Annu. Rev. Psychol. 2002. 53:109–32

MOTIVATIONAL BELIEFS, VALUES, AND GOALS

Jacquelynne S. Eccles and Allan Wigfield
Institute for Social Research, University of Michigan, Ann Arbor, Michigan 48106; e-mail: jeccles@isr.umich.edu

Key Words expectancies, task value, goal theory, efficacy, volition, self-regulation

■ **Abstract** This chapter reviews the recent research on motivation, beliefs, values, and goals, focusing on developmental and educational psychology. The authors divide the chapter into four major sections: theories focused on expectancies for success (self-efficacy theory and control theory), theories focused on task value (theories focused on intrinsic motivation, self-determination, flow, interest, and goals), theories that integrate expectancies and values (attribution theory, the expectancy-value models of Eccles et al., Feather, and Heckhausen, and self-worth theory), and theories integrating motivation and cognition (social cognitive theories of self-regulation and motivation, the work by Winne & Marx, Borkowski et al., Pintrich et al., and theories of motivation and volition). The authors end the chapter with a discussion of how to integrate theories of self-regulation and expectancy-value models of motivation and suggest new directions for future research.

CONTENTS

0084-6570/02/0201-0109$14.00

OVERVIEW

The Latin root of the word "motivation" means "to move"; hence, in this basic sense the study of motivation is the study of action. Modern theories of motivation focus more specifically on the relation of beliefs, values, and goals with action. In this chapter we review the work growing out of these theories of achievement motivation with a particular emphasis on developmental and educational psychology. Furthermore, although motivation theories have emerged from different intellectual traditions (Weiner 1992), we focus on those that are most closely linked to expectancy-value models of behavior. Expectancies refer to beliefs about how one will do on different tasks or activities, and values have to do with incentives or reasons for doing the activity. We use this perspective to organize our presentation, by grouping motivational theories into four broad categories. The first focuses on beliefs about competence and expectancy for success. The second focuses on the reasons why individuals engage in different activities; these theories include constructs such as achievement values, intrinsic and extrinsic motivation, interests, and goals. The third integrates expectancy and value constructs. The fourth draws links between motivational and cognitive processes. We consider each perspective in turn.

THEORIES FOCUSED ON EXPECTANCY

Several theories focus on individuals' beliefs about their competence and efficacy, expectancies for success or failure, and sense of control over outcomes; these beliefs are directly related to the question, "Can I do this task?". In general, when people answer this question affirmatively they perform better and are motivated to select more challenging tasks.

Self-Efficacy Theory

Bandura (1997) proposed a social cognitive model of motivation focused on the role of perceptions of efficacy and human agency. Bandura defined self-efficacy as individuals' confidence in their ability to organize and execute a given course of action to solve a problem or accomplish a task; he characterized it as a multidimensional construct that varies in strength, generality, and level (or difficulty). Thus, some people have a strong sense of self-efficacy and others do not; some have efficacy beliefs that encompass many situations, whereas others have narrow efficacy beliefs; and some believe they are efficacious even on the most difficult tasks, whereas others belief they are efficacious only on easier tasks.

As in expectancy-value theory and attribution theory, Bandura's self-efficacy theory focuses on expectancies for success. However, Bandura distinguished between two kinds of expectancy beliefs: outcome expectations—beliefs that certain behaviors will lead to certain outcomes (e.g., the belief that practicing will improve one's performance)—and efficacy expectations—beliefs about whether one can effectively perform the behaviors necessary to produce the outcome (e.g., "I can practice sufficiently hard to win the next tennis match"). These two kinds of expectancy beliefs are different because individuals can believe that a certain behavior will produce a certain outcome (outcome expectation), but may not believe they can perform that behavior (efficacy expectation). Indeed, Bandura proposed that individuals' efficacy expectations are the major determinant of goal setting, activity choice, willingness to expend effort, and persistence.

The self-efficacy construct has been applied to behavior in many domains including school, health, sports, therapy, and even snake phobia (see Bandura 1997). By and large, the evidence is very supportive of the theoretical predictions. For example, high personal academic expectations predict subsequent performance, course enrollment, and occupational aspirations choice (see Bandura 1997, Bandura et al. 2001).

