

THEORIES AND PRINCIPLES OF MOTIVATION

Sandra Graham

UNIVERSITY OF CALIFORNIA, LOS ANGELES

Bernard Weiner

UNIVERSITY OF CALIFORNIA, LOS ANGELES

Early humans no doubt constructed bridges well before engineering courses and knowledge of the laws of physics existed; primitive healers attained cures well before medical courses and knowledge of the laws of biology existed; and achievement strivings in others were fostered well before self-instructional tapes and knowledge of the laws of motivation existed. But it is also true that the laws of physics aided the construction of the Golden Gate Bridge and the laws of biology helped eradicate smallpox. In a similar vein, theories of motivation may assist in the creation of rules to enhance human performance. We acknowledge at the outset that this motivational goal is presently more a dream than a reality and will not reach fruition in the reader's lifetime. Thus, those beginning this chapter with the anticipation that after reading the final paragraph they can go back into the classroom and soon have all the students working with intensity and positive affect will be disappointed.

This does not mean that effective principles of motivation do not exist, as Deborah Stipek illustrates in the following chapter. But a belief about motivation or a specific guide to conduct is far from a theory. For example, it is common knowledge that if a person is engaged in an activity that is interesting, engrossing, and involving, and the person is oblivious to all else, then motivation is high. Intensity, persistence, and other indicators of motivation will thereby be augmented. Psychologists are well aware of this fact, and one approach to enhancing motivation stresses "intrinsic" motivation (Deci, 1975), or motivational "flow" (Csikszentmihalyi, 1975), where conditions are created that increase interest so that learning and mastery are sought for their own sake. This reasonable and in all likelihood correct principle of motivation is shared by prescientific societies and motivational engineers alike. But a guideline for behavior is far from a theory of motivation.

Numerous other principles of motivation have been proposed, and they tend to be in agreement with the thoughts of lay consumers of this knowledge. For example, it has been argued that the search for knowledge will be impeded if other motivations necessary for survival, such as hunger, are more

pressing (Maslow, 1943); that positive benefits accruing from performance will increase the likelihood of subsequent repetitions of this desired behavior (Skinner, 1953); that students will be positively motivated if they are more concerned with mastery of the material than with doing better than others (Nicholls, 1984); and that contexts should be established so that students perceive themselves as personally responsible for performance rather than as passive recipients controlled by outside forces (deCharms, 1972). All of these examples depict reasonable beliefs that can be incorporated into educational programs, with some likelihood of augmenting motivation and performance. They are not, however, theories of motivation.

WHAT IS A MOTIVATIONAL THEORY?

To address this question, let us begin with a definition of motivation. Motivation is the study of why people think and behave as they do. In the context of academic achievement, motivational concerns would be addressed if we were to ask, for example, why some students complete tasks despite enormous difficulty, while others give up at the slightest provocation, or why some students set such unrealistically high goals for themselves that failure is bound to occur.

Another way to capture the concept of motivation is to think about a typical achievement behavior, such as studying for an examination, and to view it as a temporal sequence that is started, sustained, directed, and finally terminated. Motivational psychologists would want to examine what the individual is doing, or the *choice* of behavior; how long it takes before an individual initiates the activity, or the *latency* of behavior; how hard the person actually works at the activity, or the *intensity* of behavior; how long the individual is willing to remain at the activity, or the *persistence* of behavior; and what the individual is thinking and feeling while engaged in the activity, or the *cognitions* and *emotional reactions* accompanying the behavior. Note that this is quite different from the study of learning,

which has to do with what has already been or is being formed. Educators sometimes confuse the goals of psychologists who study motivation with the goals of those who study learning.

With these definitional issues behind us, let us now turn to what is meant by a theory of motivation. In what ways do theories differ from specific explanations or rules? And why should a theory of motivation provide better (or worse) guidelines for motivational augmentation than would a set of specific explanations or rules?

We construe a theory to be a network of constructs, related to one another by a precise set of rules, with some or all of these constructs linked with an operational language. For example, consider Clark Hull's drive theory of motivation (Hull, 1943, 1951). Although this conception no longer has great impact in psychology, it was the most influential approach in the decades from 1940 to 1960. In its simplest form, the theory states that behavior is a function of drive multiplied by habit: $B = f(D \times H)$. Thus, two constructs, drive and habit, are linked in a clearly specified mathematical manner (multiplicative). Furthermore, drive is determined by factors like hours of deprivation of a commodity necessary for survival, and habit by the number of times a response has been rewarded in a particular situation. Described in this very incomplete manner, drive theory meets some of the criteria necessary for a conception to be labeled as a *theory*—multiple concepts, linked in a definitive manner, and identified with observable indicators.

There are other differences between a theory and a specific explanation in addition to the number of constructs involved and the preciseness of their postulated interrelations. A "good" theory should be able to explain diverse phenomena across a range of disparate situations. That is, a scientific theory entails general laws that transcend particular instances. For example, when a layperson explains why one is drinking water, he or she may state that the person is thirsty. A motivational engineer with the goal of inducing subsequent drinking behavior may deprive the person of water, offer this individual some salty peanuts, and the like. These motivational manipulations will surely "work," i.e., increase the behavior that is desired. In a similar manner, when a person accounts for why another is eating, he or she is likely to explain that the person is hungry; motivational engineers with the goal of increasing food consumption at a point in time surely will be able to establish conditions that heighten eating behavior, such as food deprivation, filling the room with a tantalizing odor, and so forth. But a motivational theorist, unlike the layperson or engineer, would attempt to use the same constructs and theory of action to interpret instances of both water intake and food consumption. The theorist might postulate, for example, that behavior is directly related to the amount of deprivation (whether water or food) and the level of arousal (whether induced by the eating of peanuts or by the aroma of food). Thus, the same concepts are applied to disparate motivational domains, and the analysis shifts from concrete instances to abstract issues involving the presence of any need. One of the goals of science is the development of such general explanatory principles. The objective is to develop a language, an explanatory system, a conceptual representation, or what is more commonly termed a theory, that is applicable across many domains of behavior and provides insights into (accurate predictions about) why behavior is initiated, maintained, directed, and so forth.

The more abstract the language and the greater the generality, the "better" is the theory. However, the further one departs from the specific instance under consideration, the less applicable is the theory to a specific context. For example, stating that behavior is a function of amount of deprivation and level of arousal does not provide the teacher with a clear set of engineering tools to alter performance in the classroom. In the long run, it may indeed be the case, as the motivational psychologist Kurt Lewin (1936) stated, that "nothing is as practical as a good theory." But in the short run, and when the science is as nascent as the field of motivation, then this epigram is not correct. In fact, there may be little as impractical as a theory, and nothing as practical as a good, concrete rule with little generality beyond the issue being considered. Surely, for example, making a task interesting will be a better step toward increasing classroom motivation than postulating that behavior is a function of drive \times habit.

In spite of the above statement, this chapter, should not be interpreted as opposed to theoretical development, for it is written by two theoretically oriented motivational psychologists. Rather, it is merely conveying reality (as we interpret it) at this point in the maturation of the field of motivation. Furthermore, theories have goals and benefits other than the possibility of application. The aim of theoretical understanding is to be able to incorporate disparate phenomena in as parsimonious a manner as possible. Such conceptual systems are of value with or without practical implications; and they allow for a more complete understanding of human behavior by grasping the core aspects of motivated action.

HISTORY OF THE SCIENTIFIC STUDY OF THEORIES OF MOTIVATION

The development of theory in the field of motivation has had disparate impact at different points in history. Thus, prior to examining both general theories and specific principles of motivation that have been proposed, we think it is beneficial to provide an overview of the growth and changes in this field of study. This allows us to introduce the theories and principles that we later review by first placing them in their broader historical context.

History is a constructive process. Just as one can subscribe to different psychological theories, so one can advocate different historical interpretations of a field. Our construction of history should be understood as only one among a number of possible viewpoints. Our interpretation was shaped by our training as experimentalists who believe that motivational principles applied to the classroom should meet the tenets of science. This history therefore has a decidedly empirical focus in tracing those theories that have been most subject to experimental testing.

There have been a few major trends in the scientific study of motivation, which had its origin around 1930. First, and particularly germane to this chapter, there has been a general shift from the creation of all-encompassing, broad theories to a focus on narrower, more bounded "mini"-theories and the analysis of specific aspects of motivated behavior. This is true not only for general psychologists but also for educational psychologists, who have withdrawn from the pursuit of general conceptions of behavior to a consideration of theories of

TABLE 4-1. Contents of the Chapters on Motivation in the Encyclopedia of Educational Research, 1941-1990

P. T. Young (1941 and 1950)	M. Marx (1960)	B. Weiner (1969)	S. Ball (1982)	B. Weiner (1990)
Need and activity level	Theories	Theories	Attribution theory	Cognitions
Appetite and aversion	Techniques	Associative	Achievement motivation	Causal attributions
Equilibrium and homeostasis	Drive and learning	Drive	Anxiety	Self-efficacy
Chemical controls	Drive and frustration	Cognitive	Self-esteem	Learned helplessness
Neural structures	Activation of drives	Psychoanalytic	Curiosity	Individual differences
Incentives	and motives	Topics	Minor areas	Need for achievement
Defense mechanisms	Reward	Curiosity (exploratory behavior)	Level of aspiration	Anxiety about failure
Degree of motivation	Knowledge of results	Affiliation	Affiliation	Locus of control
Educational applications	Fear and anxiety	Imbalance (dissonance)	Biochemical correlates	Attributional style
Praise and reproof	Arousal	Frustration	Reinforcement theory	Environmental determinants
Success and failure		Aggression		Cooperation versus competition (goal structure)
Knowledge of results		Relation to processes		Intrinsic versus extrinsic rewards
Cooperation and competence		Learning		Praise
Reward and punishment		Perception		
		Memory		

Note. From "History of motivational research in education," by B. Weiner. *Journal of Educational Psychology*, 82, 1990, pp. 616-622.

achievement behavior and principles that might augment or inhibit achievement strivings.

A second trend in the field of motivation has been a shift in the types of theories and principles proposed, from those conceiving of the person as machinelike, without conscious awareness or volition and controlled by environmental forces, to perceptions of individuals as rational scientists, decision makers, information processors, self-determining, and having other characteristics associated with an active mind (see Weiner, 1992). This change was part of the better known general shift in psychology away from mechanism and toward cognitive views of the dynamics of behavior.

One way to document these and other trends in the history of the study of motivation is to perform a content analysis of the chapters on motivation in the standard source book, *The Encyclopedia of Educational Research* (see Weiner, 1990). This volume has been published each decade, starting in 1941, and six chapters examine the motivation research conducted between 1930 and 1990 (Table 4-1).

The Mechanistic Period: 1930-1960

The first two motivation chapters in the *Encyclopedia of Educational Research* were written by Paul Young (1941, 1950). Table 4-1 reveals that the major research concerns of the day were activity level, appetites and aversions, homeostasis, chemical controls and neural structures, incentives, defense mechanisms, and degrees of motivation (the Yerkes-Dodson law of optimal motivational level). These topics were primarily associated with drive theory, the most dominant of the early theories of motivation. This conception is reviewed in greater detail later in the chapter. Some specific concerns of educational psychologists also were represented in the 1930s to 1950s, including praise and reproof, success and failure, knowledge of results (feedback), cooperation and competition, and reward and punishment. In contrast to the themes associated with drive

theory, the preoccupations of educational psychologists were less clearly tied to any formal conceptions of motivation.

