest that ability attributions may be characterized as either controllable or uncontrollable. Reformulations of ability as controllable make sense when considering how persons explain outcomes in a variety of work situations. Persons starting a new job or assignment, for example, are frequently told that task-specific abilities reflected in performance develop with practice and sustained effort (i.e., fostering attributions of internality, stability, and controllability of outcomes). Evidence indicating the effects of these varying attributional explanations of failure outcomes with respect to ability is presented by Dweck and her colleagues (see Dweck & Leggett, 1988).

The Dynamics of Action Approach. Recognizing that motivational effects occur within

a "stream of behavior," Atkinson and Birch (1970, 1974, 1978) developed a theory to explain and predict change and stability in the direction of behavior over time. As Kuhl and Atkinson (1984) point out, the dynamics of action theory differs from classic and elaborated achievement models by emphasizing the historical continuity in motivated behavior.

Assumptions and Constructs. Atkinson and Birch assume that multiple motivational tendencies operate continuously. A person's behavior at any particular moment is assumed to reflect the motivational tendency strongest at that time. Changes in the direction of behavior reflect changes in the dominant behavioral tendency. According to Atkinson and Birch, motivational tendencies gain and lose dominance based on several variables that govern the behavioral switching process. In their theory, arousing or instigating forces increase particular motivational tendencies over time. Thus, persons switch to another activity if the cumulative motivational tendency of the alternative activity surpasses the activity currently being performed. This parameter is useful in explaining why activities with lower valence may be performed without direct instruction. For example, a salesperson may "spontaneously" switch from an attractive activity, such as calling customers, to one involving completing required paperwork (an activity with low valence) after allowing such paperwork to accumulate for a few days.

Consummatory forces counter the growth of instigating force and decrease particular motivational tendencies over time. The consummatory force of an activity depends on the nature of the task and the strength of the tendency. Engaging in some activities will result in more rapid reduction of the motivational tendency than other activities. Kuhl and Atkinson (1984), for example, suggest that succeeding at a task should have greater consummatory value than failing at a task. Termed the *negaction principle*, this proposition focuses on the motivational

processes that reduce rather than arouse motivation.

A change in the direction of behavior reflects an increase in the instigating strength of the new behavior relative to competing and previously dominant tendencies. Since consummatory forces come into play as behavior associated with them is carried out, the probability of behavioral switching should increase as the dominant tendency is executed.

Inhibitory forces and forces of resistance refer to the individual's tendency to avoid activities associated with previous negative experiences. Situational factors and individual differences variables determine the strength of these forces. Dynamics of action theory differs from traditional and cognitive-episodic theories in several ways (Kuhl & Atkinson, 1984). First, cognitive-episodic theories predict that persons will engage in behaviors with the highest expected value. The cumulative aspect of the instigating force parameter can be used to explain why actions with lower expected value occasionally occur. Second, cognitive-episodic theories focus on the instigating force underlying action; Atkinson and Birch's (1970, 1978) theory formally proposes a second process that systematically reduces motivation. Third, the time an individual allocates to an activity in cognitive-episodic theories is posited to change only with a change in expected values. Dynamics of action theory proposes that time spent on an activity will also vary due to continuously changing strengths of motivational tendencies. The implication of the dynamic model is that behavioral change, rather than behavioral consistency, represents the normal state of affairs.

Evidence. Blankenship (1982) investigated the consummatory parameter in the dynamics of action approach. Consistent with the theory, she found that the consummatory value of success (assessed via task switching) was greater for easy tasks than for difficult tasks when the instigating force among the groups

was held constant. The role of the consummatory parameter in prediction of task preference (and the theoretically proposed delay of this effect as a function of individual differences in achievement orientation) suggests that adoption of more challenging task assignments may occur without intervention among success-oriented persons but may be substantially delayed among those most motivated to avoid failure (Blankenship, 1987).

Only one organizational study (Fichman, 1988) to date has used the Atkinson and Birch approach. Fichman used the dynamics of action perspective to link work attendance and absenteeism, treating absence and attendance at work as consequences of an individual's allocation of time across competing behavioral activities and developing predictions regarding the determinants and duration of attendance periods and absence among unionized coal miners. His results provided partial support for specific predictions of the Atkinson and Birch approach. More importantly, however, Fichman's study illustrates how dynamics of action theory can be used to develop predictions about work behavior *patterns* in multitask jobs (e.g., sales).

Summary of Cognitive Choice Approaches

The cognitive choice paradigm has witnessed substantial theoretical and empirical activity over the past 15 years. Most theoretical developments, such as Raynor's future orientation theory, Weiner's attributional theory of motivation and emotion, and Atkinson and Birch's dynamics of action theory, expand on Atkinson's (1957) original formulation and propose additional motivational constructs to broaden the scope of the cognitive choice paradigm. In Raynor's theory, the inclusion of a path construct enables prediction of when individual differences in achievement motivation are important determinants of behavior. In Weiner's theory, emphasis on the attributional makeup of expectations suggests a means of more precisely mapping affective responses to

components of the expectation construct. Atkinson and Birch's dynamics of action theory assimilates expectations and valences in a broader motivational framework that stipulates additional parameters governing the decline of behavioral tendencies and shifts in the direction of behavior. The common bond among these approaches is their inclusion of expectancy and value constructs; empirical research stemming from each approach addresses different but complementary segments of the nomological network of motivational constructs.

The theoretical developments stemming from Atkinson's achievement motivation model have occurred primarily in the achievement and motivational psychology domain. Unfortunately, $E \times V$ researchers in organizational psychology have often tended to neglect theoretical developments in other domains (Feather, 1982; see Fichman, 1988, and Naylor, Pritchard, & Ilgen, 1980, for exceptions).

Over the past 15 years, $E \times V$ research in industrial and organizational psychology has focused largely on increasing the precision of Vroom-based models by using within-subject methodology, refining measures of theory components, and exploring boundaries of the theory associated with propositions about how persons integrate expectancies and valences. Investigations of boundary conditions suggest a number of interesting questions about the expectation construct, such as (a) which cues people use to develop expectations, (b) what form these expectations take, (c) what mechanisms people use to cull information from their environment to form expectations, and (d) which individual differences and situational factors play an important role in the integration of information leading to choice behavior. The finding that information integration strategies differ both within and between individuals might lead to research that results in more accurate predictions of behavior and knowledge about level of motivation, given the circumstances and information integration

strategy used. For example, an additive integration strategy might yield a higher level of motivation when tasks are very difficult or perceived to be less attractive. Such knowledge could also lead to interventions that enhance the level of motivation by teaching people to use particular information integration strategies in particular circumstances or by reinforcing their use.

Choice is an important construct in cognitive choice theories. Yet many researchers noted that the correspondence between choice and behavior is often weakened by motivational processes subsequent to the intention (e.g., Bandura, 1986; Kuhl, 1985). This problem is minimized in settings where choices can be readily implemented, such as in choosing to accept a job offer. If, however, cognitive choice theories are to contribute to the accurate prediction of continuous behavior, they will need to incorporate volitional constructs pertaining to the implementation of an intention. They will also need to delineate the relations between determinants of choice and determinants of goal-directed behaviors. Dynamics of action theory (Atkinson & Birch, 1970, 1974, 1978) represents an important first step in this direction.

Self-regulation–Metacognition Approaches

Self-regulation and metacognition are generally considered to be higher level cognitive processes. Specifically, these processes mediate cognitive and affective functioning for the purpose of attaining goals (F. H. Kanfer, 1970; also see Brown, 1987)—that is, once a goal is chosen, these processes guide the allocation of time and effort across covert and overt activities directed toward attaining the goal. Self-regulation theories concentrate on both the determinants and consequences of these executive processes for behavioral change, particularly in conflict situations (e.g., delay of

gratification). Metacognitive theories have a still broader perspective, viewing behavior as a function of both executive, self-regulatory processes and the individual's knowledge of his or her own cognitive processes (see Weinert & Kluwe, 1987). In contrast to need-motive-value and cognitive choice paradigms, theories in the self-regulation–metacognition paradigm focus primarily on processes that govern the impact of goals on behavior, not on processes that determine choice of goals.

The goal construct is central to theories in this paradigm. Bandura (1986) noted that one's capacity to symbolically represent desired end-states as goals enables the exercise of cognitive control over thoughts and actions. Locke (1967; Locke, Shaw, Saari, & Latham, 1981) views goals as the most potent determinant of action. In Kanfer's (1970; Kanfer & Schefft, 1988) and Carver and Scheier's (1981) theories of self-regulation, an individual's performance standards (i.e., goals) represent a critical component of the self-regulation process. Kuhl and his colleagues (e.g., Heckhausen & Kuhl, 1985; Kuhl, 1986) accord goals a pivotal role in motivational processing and have further distinguished between intentions and goals: Intentions gain control over behavior only when intentional strength passes a critical threshold; at this point, intentions become goals that direct action.

Research in the self-regulation–metacognition paradigm has gained momentum in several subdisciplines of psychology. During the late 1960s and early 1970s, self-regulation theories and research were closely associated with advances made in social learning/clinical and goal-setting areas. More recently, these have been associated with social psychology. Metacognitive conceptions, however, have been typically associated with achievement motivation and cognitive, educational, and developmental psychology research.

Achievement motivation research has focused on identifying "metamotivational" (Kuhl & Kraska, 1989) individual differences variables, such as action-state orientation, and

metacognitive processes that affect goal-directed behavior. In the developmental domain, research has emphasized the role of self-regulation in delay of gratification and in metacognitive bases for learning and acquisition of cognitive knowledge (e.g., see Brown, 1978, 1987; Campione, 1987; Flavell, 1979; Kluwe, 1987; Mischel, 1974, 1981). For example, metacognitive approaches have been used to understand the development of mathematical and reading skills in children.

In clinical and social psychology, theories of self-regulation by Bandura (1977a, 1986) and Kanfer (1977; Kanfer & Hagerman, 1981; Kanfer & Schefft, 1988) have been frequently used to predict and control a variety of behaviors, including smoking cessation, weight control, impulsivity in children, anxiety reduction, substance abuse, and depression (e.g., see Bandura, 1986; Karoly & Kanfer, 1982). In social psychology, self-regulation frameworks have been used to understand the influence of self-processes on behavior in various social contexts (e.g., Carver & Scheier, 1981; Higgins, 1987).

In industrial and organizational psychology, Locke's (1968) goal-setting model receives the most attention. According to Locke (e.g., Locke, 1968; Locke, Cartledge, & Knerr, 1970; Locke & Henne, 1986), an individual's goals provide the mechanism by which motivational states are translated into action. Cognitive processes and emotional reactions determine an individual's goals; goals are precursors to action. The causal path indicated in Locke's model suggests that goals exert a stronger influence on behavior than affect or cognitions (Lee et al., 1989; Locke & Henne, 1986).

Most self-regulation–metacognition researchers believe that traditional motive and cognitive choice theories are inadequate for explaining a wide range of motivated human behaviors. Kuhl (1982, 1986), for example, argued that need-motive-value and cognitive choice paradigms deal with *motivational* constructs, such as intentions or choice, whereas

the self-regulation–metacognition paradigm addresses *volitional* constructs, such as goals or allocation of attention. He pointed out that the widespread neglect of volitional processes in expectancy-value formulations limits the practical utility of these models (Kuhl, 1982, 1985, 1986). He further suggested that investigation of self-regulatory processes from an information processing perspective can complement E x V formulations and has conducted several studies illustrating the advantages of integrating these theoretical approaches (e.g., Kuhl & Blankenship, 1979; Kuhl & Geiger, 1986; Kuhl & Kraska, 1988; Kuhl & Melendez, 1984; Kuhl & Wassiljew, 1985).

This section begins with a review of Locke's goal-setting approach, followed by formulations in the social learning/social cognitive research domain (e.g., Bandura, 1986; Kanfer, 1977) and by Carver and Scheier's (1981) cybernetic control theory of behavioral self-regulation. Each of these approaches focuses on the volitional processes and cognitive mechanisms underlying the goal-performance relation in goal setting and self-regulation studies. The next section reviews recent research directed toward unification of goal setting, social learning, and control theory research. The final section discusses the metacognitive perspective and its distinction from self-regulation approaches.

Goal-setting Research

Locke proposed that goals are the most powerful cognitive determinants of task behavior and that goals affect behavior by (a) directing attention, (b) mobilizing on-task effort, (c) encouraging task persistence, and (d) facilitating development of strategies (Locke, 1968; Locke et al., 1981). He also specified intensity and content as the two relevant attributes of goals that affect behavior. *Intensity* refers to the strength of the goal and is influenced by factors such as perceived goal importance and goal commitment (Lee et al., 1989). Goal *content* encompasses

features such as difficulty, specificity, complexity, and goal conflict.

The majority of goal-setting studies focus on the effects of goal content on performance. More specifically, they focus on the effects of goal difficulty and goal specificity (see Locke et al., 1981, for a review), which are often investigated by contrasting performance in a non-specific goal condition (e.g., a "do your best" goal instruction) with performance in a specific and difficult assigned goal condition (e.g., "Obtain a score of 87 on the next trial"). Goal *difficulty* level is typically manipulated through assignment of performance goals associated with different objective probabilities of attainment, with the probability of attainment based on mean performance levels obtained by a reference population sample. Thus, difficult goal assignments refer to performance levels attained by relatively few persons, and easy performance goals refer to performance standards attained by most persons. Goal *specificity* is typically operationalized as the extent to which the assignment is made explicit with respect to the target of action (Locke et al., 1981). Few researchers manipulate goal specificity independently of goal difficulty (for exceptions, see Klein, Whitener, & Ilgen, in press; Locke, Chah, Harrison, & Lustgarten, 1989).