Control Theories

Locus of control theories are another type of expectancy-based theory (Crandall et al. 1965, Rotter 1966). According to these theories, one should expect to succeed to the extent that one feels in control of one's successes and failures (i.e., one has an internal locus of control). Evidence supports this prediction (see Findley & Cooper 1983, Weisz 1984). Recent locus of control theorists have elaborated broader conceptual models of control. Connell (1985), for example, added *unknown control* as a third control belief category and argued that younger children are particularly likely to use this category. He also demonstrated that not knowing the cause of one's successes and failures undermines one's motivation to work on the associated tasks.

Connell & Wellborn (1991) also integrated control beliefs into a broader theoretical framework in which they proposed three basic psychological needs: competence, autonomy, and relatedness. They linked control beliefs to competence needs: Children who believe they control their achievement outcomes should feel more competent. They hypothesized that the extent to which these needs are fulfilled is influenced by following characteristics of their family, peer, and school contexts: the amount of structure, the degree of autonomy provided, and the level of involvement in the children's activities. Finally, they proposed that the ways in which these needs are fulfilled determine engagement in different activities. When the needs are fulfilled, children will be fully engaged. When one or more of the needs is not fulfilled, children will become disaffected and unmotivated (see Connell et al. 1994, Skinner & Belmont 1993 for supportive evidence).

Ellen Skinner and her colleagues (e.g., Skinner 1995, Skinner et al. 1998) proposed a more elaborate model of perceived control. Focusing on understanding

goal-directed activity, Skinner described three critical beliefs: means-ends beliefs, control beliefs, and agency beliefs. Means-ends beliefs concern the expectation that particular causes can produce certain outcomes; these causes include causal attributions (Weiner 1985) and unknown control. Agency beliefs are the expectations that one has access to the means needed to produce various outcomes. Control beliefs are the expectations individuals have that they can produce desired events. All three sets of beliefs influence performance on achievement tasks. Skinner et al. (1998) charted the development of these beliefs over the school years and looked at relations of children's perceived control to the ways children perceived that teachers treated them. Children who believed teachers were warm and supportive developed a more positive sense of their control over outcomes.

THEORIES FOCUSED ON THE REASONS FOR ENGAGEMENT

Although theories dealing with competence, expectancy, and control beliefs provide powerful explanations of individuals' performance on different kinds of achievement tasks, these theories do not systematically deal with the reasons individuals have for engaging in different achievement tasks. Even if people are certain they can do a task, they may have no compelling reason to do it. The theories presented in this section focus on the question of why.

Intrinsic Motivation Theories

Several theories focus on the distinction between intrinsic and extrinsic motivation (see Sansone & Harackiewicz 2000). When individuals are intrinsically motivated, they engage in an activity because they are interested in and enjoy the activity. When extrinsically motivated, individuals engage in activities for instrumental or other reasons, such as receiving a reward.

SELF-DETERMINATION THEORY Given the growing evidence that extrinsic incentives and pressures can undermine motivation to perform even inherently interesting activities, Deci & Ryan (1985) proposed self-determination theory in which they integrated two perspectives on human motivation: (*a*) Humans are motivated to maintain an optimal level of stimulation (Hebb 1955), and (*b*) humans have basic needs for competence (White 1959) and personal causation or self-determination (deCharms 1968). They argued that people seek out optimal stimulation and challenging activities and find these activities intrinsically motivating because they have a basic need for competence. In addition, they argued that intrinsic motivation is maintained only when actors feel competent and self-determined. Evidence that intrinsic motivation is reduced by exerting external control and by giving negative competence feedback supports this hypothesis (see Cameron & Pierce 1994, Deci & Ryan 1985, Deci et al. 1999).

Deci & Ryan (1985) also argued that the basic needs for competence and self-determination play a role in more extrinsically motivated behavior. Consider, for example, a student who consciously and without any external pressure selects a specific major because it will help him earn a lot of money. This student is guided by his basic needs for competence and self-determination, but his choice of major is based on reasons totally extrinsic to the major itself. Finally, Deci & Ryan (1985) postulated that a basic need for interpersonal relatedness explains why people turn external goals into internal goals through internalization.

Deci, Ryan, and their colleagues (see Ryan & Deci 2000) have extended the extrinsic-intrinsic motivation dichotomy in their discussion of internalization—the process of transferring the regulation of behavior from outside to inside the individual. When individuals are self-determined, their reasons for engaging in behavior are fully internalized (see Grolnick et al. 2000 for discussion of the development of self-regulation). Deci and colleagues defined several levels in the process of going from external to internalized regulation. These are *external* (regulation coming from outside the individual); *introjected* (internal regulation based on feelings that one has to do the behavior); *identified* [internal regulation based on the utility of that behavior (e.g., studying hard to get grades to get into college)]; and *integrated* (regulation based on what the individual thinks is valuable and important to the self). Even this last level, however, is not fully internalized and self-determined.