Why were these the main fields of research when the scientific study of motivation was initiated? At first, the experimental analysis of motivation (the Latin root of *motive* means "to move") was linked with the search for the motors of behavior and was associated with mechanical concepts such as instinct, drive, arousal, need, and energization. Motivational psychologists in the 1930s to 1950s were especially concerned with what moved a resting organism to a state of activity. Accordingly, hungry rats were deprived of food and curious monkeys were placed in rooms without visual stimulation. It was believed that a discrepancy between an ideal "off" state and a less than ideal "on" state (i.e., the presence of a need) would be detected by the organism and activity would be initiated until the disequilibrium was reduced to zero (i.e., homeostasis was attained). It was presumed to be hedonic (pleasurable) to be in a state of balance, free of needs, and homeostatic mechanisms were believed to be automatically activated to maintain this equilibrium, such as shivering when the organism was too cold and sweating when the organism was too warm. Hence, researchers examined the effects of a variety of need states on a variety of indexes of motivation, including speed of learning.

The concept of a deprived organism living in an environment of limited resources gave a functionalistic, Darwinian flavor to the field of motivation, which between 1930 and 1960 was dominated by Clark Hull and Kenneth Spence, the moving forces behind drive theory. This foundation was far removed from issues in the classroom. Indeed, motivational theorists thought that human behavior was too complex to study directly and therefore not readily amenable to experimental manipulation, which at that point in history connoted deprivation of something necessary for survival. Hence, another characteristic in the study of motivation during this early period was a reliance on nonhuman subjects, who could indeed be deprived.

Melvin Marx (1960), in the next *Encyclopedia* chapter, also

linked motivation with energy and drive level. He examined the topics of drive and learning, drive and frustration, activation of drives, rewards, knowledge of results, fear and anxiety (which were learned drives), and arousal, all within the Hull–Spence tradition, and all with little or no relevance to the concerns of educational psychologists.

The Arrival of Cognition: 1960–1970

In 1969, four theoretical approaches dominated motivation: associationistic theory (John Watson), drive theory (Hull and Spence), cognitive theory (Kurt Lewin and John Atkinson), and psychoanalytic theory (Sigmund Freud) (see Table 4–1). The theories of Lewin and Atkinson, which followed Hull's in their impact on motivational psychology, will be examined in detail later in this chapter. The specific research areas analyzed in the decade of the 1960s included exploratory behavior, affiliation, balance (dissonance), frustration, and aggression. Furthermore, motivation was related to the other process areas of learning, perception, and memory. Although Hull and Spence and the drive concept remained influential, studies on drive, energy, arousal, homeostasis, and the other mainstays of drive theory received less attention.

Major changes therefore had taken place, some starting before Marx (1960) wrote his chapter and others flowering in the 1960s. The most important change was the general shift in psychology away from mechanism and toward cognition. For example, proponents of the psychology of Edward Thorndike (1911), which was incorporated by Hull, believed that a reward would automatically increase the probability of the immediately prior response, thus augmenting the likelihood of that behavior when the organism was in that same environment. It gradually became evident, however, that reward is associated with a variety of cognitions: A reward might convey to the recipient that he or she is being coerced or that the expectations of others are low. Each of these connotations could have a different motivational implication.

When the cognitive approach to motivation carried the day, the result was not just a different theoretical orientation, but also a new empirical outlook. For example, researchers began to concentrate on human rather than on nonhuman behavior. It became as respectable to generalize from human to nonhuman behavior as vice versa. So, just as Hull speculated about human motivation based on the observation of rats, so Lewin mused about the behavior of rats based on the study of humans! Furthermore, issues associated with success and failure and achievement strivings formed the heart of the theoretical and empirical study of motivation. This interest arose in part because of the manifest importance of achievement strivings in human behavior. In addition, success and failure could be readily manipulated in the laboratory, and their effects on subsequent performance determined, with no more difficulty than depriving lower organisms of food and testing the effects of deprivation on performance. Finally, many naturally occurring instances of achievement outcomes could be subject to field research, including success and failure in the classroom, thus opening a door for educational researchers.

By 1970, motivational research had become almost synonymous with achievement motivation research. Educational psychology thus moved into the spotlight and out of the shadows

portrayed in the reviews by Young (1941, 1950) and Marx (1960). Of course, other aspects of human motivation were studied in the 1960s, including affiliative behavior and cognitive balance. But these paled in comparison to the attention given to achievement strivings.

The cognitive motivational theorists remained wedded to the “grand formal theory” approach of Hull and Spence. They set as their task the isolation of the determinants of behavior and the specification of the mathematical relations among these factors. This is illustrated in the dominant Motive \times Probability \times Incentive formula of Atkinson (1957, 1964) and the closely related theories of Lewin (1935) and Julian Rotter (1954). All of these conceptions were known as expectancy-value theories, according to which motivation is determined by what one expects to get and the likelihood that one will get it. Thus, cognitions were presumed to play a key role in motivated behavior. Further, it became accepted that organisms are always active and, as a result, the key dependent variables in motivation became choice and persistence, indicators of the direction of behavior. Finally, although the scientific goal remained the development of general motivational theories, virtually the only testing ground for these theories was the context of achievement strivings. Thus, a disparity was created between the broad objectives of the theories and their narrow empirical focus.

With, on the one hand, the waning of mechanism, drive, and homeostasis as the loci of investigation and the gradual decline in research using lower organisms as subjects, and on the other hand the advent of cognitivism, rational-person metaphors, achievement strivings, and the study of human motivation, there came another important research direction. Attention shifted to the study of individual differences, with persons characterized as high or low in achievement needs, high or low in anxiety, high or low in internal control, and high or low in other characteristics presumed to bear on motivated activity. For the educational psychologist interested in individuals who performed poorly in the classroom, this was an important and a compatible shift.

Contemporary Motivation Research: 1970–1990

The next motivation chapter in the *Encyclopedia of Educational Research* was written by Samuel Ball (1982). The topics he covered included attribution theory, achievement motivation, anxiety, and, to a much lesser extent, level of aspiration, affiliation, biochemical correlates of motivation, and reinforcement (see Table 4–1). Ball's chapter documented a continuation of the trends observed in the 1960s, among them the continued decline of the broad theories proposed by Hull, Lewin, Atkinson, and Rotter, although attribution theory as a growing field was added to these general theories; an even greater focus on human behavior, particularly achievement strivings; an increasing range of cognitions documented as having motivational significance, including causal ascriptions; and an enduring interest in individual differences in achievement needs, anxiety about failure, and perceptions of control. During the 1970s, the study of nonhuman motivation (excluding the physiological mechanisms of hunger, thirst, and so forth) and the associated drive concept virtually vanished, not that many years after the heyday of Hull and Spence.

In the 1990s the motivation topics include cognitions (e.g.,

causal attributions), individual differences in motivation (e.g., need for achievement), and environmental influences on motivation (e.g., competitive versus cooperative contexts). Because most of these topics are reviewed in the remainder of this chapter, we conclude this section on history with the following general impressions:

1. The sweeping theories have for the most part faded away. What remain are varieties of cognitive approaches to motivation. The main theoretical conceptions today are based on the interrelated cognitions of causal attributions, efficacy and control beliefs, and thoughts about the goals toward which the subject is striving.

2. Achievement desires remain at the center of the study of motivation. There are pockets of research on power motivation, affiliation, exploratory behavior, altruism, aggression, and other social motivations, but these are of secondary concern. As already indicated, this orientation greatly limits the generality of the theories that have been proposed. On the other hand, for those solely interested in classroom achievement striving and engineering goals, the lack of theoretical generality need not be of great concern.

3. Within the achievement field, new approaches are vying to share the dominance heretofore held by need for achievement and causal ascriptions. These approaches embrace the linked concepts of task versus ego involvement, competitive versus cooperative goal structures, and intrinsic versus extrinsic rewards.

Overview of the Remainder of the Chapter

Bearing in mind these thoughts about theory definition (a network of interrelated concepts linked with a data language) and the history of motivational research (from broad mechanistic theories to a more specific focus on cognitive principles germane to achievement strivings), we now turn to a review of motivational theories and achievement-related principles. The review first covers five general theories that have dominated the scientific study of motivation: Hull's drive theory, Lewin's field theory, Atkinson's theory of achievement strivings, Rotter's social learning theory, and attribution theory as espoused by Heider, Kelley, and Weiner. Although some of these broad theories no longer have great impact, they nonetheless spawned a number of contemporary constructs with less breadth but more relevance to classroom motivation. We then turn to six contemporary motivation constructs concerned with achievement strivings. Three constructs generally address concerns about ability or its absence: self-worth, self-efficacy, and helplessness beliefs. As will be seen, these three constructs are, in part, the legacy of expectancy-value theories. The remaining three constructs we examine relate to the cognitive and affective consequences of different achievement goals. Under this broad rubric we review research on task versus ego involvement, intrinsic versus extrinsic incentives, and cooperative versus competitive goal structures. We conclude the chapter with a discussion of general issues in the study of motivation that we consider important for future research.

GENERAL THEORIES OF MOTIVATION

The five general theories reviewed in this section are described in Table 4–2. We will return to a discussion of the

contrasting features of these theories in the section summary. For now, we suggest that the reader refer to Table 4–2 as each theory is presented.

Hull's Drive Theory

In the early 1990s, there was ferment about the general laws of mechanics, the notion that energy could be transformed in a myriad of ways. It was in this atmosphere that Clark Hull, an early robotic engineer, formulated his general theory of motivation and linked it with experimental psychology. It is uncertain whether Hull should be credited with the formulation of the first experimentally guided motivational theory, for both Kurt Lewin (discussed next in this chapter) and Edward Tolman (whose theory is not examined) were developing their conceptions at about the same time as Hull. But there is no doubt that Hull was the first dominant motivational theorist in America.

Hullian theory was partly derived from the laws of learning. To explain learning, Hull accepted the well-known Law of Effect proposed by Thorndike (1911). That law states that when a stimulus-response bond is followed by a satisfying state of affairs, the strength of the bond increases. Conversely, when a stimulus-response bond is followed by an annoying state of affairs, the strength of the bond is weakened. Hull accepted that reinforcement provided the necessary grounding for the establishment of stimulus-response connections, which he labeled *habits*.

The Drive Concept. Prior to Hull's work, motivational concepts were used to explain a different set of phenomena than those focused on by learning theorists. The behaviors set aside for motivation were grouped under the term "instinctive," the so-called inner urges that were striving for expression. However, in the face of severe criticism, such as lack of agreement on how many instincts there were and how they could be identified, the use of instinct as an explanatory principle began to wane. It often happens in science, however, that a theory or construct does not die—it is replaced. The concept of instinct was replaced by that of drive.

Hull (1943) suggested that it was a physiological deficit, or a need, and not an instinct, that instigated the organism to undertake behaviors that then resulted in the offset of the need. Stimulus-response linkages (*habits*) could provide the direction but not the energy required for action. According to Hull, for prior associations to be displayed, there had to be some unsatisfied need that in turn produced a drive to action. Drive, then, resulted from physiological disequilibrium and instigated behaviors that returned the organism to a state of equilibrium. Furthermore, drive was considered to be a nondirective energizer of behavior—any extant need would evoke whatever associative linkage was highest in the organism's habit structure.