Results of recent meta-analyses on goal-setting research indicate support for Locke's basic thesis that *persons assigned (and who adopt) difficult and specific goals outperform persons provided "do your best" goal assignments* (Latham & Lee, 1986; Mento, Steel, & Karren, 1987; Tubbs, 1986). Field studies on the effectiveness of goal setting indicate that persons assigned specific and difficult performance goals tend to outperform persons who do not establish such goals for their performance (see Latham & Lee, 1986). The accumulated evidence demonstrating the beneficial effects of difficult and specific goal assignments on work performance has prompted widespread use of goal-setting techniques in industry (see Locke & Latham, 1984).

The empirical demonstration of goal-setting effects on performance has led to several investigations directed toward understanding the processes, mechanisms, and moderator variables involved in the goal-performance relationship (e.g., see Bandura & Cervone, 1983, 1986; Erez, 1977; Hollenbeck & Brief, 1987; Locke et al., 1989; Phillips & Freedman, 1988; for reviews, see Austin & Bobko, 1985, and Locke et al., 1981). Although many of these studies were undertaken to clarify Locke's theory, findings have also contributed to a broader understanding of self-regulatory processes (Kanfer, 1986, 1987).

One research issue that has received considerable attention concerns the independent and interactive effects of goal assignments and knowledge of results. Locke (1968) proposed that goals moderate the effects of knowledge of results on subsequent behavior. Several researchers found that goals alone or knowledge of results alone has a less pronounced effect on performance than the combined use of goal assignments and goal-relevant performance feedback (e.g., Bandura & Cervone, 1983; Erez, 1977; Komaki, Barwick, & Scott, 1978).

Locke's goal-setting approach concentrates on the relationship between goals and task behavior; the theory did not originally address how individuals select goals, nor did it specify the factors that determine acceptance or commitment to goals, imposed by the environment or by other persons (see Locke, 1968). Recently, however, investigators have attempted to integrate research on the determinants of goal choice and intentional states with goal-setting research findings. One active research area involves investigation of the determinants of goal commitment and the effects of goal commitment on the goal-performance relation.

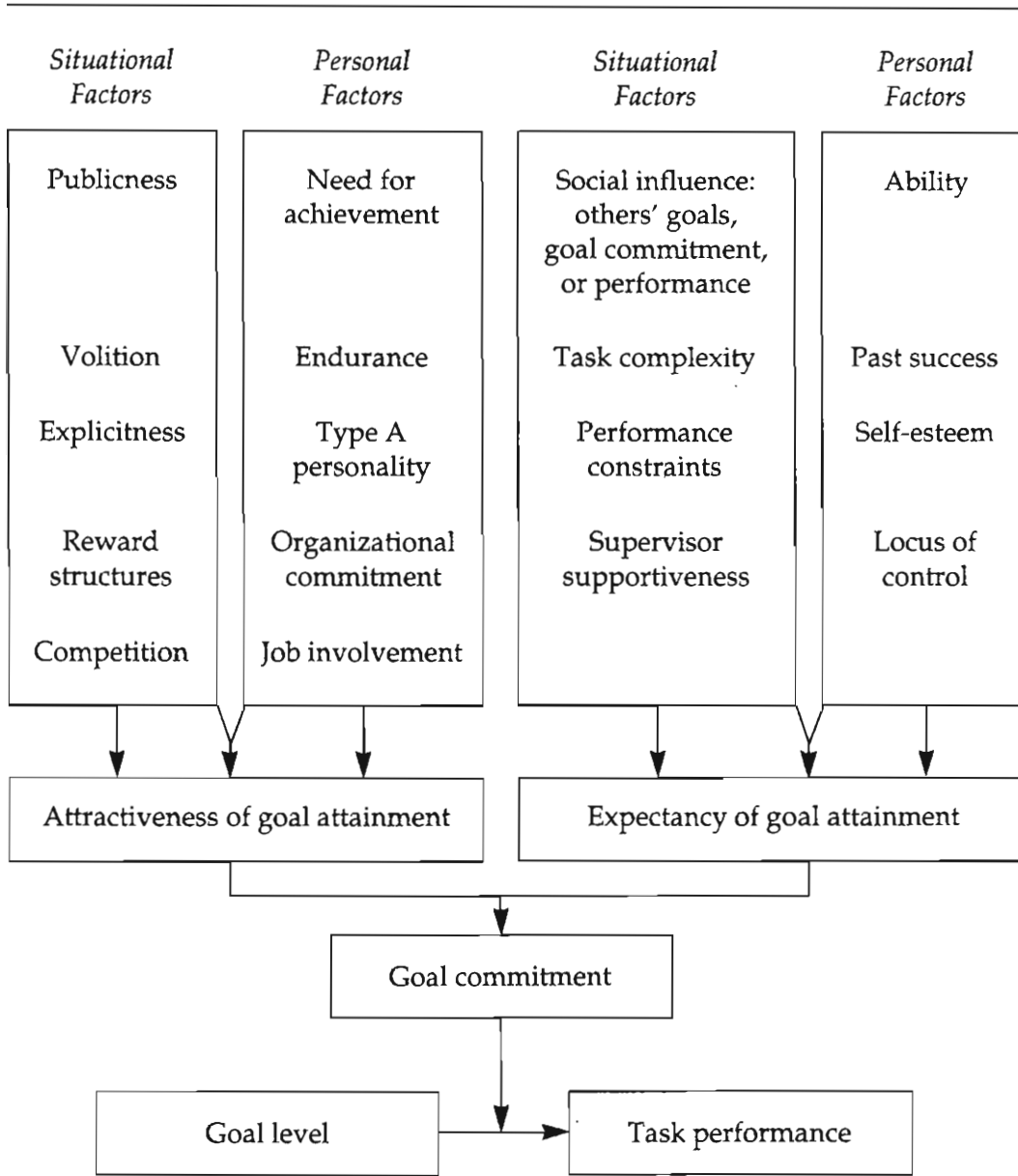
Determinants and Effects of Goal Commitment. Locke et al. (1988) proposed three major determinants of commitment to goals

assigned by others (e.g., a supervisor): external factors, interactive factors, and internal factors. *External factors* include variables such as the extent to which the person making the goal assignment is perceived as making a legitimate request, the employee's trust in the authority figure, peer group influence, and the extrinsic rewards and incentives associated with goal attainment. *Interactive factors* pertain to the context in which goal setting occurs and include participatory procedures, competition, and cultural values. Finally, *internal factors* refer to a variety of cognitive concepts, including expectations of task success and internal rewards. Taking an inductive approach, Locke and his colleagues proposed that these three antecedent factors affect goal commitment and corresponding task performance through their influence on as yet unspecified cognitive processes. In turn, goal commitment and goal content are posited to exert independent influences on task performance.

Research examining the effects of assigned versus participative goal setting provides indirect evidence for the impact of some of these factors on commitment to assigned goals and subsequent task performance. Latham, Erez, and Locke (1988), for example, noted that previous studies comparing assigned versus participative goal-setting procedures differed in terms of the specific methods used to establish the goal assignment. They suggested that differences in a supervisor's instructions and other behavior during the goal-setting process might affect goal commitment and subsequent task performance. Latham et al. (1988), in conducting studies designed to identify the features of the goal-setting process that affect both goal commitment and task performance, found that goal commitment and task performance were enhanced when (a) persons have high self-efficacy expectations for task success and (b) perceive the person who assigns the goal in a positive light. When people lack confidence in their capability to attain the goal or consider the person assigning

FIGURE 2

Hollenbeck and Klein's Expectancy Theory Model of the Antecedents and Consequences of Goal Commitment



From "Goal Commitment and the Goal-Setting Process: Problems, Prospects, and Proposals for Future Research" by J. R. Hollenbeck, 1987, *Journal of Applied Psychology*, 72, p. 215. Copyright 1987 by the American Psychological Association. Adapted by permission.

the goal as nonsupportive, participative procedures might augment weak intentional states and thereby enhance goal-directed action.

Hollenbeck and Klein (1987) proposed a slightly different model, as shown in Figure 2. Working from an expectancy-value

framework, these authors proposed two determinants of goal commitment: expectancy of goal attainment and valence of goal attainment. The authors also specified several personal and situational factors that are influential in this regard.

In accord with E x V theorizing, Hollenbeck and Klein (1987) proposed that expectancy and perceived valence of goal attainment jointly determine goal commitment. In their model, goal commitment moderates the goal assignment–performance relation. In contrast, Locke et al. (1988) proposed separate and direct relationships between (a) goal commitment and performance and (b) goal content and performance.

Similar to Locke et al., Hollenbeck and Klein cite social influence, supervisor supportiveness, reward structures, and competition as relevant situational factors. Other situational factors they list include stating the goal publicly (somewhat similar to Locke et al.'s, 1988, "pressure" factor), volition, task complexity, and performance constraints. The personal factors include variables such as need for achievement, endurance, type A personality, organizational commitment, job involvement, ability, past success, self-esteem, and locus of control.

Evidence that supports part of Hollenbeck and Klein's (1987) model was provided by Hollenbeck, Williams, and Klein (1989) in a study of the effects of individual differences in need for achievement and goal publicness on goal commitment. They found that both need for achievement and goal publicness exerted independent and interactive effects on goal commitment. For example, subjects high in need for achievement and who were assigned a public goal demonstrated higher levels of goal commitment and subsequent task performance than similar subjects assigned a privately held goal.

The Locke et al. (1988) and Hollenbeck and Klein (1987) models of goal commitment partially integrate distal (e.g., expectancy-value) and proximal (e.g., goal-setting) motivation theories. In both models, this integration is achieved by the assumption that cognitive choice processes affect performance via the construct of goal commitment. Antecedent factors, such as participation, are represented as conditions affecting task performance

indirectly through their influence on goal commitment. However, the proximal motivational processes by which goal commitment and goal assignment attributes affect performance (e.g., self-efficacy expectations) are not specified.

The two models raise a critical question for future research in the goal-setting domain: How should proximal and distal constructs of motivation be integrated? The models suggest that cognitive choice processes represent an *additional* determinant of performance, apart from the influence of goal difficulty. These models indicate that cognitive choice processes, that is, goal commitment processes, are unaffected by the difficulty of assigned goals. It seems very likely, however, that assigned goal difficulty affects cognitive *antecedents* of goal commitment. For example, persons might lower their self-efficacy expectations for goal attainment when the goal assignment is difficult as opposed to easy. In Locke et al.'s model, such an effect would be represented by a causal arrow from goal content to internal factors. Similarly, social justice research suggests that participative goal-setting procedures may affect the ultimate goal assignment, an influence that would be represented by positing a link between Locke et al.'s participation factor and goal content. An alternate representation to both models might be that goal content or goal level function as another antecedent influence on goal commitment.

A related issue is how these models view self-regulatory variables, such as self-administered rewards and self-efficacy expectations. In both models, self-regulatory processes represent determinants of goal commitment. This treatment of self-regulation processes neglects the important roles these variables play in the *translation* of goals into action. The implication of both models is that persons with high levels of goal commitment simply persist at the task longer than persons with low levels. An equally plausible explanation may be that the beneficial effects of goal commitment on performance are the results of a fundamental change in the way information is processed and task

strategies are identified and implemented (cf. Klinger, 1971). A critical question in the proximal motivation paradigm thus concerns how self-regulatory processes affect *what* persons do when they try to attain a goal. To answer this question, proximal motivational processes need to be spelled out in more detail.

Integration of distal and proximal motivation constructs represents a major challenge for contemporary motivational researchers. At present, the most promising avenue for achieving this integration appears to be through a better understanding of the relationship between goal choice and commitment. The Locke et al. and Hollenbeck and Klein models represent one approach to this problem from the goal-setting perspective. Other approaches have been proposed by Atkinson and Birch (1974) in their dynamics of action theory, by Heckhausen and Kuhl (1985), and by Kanfer and Ackerman (1989). These perspectives are discussed later in this chapter.

Social Learning and Social Cognitive Theories

Social learning theories of behavior gained prominence in the 1960s in response to dissatisfaction with behaviorist views that dismissed the causal role of cognitive processes (e.g., Skinner, 1953, 1969). Attempting to integrate both behavioral and cognitive concepts, social learning approaches have stressed the interactive features of cognition, learning, behavior, and the environment as they influence behavior. The strong orientation toward prediction of observable behaviors and the compatibility of findings derived from social learning and behavior modification frameworks is not surprising if one considers the evolution of social learning formulations.

Briefly, Skinner (1953) stated that behavior is jointly determined by genetics and the environment, while cognitions and motivational constructs—outside the realm of the relationship between behavior and its sequences—are accorded a nonessential role.

Specifically, Skinner proposed a three-component model of behavior, composed of situational cues, behavior, and response consequences. In this model, stimulus cues set the occasion for behavior. Response consequences provide contingent reinforcement that shapes and controls subsequent behavior. (For comprehensive descriptions of behavioral models, see Campbell & Pritchard, 1976; Luthans & Kreitner, 1985.)