FLOW THEORY Csikszentmihalyi (1988) defined intrinsically motivated behavior in terms of the immediate subjective experience that occurs when people are engaged in an activity. Expert climbers, dancers, chess players, basketball players, and composers describe their experiences when fully engaged in terms of an emotional state Csikszentmihalyi labeled "flow," characterized by (*a*) a holistic feeling of being immersed in, and carried by, an activity; (*b*) a merging of action and awareness; (*c*) focus of attention on a limited stimulus field; (*d*) lack of self-consciousness; and (*e*) feeling in control of one's actions and the environment. Flow is only possible when a person feels that the opportunities for action in a given situation match his or her ability to master the challenges. The challenge of an activity may be concrete or physical like the peak of a mountain to be scaled or abstract and symbolic like a set of musical notes to be performed, a story to be written, or a puzzle to be solved. Recent research has shown that both the challenges and skills must be relatively high before a flow experience becomes possible (Massimini & Carli 1988).

At first sight, the theories of Deci & Ryan and Csikszentmihalyi seem to be very different. Deci & Ryan (1985) conceptualize intrinsic motivation in terms of innate, basic needs, whereas Csikszentmihalyi stresses subjective experience. We suggest, however, that this difference reflects two sides of the same coin. As Schneider (2001) has argued, one has to distinguish between immediate reasons (e.g., enjoyment) and ultimate reasons of behavior (e.g., survival). Intrinsically motivated behavior can be conducive to ultimate goals even though the actor is

only motivated by immediate incentives. A typical case is exploratory or play behavior. Both types of behavior help to increase an individual's competence, but they are usually performed because they are exciting, pleasurable, or enjoyable. This distinction between immediate and ultimate causes of behavior makes it possible to reconcile the positions of Deci & Ryan and Csikszentmihalyi. Deci & Ryan (1985) focus on ultimate reasons of behavior, whereas Csikszentmihalyi (1988) focuses mainly on immediate reasons. Csikszentmihalyi & Massimini (1985) have suggested that the experience of flow is a reward that ensures that individuals will seek to increase their competence. According to Csikszentmihalyi, the repeated experience of flow is only possible when individuals seek out increasingly challenging tasks and expand their competencies to meet these challenges. Thus, the experience of flow should reinforce behaviors underlying development.

INDIVIDUAL DIFFERENCE THEORIES OF INTRINSIC MOTIVATION Until recently, intrinsic motivation researchers have focused primarily on conditions, components, and consequences of intrinsic motivation without making a distinction between intrinsic motivation as a state versus intrinsic motivation as a traitlike characteristic. However, interest in traitlike individual differences in intrinsic motivation is increasing, particularly among educational and sport psychologists (see Amabile et al. 1994; Gottfried 1990; Nicholls 1984, Nicholls et al. 1990). These researchers define this enduring intrinsic motivational orientation in terms of (*a*) preference for hard or challenging tasks, (*b*) learning that is driven by curiosity or interest, and (*c*) striving for competence and mastery. The second component is most central to the idea of intrinsic motivation. Both preference for hard tasks and striving for competence can be linked to either extrinsic or more general need-achievement motivation. Nonetheless, empirical findings suggest that the three components are highly correlated. In addition, evidence suggests that high levels of traitlike intrinsic motivation facilitate positive emotional experience (Matsumoto & Sanders 1988), mastery-oriented coping with failure, high academic achievement (Benware & Deci 1984), and use of appropriate learning strategies (Pintrich & Schrauben 1992).

Interest Theories

There has been a recent upsurge in work on the concept of "interest" (e.g., Alexander et al. 1994, Hidi & Harackiewicz 2001, Schiefele 1999). These researchers differentiate between individual and situational interest. Individual interest is a relatively stable evaluative orientation towards certain domains; situational interest is an emotional state aroused by specific features of an activity or a task. Two aspects or components of individual interest are distinguishable (Schiefele 1999): feeling-related and value-related valences. Feeling-related valences refer to the feelings that are associated with an object or an activity—feelings such as involvement, stimulation, or flow. Value-related valences refer to the attribution of personal significance or importance to an object or activity. In addition, both feeling-related and value-related valences are directly related to the object or

activity rather than to the relation of this object or activity to other objects or events. For example, if students associate mathematics with high personal significance because mathematics can help them get prestigious jobs, then we would not speak of interest. Although feeling-related and value-related valences are highly correlated (Schiefele 1999), it is useful to differentiate between them because some individual interests are likely based primarily on feelings, whereas other interests are more likely to be based on personal significance (see Eccles et al. 1998b, Wigfield & Eccles 1992).