In addition, Hull specified a mathematical relation between the drive (energy) and habit (direction) determinants of behavior such that

$$\text{Behavior} = \text{Drive} \times \text{Habit}$$

Because the relationship is multiplicative, if there was no deprivation (e.g., drive = 0), the organism would not act at all, no matter how strong the habit. Thus, passivity indicated a satisfied

TABLE 4-2. Characteristics of the Theories of Motivation

	Motivation Theory				
	Drive: Hull	Field: Lewin	Achievement: Atkinson	Social Learning: Rotter	Attribution: Heider, Kelley, Weiner
20-year time span	1940-60	1940-60	1960-80	1960-90	1970-90
Homeostasis	Yes	Yes	No	No	No
Mathematical model	Yes	Yes	Yes	Yes	No
Individual Difference	Anxiety	None	Need achievement	Locus of control	None
Focus and range	Food and water deprivation; learning	Task recall; conflict; aspiration level	Task choice	Expectancy in skill vs. chance situations	Achievement, affect, helping

organism. If the relation between drive and habit were additive, then, if there were many reinforcements for behavior (strong habit), that behavior would be undertaken even in the absence of need. The behavior then would not be functional, which was a basic tenet of motivational approaches in Hull's era.

Hull's formulation generated a vast amount of research in such areas as conflict, frustration, fear, social facilitation, and cognitive dissonance (see reviews in Atkinson, 1964; Bolles, 1967; Cofer & Appley, 1964; Weiner, 1992). Many of the empirical investigations were undertaken to support one or more of the following assertions:

1. Drive energizes behavior. This was documented by demonstrating that without the presence of needs, behavior would not be instigated.
2. Drive and habit relate multiplicatively. This was documented by manipulating both variables and showing their interactive effect on performance.
3. Drive is a pooled energy source. This was examined by varying two needs simultaneously and showing that they both activated the same response.

Anxiety and Learning. Among the most novel and influential aspects of research guided by drive theory were studies that related anxiety level to learning, a topic of particular relevance to educational psychologists. Spence (1958) and his colleagues contended that scores on an anxiety scale could be used to infer drive level, for anxiety, like need, was considered an aversive stimulus. These researchers then applied the drive \times habit conception to the learning of simple and complex verbal tasks. A simple task is one in which the correct response is dominant in the person's response hierarchy. An example would be a paired associates task where *day* is the correct response to the stimulus word *night*. Although individuals have been exposed to many associations involving the word *day*, the association with *night* has probably occurred more often and thus has the greatest habit strength. According to Spence, anxiety energizes the correct response to a greater extent than it evokes the incorrect response, and therefore increases the speed of learning. Thus, an increase in the level of drive (anxiety) should result in faster learning and fewer errors.

With complex tasks, on the other hand, drive theorists hypothesized that the heightening of drive would interfere with performance. A complex task is one in which there are many

competing response tendencies, all of which are relatively weak in habit strength. The effect of high anxiety as an energizer is to increase the strength of many incorrect tendencies, thereby interfering with the correct response tendency. An interaction is therefore predicted between drive level and performance on easy and complex tasks. Given an easy task, individuals high in anxiety (drive) would be expected to perform better than those low in anxiety. Given a difficult task, in contrast, those high in anxiety would be expected to perform worse.

Empirical studies conducted by Spence and his colleagues generally supported the interaction predicted by drive theory (see Spence, 1958). Thus, general laws of motivation based initially on animal research were successfully applied to predict the speed of human learning. This was indeed an impressive accomplishment.

The main contribution of drive theory was the systematic and precise exploration of motivated behavior from a mechanistic perspective. Drive theorists provided an exemplar for the scientific and experimental study of motivation. They carefully identified the determinants of behavior, specified their relations, created a mathematical model, and deduced predictions from that model that were tested in carefully controlled laboratory settings. This theory did not generate suggestions to increase classroom performance, but instead addressed the fundamental laws of motivation.

Lewin's Field Theory

Like Hull's drive conception, Kurt Lewin's field theory flourished during the 25-year period between 1935 and 1960. Lewin was guided by basic principles of Gestalt psychology. The Gestaltists argued that a behavioral "field," like physical and perceptual fields, would "seek" an arrangement of simplicity and "goodness," as illustrated in the symmetrical shape assumed by a drop of oil in water, the perception of a circle when such a shape is not fully closed, and the perception of faces as symmetrical when, in fact, they are not. The Gestaltists observed that if a point of light was presented in a dark context, the eye would be drawn to it. A tension would arise in the visual field, and some action would be taken to reduce this tension. Kurt Koffka (1935), a leading Gestalt psychologist, stated: "Theoretically, there is no difference between eye movements and such movements of the whole body as are executed in order, say,

to quench one's thirst" (p. 626). A person attaining a goal corresponds to a simple figure, the Gestaltists suggested.

The language of Gestalt psychology, developed primarily to account for perceptual phenomena, was adopted by Lewin for the interpretation of motivated behavior. Known as field theory, Lewin's basic theoretical statement held that behavior is determined by both the person (P) and the environment (E):

$$\text{Behavior} = f(P, E)$$

According to Lewin, the motivational force on the person to reach an environmental goal is determined by three factors: tension (t), or the magnitude of a need; valence (G), or the properties of the goal object; and the psychological distance of the person from the goal (represented by the letter e). Specifically,

$$\text{Force} = f(t, G)/e$$

Each of these factors and their interrelations have specific meanings in Lewinian terms. When a person experiences a need, desire, or intent, he or she is in a state of tension (t). For example, hunger produces a state of tension in the individual, who is then directed toward the goal of eating. Once the goal is attained, tension is eliminated. But for Lewin, needs are not related only to bodily functions and survival. The intent to complete a task or to solve a problem produces similar states of tension. Goals (G) become attractive, that is, acquire positive valence, to the extent that they can satisfy needs. For example, if one is hungry, the sight of a sumptuous meal acquires positive valence, as does locating a misplaced book if one's need is to find this lost object. Note also that in Lewin's formula, the psychological distance of the person from the goal (e) is inversely related to the magnitude of motivation. Thus, the closer one is to the goal (i.e., e approaches 0), the greater is the motivational force. This Lewinian principle is illustrated, for example, by the tired distance runner who sprints when the finish line is in sight, or by the reader who is totally engrossed in the final chapter of an engaging novel.

Few theoretical approaches have been as fruitful as Lewinian theory. Among the diverse motivational phenomena examined are frustration (which was shown to result in regressive behavior); substitution (the replacing of one goal with another when the initially desired goal could not be attained); and level of aspiration (which tends to increase after success and decrease after failure). Here we focus on two motivational phenomena that illustrate the application of Lewinian principles: conflict and task recall.

Conflict. Imagine a situation in which a student receives an academic prize in the form of a monetary award. The rules stipulate that the prize can be either a \$10,000 cash stipend or applied toward payment of tuition and fees for the next academic year. The student must decide how she wants the award allocated. In Lewinian terms, this represents an approach-approach conflict: The person must choose between two attractive (positively valenced) goals. Lewin regards such conflicts as relatively unstable and easily resolvable. For example, a simple change in cognition (e.g., "I don't want to have to worry about tuition next year") can alter the relative attractiveness of the two goals, thus motivating the individual to move toward the more attractive alternative.

In contrast, consider a situation in which a child is told by his teacher that he must remain in the classroom either during recess or immediately after lunch as punishment for classroom misbehavior. This depicts an avoidance-avoidance conflict inasmuch as the choices are between two negatively valenced alternatives. Lewin argued that avoidance-avoidance conflicts are less easily resolvable than approach-approach conflicts. As one approaches one of the aversive alternatives, the tendency to avoid that goal becomes even stronger. Thus the individual will vacillate between the two undesirable alternatives. Lewin's hypotheses have been supported in experimental studies documenting longer response latencies (implying more conflict) for avoidance-avoidance than for approach-approach hypothetical conflicts.

Task Recall. Lewin's student, Bluma Zeigarnik (1927), documented that people are more likely to remember tasks that they are not allowed to complete than those that are completed. Labeled the Zeigarnik effect, the greater recall of unfinished tasks derives from Lewin's conception of tension. The person's desire to reach a goal such as solving a set of anagrams corresponds to a state of tension. This tension leads not only to actual movement toward the goal, but also to thoughts about that goal. If the goal is not reached—for example, if the task is interrupted—the tension persists, as do thoughts about the goal. Hence, there is greater recall of unfinished than finished tasks. Although subsequent experimental studies called into question the robustness of the Zeigarnik effect (see Weiner, 1972), the predictions are unique to Lewin's formulation and are not readily explainable within other motivational frameworks.

Summary. Lewinians conceptualized motivation in terms of tensions that move the individual toward goals of varying psychological distance. Hullians conceptualized the same phenomena in terms of drive level and habit strength. Even though their motivational formulas are different, both Lewin and Hull reached similar conclusions about what determines motivated behavior: needs of the person (drive or tension), properties of the goal object (incentives), and a directional variable (habit or psychological distance). Further, both advocated that the goal of motivational theory is to identify the determinants of behavior and specify their mathematical relationships. Unlike drive theorists, however, Lewinians were concerned almost exclusively with complex human behavior as opposed to the behavior of nonhuman organisms. In addition, whereas drive theorists excelled in demonstrating how motivational theorists ought to function as experimenters, conducting well-controlled laboratory investigations, the main contribution of the field theorists was in pointing out the broader goals of a theory of motivation, using whatever experimental methods were available. Few conceptions have been able to incorporate the breadth of motivational phenomena addressed by field theory.

Expectancy-Value Theories

Studies conducted by Tolman and his colleagues during the 1930s (see Tolman, 1932) suggested that animals learn expectancies—what will follow if and when a particular response is made—rather than specific habits. In motivational theories, the concept of expectancy slowly began to replace the concept of

habit in descriptions of the learning process, a change consistent with the more general cognitive emphasis being exhibited by learning theorists. The concept of drive also came under increasing scrutiny. As the belief that organisms are always active gained acceptance, the field of motivation shifted from the study of what turns organisms "on" or "off" to an interest in the direction of behavior, or what choices are made. This shift led to increased attention being paid to incentives, as well as to expectancies, which Tolman had documented as necessary for performance.

The growing recognition of expectancies and incentives as determinants of motivation resulted in what is known as expectancy-value theory. The basic assumptions of expectancy-value theory are in accord with commonsense thinking about motivated behavior: What behavior is undertaken depends on the perceived likelihood that the behavior will lead to the goal, and on the subjective value of that goal. Furthermore, it is assumed that at any given moment individuals are faced with an array of alternative goals, each of which has its own subjective likelihood of attainment and assigned value. The expectancies and values are combined to yield a motivational tendency; the strongest motivational value "wins," that is, is expressed in action.

Expectancy-value theory was adopted by John Atkinson and Julian Rotter, the next two theorists to be examined. Their theories dominated the study of motivation for nearly 20 years, from the early 1960s up to about 1980.

Atkinson's Theory of Achievement Motivation. Like Hull and Lewin, Atkinson (1957, 1964) attempted to isolate the determinants of behavior and then to specify the mathematical relations between the components of his theory. However, Atkinson diverged from Hull and Lewin in concentrating on individual differences in achievement motivation.

In its simplest form, Atkinson's theory states that the tendency to approach an achievement-related goal (T_s) is a product of three factors: the need for achievement or the motive for success (M_s), the probability that one will be successful at the task (P_s), and the incentive value of success (I_s). These components were presumed to be multiplicatively related:

$$T_s = M_s \times P_s \times I_s$$

In this equation, M_s represents the achievement motive, a relatively stable or enduring disposition to strive for success. M_s was presumed to be learned early in life and to be shaped by particular childrearing practices. The strength of the achievement motive typically has been measured using projective techniques such as the Thematic Apperception Test (TAT). Subjects write imaginative stories to pictorial stimuli, and these verbal protocols are then scored for their amount of achievement imagery.