Social learning approaches originated in research investigating two types of phenomena not readily explainable in behaviorist terms. First, people often demonstrate the capacity for suspending the influence of prevailing environmental contingencies. This capacity for self-regulation is made possible by individuals' abilities to anticipate consequences of their actions and to engage in symbolic representation of events (Bandura, 1977a). In work contexts, for example, people often work diligently at tasks despite the presence of powerful positive reinforcers for engaging in social, off-task activities. Programmatic research by Bandura (1977a, 1986), Kanfer (1977; Kanfer & Hagerman, 1981), and Mischel (1974, 1981) has illustrated the nature of the cognitive processes and the mechanisms involved in observational learning, self-regulation, and delay of gratification. The notion of active cognitive control over behavior differs sharply from earlier behaviorist formulations and represents a key tenet of social learning approaches.

Second, many new behaviors are often acquired, demonstrated, and changed in the absence of direct experience (Bandura, 1977a; Kanfer, 1977). Observational learning of job skills, the establishment of expectations based on observations of co-workers, and behavioral modeling represent phenomena involving cognitive mediation. Investigations of vicarious learning and modeling phenomena demonstrated that individuals may learn and alter some behaviors in the absence of direct experience. In contrast to behaviorist models, social learning theorists adhere to a four-component model of behavior in which

cognitive, behavioral, organismic, and environmental factors exert reciprocal influences on action (e.g., see Bandura, 1977a, 1982; Kanfer, 1977; Karoly, 1982).

The popularity of operant models stimulated great interest in the application of behavioral principles to the workplace. A number of studies investigating the utility of behavior modification programs in organizational settings have shown positive performance results (see Frederiksen, 1982, and Luthans & Kreitner, 1985, for reviews). Although behavior modification programs vary from setting to setting, two key features include functional analysis of problem assessment and implementation of response-contingent reinforcers, both positive and negative, to enhance organizationally desired behavior.

In the clinical domain, practitioners quickly recognized that the success of behavior modification programs depended on a host of previously unspecified factors, such as the nature of the behavior to be modified, the individual's willingness to comply with the program, the salience and continuing attractiveness of positive reinforcers, and the individual's willingness to provide response-contingent reinforcement in the absence of external monitoring. Similar concerns were raised in the implementation of behavior modification programs in organizational settings. Employee willingness to adopt organizationally imposed goals, development of sufficiently attractive response-contingent positive reinforcers for engaging in organizationally desired behaviors, and procedures for sustaining desired behavior in the absence of external reinforcement represent critical determinants of a program's success. In the organizational literature, the controversy concerning the relative effectiveness of goal-setting versus behavior modification programs (see Komaki, 1981; Locke, 1980) illustrates that the issue is not whether behavior modification programs "work," but rather whether implementation of such programs alone results in optimal behavioral change. The

theoretical distinction between behavioral and cognitive-behavioral change programs has all but disappeared for interventions aimed at adult populations. Both perspectives require specification of task goals, provision of unambiguous and appropriate response-contingent reinforcers, and adequate means for providing performance feedback.

Social learning approaches and Bandura's (1986) more recent social cognitive theory provide an integrative framework for understanding the interactive effects of environmental contingencies, emotions, and cognitive processes on behavior. Similar to the position taken by goal-setting theorists, social learning theorists view most behavior of interest as goal-directed, involving cognitive processes that assist the individual in regulating thoughts and actions to attain desired outcomes (Bandura, 1977a, 1986; Kanfer, 1977; Kanfer & Scheff, 1988). Until recently, however, goal-setting research has focused on the effects of goal attributes on level of skilled performance. In contrast, investigations in the social learning domain have concentrated on three different topics: (a) motivational determinants of vicarious learning, (b) cognitive processes underlying self-motivation in the context of skill acquisition, and (c) components and effects of the self-regulation system.

Component Processes in Self-regulation. Bandura (1982) and Kanfer (1970) view self-regulation as comprised of three major components: self-observation (self-monitoring), self-evaluation (self-judgments), and self-reaction. These basic components of self-regulation are described briefly in the following discussion.

Self-observation (Self-monitoring). Self-monitoring refers to attention given to specific aspects of one's own behavior. Since individuals cannot continuously attend to all aspects of their behavior (Bandura, 1982, 1986), they must selectively attend only to particular dimensions. This selective attention depends, for example, on which features of activity have

significance for goal attainment and the importance of behavioral outcomes. Self-monitoring can occur in response to external or internal prompts, or positive or negative outcomes. In organizational settings, for example, incentives for quantity performance can encourage individuals to seek and monitor the speed with which they perform.

Self-monitoring provides the individual with information about the consequences of his or her actions. Through self-monitoring, persons gain knowledge about how they are doing on some task. Information can be obtained from task-generated feedback or from explicit performance feedback provided by others. Learning about one's own performance by observing or by obtaining external feedback provides information about which aspects of behavior are most relevant in the performance context.

Several studies have demonstrated the importance of self-monitoring operationalized as the provision of performance feedback in the context of some goal (e.g., Bandura & Cervone, 1983, 1986; Erez, 1977; Kazdin, 1974). These studies show that goals and positive performance feedback components must be present to optimize performance motivation. Bandura and Cervone (1983), for example, compared the effects of self-regulatory components on behavior in a laboratory study involving performance on bicycling in place. Subjects were assigned to one of three treatment conditions: performance feedback alone, goal assignments alone, or combined goal assignments and performance feedback. Bandura and Cervone found that significantly higher levels of effort were expended by subjects in the combined goal and feedback condition when compared to levels expended by subjects in the performance feedback alone condition. Erez (1977), using a problem-solving task, demonstrate similar effects of combining goals and feedback.

Self-evaluation (Self-judgments). Attention to one's behavior plays an integral role in the

operation of the second component of self-regulation—self-evaluation—in that failure to attend to one's performance precludes self-evaluation. Attention to performance feedback ordinarily affects self-evaluation by providing a referent in the goal-performance comparison. In self-evaluation, persons compare their desired goal state with performance. Sometimes persons erroneously judge themselves to be competent at a task despite feedback to the contrary; this often occurs when persons attend to noncritical components of performance.

The comparison between one's goals and relevant performance are posited to influence two types of affective self-reactions: satisfaction/dissatisfaction and self-efficacy expectations.

Self-reactions. Self-reactions refer to internal responses that occur in response to self-evaluation. Typically, these reactions are affective responses. Self-evaluation indicating performance below one's goal is likely to yield dissatisfaction; self-evaluation indicating performance that meets or exceeds one's goal typically yields satisfaction. The intensity of self-reactions and their effects on behavior is influenced by the magnitude and direction of the perceived discrepancy between goals and performance. When self-evaluation yields large negative discrepancies (i.e., performance far below an individual's goal), negative self-reactions can lead to abandonment of goals and reduced interest in the task unless offset by strong beliefs about one's competence to attain the goal in future trials.

Self-efficacy Expectations. Bandura (1977b) expanded the self-regulation model to include an additional self-evaluation mechanism: self-efficacy expectations. *Self-efficacy expectations* refer to perceived capabilities for attainment of specific goals or task outcomes. These expectations develop from a variety of sources, including performance feedback, vicarious

experiences, previous performance history, and social influence; further, they are viewed as task-specific (see Bandura, 1986, for a review). Self-efficacy expectations differ from general affective reactions to the task. For example, self-evaluation that indicates performance has improved but still remains below the desired goal level might enhance self-efficacy expectations for goal attainment but sustain dissatisfaction with present performance. In such circumstances, the strengthening of self-efficacy beliefs while striving for goal attainment should enhance performance motivation (Bandura, 1986).

According to Bandura (1986), the self-efficacy expectation construct should be distinguished from the expectancy construct used in cognitive choice paradigms. Whereas expectancies in $E \times V$ theories refer to the outcomes that persons expect to attain given a specific level of effort, self-efficacy expectations focus on beliefs about one's *capabilities* to organize and execute behaviors requisite for attaining the outcome. Self-efficacy expectations are often positively associated with outcome expectations, but discrepancies between the two may arise and have motivational implications (see Kanfer, 1987). For example, Kanfer and Hulin (1985) assessed self-efficacy expectations and outcome expectations among persons who had just been terminated and found that, unlike outcome expectations, self-efficacy expectations were related to subsequent reemployment. Persons with high self-efficacy expectations engaged in more job search activities and were more likely to obtain reemployment than persons with low self-efficacy expectations. Locke, Frederick, Lee, and Bobko (1984) and Bandura and Cervone (1986) also demonstrated the impact of self-efficacy expectations on task behavior.

Concluding Comments. Self-regulation formulations provide a framework for understanding cognitive determinants of goal-directed behavior. The key components of

self-regulatory models are self-monitoring, self-evaluation, and self-reactions; the components influence and are influenced by environmental and person factors. Mood, for example, has been shown to affect self-efficacy expectations and other self-regulatory activities (e.g., Kavanagh & Bower, 1985; Wright & Mischel, 1982). Similarly, information conveyed in the goal-setting context can affect choice of goal difficulty level and subsequent self-evaluation (e.g., Cervone & Peake, 1986).

Bandura's (1986) social cognitive theory, growing out of social learning research on self-regulatory processes, views motivation in terms of the joint influence of self-efficacy expectations and broad self-reactions to discrepancies between current performance and some standard. This expansion of the self-regulation model emphasizes the role of affect in proximal motivation processes and forges a conceptual link to metacognitive research concerned with understanding how persons come to develop knowledge about their own cognitive processes.

Control Theories of Behavioral Self-regulation

Several similar motivation theories based on cybernetic control principles have been proposed (Carver & Scheier, 1981; Hyland, 1988; Klein, 1989; Lord & Hanges, 1987), most notably Carver and Scheier's, whose model has received considerable empirical attention.

Carver and Scheier's Theory of Self-regulation. Carver and Scheier (Carver, 1979; Carver & Scheier, 1981, 1985) describe self-regulation in terms of cybernetic control principles (e.g., see Miller, Galanter, & Pribram, 1960; Powers, 1973) and Duval and Wicklund's (1972) theory of self-awareness. In Carver and Scheier's theory, *self-regulation* refers to a negative (discrepancy-reducing) feedback loop in which the comparison between one's standard and perceived performance (i.e., termed *inputs*

in control theory language) results in cognitive and behavioral output directed toward the *reduction* of discrepancies between standards and the perceived state of affairs.

Carver and Scheier (1981) proposed two conditions requisite for the operation of self-regulation processes. First, individuals must focus attention on their behavior so that they can obtain input for the comparison process. Second, self-regulation processes are triggered when a discrepancy is detected between a standard (goal) and current performance. Comparisons indicating an imbalance between the two trigger cognitive and behavioral attempts to reduce the discrepancy. In general, goal-performance discrepancies yield one or more of three basic responses: (a) adhere to the standard and exert greater task effort, (b) lower the standard and continue to exert effort, and (c) terminate the self-regulatory cycle by withdrawing from the task. Like Adam's equity theory, control theory does not specify the mechanism by which persons choose among these responses to reduce discrepancies.

An important feature of Carver and Scheier's (1981) theory is the process by which discrepancies between goals and standards come about. To explain how various types of goals become salient, Carver and Scheier adopt Powers' (1973) notions of a hierarchical goal structure in which complex, higher order goals are composed of hierarchically linked subgoals. During the normal course of events, difficulties in carrying out a higher order goal shifts attention to the subgoal which is currently not being achieved. As the subgoal-performance discrepancy is reduced, attention shifts up the goal hierarchy. The inclusion of a hierarchical goal principle enables the self-regulation model to account for sequential behaviors related to attainment of long-term, or distal goals.

Several studies using the Carver and Scheier framework have investigated the effects of dispositional characteristics of the individual and situational factors on goal-directed behavior. Self-focus, which has been studied both as

a stable individual differences trait and as a situational manipulation, engages self-evaluation processes and is associated with higher performance motivation (see Carver & Scheier, 1981).

Integrative Research

Over the past decade, several researchers have integrated goal-setting theory, social learning/social cognitive theories, and control theory models. Quite often, goal-setting researchers have used concepts developed in social learning or control theory to clarify the processes by which goal assignments influence task performance.

Social Learning/Social Cognitive Theory and Goal Setting. The self-efficacy construct has been examined in several goal-setting studies designed to clarify the determinants of performance in goal-setting contexts (e.g., Bandura & Cervone, 1983, 1986; Locke et al., 1984; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990). Locke et al. (1984), for example, found that self-efficacy expectations influence goal choice, goal commitment, and task performance. Bandura and Cervone (1986) also found that, when provided with negative performance feedback, persons with low self-efficacy expectations exerted less effort on tasks than persons with high self-efficacy expectations.

Goal-setting researchers typically focus on performance outcomes; social learning/social cognitive researchers tend to focus on behavioral outcomes. In goal-setting research, for example, goals are usually defined as *performance* outcomes, such as number of items correct or number of sales accomplished, rather than *behavioral* outcomes, such as number of problems attempted or number of client contacts. *Performance goals* refer to the cumulative consequences of behavior; the behavioral sequences involved in performance and their interrelations are not usually specified.

In social learning research, the distinction between behavior and performance is often made in terms of proximal versus distal goals. *Distal goals* typically refer to cumulative performance accomplishments involving a series of interconnected, task-relevant behaviors, such as attaining a particular grade point average or being promoted to a particular rank. Similar to the performance goals often emphasized in goal-setting theories, distal goals emphasize the cumulative consequences of unspecified sequences of behaviors. As Bandura and Schunk (1981) suggest, distal goals may be less advantageous in some situations because they provide neither guidance for strategy development nor interim opportunities for developing or maintaining high self-efficacy expectations and self-administered rewards.