Much research on individual interest has focused on its relation to the quality of learning (see Alexander et al. 1994, Renninger et al. 1992, Schiefele 1999). In general, there are significant but moderate relations between interest and text learning. More importantly, interest is more strongly related to indicators of deep-level learning (e.g., recall of main ideas, coherence of recall, responding to deeper comprehension questions, representation of meaning) than to surface-level learning (e.g., responding to simple questions, verbatim representation of text) (Schiefele 1999).

Most of the research on situational interest has focused on the characteristics of academic tasks that create interest (e.g., Hidi & Baird 1986). The following text features have been found to arouse situational interest and promote text comprehension and recall: personal relevance, novelty, activity level, and comprehensibility (Hidi & Baird 1986; see Schiefele 1999).

Goal Theories

Motivation researchers have become very interested in children's achievement goals and their relation to achievement behavior (see Ames 1992, Anderman et al. 2001, Covington 2000, Dweck 1999, Pintrich 2000b). Several different approaches have emerged. For instance, Bandura (1997) and Schunk (1990) have shown that specific, proximal, and somewhat challenging goals promote both self-efficacy and improved performance. Other researchers have defined and investigated broader goal orientations (e.g., Ames 1992, Blumenfeld 1992, Butler 1993, Dweck 1999, Nicholls 1984). For example, Nicholls and his colleagues (e.g., Nicholls et al. 1990) defined two major kinds of motivationally relevant goal patterns or orientations: ego-involved goals and task-involved goals. Individuals with ego-involved goals seek to maximize favorable evaluations of their competence and minimize negative evaluations of competence. Questions like "Will I look smart?" and "Can I outperform others?" reflect ego-involved goals. In contrast, with task-involved goals, individuals focus on mastering tasks and increasing their competence. Questions such as "How can I do this task?" and "What will I learn?" reflect task-involved goals. Dweck and her colleagues provided a complementary analysis (see Dweck 1999) distinguishing between performance goals (like ego-involved goals) and learning goals (like task-involved goals). Similarly, Ames (1992) distinguished between the association of performance goals (like ego-involved goals) and mastery goals (like task-focused goals) with both performance and task choice. With

ego-involved (or performance) goals, children try to outperform others, and are more likely to perform tasks they know they can do. Task-involved (or mastery-oriented) children choose challenging tasks and are more concerned with their own progress than with outperforming others.

An important advance in this area is the distinction between performance-approach and performance-avoid goals (Elliott & Church 1997, Midgley et al. 1998, Skaalvik 1997). This distinction arose in part because of some inconsistent evidence about the effects of performance goals on various outcomes. As the name implies, performance-approach goals imply engagement in achievement tasks for performance reasons, whereas performance-avoid goals concern disengagement in order not to appear stupid. Generally, performance-approach goals appear to have more positive consequences on motivation and achievement than do performance-avoid goals (see Anderman et al. 2001 for review). However, there is some disagreement among goal theories about the positive consequences of performance-approach goals (see Midgley et al. 2001). This distinction is quite similar to the distinction originally made by Atkinson (1964) between the approach and avoidance components of need-achievement motivation.

Other researchers (e.g., Ford 1992, Wentzel 1991) have adopted a more complex perspective on goals and motivation, arguing that there are many different kinds of goals individuals can have in achievement settings. For example, Ford proposed a complex theory based on the assumption that humans are goal directed and self-organized (e.g., Ford 1992, Ford & Nichols 1987). He defined goals as desired end states people try to attain through the cognitive, affective, and biochemical regulation of their behavior. Furthermore, Ford viewed goals as only one part of motivation; in his model motivation is defined as the product of goals, emotions, and personal agency beliefs.

Although Ford and Nichols (Ford 1992, Ford & Nichols 1987) outlined an extensive taxonomy of goals, they distinguished most broadly between within-person goals (desired within-person consequences) and person-environment goals (desired relationship between the person and their environment). Similar to Rokeach's (1979) human values and Eccles' (1987) attainment value, the within-person goals include affective goals (e.g., happiness, physical well-being), cognitive goals (e.g., exploration, intellectual creativity), and subjective organization goals (e.g., unity, transcendence). The person-environment goals include self-assertive goals such as self-determination and individuality, integrative social relationship goals such as belonging and social responsibility, and task goals such as mastery, material gain, and safety. Although Ford & Nichols (1987) developed measures to assess all 24 goals specified in Ford's model, their evidence suggests that people typically rely on a much smaller cluster of core goals in regulating their behavior. Ford (1992) also developed an important set of principles for optimizing motivation, based on the tenets of his theory.