P_s , or the probability of success, refers to a cognitive expectancy or the anticipation that an instrumental action will lead to the goal. Operationally, this expectancy variable has usually been defined in terms of the normative difficulty of a task. For example, research participants might be told: "Our norms indicate that _____ percent of the students your age and ability level are able to solve these puzzles" (Feather, 1961). The value of P_s thus ranges from 0 to 1, where lower percentages of successful problem solvers depict normatively more difficult

tasks. Finally, the third determinant of motivated behavior, I_s , is the incentive value of success. Atkinson postulated that I_s is inversely related to P_s : $I_s = 1 - P_s$. This was because the incentive value of success was presumed to be an affect labeled "pride in accomplishment." It was reasoned that greater pride is experienced following success at a difficult task (low P_s) than following success at an easy task (high P_s); hence, probability and incentive were specified to be negatively related.

This presumption, and the multiplicative relations specified in the model, had surprising and far-reaching motivational consequences. First, motivation was presumed to vary systematically as a function of P_s at the task, with motivation maximum at tasks of intermediate difficulty (i.e., $P_s = 0.50$). Furthermore, the strength of motivation decreased symmetrically as P_s increased or decreased from the level of intermediate difficulty. In addition, Atkinson (1957) further predicted that the greater one's desire to succeed (i.e., the higher the value of M_s), the more attracted that individual would be to tasks of intermediate difficulty. Conversely, the less a person cared about achievement success (i.e., the lower the value of M_s), the more likely that person would be to select a very easy or very difficult task. These derivations resulted in Atkinson's theory being considered a theory of achievement-related risk-taking.

This conception had many implications for classroom motivation. In one nonobvious conclusion, Atkinson (1964) reasoned that ability grouping (where all performers were of equal ability and thus P_s approached 0.50), would be most beneficial to students high in achievement needs. He suggested creating environments of intermediate difficulty for those motivated by achievement desires. These types of prediction, and a desire to examine the dynamics of behavior among those considered to be high or low in achievement needs, were among the reasons why this conception was so dominant in the field of motivation. As indicated earlier, Atkinson remained committed to the development of a general theory of motivation; however, he confined his empirical interests to the study of achievement motivation, and thus the theory was particularly influential among educational psychologists.

Rotter's Social Learning Theory. Julian Rotter's social learning theory also was concerned with the choices that individuals make when confronted with a number of possible alternative ways of behaving. To explain choice, or the direction of behavior, Rotter (1954) attempted to integrate two major approaches in American psychology: the stimulus-response or reinforcement position, as exemplified primarily by Skinner and, to a lesser extent, by Hull, and the cognitive or field position advocated by Tolman, Lewin, and subsequently by Atkinson.

The motivational model formulated by Rotter is entirely consistent with the general expectancy-value perspective. According to Rotter, motivation is a function of expectancy (E) and reinforcement value (RV):

$$\text{Behavior} = f(E, RV)$$

That is, we engage in actions with the highest expectancy of bringing the most rewarding goal. But how these factors were mathematically related (e.g., multiplicatively, additively) remained unspecified.

In Rotter's terms, reinforcement value (RV) referred to "the degree of preference for any reinforcement . . . if the possibility

of their occurring were all equal" (Rotter, 1954, p. 107). Thus, reinforcement value was a relative or comparative term. This value component in the model was never greatly elaborated, inasmuch as Rotter devoted most of his attention to the expectancy variable and its determinants.

According to Rotter, expectancies for success were primarily determined by one's past history in the specific situation under consideration as well as by experiences in similar circumstances. Thus, for example, a person's beliefs about succeeding on a chemistry quiz would be influenced not only by prior experiences on chemistry examinations, but also by general success and failure on school tests (or what are termed generalized expectancies). The more novel a situation, the greater the importance of generalized expectancies in determining immediate beliefs. Hence, if a person had never taken a chemistry quiz before, that person's expectancy of success would be determined primarily by other school-related experiences.

In addition to these two factors, expectancy was determined by the perception of the characteristics of the task. Expectancies of success in skill-related situations were more differentially influenced by prior success and failure than were expectancies of success in chance-related contexts. In skill-determined tasks, where outcomes are determined by one's own abilities and effort, expectancies increase after success and decrease after failure. But in chance-determined tasks, such as the flip of a coin or the throw of a die, probabilities remain relatively unchanged following success or failure.

This analysis led Rotter (1966) to examine individual differences in more generalized perceptions of situations as skill versus chance-determined and to his well-known distinction between internal versus external control of reinforcement. Beliefs concerning personal responsibility for a reward have been postulated to constitute a personality dimension. At one end of this dimension is the person with an internal locus of control—the individual who thinks of herself as completely responsible for her behavior and reinforcements. At the other extreme is the person with an external locus of control—the individual who sees powerful others, luck, or circumstances beyond his or her control as responsible for behavior and reinforcements. Interpretations of Rotter's conception have tended to assume implicitly that to have an internal locus of control (i.e., to perceive outcomes as skill-determined) is the more adaptive motivational state. Internality on locus of control should therefore be positively related to any number of desirable outcomes, including high achievement strivings. Although empirical studies document positive associations between internal locus of control and academic achievement, the strength of this linkage is relatively weak (Findley & Cooper, 1983).

Individual differences in locus of control have been the subject of hundreds of research investigations. In the 1960s and 1970s the construct basically took on a life of its own that was far removed from its expectancy-value roots. Nonetheless, Rotter made many contributions to motivation theory. Among the significant accomplishments of this approach was that social learning theorists, by initiating the study of personal control, returned to a major motivational issue derived from philosophy—free will and its psychological consequences. Further, inasmuch as expectancy of success is a key determinant of classroom motivation and performance, the social learning theorists focused on a variable of central interest to educational

psychologists. Finally, with its emphasis on locus of control, social learning theory provided a foundation for an attributional analysis of perceived causality.

Attribution Theory

Attribution theory has its roots in the writings of Fritz Heider (1958) and the subsequent contributions of Harold Kelley (1967, 1971) and Bernard Weiner (1985, 1986). Attribution theorists construe humans as scientists seeking to understand the world around them and using naive statistical techniques, including principles of covariation, to reach causal conclusions. As applied to motivation, attribution theory falls under the broad rubric of expectancy-value approaches. However, rather than specifying mathematical relations between components, this theory presumes that motivation is best represented as a temporal process initiated with an event and ending with some behavior or behavioral intention.

In the achievement domain, where attribution theory has been most thoroughly examined, it has been documented that causal search is undertaken to determine the causes of success and failure. This search is most likely to be initiated when unexpected and important events end in failure, such as a low grade given to a good student. Among the most prevalent inferred causes of success and failure are ability, effort, task ease or difficulty, luck, mood, and help or hindrance from others. These inferences are in part based on informational variables, including past performance and social norms. Hence, for example, if one fails an examination and has failed frequently in the past, while others are successful on this examination, then the current failure is likely to be ascribed to lack of ability (see Kelley, 1967).

The motivational consequences of causal ascriptions have been related to the underlying properties of phenomenal causality, or the characteristics that all causes share in varying degrees. Three dimensions of causality have been identified: locus, stability, and controllability (see Weiner, 1986). Locus refers to the location of a cause as internal or external to the actor; stability connotes the invariance of a cause over time; and controllability concerns the extent to which the cause is subject to volitional alteration. Hence, for example, aptitude is considered internal to the actor, stable over time, and uncontrollable, whereas chance or luck typically is conceived as external to the actor, variable, and also uncontrollable.

The locus dimension of causality determines whether pride and self-esteem are altered following success or failure. Internal attributions result in enhanced self-esteem after success and decreased self-esteem after failure, whereas this is not true given external causes of success and failure. Pride and self-esteem have been documented to promote achievement strivings; internal ascriptions therefore are positive motivators following goal attainment.

The stability dimension of causality influences subjective expectancy of success. If a positive outcome is ascribed to a stable cause, such as aptitude, then future success will be anticipated. In a similar manner, negative outcomes attributed to stable causes lead to inferences that future success is unlikely. Hence, persistence in the face of failure is augmented when attributions are made to unstable causes such as insufficient effort and bad luck (see review in Weiner, 1986). Guided by

this linkage, achievement change programs have been developed that attempt to induce individuals to ascribe failure to lack of effort (an unstable cause) rather than to low ability (a stable cause). Many successful programs have been described in which retrained subjects have reported greater attributions to lack of effort following failure as well as increments in achievement strivings (see Forsterling, 1985).

Finally, the controllability dimension of causality is related to a number of affects with motivational implications, including anger, guilt, pity, and shame. Specifically, if one is prevented from success by factors that others could have controlled (e.g., noise, bias), then anger is experienced; guilt is felt when one fails or breaks a social contract because of internally controllable causes, such as lack of effort or negligence; pity and sympathy are expressed toward others who do not attain their goals because of uncontrollable causes, including lack of ability or a physical handicap; and shame (humiliation, embarrassment) is a dominant reaction when one fails because of internally uncontrollable causes such as low ability (see reviews in Graham, 1991; Weiner, 1986).

These emotional reactions also can serve as attributional cues. For example, if a teacher expresses pity and sympathy following a pupil's failure, that student tends to make low ability attributions for his or her failure (Graham, 1984). Hence, pity undermines beliefs about ability. Conversely, anger tends to promote the belief by the recipient of this emotional message that he or she has not tried hard enough (see Graham, 1990).

The various affective experiences also serve as goads, that is, they provide "instructions" to undertake particular activities. Pity toward others gives rise to helping and reward, whereas anger generates neglect and perhaps punishment when the other is in need. Thus, shy pupils in the classroom tend to elicit more help from the teacher than aggressive or hyperactive children, in part because shyness is perceived as less subject to volitional change than is aggressiveness (Brophy & Rohrkemper, 1981). In addition, students who do not try in the classroom are reacted to with anger by their teachers and are evaluated negatively, with maximum punishment dispensed to students who have ability but do not exert effort and fail. Conversely, pupils low in ability who succeed because of extra exertion receive the most positive evaluations from others. Guilt and shame, like pity and anger, also have motivational effects. Guilt tends to promote goal-directed activity, whereas shame gives rise to task withdrawal and is a motivational inhibitor.

To illustrate how principles from attribution theory relate to achievement strivings, consider the following two achievement scenarios with quite different consequences, followed by their attributional interpretations:

1. Jane fails her math examination and then seeks tutoring and increases her study time.
2. Susan fails her math examination and decides to drop out of school.

In the first scenario, where following failure the student studies harder, a negative outcome is experienced. Negative outcomes give rise to a search to understand why the goal was not attained. Let us assume that Jane has performed well in the past but on this particular test she performs poorly while others do well. Because the outcome is at variance with social norms,

Jane attributes the failure to herself. And because the outcome is also at variance with her past behavior, the attribution is to an unstable factor—lack of adequate preparation and study time. As previously stated, these causes are perceived as internal and unstable, and also as controllable. Because the causes are unstable, Jane maintains a reasonable expectation of success in the future and is hopeful. Because the causes are controllable by Jane, she experiences guilt, while her teacher and parents are angry and criticize her. High expectations of future success, along with hopefulness and guilt, enable her to overcome her feelings of sadness and weakened self-esteem. These thoughts and affects result in renewed goal strivings and an increase in motivation to perform better on the next examination.

In the second scenario, Susan also is described as failing her examination, but instead of resolving to study harder she drops out. This failure also elicits causal search. Let us assume that Susan has in the past failed examinations on which others did well. Hence, Susan ascribes failure to herself. She attributes her poor performance to low ability, which is internal, stable, and uncontrollable. Because the cause is internal, Susan's self-esteem is lowered; because the cause is stable, Susan anticipates future failure and feels helpless; and because the cause is uncontrollable, Susan feels ashamed and humiliated. In addition, her parents and teacher feel sorry for her and communicate this without criticism, furthering her disbelief in her own competence. Thus, in this achievement situation, Susan has a low expectation of future success and is feeling sad. She also feels low in self-worth, hopeless, and ashamed. Such maladaptive thoughts and feelings decrease achievement strivings and result in withdrawal from the setting.