In contrast, *proximal goals* refer to discrete performance accomplishments. Proximal goals, such as reading ten pages in one hour, are functionally similar to behavioral goals. Although proximal goals may be coordinated to achieve a distal goal, coordination typically is determined by the person making the goal assignment rather than by the individual performing the behavior. Further, unlike distal goals, proximal goals offer immediate opportunities for self-reward and invoke more stable perceptions of self-efficacy developed from earlier experiences with similar classes of tasks.

The distinction among goal types may be used to help understand a recent finding by Wood, Mento, and Locke (1987), indicating that the goal-performance relation is stronger in simple tasks than in complex tasks. In many complex tasks, performance refers to the cumulative consequences of a series of unspecified behavioral sequences. Graduating from school, for example, involves coordination of many behaviors, such as reading assigned material, attending class lectures, studying for exams, and attaining passing exam scores for each course. Performance goal assignments in these tasks are functionally identical to distal goal assignments; such goals

are likely to provide little guidance about what to do and few opportunities for evaluating one's progress or self-reinforcement.

Simple tasks, on the other hand, frequently require that only a few behavioral sequences be performed many times, as in repairing the soles of shoes or cashing. Once these sequences have been mastered, performance goal assignments may function as proximal goals; performance goals on simple tasks permit ready opportunities for evaluating progress and self-reinforcement. For example, adults assigned a performance goal of repairing 50 pairs of shoes in one work week can readily evaluate their progress on any given day by assuming that they will need to repair 10 pairs of shoes daily to achieve their goal.

This analysis of the effects of goal setting on performance of simple and complex tasks suggests that the effects of goal setting depend on at least two characteristics of the goal: (a) whether it is a proximal or distal goal and (b) whether it is a behavioral or performance goal. Goal-setting effects on simple and complex tasks suggest that the effect of goal assignments on performance depends on both type of goal and type of task. Performance goal assignments in complex tasks provide little information about how to organize one's behaviors for goal attainment. In simple tasks such information is unnecessary, given the likelihood that skills for task performance have already been developed. Behavioral goal assignments in complex tasks lessen the cognitive burden by providing the individual with a structure for behavior and more frequent opportunities for self-reward. Although behavioral or proximal goal assignments in complex tasks should enhance motivation, such procedures are time-consuming and often impractical in industrial settings.

On the other hand, performance goal assignments should have stronger effects in simple tasks than complex tasks due to the more frequent opportunities for self-evaluation and self-reward. Because performance in simple tasks represents cumulative accomplishments

of repetitive behaviors, the difference between behavioral and performance goal assignments should reduce to a difference in the salience of cues for self-regulatory activity.

The preceding discussion represents one of several possible explanations for the Wood et al. (1987) finding and is based on an information processing conceptualization of task complexity and a social learning formulation of the goal construct. In this view, task complexity is viewed in terms of the extent and nature of task information processing demands (see Kanfer, 1986, 1987; Kanfer & Ackerman, 1989), and goals are distinguished in terms of their cognitive and motivational components. Among other things, this conceptualization implies that difficult performance goals exert strong main effects in most simple tasks. In complex tasks, however, one should expect to obtain aptitude-treatment interactions, whereby some types of goals are likely to benefit individuals to a greater or lesser degree, depending on their cognitive abilities. Clearly, systematic research to investigate the viability of this explanation and others is needed.

Control Theory and Goal Setting. The control theory perspective has also been used by a number of industrial and organizational researchers to investigate and understand dynamic goal-performance relations (e.g., Campion & Lord, 1982; Kernan & Lord, 1988, 1990; Klein, 1989; Lord & Hanges, 1987). Hollenbeck and Williams (1987), for example, examined the role of self-focus and goal importance on goal choice and performance among salespersons. Consistent with Carver and Scheier's (1981) framework, past performance-goal level and goal level-current performance relations were stronger among persons who perceived the goal to be important and who showed a dispositional tendency toward self-focus.

Lord and Hanges (1987) and Klein (1989) proposed control theory models that elaborate on Carver and Scheier's (1981) theory.

Specifically, these models take a cognitive, information processing perspective that emphasizes the role of cognitive scripts and different types of decision processes. In the Klein (1989) model, for example, cognitive scripts represent organized goal structures that permit smooth transitions across goal levels. When performing complex tasks, previously learned scripts reduce attentional effort by providing persons with an organizational guide for executing various activities requisite for success in the task. Lord and Hanges (1987) also propose that speed of environmental feedback influences which type of decision mechanism will be used to deal with a perceived discrepancy. When environmental feedback is slow and initial decisions cannot be quickly modified, persons use rational choice or avoidance choice processes. In contrast, when environmental feedback is rapid and initial decisions can be quickly modified, persons use routinized choice or action-first decision processes. Routinized choice processes are held to be used more frequently when the situation is familiar and may resemble automatic or mindless processing. In contrast, when confronted with unfamiliar situations involving rapid environmental feedback, Lord and Hanges (1987) suggest that persons may use action-first processes such as trial and error.

The elaborated control theory perspectives advanced by Lord and Hanges (1987) and Klein (1989) imply that performance problems in simple tasks are often readily dealt with using previously learned cognitive scripts and routinized choice processes. In contrast, performance problems in complex tasks require greater attentional effort. In these tasks, cognitive scripts are often unavailable and environmental feedback is likely to be slower, resulting in greater use of rational choice processes. From a goal-setting perspective, the imposition of goal assignments in complex tasks may divert attention away from performance in these tasks (Kanfer & Ackerman, 1989).

Findings by Campion and Lord (1982) and Kernan and Lord (1988, 1990) provide empirical evidence supporting control theory predictions of goal effects on performance over time. For example, Campion and Lord (1982) used the control system conceptualization to investigate goal-performance discrepancy processes among students enrolled in introductory psychology classes over the course of an academic quarter. They found that course grade choice, a distal goal, was positively correlated with independent measures of ability and past grade point average. Failure to obtain a test score goal, a proximal goal, was associated with subsequent increases in effort. Over the course of the quarter, however, students who repeatedly performed substantially below their test goal also tended to lower their course goal.

Of greater interest, Campion and Lord (1982) found that successful students raised their goals and unsuccessful students maintained or raised their test goals until they had experienced repeated failures (i.e., late in the course). Campion and Lord suggest that the maintenance of test goals among students who did poorly on the previous test served a "strategic" function (p. 281). Further examination of this process is clearly warranted. For example, maintenance of test goals might represent a "metamotivational" form of self-regulation, whereby persons use environmental cues to maintain high levels of effort. Such an explanation would address Garland's (1982) challenge to identify theories that can predict persistence toward hard goals despite repeated and frequent failure.

Campion and Lord (1982) also found that subjects who succeeded in attaining their test goal tended to set higher goals for the next test. This finding suggests the operation of a positive feedback loop, in which success enhances activation of continued self-regulation for attainment of yet higher levels of performance. Further exploration of this process is important for understanding the role of self-regulation processes in intrinsic motivation.

Control Theory and Social Learning. In organizational psychology, Taylor, Fisher, and Ilgen's (1984) conceptualization of performance feedback from the control systems perspective provides a framework for unifying recent research on the determinants, sources, and consequences of feedback in applied settings (e.g., Ashford, 1986; Ashford & Cummings, 1983; Greller & Herold, 1975; Herold & Parsons, 1985; Ilgen, Fisher, & Taylor, 1979; Mitchell, Rothman, & Liden, 1985; Weiss, Ilgen, & Sharbaugh, 1982). Building on Carver and Scheier's model, Taylor et al. (1984) describe the impact of different forms of feedback on various components of the control systems model. They also stress the importance of the individual's search for feedback and the implications of incongruence between what a manager may intend when providing feedback and what the employee perceives.

Research on feedback-seeking behavior in organizational contexts (e.g., Ashford, 1986; Ashford & Cummings, 1983; Herold & Parsons, 1985) indicates that employees actively seek and obtain feedback in myriad ways. Ashford and Cummings (1983) propose that persons may use either a *monitoring* strategy or a *direct inquiry* strategy to obtain feedback. In monitoring strategies, people use passive, observational methods to obtain information, such as watching what happens to others in similar situations. In the direct inquiry approach, persons actively request feedback from others. Ashford and Cummings (1983) take a resource theory perspective (e.g., see Kanfer & Ackerman, 1989; Naylor et al., 1980) to further describe potential costs and benefits associated with each strategy.

Ashford (1986) conducted a cross-sectional field study to examine the influence of nine determinants (e.g., job tenure, self-confidence, uncertainty) on the perceived value of feedback, frequency of monitoring behavior, and frequency of inquiry behavior. The results provided some support for the hypotheses. Overall, less tenured employees and

employees who believed they might fall short of their performance goal reported less frequent monitoring and inquiry feedback than longer tenured and more goal-confident employees.

The feedback-seeking conceptualization also has implications for other motivational issues. For example, Ashford and Cummings (1983) suggest that persons might not seek feedback in order to protect self-esteem. It would be quite interesting to investigate whether a similar pattern of results would be obtained during training, where the situation could be cast as a learning rather than a performance task. From a broader motivational perspective, it would also be helpful to know if patterns of feedback seeking during task engagement differ from patterns of information seeking used in pre-engagement decision making (such as goal choice). Empirical evidence on this issue might address the hypothesis that different motivational processes come into play during decision making and self-regulation.

Metacognitive Approaches

Metacognitive approaches emphasize the influence of knowledge and control of cognitive processes on behavior—that is, they focus on the influence of self-processes in the context of learning and individual differences in behavior. Incorporating advances in cognitive psychology, metacognitive research attempts to clarify how persons accumulate knowledge and use self-knowledge to regulate cognitive activities in goal-directed learning environments.

Brown (1987) distinguishes between two types of knowledge comprising the metacognition domain. First, as described by Flavell (1979), persons develop knowledge about their cognitive capabilities. Flavell proposed that persons acquire knowledge about themselves, other persons, tasks, and strategies. Persons

learn how to deal with different types of tasks, develop repertoires of cognitive strategies for accomplishing goals, and learn about their limitations and strengths in different types of tasks. Metacognitive knowledge might be viewed as a major determinant of self-efficacy expectations in Bandura's (1986) framework.

The second type of metacognitive knowledge pertains to the *executive* cognitive processes by which persons regulate their cognitive activities during learning and task performance. In contrast to knowledge about one's resources, individuals also possess knowledge about the self-regulatory processes used to marshal resources for attaining goals. Metacognitive approaches view self-regulatory processes as comprised of a body of strategies by which persons motivate themselves, direct their attention, and organize their knowledge. One important implication of this view is that individuals differ in their knowledge of and use of self-regulatory processes. Evidence from the social learning domain indicates that explicit instruction in the use of self-management techniques may benefit performance on specific target behaviors (e.g., Frayne & Latham, 1987; Kanfer & Schefft, 1988). As Brown (1987) and Campione (1987) note, however, it is not clear whether the benefits of such training are limited to the context in which they are taught or rather result in generalizable knowledge of executive control strategies.

In contrast to previous conceptualizations of proximal motivation processes, metacognitive research characterizes an approach rather than a particular theoretical orientation. This approach integrates diverse theory and research to address a set of questions that pertains to learning and individual differences in self-regulation. For example, what distinguishes poor learners from effective learners, and which features of instructional procedures enhance learning strategies for persons of different abilities?

Summary of Self-regulation–Metacognition Approaches

Organizational research stimulated by Locke's goal-setting propositions provides clear evidence that goals influence behavior and task performance. Although the motivational processes underlying the goal-performance relation are complex and still not well understood, theories of self-regulation provide several attractive frameworks for mapping out goal-performance processes. These theories stress cognitive control of behavior, and research in the area does indicate that difficult and specific goal assignments gain their motivational effects by activation of particular cognitive and affective processes. In this regard, recent investigations of the role of goal commitment appear particularly promising. However, the precise sequence and interaction among self-regulatory components is still not thoroughly understood and is under investigation.

Features of self-regulatory activities common to all approaches include self-monitoring of behavior, self-evaluation of behavior by comparison to a standard, and self-reactions in the form of satisfaction or dissatisfaction. Bandura's concept of self-efficacy (1977) further extends the self-regulation framework to demonstrate that decisions to exert effort and persist are also determined by the individual's perceptions of ability to attain the goal. Self-regulation provides a powerful theoretical foundation for explanation of many phenomena of interest in organizational settings, such as the effects of goal assignments, performance feedback, perceived abilities, and affect on the performance of complex tasks that involve skill development over time.

Examination of proximal motivational processes from a cognitive, information-processing perspective is represented in the work by Campione (1987) and other metacognitive researchers (e.g., see Kuhl's research in the next section). In contrast to self-regulatory

frameworks, research in these areas tends to be organized around enduring questions about individual differences in executive processes and their motivational by-products. The broad perspective taken in metacognitive research raises a number of questions for motivation and organizational behavior researchers. For example, goal-setting researchers have typically investigated individual differences in terms of their moderating effects on the goal-performance relation. The metacognitive approach suggests an interactive rather than moderating effect of individual differences and goal-setting treatments. The metacognitive models provide opportunities for developing theoretical links between information processing, motivational, and personality variables and task behavior.

Integrative Approaches

The proliferation of work motivation theories has prompted three types of responses in the organizational behavior literature: (a) an *amalgamation approach*, (b) a *converging operations approach*, and (c) a *new paradigm approach*. Discussion of each follows.