Wentzel (e.g., 1991, 1993) has examined the multiple goals of adolescents in achievement settings. Wentzel's view on goals differs from the views of theorists like Dweck and Nichols in that she focuses on the content of children's goals, rather

than on mastery versus performance criteria of success. Wentzel has demonstrated that both social and academic goals relate to adolescents' school performance and behavior (see Juvonen & Wentzel 1996 for social goals and social motivation). For instance, Wentzel (1991) has found that the goals related to school achievement include seeing oneself as successful, dependable, wanting to learn new things, and wanting to get things done. Higher-achieving students have higher levels of both social responsibility and achievement goals than lower-achieving students (Wentzel 1993, 1994). Similarly, Wentzel (1994) documented the association among middle school children's prosocial goals of helping others, academic prosocial goals such as sharing learning with classmates, peer social responsibility goals such as following through on promises made to peers, and academic social responsibility goals such as following the teacher's instructions. Prosocial goals (particularly academic prosocial goals) related positively to peer acceptance. Interestingly, academic responsibility goals related negatively to peer acceptance but positively to acceptance by teachers. Further, positive prosocial and academic goals related positively to prosocial behaviors (as rated by teachers) and negatively to irresponsible behaviors. Finally, the pursuit of positive social goals was facilitated by perceived support from teachers and peers.

THEORIES INTEGRATING EXPECTANCY AND VALUE CONSTRUCTS

Attribution Theory

Weiner's attribution theory has been a major theory of motivation for the past 30 years (see Graham 1991, Weiner 1985). We place this theory in this section for two reasons: First, Weiner was a student of Atkinson, who developed the expectancy-value model of achievement motivation. Weiner always has acknowledged his connection to Atkinson's framework, although his attribution model departs from Atkinson's model in many ways. Second, attribution models include beliefs about ability and expectancies for success, along with incentives for engaging in different activities, including valuing of achievement (see Graham & Taylor 2001).

Fundamentally, attribution theorists emphasize that individuals' interpretations of their achievement outcomes, rather than motivational dispositions or actual outcomes, determine subsequent achievement strivings. Weiner argued that the individual's causal attributions (or explanations) for achievement outcomes determine subsequent achievement strivings and, thus, are key motivational beliefs.

Weiner and his colleagues (see Weiner 1992) identified ability, effort, task difficulty, and luck as the most important achievement attributions. They classified these attributions into three causal dimensions: locus of control, stability, and controllability. The locus of control dimension has two poles: internal versus external locus of control. The stability dimension captures whether causes change over time

or not. For instance, ability was classified as a stable, internal cause, and effort was classified as unstable and internal. Controllability contrasts causes one can control, such as skill/efficacy, from causes one cannot control, such as aptitude, mood, others' actions, and luck.

Weiner and his colleagues (see Weiner 1985, 1992) demonstrated that each of these causal dimensions has unique influences on various aspects of achievement behavior. The stability dimension influences individuals' expectancies for success: Attributing an outcome to a stable cause such as ability or skill has a stronger influence on expectancies for future success than attributing an outcome to an unstable cause such as effort. The locus of control dimension is linked most strongly to affective reactions. For instance, attributing success to an internal cause enhances one's pride or self-esteem, but attributing that success to an external cause enhances one's gratitude; attributing failure to internal causes is linked to shame, but attributing it to external causes is linked to anger. Weiner also argued that each dimension has important affective consequences.

Modern Expectancy-Value Theory

Modern expectancy-value theories (e.g., Eccles 1987; Eccles et al. 1983; Wigfield & Eccles 1992, 2001, Feather 1988) are based in Atkinson's (1964) expectancy-value model in that they link achievement performance, persistence, and choice most directly to individuals' expectancy-related and task-value beliefs. However, they differ from Atkinson's expectancy-value theory in several ways. First, both the expectancy and value components are more elaborate and are linked to a broader array of psychological and social/cultural determinants. Second, expectancies and values are assumed to be positively related to each other, rather than inversely related, as proposed by Atkinson.