In sum, attribution theorists contend that persons are naive scientists, trying (sometimes biasedly) to understand the causal structure of the world. The causal decisions reached, through the mediational role of their underlying properties, influence expectancy and affect. These, in turn, influence a variety of motivational variables. Among the main contributions of this approach has been recognition of an increasing number of cognitive determinants of action, as well as specifying the important role of emotion in motivation. The theory therefore has greatly expanded the postulated processes that mediate between the onset of a stimulus and the behavioral response to that stimulus.

Summary

In this section we have attempted to provide an overview of five major theories of motivation and place them within their historical context. To conclude this review, Table 4-2 compares and contrasts the theories along a number of dimensions.

Table 4-2 first lists the individuals most closely associated with each theory and the 20-year time span during which the major contributions of a theory were made. As indicated both in the table and in the earlier discussion of historical trends, the era of the "grand" theories of Hull, Lewin, and Atkinson has long since passed, and interest in Rotter's social learning theory has clearly waned. Research on attribution theory and its application to achievement concerns has continued to flourish, and this appears to be the dominant contemporary theory of motivation.

The earlier theories of Hull and Lewin postulated that the basic mechanism of motivation is homeostasis—the tendency

to seek a balanced state where forces are in equilibrium and there are no extant needs. This principle has lost favor and is not represented in either the expectancy-value theories of Atkinson and Rotter or contemporary attribution theory. Complex human motivations, such as the desire to attain success, win friends, gain power, or help others, fall beyond the range of convenience of homeostatic explanations.

Four of the five theories agree that the basic principle or "spring" of action is hedonism; that is, individuals are motivated to maximize pleasures and minimize pains. Only attribution theory adheres to the principle of mastery, which assumes that knowing and understanding are important in promoting action. At times, truth is sought (e.g., "Why did I fail the exam?"), even though that knowledge might cause great displeasure.

One of the hallmarks of a good theory of motivation is that it consists of a set of principles that are related to one another in a clearly specified manner. Four of the five theories attempted to specify these relations in mathematical or quasi-mathematical models. The theories and their constructs— $D \times H$ (Hull), t , G/e (Lewin), $M_s \times P_s \times I_s$ (Atkinson), E & RV (Rotter)—are alike in that each specifies a person variable (a temporary need state or trait), an environmental variable (incentive or value), and a learning component (habit, psychological distance, or expectancy) as the determinants of behavior. Attribution theory has not undertaken this kind of mathematical specification, although clearly it, too, comprises sets of interrelated constructs.

Table 4-2 further shows that three of the conceptions (Hull's drive theory, Atkinson's achievement theory, Rotter's social learning theory) incorporate individual differences as determinants of motivation. Atkinson and Rotter in particular greatly relied on the respective measurement of the achievement motive and locus of control. Problems associated with the measurement of motivational traits as well as their cross-situational generality no doubt contributed to the relative demise of these two theories, a point we return to later.

Finally, Table 4-2 distinguishes the five theories according to their focus, or what the theory has strived to predict; and their range, or what broader facets of motivated behavior are amenable to explanation. Each theory can explain some phenomena with some degree of insight and accuracy, while other phenomena are beyond its range of convenience. For example, Hullian drive theory cannot explain expectancy shifts at skill and chance tasks any more than social learning theory can account for the energizing effects of hunger or anxiety. Similarly, Atkinson's theory is most relevant to choice among tasks that differ in perceived difficulty, but it cannot be enlisted to explain recall of interrupted tasks (the purview of Lewinian field theory), and attribution theory is most capable of accounting for the relations between emotions and subsequent achievement strivings. In sum, there may not be a single encompassing principle that transcends all of the theories of motivation presented here. Rather, each has its own legacy that influenced subsequent developments in the field, and each has contributed to our understanding of the determinants of motivation in its own unique way.

CONTEMPORARY MOTIVATION CONSTRUCTS RELATED TO ACHIEVEMENT STRIVINGS

In this section we turn from general theories and broad applications to the more specific motivation constructs pertinent

to achievement strivings. Here the reader may find more overlap with the issues raised in Stipek's chapter, because the six constructs described here have been popular in educational psychology research. All have been studied with school-aged children, and all have clear implications for classroom motivation. Table 4-3 provides an overview of the defining features of each construct. For clarity of presentation, we offer this summary information, and suggest that the reader refer to the table as each topic is considered.

Constructs Concerned With Ability Self-Perception

If there is one principle consistently agreed upon in contemporary motivation research, that principle is that self-perception of low ability and self-statements such as "I cannot" have severely debilitating consequences. Each of the following three contemporary constructs offers a particular perspective on the topic of self-perceived ability. To be consistent with the current motivation literature, we refer to them as theories, although they do not fit our working definition of a theory as a set of interrelated principles applicable across broad motivational domains. Furthermore, because all these approaches to some degree employ concepts derived from the various theories of motivation reviewed earlier, we contrast them where appropriate with the principles and guiding assumptions of those theories.

Self-Worth Theory. Ability self-perception is the central construct in self-worth theory as articulated by Covington, inasmuch as people are believed to be primarily motivated by the need to perceive themselves as competent (Covington, 1992; Covington & Beery, 1976). Simply put, Covington proposed that to be worthy is to be able. Because society places such high value on one's ability to achieve, self-worth theorists argue that students of all ages go to great lengths to protect a sense of their own ability.

Covington and his colleagues have documented a number of self-protective strategies that students use to maintain positive academic self-regard. Most of these tactics are attributional in nature. Covington (1984) stated that "as a group these strategies seek to shift the personal causes of failure away from the internal attribution of ability and toward external factors beyond the individual's control or responsibility" (p. 83). The strategies include (a) setting unrealistically high goals, so that failure can be attributed to task difficulty rather than to lack of ability; (b) using self-handicapping techniques, such as procrastinating or not studying at all; and (c) excuse-giving, that is, attributing failure to uncontrollable factors such as poor teaching or illness. For example, Covington and Omelich (1979) documented that college students reported they would feel the least shame for test failure that they could attribute to lack of effort (which does not then implicate ability) along with the availability of an excuse for not trying. The greatest reported shame, in contrast, occurred under conditions of high effort accompanied by test failure (which implicates low ability).

Although many of the analyses and empirical findings of self-worth theory derive from attribution principles, there are also fundamental differences between the two conceptions. Whereas self-worth theory conceives ability attributions as the prime determinant of self-esteem, attribution theory employs

TABLE 4-3. Characteristics of Six Contemporary Motivation Constructs

Characteristic					
Construct	Theorist(s)	Basic Assumptions	Core Experimental Manipulations or Independent Variables	Key Empirical Findings	Theoretical Overlap*
Self-worth	Covington (1984, 1992)	Self-acceptance (worth) is achieved in school with high ability	Causes of success and failure	Students use excuses, self-handicapping, and false effort to protect the perception of high ability	
Self-efficacy	Bandura (1991) Schunk (1989, 1991)	Perceptions that one "can" are among the main determinants of motivation and performance	Self-perception of "can" by means of specific learning experiences and modeling	Inductions of the belief that "I can" through modeling, persuasion, etc., enhances performance	
Learned helplessness	Seligman (1975) Dweck & Leggett (1988)	Perceptions that one "cannot" lead to motivational, cognitive, and affective deficits	Noncontingent failure; individual differences; assessment of causal beliefs	The belief that "I cannot" is associated with giving up in the face of failure and depression Children can be distinguished as "mastery-oriented" or "helpless"	Task involvement = Mastery = Intrinsic motivation
Task vs. ego involvement	Nicholls (1978, 1984)	Disparate learning environments elicit a focus on either the task or on comparing oneself to others	Task instructions	Task involvement leads to greater persistence and more positive affect than ego involvement	Ego involvement = Performance goals = Competitive structure
Intrinsic vs. extrinsic motivation	Lepper et al (1973) Deci & Ryan (1985)	People have innate tendency to strive for self-determination and competence	Reward contingencies; task instructions	Rewards perceived as controlling (rather than informational) decrease intrinsic motivation	
Cooperative vs. competitive goals	Deutsch, (1949a,b) Ames (1984)	Different incentive or goals structures elicit distinct motivational orientations	Interpersonal structure of task performance and evaluation	Cooperative goals result in higher performance and more accurate self-perception	

*Equals sign connotes similarity between constructs.

a higher order theoretical construct—the causal dimension of locus—to account for increments and decrements in self-esteem. As the dominant internal attributions for success and failure, both ability and effort are important antecedents of esteem-related affect. At times, therefore, high effort even with low ability may result in enhanced self-worth, as when individuals feel that they have fulfilled their potential through hard work (Brown & Weiner, 1984). Self-worth theorists take a more extreme position than do attribution theorists in their belief that the influence of perceived effort expenditure on positive self-regard is entirely mediated by its effect on ability self-perception.

At a more general level, self-worth and attributional formulations also take disparate theoretical positions on what constitutes the basic motivator or "spring of action." With its emphasis on maintenance and protection of high personal esteem, self-worth theory is compatible with the belief that the hedonic principle of maximizing rewards and minimizing punishments is the main determinant of behavior. It is also consistent with a line of thinking and research in motivational psychology that holds that people are primarily guided by self-enhancement motives. In other words, individuals seek information that has positive implications for self-esteem and avoid information that

has negative implications (see, for example, Strube & Roemerle, 1985). Attribution theory, on the other hand, is guided by the belief that people are motivated by the need for mastery, or accurate self-assessment, even when such knowledge may have negative implications for self-esteem. Underlying this position is the assumption that a realistic appraisal of one's abilities (both high and low) leads to adaptive functioning. This remains a complex theoretical issue, and there is ongoing debate in the psychological literature as to whether individuals are best served by accurate and realistic beliefs about themselves or by illusory and self-protective beliefs (see Taylor & Brown, 1988).

Self-Efficacy. Self-efficacy is an ability construct, popularized by Bandura (1977, 1986, 1989), that refers to individuals' beliefs about their capabilities to perform well. When confronted with a challenging task, a person would be enlisting an efficacy belief if she asked herself, "Am I able to do it?" or "Do I have the requisite skills to master this task?" Bandura (1989) underscored the motivational role of self-efficacy when he stated that "people's self-efficacy beliefs determine their level of motivation, as reflected in how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles. The stronger the belief in their capabilities, the

greater and more persistent are their efforts" (p. 1176). Bandura's claims are supported by a large empirical literature documenting the influence of efficacy beliefs not only on achievement behavior, but also on such health-related concerns as coping and stress, anxiety, pain tolerance, and the management of phobias (Bandura, 1986). This broad application across many domains of behavior is one of the strengths of the self-efficacy construct and probably the best explanation for its enormous popularity in contemporary motivation research.