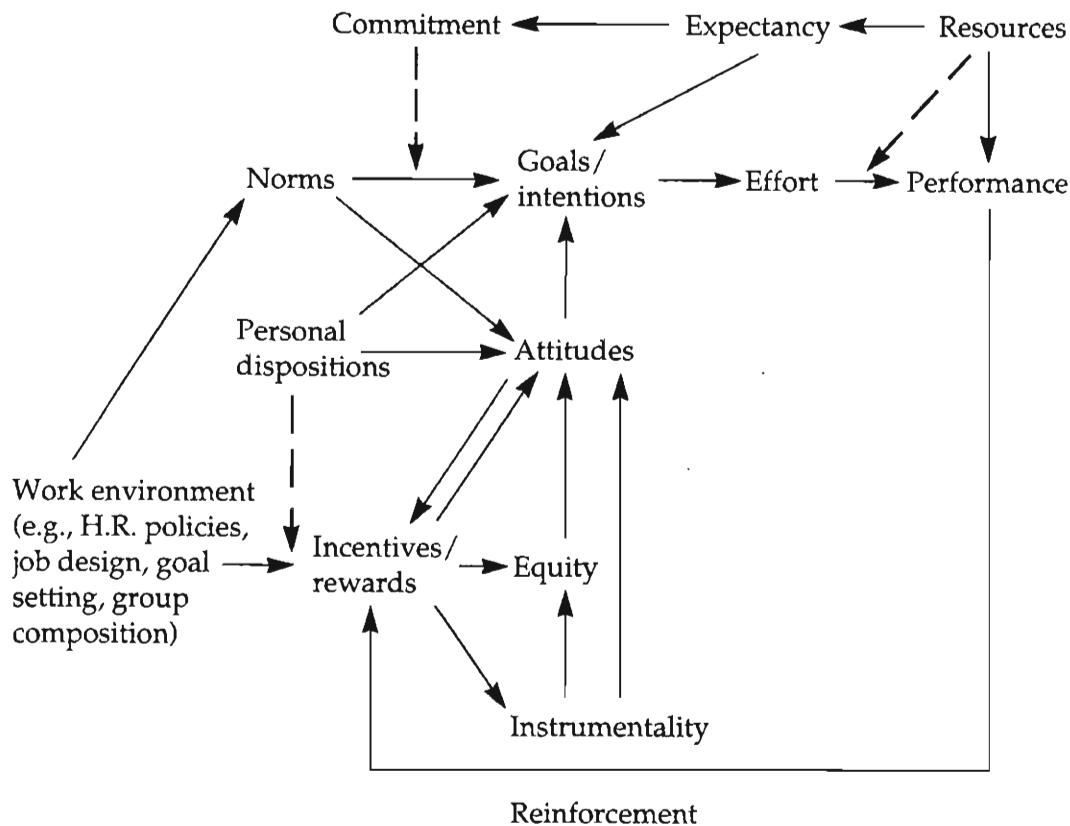
The Amalgamation Approach

In the amalgamation approach, constructs from work motivation theories are combined in an attempt to improve on the predictive validities typically obtained when using each theory alone. By combining various theories, redundant constructs are more readily identified and additional linkages between constructs can be made (Katzell & Thompson, 1988, 1990a; Landy & Becker, 1987; Pinder, 1984). Katzell and Thompson's (1990b) recent integrative motivation theory exemplifies this approach.

Katzell and Thompson's approach starts with the assumption that major work

FIGURE 3

Katzell and Thompson's Integrative Model of Attitudes, Motivation, and Performance



From *An Integrative Theory of Work Motivation* by R. Katzell and D. Thompson, 1988, unpublished manuscript, New York University, Department of Psychology. Adapted by permission.

motivation theories can be organized into a broad nomological network. Katzell and his colleagues began with a review of the recent work motivation literature to organize empirical evidence supporting various bivariate relationships between motivational variables and between motivational variables and behavior. Next, Katzell and Thompson (1988) identified 14 distinct constructs, organized in the nomological network shown in Figure 3. A total of 350 employees in three organizations responded to operational measures of these constructs. A LISREL analysis of the responses indicated a relatively high degree of fit to the model (Katzell, 1986).

As Katzell and Thompson (1988) noted, a major benefit of this framework pertains to its usefulness as a diagnostic or intervention tool for organizations. A "profile" of the organization based on the motivational construct measures and the causal model are used to identify deficiencies in an organization's human resource systems—that is, the model provides a framework for determining the performance implications of various motivational deficits and for predicting the likely impact of various organizational interventions.

In terms of the paradigms used in this chapter, the Katzell and Thompson (1990b)

model incorporates constructs from the need-motive-value, cognitive choice, and self-regulation paradigms. In addition, the identification of the norm constructs broadens the framework to include factors that have not yet received much attention in the organizational literature. It is a model of motivation that can be used for organizational diagnosis and interventions and provides an appealing way of addressing applied problem from a theoretically based framework.

The Converging Operations Approach

Unlike the amalgamation approach, the converging operations approach does not attempt to incorporate all relevant motivational constructs. Instead, this approach tends to be adopted when findings derived from one theory fall within the range of another theory but cannot be explained by the other theory. A recent example is the attempt to align goal-setting and VIE predictions of behavior. Goal-setting theory predicts (and findings indicate) a positive correlation between goal difficulty and task performance and a negative relationship between the individual's expectancy of success and task performance (Locke, 1968; Locke, Mento, & Katcher, 1978). In contrast, VIE theories posit (and findings indicate) a positive correlation between the individual's expectancy of success and task performance (Arvey, 1972; Mento, Cartledge, & Locke, 1980; Motowidlo, Loehr, & Dunnette, 1978).

During the past two decades, several researchers tried to reconcile these two approaches (e.g., Dachler & Mobley, 1973; Garland, 1984; Kanfer, 1987; Locke et al., 1986; Matsui, Okada, & Mizuguchi, 1981; Mento et al., 1980). The resolution to this issue appears to involve more careful consideration of the methodologies used in each approach and further consideration of the expectancy construct (Kanfer, 1987; Locke et al., 1986).

Garland (1984) suggested that the differences between the two approaches were due to

the failure to distinguish between expectancy-performance relations within an assigned goal group of the same level of goal difficulty and across experimental conditions of different levels of goal difficulty. Findings obtained by Garland (1984) and Locke et al. (1984) support this suggestion. Consistent with VIE predictions, there is a positive relationship between expectancy of success and task performance for people with the same level of goal difficulty. Consistent with goal-setting predictions, there is a positive relationship between level of goal difficulty and task performance.

In addition to the methodological issue, Locke et al. (1986) and Kanfer (1987) suggest that resolution of the conflict may be obtained by further considering the expectancy construct and its measurement, pointing out that measures of expectations for task performance differ in terms of the range of effort-performance levels considered. Self-efficacy expectations, assessed in a way that takes into account the full range of effort-performance levels, are expected to yield positive correlations within goal groups. Drawing from Bandura's theory of self-efficacy and previous findings, Locke et al. (1986) suggest a model that includes constructs from goal-setting, expectancy, and self-efficacy perspectives. In this model, goal choice, acceptance, and commitment are influenced by two separate factors: (a) expectancies and self-efficacy expectations and (b) valence of performance outcomes. In addition, the model indicates that these two basic components also exert a direct effect on task performance. That is, when goals are assigned and accepted, expectations for performance will continue to exert an independent effect.

Kanfer (1987), taking an information processing perspective, proposed a somewhat different integration of the self-efficacy expectancy, and goal-setting literatures. In this framework, subjective expectancies are distinguished from self-efficacy expectations on the basis of their determinants. Objective characteristics of the task, performance feedback, and

attributional bias influence perceptions of the effort-performance relation. Expectations for performance are derived from the effort-performance relation. In contrast, self-efficacy expectations, defined as judgments of confidence in one's capabilities to attain the target performance, are determined by effort-performance expectations, the perceived utility of goal attainment, and the potential disutility of expending high levels of effort for goal attainment. This integration implies that self-efficacy expectations gain their predictive superiority over expectancies by taking into account task, ability, and other individual differences factors.

Reconciliation of the expectancy-goal-setting controversy suggests that a converging operations approach can yield new research directions based on an integration of seemingly disparate theories. For example, such an approach might be informative with respect to understanding the determinants of intrinsically motivating flow experiences in an externally regulated work context. The converging operations approach is likely to be most useful in areas where critical studies can be conducted under a high degree of experimental control (Garner, Hake, & Eriksen, 1956). As a result, a potential disadvantage of this approach, at least from an organizational perspective, is the tendency to further narrow the scope of motivation research.

The New Paradigm Approach

Researchers adopting the new paradigm approach attempt to explain phenomena of interest by using constructs and theories from different fields of psychology to develop a new approach to work motivation. Three approaches (Heckhausen & Kuhl, 1985; Kanfer, 1987; Kanfer & Ackerman, 1989; Naylor et al., 1980) represent examples that place primary emphasis on explaining behavior instead of predicting it, although predictive validity ultimately becomes an issue for all of the models.

Achievement Motivation and Action Control Theory. Heckhausen's (1977) extended model of achievement motivation and Kuhl's action control theory (Kuhl, 1978, 1985, 1986, Kuhl & Kraska, 1989) integrate concepts from motivational and cognitive psychology to explain variability in the choice and enactment of intentions and goals. Heckhausen's model elaborates the determinants and interactions among variables affecting intentions; recent theorizing by Heckhausen and Kuhl (1985) integrates Heckhausen's (1977) cognitive choice theory with Kuhl's (1982) theory of action control, a theory that focuses on proximal motivational processes.

Kuhl proposed two basic determinants of action control. First, similar to Atkinson and Birch (1970), Kuhl assumed the existence of multiple action tendencies that compete for behavioral dominance. In this context, Kuhl proposed that self-regulatory processes protect intentions and associated action tendencies from being replaced by other strengthening tendencies before the intention has been completed. Kuhl maintained that self-regulatory activities are initiated when (a) difficulty level of enactment of the intention exceeds a critical level and when (b) the individual perceives an inability to successfully implement the intended action.

The second determinant of action control is the individual's action or state orientation. According to Kuhl, individuals with an action orientation are task-focused, while those with a state orientation focus on cognitive or emotional states. In many instances, state orientation reduces intention-behavior consistency. An individual's action-state orientation is determined by past experiences and the degree of incongruence between an individual's expectations and perceived performance. Similar to social learning explanations, mild levels of goal-performance discrepancies are expected to promote an action orientation. Large negative discrepancies that reach a critical level, however, are thought to trigger a state orientation.

Research by Kuhl and colleagues (e.g., Beckmann & Kuhl, 1984; Kuhl, 1982; Kuhl & Koch, 1984) has provided empirical evidence supporting various aspects of action control theory. Several studies (e.g., Kuhl & Geiger, 1986; Kuhl & Wassiljew, 1985) demonstrated differences in performance associated with stable individual differences in action-state orientation. Specifically, state orientation reduced performance; action orientation increased performance. Inductions of state and action orientations via instructions also demonstrate the mediating effect of this variable on goal enactment (e.g., Kuhl & Weiss, 1985).

According to Heckhausen and Kuhl (1985), the origin of purposeful behavior resides in a series of cognitive processes that unify wishes, wants, intentions, and actions. In essence, the authors propose that *wishes* are represented as nonenergizing goals with positive valences. To become a *want*, perceived subjective probability for attaining the goal must exceed a critical level. Wants influence action only when transformed into an intention.

To become an *intention*, wants must pass a *relevance* check, referred to as the OTIUM-future check. OTIUM is an acronym for the five components said to influence this transition: opportunity (Is there opportunity for action?), time (Is there enough time to attain the goal?), importance (Does the want fit with the individual's most salient concerns?), urgency (Must the goal be attained to avoid undesirable effects?), and means (Are there sufficient resources for attaining the goal?). As such, OTIUM variables specify that the transformation of wants into intentions involves goal attractiveness as well as other factors. Drawing from Klinger's (1971) theory of current concerns, Heckhausen and Kuhl proposed that goal commitment is defined by the successful passing of the want through the OTIUM-future check. Thus, wants are distinguished from intentions.

Heckhausen and Kuhl further propose that intentions must pass through another OTIUM check, the OTIUM-now check, to become an *activated* intention. If this check is satisfied, self-regulatory processes are activated that protect the intention from competing intentions, from diminishing motivational tendencies, and so on. Intentions that fail the OTIUM-now check move out of working memory into long-term memory, where they take on the function of a *current concern* rather than an active intention.

In Heckhausen and Kuhl's (1985) model, specific and difficult goal assignments as used in many goal-setting studies can be represented as activated intentions in which the goal has successfully passed the OTIUM checks. Their model also has relevance to the goal commitment issue in organizational psychology. According to Heckhausen and Kuhl (1985), goal commitment is associated with the OTIUM-future check. As described, this multifeature check suggests that wants may become intentions for many reasons. For example, persons may strongly commit to goals set for uninteresting or routine tasks because attaining them is important to their personal concerns about appearing competent to others. Thus, the model helps explain why public goals facilitate goal commitment (Hollenbeck et al., 1989).