THE ECCLES ET AL. EXPECTANCY-VALUE MODEL Eccles and her colleagues have elaborated and tested an expectancy-value model of achievement-related choices (e.g., Eccles et al. 1983, 1984; Meece et al. 1990). In this model choices are assumed to be influenced by both negative and positive task characteristics, and all choices are assumed to have costs associated with them precisely because one choice often eliminates other options. Consequently, the relative value and probability of success of various options are key determinants of choice.

The most recent version of this model is depicted in Figure 1. Expectancies and values are assumed to directly influence performance, persistence, and task choice. Expectancies and values are assumed to be influenced by task-specific beliefs such as perceptions of competence, perceptions of the difficulty of different tasks, and individuals' goals and self-schema. These social cognitive variables, in turn, are influenced by individuals' perceptions of other peoples' attitudes and expectations for them, by their affective memories, and by their own interpretations of their previous achievement outcomes. Individuals' task perceptions and interpretations

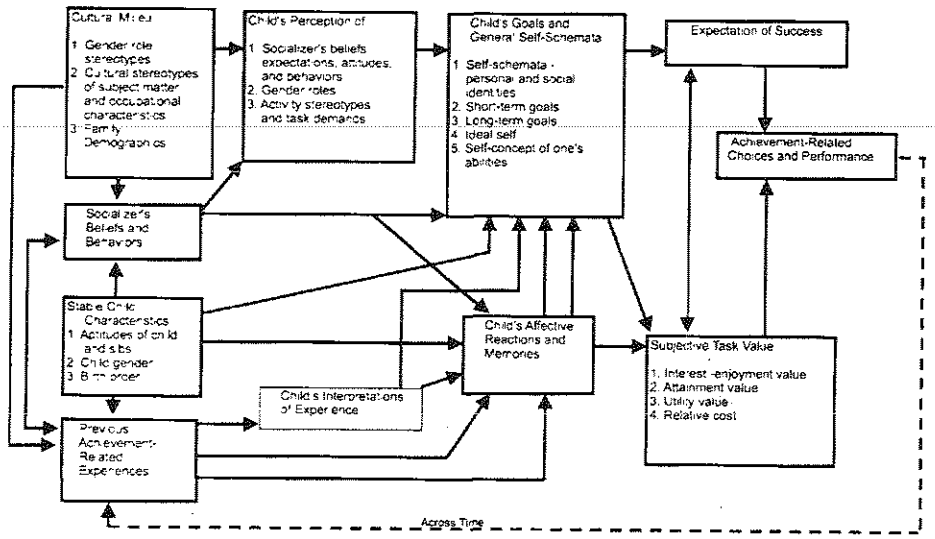

Figure 1 The Eccles et al. expectancy-value model of achievement.

of their past outcomes are assumed to be influenced by socializer's behavior and beliefs and by cultural milieu and unique historical events.

Eccles and colleagues defined expectancies for success as individuals' beliefs about how well they will do on upcoming tasks, either in the immediate or longer-term future. These expectancy beliefs are measured in a manner analogous to measures of Bandura's (1997) personal efficacy expectations. Thus, in contrast to Bandura's claim that expectancy-value theories focus on outcome expectations, the focus in this model is on personal or efficacy expectations.

Eccles et al. (1983) defined beliefs about ability as individuals' evaluations of their competence in different areas. In the expectancy-value model ability beliefs are conceived as broad beliefs about competence in a given domain, in contrast to one's expectancies for success on a specific upcoming task. However, their empirical work has shown that children and adolescents do not distinguish between these two different levels of beliefs. Apparently, even though these constructs can be theoretically distinguished from each other, in real-world achievement situations they are highly related and empirically indistinguishable.

Eccles et al. (1983) outlined four components of task-value: attainment value, intrinsic value, utility value, and cost. Like Battle (1966), they defined attainment value as the personal importance of doing well on the task. Drawing on self-schema and identity theories (e.g., Markus & Wurf 1987), they also linked attainment value to the relevance of engaging in a task for confirming or disconfirming salient aspects of one's self-schema (i.e., because tasks provide the opportunity to demonstrate

aspects of one's actual or ideal self-schema, such as masculinity, femininity, and/or competence in various domains, tasks will have higher attainment value to the extent that they allow the individual to confirm salient aspects of these self-schemata). This component of value relates most directly to the perspective on values espoused by Feather (1988) and Rokeach (1979).