Schunk (1991) has provided the most up-to-date empirical review of the relations between efficacy self-percepts and achievement strivings. In a typical experiment with children (e.g., Bandura & Schunk, 1981), a subject might be shown a series of arithmetic problems and asked to estimate on a 100-point scale the likelihood that he or she would be able to solve each problem. Subjects might also be required to indicate how certain they are about their estimates. Both of the judgments constitute measures of self-perceived efficacy. In correlational designs, a self-efficacy variable often is created by combining items from more general scales that elicit extent of agreement with such statements as "I know that I will be able to learn the material from this class" and "I expect to do well in this class" (e.g., Pintrich & DeGroot, 1990). In research using either of these rating procedures, it has been found that high self-efficacy and improved performance result when children (a) adopt short-term over long-term goals, inasmuch as progress is easier to judge in the former case; (b) are taught to use specific learning strategies, such as outlining and summarizing, both of which increase attention to the task; and (c) receive performance-contingent rewards versus reward for merely engaging in a task, because only in the former case does reinforcement signal task mastery. All of these instructional manipulations are assumed to increase the belief that "I can do it," which then increases both effort and achievement.

Unlike ability self-ascriptions in attribution theory, which are explanations for past events, efficacy beliefs are future-oriented. They are conceptualized as expectations for personal mastery of subsequent achievement tasks. As such, self-perceived efficacy more closely resembles the expectancy construct in attribution research. Indeed, efficacy theorists believe that causal attributions are one of the determinants of efficacy beliefs (Bandura, 1986; Schunk, 1989). However, unlike attribution theorists, who focus on perceived stability of causes as a (the) major antecedent of expectancy, efficacy theorists have articulated a much more extensive set of antecedents, including prior accomplishments, modeling, persuasion from others, and emotional arousal. For example, physiological symptoms signaling anxiety, such as rapid heart rate or sweaty palms, might function as cues to the individual that she or he is not likely to be successful at a particular task.

Less clear, however, are the theoretical distinctions between efficacy beliefs and Rotter's (1966) historically prior construct of expectancy over control of reinforcements. Recall that Rotter labeled the belief that outcomes are contingent on one's own behavior or characteristics as internal locus of control. In his more recent theorizing, Bandura (1989) described self-efficacy as "people's beliefs about their capabilities to exercise control over events that affect their lives" (p. 1175). Some social learning theorists (e.g., Corcoran, 1991) have pointed out the theoretical overlap of this conception of self-efficacy with Rotter's con-

struct. Because the same behavioral predictions can be made about the person with internal locus of control or high perceived self-efficacy, it has even been suggested that the differences between the two theories are more semantic than conceptual (Kirsch, 1985).

Bandura (1991) maintained that the conceptual and empirical nonequivalence of locus of control and self-efficacy is well supported, and the debate between the two camps remains lively. What cannot be disputed is Bandura's argument that self-efficacy has been a much more consistent predictor of behavior and behavior change than has locus of control or any of the other closely related expectancy variables. Efficacy beliefs have been related to the acquisition of new skills and to the performance of previously learned skills at a level of specificity not found in any of the other motivation conceptions that include an expectancy construct.

Helplessness Beliefs. Whereas efficacy self-percepts capture the lay understanding of "I can," helplessness beliefs symbolize shared agreement about the meaning of "I cannot." How people deal with the perception that there is no relation between their own behavior and their outcomes has been the cornerstone of learned helplessness theory (e.g., Seligman, 1975). According to this formulation, a state of helplessness exists when failures are perceived as insurmountable, or more technically, when noncontingent reinforcement results in a perception that events are uncontrollable. This belief often is accompanied by passivity, loss of motivation, depressed affect, and performance deterioration. Helplessness becomes a *learned* phenomenon when individuals inappropriately generalize from an experience with noncontingency in one situation to subsequent situations where control is in fact possible. A prototypical example is the successful student who unexpectedly fails despite high effort and then becomes virtually incapable of completing work that was easily mastered prior to failure.

Causal interpretations of failed events proved to be particularly important (Abramson, Seligman, & Teasdale, 1978) and learned helplessness theory now has a decidedly attributional focus. Helplessness theorists maintain that when individuals encounter failures, they ask, "Why?" Explanations for failure are then classified according to underlying causal dimensions, much as they are in contemporary attribution theory. Three dimensions are identified in the helplessness model, and each is linked to a particular psychological consequence. First, if a person explains negative outcomes with internal causes, he or she suffers greater loss in self-esteem than when the same outcome is explained by enlisting external causes. (This is similar to the locus-esteem relation in attribution theory.) Second, if people explain aversive events with stable causes, the negative consequences accruing from a state of helplessness last longer than when explanations endorse unstable causes. (This closely corresponds to the stability-expectancy linkage in attribution theory.) Third, causes perceived as global, that is, generalizable across situations and contexts, lead to more pervasive deficits than causes perceived as specific. (The inclusion of a globality dimension of causality is unique to helplessness theory.) Thus, the people most vulnerable to helplessness beliefs and their consequences are those who attribute failure to internal, stable, and global factors.

Helplessness theory has had its major impact in the clinical

literature, where it is recognized as an important cognitive model of depression (Abramson, Metalsky, & Alloy, 1989). However, two lines of research that are particularly pertinent to helplessness beliefs in the achievement domain have also evolved from the theory. One research direction has been concerned with individual differences in the perceived causes of helplessness, or what has been called explanatory style. The second body of pertinent work has examined the cognitive and motivational differences between children characterized as helpless versus mastery-oriented.

Explanatory Style. Historically, learned helplessness theorists were experimental psychologists concerned with helplessness as a phenomenological *state* that could be manipulated and studied in the laboratory. In recent years, however, increasing attention has been given to the possibility of individual differences between people in their habitual tendency to explain outcomes in one way or another. Peterson and Seligman (1984) labeled this tendency explanatory style, but the same construct is often referred to in the literature as attributional style. Some people typically explain bad events by pointing to characteristics that are internal, stable, and global (e.g., "I'm always a failure no matter what I do"). These individuals are believed to have a *pessimistic* explanatory style. The other end of the continuum is anchored by individuals whose interpretations of bad events usually evoke momentary and specific causes (e.g., "I just happened to be in the wrong place at the wrong time"). Such individuals are characterized as having an *optimistic* explanatory style.

To measure explanatory style, individuals are presented with hypothetical negative events, such as school failure or social rejection. They report the major cause for the outcome and then rate that cause on the three dimensions of locus, stability, and globality. These dimension ratings are then summed to determine a person's attributional score. Other measurement techniques have also been developed, including content analysis of archival material such as presidential speeches, personal diaries, and the sports pages.

Proponents of explanatory style as a trait have made bold claims about its relationship to a number of life events, including academic achievement. In a review of the achievement literature, Peterson (1990) reported a number of studies indicating that a pessimistic explanatory style is positively related to poor school grades, diminished help-seeking behavior, lower aspiration levels, ill-defined achievement goals, and ineffective use of learning strategies. There is even some evidence for the long-term predictability of explanatory style. For example, Peterson, Seligman, and Vaillant (1988) documented that a pessimistic explanatory style in young adulthood is a risk factor for poor mental health in middle and later adulthood.

Does explanatory style qualify as a genuine personality trait that measures individual differences in a motivation construct? That is, should we view it as central to understanding the role of helplessness beliefs on subsequent achievement strivings, in the same way that we view individual differences in the achievement motive (M_i) and variations in locus of control in the respective theories of Atkinson and Rotter? Critics of explanatory style, like critics of personality approaches in general, continue to raise questions about the cross-situational generality of the trait as well as problems in its measurement.

Regarding measurement, for example, Carver (1989) takes issue with the use of a composite score summing across dimensions (locus, stability, globality) when each dimension theoretically predicts a different consequence (self-esteem, chronicity, generality). It is also clear that explanatory style as a predictor of achievement strivings can be completely overridden by strong situational factors (Anderson, 1983). It is not likely, for example, that a failing student's perceived personal competence will be greatly influenced by a causal disposition if her teacher is giving her heavy doses of feedback that implicate low ability. Anderson and his colleagues reviewed the status of explanatory style in what is perhaps the most balanced statement to date (Anderson, Jennings, & Arnoult, 1988). These authors concluded that explanatory style "does not appear to be as general or cross-situationally consistent as originally thought. Neither is it so situationally specific as to cease being a meaningful individual difference construct" (p. 989).

Helpless Versus Mastery-Oriented Children. Many of the affective, cognitive, and behavioral consequences of helplessness beliefs have been examined in school-aged children by Dweck and her colleagues (see review in Dweck & Leggett, 1988). These researchers have shown that children who initially are of equal ability display one of two distinct motivational patterns in response to challenging tasks where failure is possible. Some children reveal what Dweck describes as a helpless response pattern to academic challenge: They focus on personal inadequacies, often make spontaneous attributions to lack of ability, express negative affect, including boredom and anxiety, and show marked deterioration in actual performance. In other words, they display the classic symptoms associated with learned helplessness. In contrast, other children maintain what has been characterized as a mastery-oriented approach to imminent failure: These children focus on the task rather than on their abilities, often avoiding attributions altogether; they display positive affect, indicating enjoyment of challenge; and they generate solution-oriented strategies that lead to performance enhancement.

Inasmuch as helpless-response and mastery-oriented children appear not to differ in general ability, other factors must account for their disparate reactions in the face of failure. One such factor, proposed by Dweck and Leggett (1988), addresses the children's implicit theories about the meaning of ability. Helpless children are what Dweck and Leggett label *entity* theorists: They believe that ability is basically fixed and uncontrollable, as when they endorse such statements as "You can learn new things, but how smart you are stays pretty much the same" (Dweck & Leggett, 1988, p. 263). But mastery children think more like *incremental* theorists because they believe that ability is both modifiable and enhanceable. They are therefore more likely to endorse a statement such as "Smartness is something you can increase as much as you want to." It is not difficult to see how these different implicit theories can be related to the achievement-related cognitions and behaviors characteristic of mastery-oriented versus helpless-response children. Children who subscribe to the incremental conception of ability prefer challenging tasks so that they can increase their ability and also achieve greater mastery. On the other hand, students who support the entity conception of ability avoid challenge because

their primary concern is with the adequacy of their presumably fixed ability.

The reader might have detected some theoretical overlap between Dweck's entity-incremental distinction and attribution theory's classification of ability along the stability dimension. In essence, individuals who subscribe to an entity view perceive ability as stable, whereas those who endorse an incremental view perceive ability as unstable. It is fully consistent with attribution theory that for some individuals ability might be perceived as unstable. However, attribution researchers have displayed inadequate attention to unstable ability, given the theory's empirical emphasis on the negative consequences of low-ability perceptions and the unquestioned acceptance of a priori classification of causes along the locus, stability, and controllability causal dimensions (see Weiner [1983] for a discussion of this issue). The entity-incremental distinction proposed by Dweck and Leggett serves as a useful reminder for motivation researchers about the importance of subjective perceptions of the meaning of ability.

Concluding Comments About Ability Perceptions. The belief that "I can" (self-efficacy), "I cannot" (helplessness), and preoccupation with avoiding public recognition of the latter (self-worth) all characterize contemporary motivation research on self-perceived ability. These topics reflect what is probably the main new direction in the field of motivation—the study of the self. If we add to this list the constructs of self-concept (e.g., Markus & Nurius, 1986), self-focus (e.g., Duval & Wicklund, 1972), self-handicapping (e.g., Jones & Berglas, 1978), self-monitoring (e.g., Snyder & Gangestad, 1986), and the remainder of the "self" vocabulary then it is evident that the self is on the verge of dominating the field of motivation.