Heckhausen and Kuhl (1985) also noted that intentions alone do not guarantee goal-directed action. In their model, the intention is activated only following an OTIUM-now check. Failure to obtain higher levels of performance, despite high levels of commitment, might be due to the failure of the intention to elicit the self-regulatory processes needed to maintain goal-directed action. When the task is easy and brief, failure to pass the OTIUM-now check would likely be unimportant. However, achievement of difficult and long-term goals requires the activation of such self-regulatory processes to protect the intention from competing

intentions and resource demands (as proposed to occur in Atkinson and Birch's [1970] theory). Among other possible implications, this analysis suggests that the initial level of goal commitment will be a more powerful determinant of performance when the goal or task is easily accomplished. When difficult, lower levels of performance may be due to *either* failure to pass the OTIUM-future check *or* failure to pass the OTIUM-now check.

Consistent with Heckhausen and Kuhl's framework, Kuhl (1985, 1986) further proposed several intriguing areas for future research that focus on the intention-action portion of the model. For example, individual differences in action-state orientation should influence planning and subsequent performance on a complex task, where the higher level of attention directed toward emotions and cognitions among state-oriented persons should result in less effective on-task planning. Evidence supporting this notion was obtained by Kuhl and Wassiljew's (1985) laboratory experiment investigating goal-directed performance on a complex problem-solving task. They found that state-oriented subjects developed less efficient plans than action-oriented subjects. Similarly, Kanfer and Ackerman (1989) found that persons assigned goals during the early phase of skill acquisition demonstrated lower performance and reported more frequent emotion-related thoughts than persons who did not receive an early explicit goal assignment.

Kuhl (1985) also provided a descriptive taxonomy of self-regulatory strategies that distinguishes self-regulatory strategies with respect to their target of control. This taxonomy provides a framework for investigating the effectiveness of various self-regulatory strategies. An important implication is that no single self-regulatory strategy is always best; the most effective one depends on the situation and the person. For example, a motivation control strategy that strengthens the motivational basis of an intention might be particularly useful

when performing boring or routine tasks, whereas an emotional control strategy might be useful when performance is evaluated as a reflection of ability. Further investigation of different self-regulation strategies used during task engagement would help in understanding the motivational processes that mediate the goal-performance relationship.

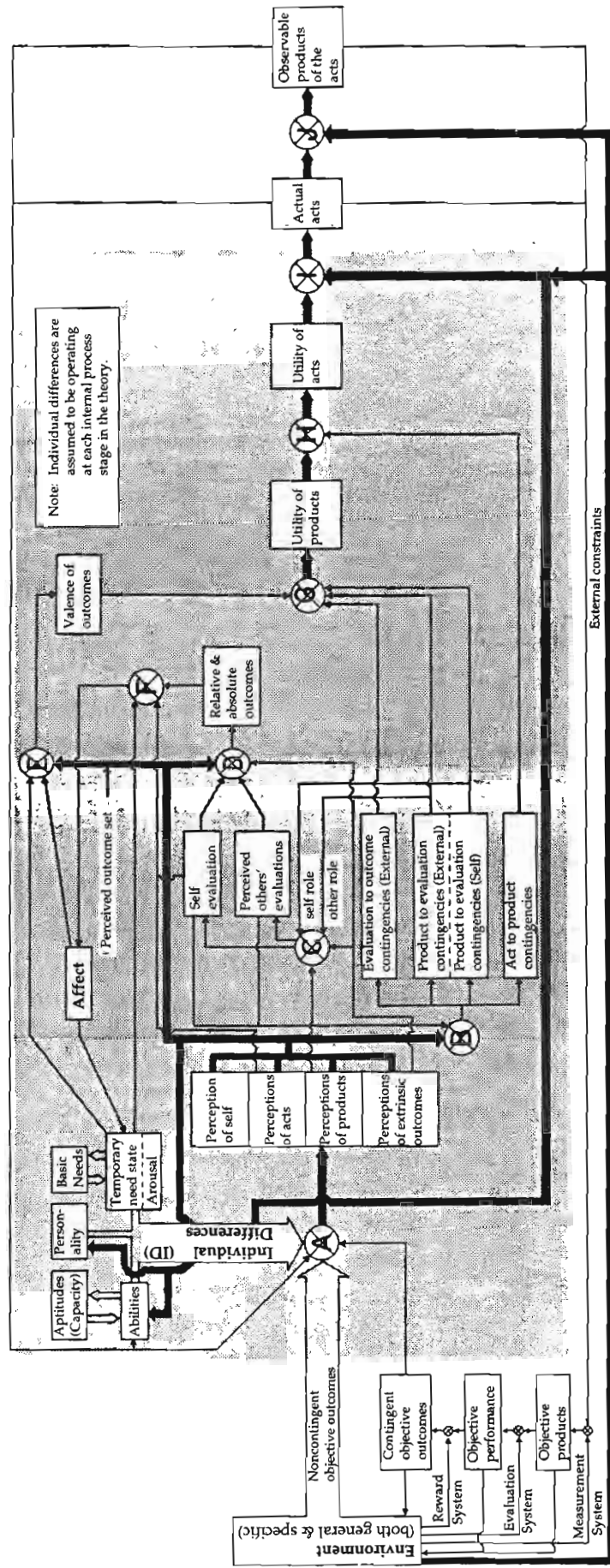
The Heckhausen and Kuhl framework provide an integrated treatment of distal and proximal motivation perspectives that offers a number of advantages over existing conceptualizations. First, the delineation of specific dispositional variables proposed to affect motivation at different points along the path from wishes to action provides a framework for more systematic investigation of personality effects on work motivation and performance. Second, Heckhausen and Kuhl conceptualize goal commitment as a process, rather than a static construct, that links intentions to action through self-regulation. This elaboration of goal commitment can help explain a number of goal-setting findings. Third, the adoption of an information processing perspective can be used to explain a number of phenomena that cannot be readily accounted for in other work motivation theories, such as how intentions may influence action at later points in time.

A Resource Theory of Behavior in Organizations. Naylor, Pritchard, and Ilgen (1980) proposed a comprehensive theory of individual behavior in organizations that integrates various theories of work motivation on the basis of their role in a broader decision-making conceptualization of action. The model is shown in Figure 4.

The overarching decision-making framework used maintains some, but not all, of the assumptions underlying $E \times V$ theories. Two features of the Naylor et al. (1980) approach distinguish it from previous organizational $E \times V$ theories. First, they regard motivation as a personal resource allocation process in

FIGURE 4

Naylor, Pritchard, and Ilgen's Integrative Model of Individual Behavior in Organizations



From *A Theory of Behavior in Organizations* (p. 24) by J. C. Naylor, R. D. Pritchard, & D. R. Ilgen, 1980, New York: Academic Press. Copyright 1980 by Academic Press. Adapted by permission.

which persons distribute their time and effort in accord with expectations for maximizing anticipated positive affect. Viewing motivation as a resource allocation process substantially broadens the $E \times V$ framework. For example, commitment to a task or product may be expressed as the sum of commitment to task-relevant and task-irrelevant actions. The focus of investigation thus shifts from asking whether a person is motivated to accomplish a target task to asking what proportion of personal resources he or she will devote to the target task. Adopting a resource allocation perspective also implies individual differences in total resource availability. As suggested (Kanfer, 1987; Kanfer & Ackerman, 1989), resource allocation models permit the development of a theoretical integration of ability and motivational determinants of performance.

Naylor et al.'s (1980) theory maintains its status as a cognitive choice theory through its emphasis on prediction of rational, conscious choice behavior. However, description of information processing in terms of individual's perceptions of the form of various contingencies distinguishes it from the traditional ahistorical approach of these theories. Specifically, they propose that choices are based on perceptions of bivariate functions instead of on subjective probability and utility estimates. For example, in considering the relationship between effort and task performance, they suggest that persons perceive the relation between effort and performance given different amounts of effort. Perceptions of a positive, monotonically increasing function between effort and performance indicates a belief that performance will improve with increases in effort, but with diminishing returns as one's effort and performance level approach asymptote. Other possible forms of the perceived effort-performance relation are discussed in Naylor et al. (1980).

The emphasis on the *form of the function* provides a framework for understanding how persons anticipate and change effort and time allocations over time in a relatively smooth

fashion. If, as Naylor et al. suggest, people perceive functional contingencies, then they can adjust time and effort allocations quickly when new information is obtained. This feature of the Naylor et al. approach creates a conceptual bridge linking $E \times V$ formulations with dynamic approaches, such as Atkinson and Birch's (1970) dynamics of action theory.

Naylor et al.'s theory also elaborates on cognitive determinants of action specific to work settings. The authors separate the instrumentality contingency into two distinct contingencies—(a) an *outcome-evaluation* contingency and (b) an *evaluation-reward* contingency—pointing out that the relationship between an outcome, such as a particular level of performance and evaluation of that performance by a supervisor, is probabilistic and depends on a number of factors, such as the supervisor's attention to the employee's activities. Furthermore, the relationship between the evaluation of the individual's performance and external reward such as a pay increase is also mediated by a host of factors, such as the organization's reward allocation policy. All other things held constant, people who perceive a noncontingent relation between the evaluation of performance and organizationally dispensed rewards should view time and effort directed toward task performance as less attractive than people who perceive a contingent outcome-evaluation relation. The distinction between performance, evaluation, and external reward processes emphasizes the separate influence of performance evaluation and organizational reward procedures on choice behavior.

Although the Naylor et al. (1980) theory is too complex to be tested in its entirety, the theory does suggest hypotheses worthy of research. For example, Naylor and Ilgen (1984) demonstrated how the theory can be applied to explain specific phenomena such as goal setting. Their theoretically based analysis of the goal-performance relation suggests that changes in performance due to different attributes of goal-setting procedures can be

related to changes in the perceived utility functions underlying changes in motivational force. More simply, goal-setting procedures that incorporate features such as persuasion can enhance performance on a task by altering perceptions of the act-product contingency and/or the product-evaluation contingency. Furthermore, more specific goal assignments refine the individual's perception of the point of inflection in the perceived product-evaluation contingency. Future research assessing additional innovative features of the Naylor et al. approach is likely to yield information that helps integrate and extend existing motivation theories.

An Integrated Information Processing/Resource Allocation Framework. This approach (Kanfer, 1987; Kanfer & Ackerman, 1989) departs from the Naylor, Pritchard, and Ilgen perspective in three ways: (a) individual differences in cognitive resource availability are examined in the context of cognitive resource demands imposed by the task and by motivational manipulations, (b) a distinction is made between distal and proximal resource allocation processes for the purpose of explicitly investigating the role of self-regulatory phenomena, and (c) individuals are said to differ in their resource capacity as a function of cognitive ability level.

In this framework, theories of human information processing (e.g., Kahneman, 1973; Navon & Gopher, 1979; Norman & Bobrow, 1975; Wickens, 1984) provide the foundation for describing theoretical links between ability, motivation, and task characteristics. Following Norman and Bobrow (1975), tasks are described on the basis of a performance-resource function that indicates the relationship between amounts of cognitive/attentional resources devoted to the task and resulting level of performance on that task. When tasks are *resource-dependent*, changes in attentiveness devoted to the task are accompanied by changes in performance. When tasks are *resource-insensitive*,

performance is limited by the nature of the task so that changes in attentiveness result in minimal change in performance. The analysis of tasks based on the performance-resource function permits distinctions between tasks according to their attentional demands and subsequent effects on behavior and performance.

By mapping motivational processes to the performance-resource function, Kanfer (1987) proposes that distal resource allocation processes govern how much of an individual's total attentional effort will be devoted to a task. Initially, this decision involves the joint operation of three cognitive mechanisms: (a) the performance-utility function, (b) the effort-utility function, and (c) the perceived effort-performance utility relation. Similar to $E \times V$ models, attentional allocations at this point reflect the individual's attempt to maximize perceived performance- and effort-utility functions through the perceived performance-resource function.

The *performance-utility function* refers to the individual's perceptions of the attractiveness of different performance levels for extrinsic or intrinsic outcomes, such as material rewards, recognition, and feelings of competence. Dispositional factors, such as achievement orientation, can also affect the relative attractiveness of different outcomes associated with higher levels of performance. Moreover, different levels of performance are more or less attractive, depending on the constellation of outcomes associated with each performance level. Beginning math students, for example, might view test scores of 60, 70, and 80 as similarly attractive (since they are all passing grades) but may view scores of 85 through 100 as more attractive if these scores are additionally associated with increasing levels of public recognition and pride. Consistent with Naylor et al. (1980), the overall utility of performance levels is cognitively represented as a contingency function between performance levels and the anticipated attractiveness of outcomes associated with varying levels of performance.

Decisions to allocate a certain amount of effort also depend on the perceived *effort-utility function*, or the anticipated costs and benefits of expending effort based on relatively stable preferences for effort expenditure. Persons performing tasks that require little attention are frequently dissatisfied with the work and describe it as boring. On the other hand, persons performing tasks requiring very high attention levels often describe the work as stressful and fatiguing, similarly unattractive. The overall utility of performance is thus a function of the individual's perception of both the performance-utility and effort-utility functions—that is, the attractiveness of outcomes associated with performance and their anticipated costs in terms of expending effort.

The third function, the *perceived effort-performance function*, serves a critical role in coordinating the performance-utility and effort-utility functions and permitting the individual to translate performance levels into personally meaningful allocations of effort. Without this referent function, decision making to maximize overall utility is imprecise at best. For example, although a person might view increased performance as desirable, the perceived effort-performance function enables the person to judge the point at which the costs of effort to attain it override the benefits of improved performance.