Intrinsic value is the enjoyment the individual gets from performing the activity or the subjective interest the individual has in the subject. This component of value is similar to the construct of intrinsic motivation as defined by Harter (1981), and by Deci and his colleagues (e.g., Deci & Ryan 1985), and to the constructs of interest and flow as defined by Csikszentmihalyi (1988), Renninger (Renninger et al. 1992), and Schiefele (1999).

Utility value is determined by how well a task relates to current and future goals, such as career goals. A task can have positive value to a person because it facilitates important future goals, even if he or she is not interested in the task for its own sake. For instance, students often take classes they do not particularly enjoy but that they need to take to pursue other interests, to please their parents, or to be with their friends. In one sense then this component captures the more "extrinsic" reasons for engaging in a task (see Deci & Ryan 1985, Harter 1981). However, it also relates directly to an individual's internalized short- and long-term goals.

Finally, Eccles and her colleagues identified cost as a critical component of value (Eccles et al. 1983, Eccles 1987). Cost is conceptualized in terms of the negative aspects of engaging in the task, such as performance anxiety and fear of both failure and success, as well as the amount of effort needed to succeed and the lost opportunities that result from making one choice rather than another.

Eccles and her colleagues have shown that ability self-concepts and performance expectancies predict performance in mathematics and English, whereas task values predict course plans and enrollment decisions in mathematics, physics, and English and involvement in sport activities even after controlling for prior performance levels (Eccles 1987, Eccles et al. 1983, Eccles et al. 1984, Meece et al. 1990). They have also shown that both expectancies and values predict career choices (see Eccles et al. 1998a). These findings suggest a possible modification to the model in Figure 1, in which direct paths are drawn from both expectancies and values to performance, persistence, and choice. These results suggest reconsidering the paths from expectancies to choice once prior achievement level is controlled, and from values to performance (see Wigfield & Eccles 1992).

An important question is how people's competence beliefs relate to their subjective task values. According to both the Eccles et al. model and Bandura's (1997) self-efficacy theory, ability self-concepts should influence the development of task values. In support, Mac Iver et al. (1991) found that changes in junior high school students' competence beliefs over a semester predicted change in children's interest much more strongly than vice versa. Does the same causal ordering occur in younger children? Bandura (1997) argued that interests emerge out of one's sense of self-efficacy and that children should be more interested in challenging than in easy tasks. Taking a more developmental perspective, Wigfield (1994) proposed

that initially, young children's competence and task-value beliefs are likely to be relatively independent of each other. Over time, particularly in the achievement domain, children may begin to attach more value to activities in which they do well, for two reasons: First, through processes associated with classical conditioning, the positive effect one experiences when one does well should become attached to the successful activities (see Eccles et al. 1983). Second, lowering the value one attaches to difficult activities is likely to be an effective way to maintain a positive global sense of efficacy and self-esteem (see Eccles et al. 1998b, Harter 1990). Thus, at some point competence-related beliefs and values should become positively related to one another; Wigfield et al. (1997) demonstrated this empirically.

FEATHER'S WORK ON VALUES Feather (e.g., 1988, 1992) extended Atkinson's original expectancy-value model in important ways by broadening the conceptualization of value. Drawing on Rokeach's (1979) work, he defined values as a set of stable, general beliefs about what is desirable and postulated that these beliefs emerge from both society's norms and the individual's core psychological needs and sense of self. He integrated Rokeach's approach to values into the expectancy-value approach to need-achievement by arguing that values are one class of motives that lead individuals to perform acts they think should be done. Individuals' values influence the attractiveness of different goal objects and, consequently, the motivation to attain these goals. Feather (1988, 1992) has confirmed these ideas for several types of behavior including joining political action groups and selecting academic majors. In addition, he found that values and ability perceptions are positively rather than inversely related, suggesting that values are determined by influences other than just the difficulty of the task—influences such as the features of the goal object itself, the valence of success and failure to the individual, and the probability of succeeding on the task. He also concluded that we know little about the origins of these task values.

HECKHAUSEN'S EXPECTANCY-VALUE MODEL In his general expectancy-value model, Heckhausen (see 1991) attempted to integrate a number of different approaches to motivation. The resulting model distinguished between four different types of expectancies: situation-outcome (subjective probability of attaining an outcome in a specific situation without acting), action-outcome (subjective probability of attaining an outcome by one's actions), action-by-situation-outcome (subjective probability that situational factors facilitate or impede one's action-outcome expectancy), and outcome-consequence (subjective probability of an outcome to be associated with a specific consequence). It is important to note that in Heckhausen's model outcomes are the immediate results of one's actions. These immediate results are or are not followed by various consequences (e.g., self-evaluation, external evaluation). They do not have any incentive value on their own. Incentive value is only attributed to the consequences of one's actions. Therefore, the motivation to act depends mainly on the value attached to the consequences of one's behavior.