Constructs Concerned with Achievement Goals

Motivation is often defined as goal-directed activity. Many contemporary researchers have picked up on this theme as achievement strivings are increasingly described in terms of the student's goals or purposes for task engagement. For example, Dweck distinguishes mastery-oriented and helpless children not only in terms of their implicit theories about ability, but also according to the achievement goals that they adopt (Elliott & Dweck, 1988). Mastery-oriented children are more likely to be pursuing *learning* goals, where their intent is to master the task and acquire new skills. Helpless children, on the other hand, appear to adopt *performance* goals, in which their purpose is to demonstrate that they have adequate ability and avoid giving evidence that they have low ability. Because students who pursue performance goals often see their ability as threatened in situations of challenge, they are particularly vulnerable to informational cues that might convey low ability. Two themes have emerged from this literature, of which the Dweck approach is illustrative. First, in any achievement context, goals provide the mechanism or filter through which incoming information is processed and interpreted (Ames & Ames, 1989). Second, certain types of goals are more conducive to achievement strivings than others. In the following sections we discuss task versus ego involvement, intrinsic versus extrinsic motivation, and cooperation versus competition as examples of dispa-

rate goals that have differential effects on self-perception and achievement strivings (see Table 4-3).

Task Involvement versus Ego Involvement. In recent years, much has been written about learning environments that are structured to be task-involving rather than ego-involving, a distinction most closely associated with the work of Nicholls (1984, 1989, 1992). According to Nicholls, task-involving states are those where one's goal is to master the task. Greater understanding or acquisition of new tasks is considered an end in itself. In ego-involving states, by contrast, the primary goal is to demonstrate high ability relative to others or to conceal low ability. Unlike a task-focused context, which emphasizes personal accomplishment and preference for moderately challenging tasks, an ego-focused context connotes highly evaluative situations in which the emphasis is on comparison with others.

Task- versus ego-involving goals have been created by a variety of experimental manipulations, such as telling subjects that the task is a game versus a test (e.g., Graham & Golan, 1991), focusing their attention on the intrinsic value of the task versus doing better than others (Jagacinski & Nicholls, 1984, 1987), or having teachers provide written comments on student assignments rather than letter grades (Butler, 1987). The distinct motivational states elicited by these manipulations have been shown to have disparate consequences for students' self-perception and performance. For example, compared to ego-involved individuals, task-involved learners make fewer low-ability attributions for failure (Nicholls, 1984; Jagacinski & Nicholls, 1987), feel more pride in success resulting from effort (Jagacinski & Nicholls, 1984), and are more likely to be interested in the task and to actually perform better (Butler, 1987; Stipek & Kowalaski, 1989). The general premise underlying all of these findings is that because task-involved subjects believe more in the efficacy of effort, they work harder and therefore experience more positive outcomes.

In his theoretical argument for the task versus ego distinction, Nicholls (1984) also viewed different conceptions of ability as integrally related to particular achievement goals. Some individuals employ a *differentiated* concept of ability. They view ability as capacity, where assessing one's own competence involves comparison with the efforts and outcomes of others. For example, if I try hard while others succeed with less effort, this implies that I am less able. Other individuals entertain a *less differentiated* conception of ability. Greater effort followed by success implies mastery and increased ability, irrespective of the performance of others. If I try hard and master even a difficult task, that leads me to the inference that I have high ability. Although mature learners understand, or can think about, ability in either its differentiated or less differentiated sense, which conception they employ depends on whether their goals are task- or ego-related. Nicholls maintained that task-involving contexts are those in which the less differentiated conception of ability is employed (i.e., effort and mastery connote ability), whereas ego-involving contexts are those in which the more differentiated conception is salient (i.e., ability is judged in relation to the performance of others).

The task-ego distinction has much in common with Dweck's conception of learning versus performance goals. Indeed, the experimental manipulation of goals in Elliott and Dweck's

(1988) study is remarkably like that described in many of the studies manipulating task versus ego orientation. Nicholls and Dweck are also alike in that two different conceptions of ability define one's achievement-related goals. Viewing ability as a fixed entity is not unlike thinking of ability as capacity in the differentiated sense, just as conceiving of ability as incremental resembles the undifferentiated conception of ability as synonymous with effort and mastery. Thus, greater theoretical distinctions need to be made between these two conceptions, an issue we return to in the final section of this chapter.

Intrinsic versus Extrinsic Incentives. One of the truisms of education is that it is more adaptive to be intrinsically rather than extrinsically motivated, and that schooling as we know it often undermines children's natural (intrinsic) desire to learn. Motivation research in the achievement domain has elaborated on this pervasive belief by documenting that children and adults with initial interest in a task (intrinsic motivation) lose some of that interest when an external reward (extrinsic motivation) is offered for performing that task (see reviews in Morgan, 1984; Deci & Ryan, 1985). This basic phenomenon, known as the undermining effect of extrinsic reward, has been shown with experimental tasks as simple as playing with colorful markers or as complex as mastering difficult verbal passages, and with both symbolic and tangible rewards including grades, medals, gold stars, food, and even money. Motivational indices examined include choice and persistence at a task in the absence of reward, as well as self-reported interest and enjoyment. For example, in one often cited study (Lepper, Greene, & Nisbett, 1973), young children who received an expected "good player certificate" for engaging in a drawing activity showed less subsequent interest in that activity than did children who did not receive such an award. The 100 or more published studies on this topic following the investigation by Lepper et al. (1973) used variants of this basic paradigm and reported similar findings.

Among the more prevalent theoretical explanations for the undermining effect of rewards on motivation, and the one most compatible with a goal framework, is cognitive evaluation theory, as articulated by Deci and Ryan (1985). According to this conception, intrinsic motivation is displayed when one's goal to feel both self-determining and competent is achieved. Self-determination implies the experience of choice, autonomy, or an internal locus of causality. Competence, in turn, connotes the satisfaction derived from exercising or extending one's capabilities. If a person's feelings of self-determination and competence are enhanced by a reward, then the reward context is intrinsically motivating. Conversely, if rewards lessen one's sense of self-determination and competence, then they undermine intrinsic motivation.

This analysis implies that extrinsic incentives are not always detrimental to intrinsic motivation, a finding that Deci and Ryan explain by contrasting two possible functions of rewards. Rewards can be *controlling* in the sense that they are experienced as pressure to think, feel, and act in a particular way; that is, they exert control over the behavior on which they are contingent. But rewards can also be *informational* to the degree that they provide feedback about how well one is doing; in other words, they signal competence and mastery. When the controlling function of rewards is dominant, intrinsic motivation is

undermined, but when the informational aspect is more salient, motivation is enhanced.

Manipulations of reward as controlling or informational have been relatively simple and straightforward in experimental studies. For example, Ryan, Mims, and Koestner (1983) induced controlling rewards for college students working on a puzzle by telling them that they would receive three dollars for their performance but that they "should try as hard as possible because I expect you to perform up to standards on these puzzles" (p. 745). Subjects in the informational condition were promised the same reward but told only to "do as well as you can." The results of this study revealed that controlling rewards diminished intrinsic motivation (i.e., amount of time later spent on the task), even when the reward had been made contingent on high performance. Thus, sources of positive evaluation such as good grades cannot be motivational enhancers, if at the same time they instigate constraints or pressure to perform in a particular way. In a more recent study of cognitive learning in fifth grade children that used a similar manipulation, Grolnick and Ryan (1987) documented less interest in the task that used controlling rather than informational feedback, and also less conceptual learning.

The basic propositions of cognitive evaluation theory as an interpretation of the undermining effects of extrinsic rewards are compatible with ideas concerning personal control and freedom introduced in Rotter's social learning theory. In Rotter's view, a core aspect of personality is the extent to which people see themselves as having control over outcomes. Deci and Ryan, on the other hand, view the quest for control as a fundamental human motive that can be either facilitated or inhibited by environmental factors like reward contingencies.

The approach followed by Deci and Ryan is also consistent with humanistic beliefs that there is an internal, biological tendency to develop fully the capacities and talents that have been inherited, and that there is a central motivation to grow and enhance the self (see Maslow, 1971; Rogers, 1963). Thus, it is presumed that there is an "inner push" that propels people to master their environments (deCharms, 1972). These conceptions therefore embrace such concepts as self-regulation and autonomy, which are seen by some educational psychologists as fundamental to classroom learning. Indeed, because the use of reward, evaluation, and other forms of "constraint" discussed by cognitive evaluation theory are so pervasive in American education, the body of empirical work on intrinsic versus extrinsic incentives has probably received more attention in education as an application of motivation research than have any of the other constructs or theories included in this review.

Cooperative, Competitive, and Individualistic Goal Structures. As a method of teaching (and rewarding) students, cooperative learning has become extremely popular during the past two decades (see Slavin, 1985). In this method, students work together in small mixed-ability groups where they are expected to help one another learn or complete a task. From a motivational perspective, cooperative learning is of interest because it is based on a theory of incentive structures and their relation to particular goals. As elaborated by Deutsch (1949b), this theory also uses the language of Lewin's field theory of motivation.

To conceptualize how the need states, or tensions, of different individuals can be related, Deutsch described three different

types of goal or incentive structures. A cooperative incentive structure exists when two or more individuals are rewarded based on their performance as a group. Any one member can attain his or her own goal (e.g., academic recognition) only if the other members also attain theirs. A competitive incentive structure is one in which two or more individuals are compared with one another and only the best performing individuals are rewarded. In the strictest sense, a competitive structure exists when any one individual can attain his or her goal only if other participants do not obtain theirs. Finally, an individualistic incentive structure is one where persons are rewarded for their own performance, irrespective of the outcomes of others.

Since Deutsch first offered these distinctions, there has been considerable research on the effects of incentive structure on performance. In his own experimental research, Deutsch (1949a) predicted and found higher productivity when individuals worked in cooperative as opposed to competitive groups. More recent reviews focusing on school achievement outcomes reveal some disagreement about the effectiveness of cooperative systems. Johnson, Maruyama, Johnson, Nelson, and Skon (1981) conducted a meta-analysis of well over 100 studies on this topic and concluded that cooperative structures across the board resulted in higher achievement and productivity than either competitive or individualistic incentives. In a later review, however, Cotton and Cook (1982) questioned this interpretation, arguing instead that the superiority of cooperative reward systems over the other two depended on many situational factors, including degree of interdependence, type of task, and size of the group. Cooperative structures appeared to work best with large groups working very interdependently on complex tasks.

In a later review involving only children in elementary and secondary school, Slavin (1983) also took an interactional approach. He suggested that cooperative incentives lead to better academic achievement only in situations where group members receive a group reward that is based on the assessment of individual learning. Thus, for example, an effective cooperative incentive structure for math learning would be one where the group reward is based on the average or sum of each member's performance on tests of individual achievement. Successful cooperative methods, according to Slavin, are those where individuals are held accountable to the group and there is substantial peer pressure for all students to perform to the best of their abilities. Simply working together on a task and then being evaluated solely on the basis of individual performance led to no better outcome than the more traditional competitive or individualistic goal structures.

In the research reviewed by Slavin (1983) and Johnson et al. (1981), the focus was on performance outcomes, with motivation only inferred to be higher under reward structures with more positive outcomes. Ames (1984) specifically applied a motivational analysis to the three types of goal structures, suggesting that each is related to a distinct motivational system. Competition elicits what Ames referred to as an egoistic motivational system. The emphasis is on ability and outperforming others. Not unlike Covington's (1992) self-worth conception and Nicholls's (1984) ego-involving context, competitive goal structures elicit the desire to demonstrate high ability and maximize the associated feelings of pride, and to avoid demonstrating low ability with its linked emotion of shame.

Individualistic goal structures, in contrast, elicit a mastery

motivational orientation where the focus is on effort and competing against one's own standard of excellence. Finally, cooperative goal structures elicit what Ames referred to as a moral motivational orientation where the focus is on how willing one is to exert effort to aid group members. Individuals try hard in order to serve the group's needs and therefore demonstrate social responsibility. At their best, then, cooperative reward systems instigate group members to pay attention to one another's efforts, to reinforce individual members' efforts that improve group performance, and to blame or otherwise apply social disapproval to members perceived as not contributing to group goals. Ames's research has been quite consistent in documenting the positive consequences of cooperative systems on children's self-perception, perception of others, and actual achievement (Ames, 1992).