The primary determinant of the perceived effort-performance relation is the performance resource function—the objective relation between allocation of cognitive resources and performance. As discussed by Norman and Bobrow (1975), this function is rarely linear and can change depending on the type and difficulty of the task. Building on work in the information processing domain, Kanfer (1987) used Shiffrin and Schneider's (1977) distinction between *varied* and *consistent* information processing tasks to indicate the basis for changes in the perceived effort-performance function with practice across different task types.

Based on this conceptualization, Kanfer and Ackerman (1989) proposed an information processing model to integrate ability and motivational determinants of performance. Specifically, an individual's performance may be represented as a joint function of the individual's attentional capacity (i.e., cognitive ability) and the proportion of the individual's total capacity actually devoted to the task (i.e., motivation).

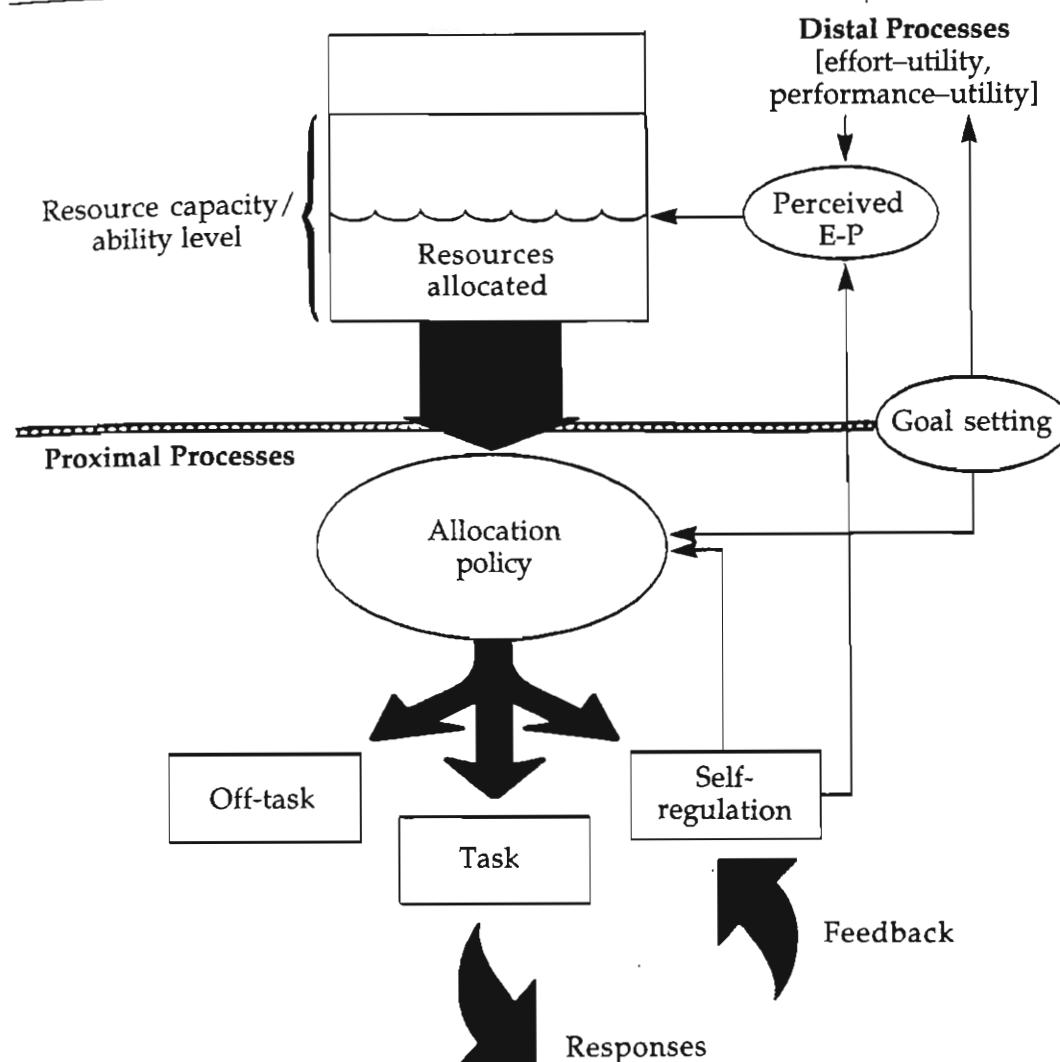
As shown in Figure 5, this framework is partly derived from Kahneman's (1973) model of attentional capacity. Attentional resources are allocated across different activities; feedback loops allow for adjustment of allocations, proportion of total capacity allocated, and for external influences at both the level of allocation of capacity and allocation policy. In addition, based on Ackerman's (1987, 1988) theorizing and research, individual differences in total attentional and cognitive capacity are conceptualized as differences in intellectual ability. Furthermore, the Kanfer and Ackerman framework emphasizes self-regulatory processes.

The Kanfer and Ackerman model assumes that changes in the amount of capacity used and policies of allocation are accomplished through motivational processes. Distal and proximal motivational processes affect the reallocation and/or mobilization of additional portions of capacity to off-task, on-task, and self-regulatory activities. When task resource demands are high, such as during the initial stages of skill acquisition, the individual allocates more attention to the task or adjusts the proportion of capacity engaged. Conversely, when task demands are reduced, such as during later stages of skill acquisition, the individual might attend to off-task activities and reduce the proportion of capacity engaged.

In the Kanfer and Ackerman (1989) model, both distal and proximal motivational processes influence the initial proportion of capacity engaged and the allocation policy across activities. Goals, incentives, dispositional tendencies, and metacognitive knowledge, in

FIGURE 5

Kanfer and Ackerman's Integrative Resource Model of Ability-Motivation Interactions for Attentional Effort



From "Motivation and Cognitive Abilities: An Integrative/Aptitude-Treatment Interaction Approach to Skill Acquisition" by R. Kanfer and P. Ackerman, 1989, *Journal of Applied Psychology* [Monograph], 74, pp. 657-690. Copyright 1989 by the American Psychological Association. Adapted by permission.

turn, influence these motivational processes. During skill acquisition, self-regulatory activities provide the essential mechanism for bringing about changes in allocation policy toward a task or total proportion of resource capacity actually engaged (e.g., through changes in the perceived effort-performance function). Without activation of self-regulatory processes,

an individual is expected to devote the same amount of resources originally committed to a task through the initial motivational decision processes.

Several implications can be drawn from the integrated resource model. In general, the framework implies that the effectiveness of motivational interventions on task

performance must be considered in light of individual differences in resource capacity and attentional demands imposed by the task. As attentional demands imposed by the task decrease with learning, individual differences in general intellectual ability become relatively less important determinants of performance while proximal motivational processes that sustain on-task attention over time become relatively more important (cf. Ackerman & Humphreys, 1990).

The model also provides a theoretically based account for the observed mediating effects of task complexity on the goal-performance relation (Mento et al., 1987; Tubbs, 1986; Wood et al., 1987). In essence, the Kanfer and Ackerman (1989) model suggests that goal assignments impose additional attentional demands associated with self-regulatory activities. During initial encounters with complex tasks, the benefits of goal-directed, self-regulatory activities are difficult to realize, given the high attentional demands imposed by the task. In simple tasks, resource demands are diminished and may therefore provide greater opportunity for the benefits of goal assignments to be demonstrated. During complex skill acquisition, goal-setting procedures are expected to enhance performance only when there are sufficient cognitive resources available for engaging in self-regulatory activity itself—that is, only during later phases of skill acquisition.

Kanfer and Ackerman (1989) examined the viability of the framework and several of its implications in the context of skill acquisition, where the information processing and ability demands changed as a function of practice, training paradigm, and the timing of goal setting. Three field-based lab experiments were conducted, in which 1,010 U.S. Air Force trainees engaged in a complex, computerized air traffic controller simulation. In the first experiment, the basic learning and ability-performance parameters were evaluated in conjunction with a goal-setting

intervention early in practice. Results offered support for the initial tenets of the framework and pointed to a number of critical issues in the appropriate use of goal setting in a complex learning environment. As expected, ability exerted a strong influence on early performance, but the effect of ability attenuated as attentional demands of the task declined with practice. Goal assignments made during the initial stage of skill acquisition exerted no effects on mean performance; however, self-report measures of self-regulatory activity associated with the goal-setting manipulation suggested that the goal-setting manipulation might have been less effective in stimulating self-regulatory activity at the early stage of skill acquisition, when resource demands of the task were high and self-confidence in capability for goal attainment was low.

In the second experiment, goal setting was further investigated at later stages of skill acquisition. The results indicated that difficult goal assignments made during the intermediate stage enhanced task performance for both high-and-low-ability subjects. Further, goal assignments made during a later stage of practice were associated with higher reported levels of self-regulatory activity during the goal trials and higher levels of performance. The gradual decline of general ability-performance correlations across trials further suggested that activation of self-regulatory activity at this point did not drain resources from task performance but in fact may have redirected attentional effort toward the task.

A third experiment investigated the joint effects of self-regulatory activities, ability differences, and attentional task demands using a pretraining procedure that explicitly altered the information processing demands of the task but established high levels of self-confidence in goal attainment for all subjects. Specifically, subjects were assigned to one of two part-task training procedures, denoted *declarative* and *procedural*. Although both part-task training procedures were expected

to enhance performance of the complete task, the declarative training procedure was designed to reduce attentional demands by helping subjects gain declarative knowledge for performing the task before engaging in it. The demonstration of an aptitude-treatment interaction between goal-setting and intellectual ability in this experiment provided support for the Kanfer and Ackerman framework. For persons receiving procedural training where attentional demands in the full task were not lessened by training, goal assignments had a negative influence on performance, with a larger dysfunctional effect obtained for low-ability subjects. In contrast, subjects receiving declarative training where attentional demands in the full task were lessened by training, goal assignments had a positive influence on performance, with a larger beneficial effect for low-ability persons.

Summary of Integrative Approaches

An enduring problem in industrial and organizational psychology concerns the translation of basic research findings into broad yet accurate conceptual frameworks applicable to organizational settings. Katzell and Thompson's framework, building on previous advances in work motivation research, attempts to provide this type of bridge.

Other integrative approaches have less direct ramifications for applied settings. Heckhausen and Kuhl's framework unifies distal and proximal motivation approaches and suggests a number of researchable hypotheses for understanding the breakdown of intention-action relations. Naylor et al.'s (1980) emphasis on resource allocation decisions in the form of time suggests a new way of applying $E \times V$ notions to organizational issues such as employee efficiency. The integrated resource model proposed by Kanfer and Ackerman (1989) indicates how motivation affects skill acquisition and when and for whom

motivational interventions might be most useful.

These recent integrative approaches also serve an important scientific function; such approaches identify potentially fruitful directions for future research. Within the motivational domain, much activity has been directed toward integration of prevailing formulations: $E \times V$ and goal-setting formulations (e.g., Hollenbeck & Brief, 1987; Hollenbeck & Klein, 1987; Locke et al., 1986; Naylor & Ilgen, 1984; Riedel, Nebeker, & Cooper, 1988), goal setting and social learning (e.g., Bandura & Cervone, 1983, 1986; Kanfer, 1987; Locke et al., 1984), $E \times V$ and information processing approaches (e.g., Mitchell & Beach, 1977; Zedeck, 1977), goal setting and control systems theory (e.g., Campion & Lord, 1982; Kernan & Lord, 1988, 1990), and $E \times V$ and self-regulation/metacognition (e.g., Heckhausen & Kuhl, 1985; Kuhl & Kraska, 1989). Perhaps such research will shed light on behavior in important areas in industrial and organizational psychology, such as learning, transfer of training, and prediction of long-term job performance.

Directions for Future Research

Motivational psychology is entering a new phase of growth. In this phase, persons are viewed not only as processors of information but as sources of influence on behavior. All paradigms of motivation have witnessed increased emphases on the individual's goals and the effects of self-systems on cognitive processing of information and subsequent task behavior. In the need-motive-value paradigm, investigations have coalesced around understanding the psychological structure of work goals and the effects of activated personal goals on affect and cognitions. In the cognitive choice paradigm, Raynor's (1978) theory has expanded $E \times V$ models to take into account the relationship between an individual's immediate and long-term goals. In the self-regulation

paradigm, goals are regarded as a fundamental starting point for motivational activity.

Two larger themes serve to underscore recent motivation theories and research. Expectancy-value theories, intrinsic motivation theories, self-regulation theories, and attributional theories all have stressed the energizing role of affect and emotion as they influence the individual's organization and interpretation of knowledge and search for information. Although the approaches differ in the primacy accorded affect relative to cognitions, the influence of cognized goals on motivation accrues in large part through its affective potency.

The affective basis of motivational processing has been studied primarily in the context of decision making and goal choice. There is, however, increasing interest in understanding how and when emotional states "short-circuit" cognitive decision-making processes. Heckhausen and Kuhl's (1985) description of the transition from wishes to action suggests a number of interesting hypotheses. For industrial and organizational psychologists, investigations of "short-circuit" processes have potential implications for building conceptual links between an individual's enduring personal concerns and seemingly irrational or unrelated work behavior patterns. Weiner (1985), for example, argues that different forms of affect exert a direct influence on actions such as helping others. This line of reasoning might be used to study the role of differentiated affects such as anger, happiness, and gratitude on constellations of behavior demonstrated in the workplace.