Concluding Comments About Achievement Goals. In this section we considered three contemporary motivation constructs that fall under the broad rubric of achievement goals. Each described either a context for learning (task involvement versus ego involvement) or a set of incentive structures (informational versus controlling rewards and cooperative versus competitive learning) that was linked to particular achievement goals. None of these topics achieves the status of a theory of motivation in the sense that there are sets of interrelated constructs, linked with an operational language, and broadly applicable to domains other than achievement. However, each suggests one or more principles or guides to achievement-related behavior that can be incorporated into classroom instructional processes. For example, it is evident from this research that motivation is likely to be enhanced if the learner is allowed to focus on the task rather than on outperforming others, if rewards signal competence rather than external constraints, and if students are encouraged to work in collaboration with others rather than alone or in competition.

GENERAL ISSUES IN THE STUDY OF MOTIVATION

To facilitate presentation of both the theories and principles of motivation in the preceding sections, we have bypassed a number of important and complex issues. For example, little has been said about the role of individual differences in the study of motivation; we have only alluded to the problem of theoretical overlap among constructs; and we have not at all addressed issues such as the development of motivation and the possibility of motivational change. All of these issues are of particular concern to educational psychologists who study motivation. We turn to these complex issues now, not to offer solutions, but to assure readers that we are aware of some of the problems and to invite them to aid in their resolution.

Individual Differences in Motivation

In the historical review of motivation research, we commented on the rise and fall of the study of individual differences in motivation. Among the earlier theorists, Atkinson (1964) and Rotter (1966) were especially persuasive in arguing that individ-

ual differences play a central role in the study of motivational processes. In Atkinson's theory of achievement strivings, persons labeled high in the achievement motive are predicted to display different risk-taking behavior than persons low in that motive. And in Rotter's social learning theory, persons classified as internal on locus of control are predicted to have different generalized expectancies for success than those labeled external. Differences among individuals are therefore central to testing both of these conceptions.

But both theories have fallen prey to all of the complex issues and obstacles faced by trait approaches, particularly their lack of cross-situational generality (e.g., Mischel, 1973). For example, people do not demonstrate high achievement needs in all situations, nor are they equally motivated to exert internal control across diverse settings. Neither Atkinson's nor Rotter's formulation fully acknowledges this possibility. Thus, hypotheses using achievement needs or perceptions of control as predictor variables have often been disconfirmed, and the influence of both theories has waned.

On the other hand, the growing visibility of research on explanatory style suggests a renewed interest in individual differences, as does the shift in learned helplessness research toward viewing helplessness and mastery orientation in a dispositional framework (Dweck & Leggett, 1988). Moreover, research on trait anxiety in achievement contexts continues to thrive. But given the difficulties of personality measurement and the situational specificity of behavior, we believe that a more fruitful approach at this time might be to search first for general laws of motivation rather than explore the possibility of complex person \times situation interactions. Once accomplished, this search can be followed by the inclusion of individual differences to refine the generalizations that have been made or to uncover more complex associations that might have been overlooked. Others, of course, may have different views on this complex issue.

Developmental Factors

Most of the theories and all of the achievement-related contemporary constructs that we reviewed incorporate cognitions of varying complexity. Based on these conceptions, we described a constellation of maladaptive motivational patterns that included attributing failure to low aptitude, having low expectations for success, perceiving outcomes as uncontrollable, and being overly concerned with demonstrating high ability and concealing low ability. All of these beliefs make students more vulnerable to the negative consequences of achievement failure.

There is a vast amount of empirical support for these linkages between cognitions and achievement-related behavior from middle childhood on. The findings are less clear, however, in the case of young children. Developmental research suggests that children younger than about third grade are much less vulnerable to the cognitive-motivational deficits described above. For example, studies show that early elementary school-aged children have very high self-ratings of ability, high expectations, and tend not to display learned helplessness after unexpected failure (see Stipek, 1984, for a review). Young children also are not as susceptible to the low ability inferences that can be communicated through

teacher feedback, such as praise for success at an easy task (Barker & Graham, 1987).

Many of these observed differences between younger and older research participants can be traced to cognitive-developmental changes in children's understanding of achievement-related cognitions. For example, Covington's self-worth argument, Dweck's helplessness model, Nicholls' task-ego distinction, and some predictions of attribution theory are based on an understanding and use of what is called a compensatory schema concerning effort and ability. Understanding a compensatory schema means that effort and ability are perceived as inversely related such that the higher one's perceived effort given success at a task, the lower is one's perceived ability, and vice versa. Yet developmental research indicates that children do not understand the compensatory schema before about age 9. Rather, they tend to expect ability and effort to covary positively. The student who tries harder is believed to be smarter, a phenomenon that Kun (1977) labeled the "halo schema" (also see Nicholls, 1978). From a motivational perspective, therefore, young children's thinking naturally resembles the more adaptive belief patterns of mastery-oriented children who endorse an incremental theory of ability (Dweck & Leggett, 1988) or task-involved individuals who employ the less differentiated conception of ability (Nicholls, 1984).

For the educational psychologist concerned with motivation research, these developmental findings suggest that the cognitive models elaborated in the "adult" motivation literature may require some modification when applied to the study of achievement strivings among very young children. These modifications require sensitivity to the cognitive maturity of research subjects. It does not make much sense, for example, to predict helplessness beliefs in a 6-year-old if children of that age do not perceive low ability as something stable and uncontrollable.

But paralleling age-related cognitive growth are systematic grade-related changes in classroom environments that must also play a role in developmental differences in achievement strivings. For example, as children progress through elementary school, there is increasing focus on ability assessment and comparison with others through such common classroom practices as letter grades, report cards, ability grouping, and movement from a mastery to a competitive feedback orientation (e.g., Eccles, Midgley, & Adler, 1984; Stipek & Daniels, 1988). All of these practices operate to enhance the conception of ability where being smart means being smarter than others but having to try less hard, and doing well means succeeding on hard tasks at which others encounter difficulty. Therefore, the degree to which motivationally maladaptive cognitions become salient will be influenced by both cognitive growth across age and by changes in classroom environments across grade. The motivation researcher with a developmental focus needs to take into account both of these important determinants of perceived personal competence and other achievement-related beliefs.

Pulling Apart the Theoretical Overlap Between Constructs

A myriad of constructs, including most that we reviewed here, compose the contemporary motivation literature. While

each of these constructs has its own set of defining characteristics and empirical findings, the theoretical distinctions between some of the constructs often remain unclear. We noted earlier, for example, that the task-ego distinction has some conceptual overlap with Dweck's conception of learning versus performance goals. It also is not clear how self-efficacy differs from expectancy for future success, whether being mastery-oriented is any different from being task-involved, and whether incremental versus entity theories of ability can be distinguished from an attributional analysis of ability as varying along the stability dimension. In short, motivation researchers need to find ways to distinguish their constructs better, both theoretically and empirically.

It has been suggested that motivational factors influence particular cognitive processes, such as encoding of information or attention deployment, and that these information processing components then more directly influence performance. Perhaps one way to distinguish particular motivational states might be to relate them to particular cognitive processes. In efforts along these lines, Graham and Golan (1991) reported that the motivationally maladaptive effects of ego involvement (compared with involvement) occur more at the retrieval stage of information processing than at the encoding stage. For individuals induced to focus on their ability rather than on mastery, the difficulty may lie not so much in placing information in memory as in accessing that information. Other motivational states, in contrast, appear to be linked to different stages of information processing. For example, Pittman and D'Agostino (1989) have shown that perceived noncontingency (as in the learned helplessness theory) can have positive effects on encoding but not on retrieval of verbal information. Pittman and D'Agostino argued that control-deprived subjects encode new information more carefully as part of their attempt to regain control of their environment.

These sets of findings intimate that motivational constructs might be distinguished by whether they influence new learning (encoding) or whether they facilitate or interfere with an individual's ability to demonstrate what has been learned already (retrieval). We think that a systematic mapping of distinct motivational states onto particular sets of cognitive processes might be a useful step toward the goal of greater conceptual clarity in motivation research.

Motivation Change

By identifying the determinants of motivation, the theories and principles presented in this chapter also provide suggestions for motivational change. Thus, increasing success expectancies, altering attributions for failure from stable to unstable, changing reward practices in the classroom to emphasize their informational rather than controlling aspect, and altering the perception of ability so that ability is seen as unstable rather than stable are some of the techniques that could be used to enhance motivation. Indeed, many motivational programs have already been tested in both laboratory and clinical settings, and are proving successful (e.g., Forsterling, 1985, 1988; Perry, Hechter, Menec, & Weinberg).

From the literature, it appears that two types of motivational change programs could be pursued. One approach focuses on particular individuals, with the goal of changing their cognitions

to be more adaptive. This approach would require the selection and treatment of individuals who, for example, ascribe their failures to stable causes. The other type of change program could be introduced into the general classroom, for it is assumed that all individuals would benefit, for example, from comparing their performance with their own prior performance rather than with others' performance, thereby promoting task rather than ego involvement.

But both of these approaches assume that students value success and are underperforming because of some motivational deficit located either within the person or within the learning context. Unfortunately, the most chronic and pervasive motivational problems are evident in children neither wanting to learn, nor to try. Principles such as task involvement, mastery focus, and unstable attributions for failure then become somewhat irrelevant.

The question thus shifts to a larger and more difficult one: How can we get "unmotivated" children to accept the basic premise that learning, schooling, and mastery of the material that adults prescribe are important? That is, how can there be internalization of attitudes that reflect, "Trust us. We know what is best for you, and if you do it, you will not only like it, but it will help you better yourself in our world"?

We cannot supply an answer to this question, for it lies at the root of problems in contemporary American culture. It involves lack of motivation not only in school, but also on the job. It touches upon not only the lack of equality in our system of distributive justice, but also on a perception of the impossibility of meaningful goal attainment. A change program to treat this larger population of motivationally impaired individuals would have to involve not only the school setting, but also the parents, the principal, the pastor, the policy makers, and the president. This is a task for all of society.

When one talks about the laws of learning, it is assumed that the person is exposed to the material and is attending. When one examines the laws of perception, it is assumed that the perceiver has his or her eyes open. And when one examines the laws of motivation, it is presumed that the student prefers to do better. Without this, motivational enhancement is not possible.

CONCLUSION

In this chapter, we reviewed some of the history of the study of motivation, the most important and general theoretical conceptions, and more specific principles that pertain to achievement strivings. Motivation is a rich and changing field that has witnessed much progress in its relatively short history. In the 60 years since the insights of Hull and Spence, there have been major upheavals in the field (the shift from mechanism to cognition); new theories and concepts have been introduced (such as causal attributions, learned helplessness, and self-efficacy); and novel research directions have been followed (such as the finding that reward at times can decrease motivation).

We stated at the beginning of this undertaking that readers should not finish this chapter with the hope that they can go into classrooms and institute immediate changes. Perhaps we have been too guarded. Principles have been suggested that readers can follow. Many have good theoretical and empirical

grounding. For example, we now know the positive motivational consequences of attributing failure to lack of effort, of selecting tasks of intermediate difficulty, and of having students focus on the task rather than on the self. Thus, there has been

a marriage between theory and empirical research, which we indicated at the outset guided our selection of topics for review. The full testing of these principles in classroom settings is a major task we see for future motivation research.

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