A second, related theme underlying research in the self-regulation-metacognition paradigm stems from recognition of the self-system as a determinant of action. Two prominent features of this system pertain to self-assessment and self-enhancement (Sorrentino & Higgins, 1986). *Self-assessment* refers to persons' attempts to obtain a realistic assessment of their competencies. *Self-enhancement* refers to persons' attempts to enhance self-esteem.

As Trope (1986) indicates in his integrative review of self-assessment and self-enhancement, an individual's goals may center on self-assessment, self-enhancement, or both in achievement contexts. Analysis of intrinsic motivation and self-regulation theories indicates that both self-enhancement and self-assessment underlie many of these formulations. The learning-performance distinction made by Dweck and Nicholls supports the notion that different behaviors might be demonstrated, depending on which motive is most salient.

Reminiscent of notions associated with traditional growth theories, Trope (1986) suggested that people often seek challenging tasks if they perceive that the diagnostic information about their capabilities might enhance their self-esteem. For example, a novice salesperson might privately set a difficult sales goal in order to learn more about his or her sales ability. The person might also engage in self-regulatory strategies to enhance motivation and control the negative impact of failure. In Nicholls' (1984) terms, however, this situation involves both a learning and performance goal. Disentangling these orientations in organizational settings is likely to be difficult except in strong environments, such as in training or competition.

An alternative approach suggested by Trope (1986) and Kuhl (1985) is to focus future research on the determinants and behavioral consequences of individuals' use of different types of self-regulatory strategies. In the organizational domain, Beach and Mitchell (1978) and Tatum and Nebeker (1987) suggested a similar approach that aims toward developing a taxonomy of strategies used in work settings. Tatum and Nebeker (1987), for example, view goal setting as comprising only one of several general work strategies (e.g., pacing, work-time management, feedback seeking). These work strategies can be thought of as metamotivational strategies because of their influence on the allocation of time and effort across work activities. Investigation of self-regulatory and other metamotivational strategies used in the

workplace appears to be a promising avenue for applied motivation researchers.

Most contemporary motivation theories in industrial and organizational psychology either neglect noncognitive individual differences or treat a few select individual differences as moderating variables (e.g., job characteristics theory). Furthermore, new theories brought into the industrial and organizational realm tend to be similarly silent about individual differences (e.g., attribution theory). In contrast, recent advances in motivational psychology typically clarify the role of individual differences variables at the outset of the theoretical formulation. Although identification and measurement of stable dispositional variables remains somewhat problematic in many areas of psychology, it is unlikely that work motivation theories will advance without more systematic recognition and treatment of factors involving dispositions and motives.

Similarly, despite widespread agreement with Vroom's well-known statement that performance is an interactive function of abilities and motivation, work motivation researchers have shown a curious neglect of individual differences in cognitive abilities. In a learning context, Snow (1986, 1989) argues persuasively for the importance of cognitive-conative aptitude-treatment interactions. Results obtained by Kanfer and Ackerman (1989) indicate that further attention to these interactions might have important implications for the development of effective training programs and management practices.

Few of the recent theoretical developments in motivation have come directly from the industrial and organizational domain. A factor that might account for the relative dearth of advances in work motivation theory stems from the narrow range of motivational theories that have dominated our literature. Landy and Becker's (1987) review refers to five major work motivation theories: (a) need theories, (b) reinforcement theories, (c) equity theories, (d) expectancy theories, and (e) goal theories.

However, review of these formulations in the context of broader developments in motivational psychology suggests that they have lost much of their power for guiding empirical efforts. In each case, elaborations and revisions of the original formulation have led to new lines of research, and in some cases the revised theories have little in common with the original formulation (e.g., Atkinson & Birch, 1970; Bandura, 1986; Kanfer & Hagerman, 1981; Thibaut & Walker, 1975).

As streams of research develop, old distinctions between theories blur and new distinctions emerge. For example, traditional divisions between cognitive, personality, and behavioral theories have less import as new conceptualizations embrace an integrated cognitive-behavioral perspective that takes into account person-situation interactions. In addition, formulations can be distinguished according to their emphasis on *distal* or *proximal* motivational processes. Distal processes, whose indirect effects on behavior depend on how intentions and goals are implemented in action, guide the establishment of an individual's behavioral intentions and choice between alternative courses of action. Vroom's (1964) theory, for example, focused on distal motivational processes. In contrast, proximal motivational processes come into play when goals and intentions are not readily accomplished. In these situations, additional volitional or metacognitive activities are required to guide resource allocations. Bandura's (1977a, 1977b, 1986), Carver and Scheier's (1981, 1985), Kanfer's (1970; Kanfer & Hagerman, 1981), and Kuhl's (1982, 1984, 1986) motivation theories focus on proximal motivational processes. More comprehensive explanations of motivation must address both distal and proximal processes.

For industrial and organizational researchers, a key implication of the distal-proximal distinction is that the motivation domain is conceptualized as a *dynamic series of resource allocation processes*. Industrial and organizational

psychology has long viewed motivation as a determinant and consequence of reasoned choice. Current theory and research indicates serious limitations with this perspective. For example, the emphasis on cognitive choice yields an outcome of *intended effort or action*, not behavior. In the resource allocation perspective, classic models of choice can be represented as one of several processes involved in the regulation of behavior; choice processes set the stage for (and might condition) subsequent self-regulatory processes.

Adopting a multiple resource allocation perspective has direct implications for future research. Theoretically, the construct of cognitive resources provides a metric for linking total cognitive resource capacity with motivational influences on the allocation of available resources. Pragmatically, the distinction between determinants of choice and determinants of self-regulatory efficiency implies that particular interventions, such as goal assignments, can exert contradictory effects on distal and proximal motivation processes. Developmental, dynamic models of motivational processes are sorely needed to understand (a) the interplay of distal and proximal motivation systems during complex skill acquisition, (b) the determinants of long-term work accomplishments, (c) persistence in the face of failure, and (d) strategic activity in the achievement of complex task goals.

As with motivational psychology research in general, work motivation researchers continue to focus on cognitive mechanisms and processes underlying work activities. Expectancies, goals, and perceptions of person-environment contingencies remain central constructs in these cognitive theories of choice and action. Within this cognitive framework, research investigating the environmental and internally mediated determinants of these factors has flourished. The importance of self-generated reactions to environments and their effects on choice processes is reflected in the recent integration of social learning and goal-setting theories.

The emphasis on cognitive processes has also renewed interest in identifying naturally occurring determinants of goal states. In contrast to earlier research based on rigid taxonomic models of human needs, contemporary research has focused on context influences on goal choice and the effects of career stage on the changing salience of goal states and job outcomes over time. Similarly, there has been renewed interest in personality-based approaches that explore how features of the environment trigger specific motivational states functionally similar to motives. Decision-making procedures, for example, can activate goals or motive states specifically designed to restore justice and fairness. Instructional cues that make competency assessment salient may trigger motivational processes designed to protect self-esteem and so result in lower levels of effort.

The growing interest in person-environment determinants of goal states differs from traditional expectancy-value research in two ways. First, new approaches view motive states as waxing and waning in association with environmental and personal factors. Increasingly, researchers are distinguishing between motivational processes that occur in achievement contexts and those that govern daily functioning. This perspective suggests some volitional control involving switches between different motivational orientations. From an industrial and organizational perspective, it is essential to know more about which environmental events trigger this switching and the benefits and drawbacks associated with each orientation.

Recent growth in motivational psychology has sparked new interest in delineating the areas, issues, and questions that work motivation researchers should address. An initial list of the many possibilities follows.

- *Volitional processes.* The growing interest among industrial and organizational researchers in self-regulatory processes underlying the goal-performance relation

parallels a burgeoning literature on self-processes in developmental, motivational, and personality psychology, and metacognitive processes in educational and cognitive psychology. Research in these domains indicates that investigation of volition requires careful attention to the connection between goals, specific cognitive processes, affect, and learning. For work motivation researchers, theoretical advances in other domains suggest several questions that have direct implications for work behavior. For example, what metacognitive/self-regulatory processes are enlisted in implementing which types of goals? Are these processes amenable to training? Can a taxonomy of self-regulatory strategies be developed, and what might determine when different strategies should be used? How do factors such as social influence and individual differences in cognitive abilities affect the motivational and volitional processes involved in task persistence?

- *Dispositional influences.* A fundamental problem in the investigation of dispositional influences on work behavior stems from the current lack of a unified theoretical perspective for understanding how and which personality constructs influence the motivational system (Weiss & Adler, 1984). It is doubtful that such a perspective will be developed in the near future. Nonetheless, the present review suggests a number of questions that might aid in the ultimate development of such a framework. For example, Revelle and his colleagues (see Revelle, 1989) provide evidence for a link between impulsivity, arousal, and task performance. What effects do such personality dimensions have on self-regulation and the selection of self-regulatory strategies for task accomplishment? Investigations of achievement orientation have traditionally examined

the role of dispositional variables on goal choice. Consistent with recent research by Kuhl and others (e.g., Helmreich et al., 1986), one might argue that dispositional variables such as impulsivity affect work behavior through proximal rather than distal motivational processes.

- *Organizational influences.* Many work motivation theories implicitly assume that organizational procedures and variables exert a static influence on work motivation—that a change in the workplace produces a stable change in choice and subsequent behavior. Alternatively, a dynamic person-based perspective suggests that organizational procedures can trigger longer term changes in work behavior that are sustained through self-processes. Little attention has been given to investigating organizational interventions that might exert such effects. Relevant questions along these lines include, for example, how do technological innovations that make a job more boring influence self-regulatory efficiency on task-related dimensions such as attendance and work behavior problems? What kinds of organizational training procedures facilitate intrinsic task involvement? Which features of the work environment tend to promote intrinsic task involvement among longer tenured employees? When might intrinsic task involvement be detrimental to achievement of organizational goals? Answers to these questions require further study of motivational consequences across time and in environments with better known task and person properties, such as in training.
- *Task characteristics and action strategies.* Continuing interest in goal-setting procedures and their effects on performance raises the fundamental question of how individuals translate goals, choices, and

intentions into action. Recent studies examining the fidelity of the goal-performance relation have focused on task characteristics and task strategies (e.g., Campbell & Ilgen, 1976; Earley, Wojnarowski, & Prest, 1987; Huber, 1985; Jackson & Zedeck, 1982). The introduction of task characteristics into the goal-setting literature raises a host of important new questions that require more attention to our conceptualization of task complexity and task strategy constructs and suggests a possibility to merge motivation theory with other elements of cognitive theory (e.g., Kanfer, 1987, 1989; Kanfer & Ackerman, 1989).

A research agenda on task characteristics will need to address at least two critical conceptual problems. First, as Wood (1986) and Campbell (1988) suggest, task complexity can be conceptualized in terms of the cognitive, information processing demands imposed by task performance. In this view, however, conclusions about the moderating effects of task complexity on the goal-performance relation cannot be drawn until more is understood about the features that distinguish simple and complex tasks. For example, with practice persons can perform some multipart complex tasks, such as driving, with relatively little effort. Practice on other complex tasks, such as troubleshooting computer equipment failures, however, is less likely to substantially reduce attentional effort requirements for task performance when equipment designs constantly change. Advances in cognitive psychology provide opportunities for organizational researchers interested in this issue.

A similar conceptual problem arises with respect to task strategy. A fundamental feature of task strategies is their dynamic quality—*strategies* refers to the management of time and effort across activities and over time for a specific purpose. At the level of individual behavior, the heart of the task strategy problem thus

appears to be the issue of self-regulation, or how persons protect, channel, maintain, and terminate goal-derived resource allocations of cognitive effort and time in the face of changing difficulties and competing demands for attention. As suggested by Kanfer and Ackerman (1989) and by Kuhl (1986, Kuhl & Kraska, 1989), the effects of goal setting on performance of complex tasks might be due to how features of the goal-setting procedure influence subtle and relatively automatic self-regulatory processes. These self-regulatory activities may be best thought of as strategies.

Research in metacognition suggests that selection and implementation of a specific task strategy is likely to be influenced by individual differences in self-knowledge and cognitive abilities as well as by motivational interventions such as goal assignments. Persons who do not recognize the potential benefits of self-regulatory activity are less likely to use such strategies in accomplishing difficult goals. It is not yet clear how effectively or generally such self-knowledge can be imparted through training. In addition to potential individual differences in self-knowledge, individuals are likely to differ in the extent to which they can effectively use different strategies. When strategies involve cognitive processing, persons with less cognitive ability might be unable to take advantage of task strategies used by high-ability persons. Thus, the choice and quality of an individual's strategy is likely to depend not only on environmental factors but also on self-knowledge and individual differences in cognitive abilities. Such a view is consistent with Bandura's emphasis on the emergent influence of self-efficacy expectations during multitrial learning. Future investigations of goal-strategy-performance relationships will need to pay more attention to individual differences in cognitive abilities and potential aptitude-treatment interaction effects on behavior and job performance (e.g., see Snow, 1989).

In summary, advances in industrial and organizational motivational psychology will

not come from further incremental exploration of traditional theories in the literature. Advances in cognitive, differential, and personality psychology have raised new issues that require synthesis of older approaches and the development of new perspectives that look beyond the issues and paradigms delineated by the established theories. The most promising direction for synthesis involves reconsideration of the goal construct as it pervades daily and long-term functioning in work contexts. For industrial and organizational scientists, the current revival of motivational psychology, as seen in the advances reviewed in this chapter, indicates a number of opportunities for expanding the scope of inquiry and changing individual behavior in organizational settings.

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