In sum, expectancy-value models continue to be prominent. The most important contributions of the contemporary models are the elaboration of the values construct and the discussion of whether expectancies and values relate differentially to performance and choice. More work is needed on how the links of expectancies and values to performance and choice change across ages (see Eccles et al. 1993, Wigfield 1994) and on the links between expectancies and values.

Like attribution theory, goal theory, and self-efficacy theory, modern expectancy-value theory can be criticized for emphasizing the rational cognitive processes leading to motivation and behavior. For example, Fischoff et al. (1982) argued that the logical, rational decision-making processes of determining expectancies and valences are often not used because people prefer simpler, but more fallible and optimistic, decision-making strategies. They also argued that task values shift fairly rapidly, particularly for unfamiliar tasks. These criticisms are likely to be particularly à propos when these models are considered from a developmental perspective (see Wigfield 1994). However, the impressive body of research showing the relations of expectancy and values to different kinds of performance and choice supports the continuing viability of these models. Furthermore, as conceptualized by Eccles and her colleagues, values are linked to more stable self-schema and identity constructs and choice is not necessarily the result of conscious rational decision-making processes (see Eccles 1987, Eccles & Harold 1992). By including affective memories, culturally based stereotypes, and identity-related constructs and processes as part of the theoretical system, Eccles and her colleagues have included less rational processes in motivated behavioral choices.

Self-Worth Theory

Before leaving the straight motivation theories, we want to add one more that is not easily classifiable in terms of expectancies and values. We include it in this section because it does link ability-related and value-related constructs to motivated behavior in academic settings. In addition, however, it focuses on mental health as a key determinant of the relation of expectancies and values to achievement behaviors.

In his self-worth theory, Covington (see 1992, 1998) defined the motive for self-worth as the tendency to establish and maintain a positive self-image, or sense of self-worth. Because children spend so much time in classrooms and are evaluated so frequently there, Covington argued that a key way to maintain a sense of self-worth is to protect one's sense of academic competence. That is, children need to believe they are academically competent in order to think they have worth as a person in the school context. Therefore, children will try to maximize, or at least protect, their sense of academic competence in order to maintain their self-worth. One way to accomplish this is by making causal attributions that enhance one's sense of academic competence and control. Covington & Omelich (1979) demonstrated that both college students' and younger individuals' most-preferred attributions for success are ability and effort; the most-preferred attribution for

failure was not trying. Attributing failure to lack of ability was a particularly problematic attribution that students preferred to avoid.

However, school evaluation, competition, and social comparison make it difficult for many children to maintain the belief that they are competent academically. Covington (1992) discussed the strategies many children develop to avoid appearing to lack ability. These include procrastination, making excuses, avoiding challenging tasks, and perhaps most important, not trying. Covington & Omelich (1979) referred to effort as a "double-edged sword," because although trying is important for success (and is encouraged by both teachers and parents), if children try and fail, it is difficult to escape the conclusion that they lack ability. Therefore, if failure seems likely, some children will not try, precisely because trying and failing threatens their ability self-concepts. Covington called such strategies "failure avoiding strategies." Furthermore, Covington discussed how even high-achieving students can be failure avoidant. Rather than responding to a challenging task with greater effort, these students may try to avoid the task in order to maintain both their own sense of competence, and others' conclusions regarding their competence. Covington (1992) suggested that reducing the frequency and salience of competitive, social comparative, and evaluative practices, and focusing instead on effort, mastery, and improvement, would allow more children to maintain their self-worth without having to resort to these failure-avoiding strategies (see Covington 1998 for further suggestions on how to enhance students' motivation). Recent school reform efforts support these suggestions (e.g., Ames 1992, Maehr & Midgley 1996).

Some work in the self-concept area, however, raises questions about Covington's contention that academic competence beliefs are the strongest determinant of self-worth. For example, Harter (1990) has shown that self-concepts regarding physical appearance and social competence more strongly predict self-worth than academic self-concepts (see Harter 1998). Perhaps academic self-competence is not as strong a predictor of self-worth as Covington claims for all individuals. In fact, several investigations suggest that the power of any particular self-concept to influence one's self-worth is dependent on the value one attaches to this competence domain and that people may reduce the value they attach to those tasks at which they expect to fail in order to maintain their sense of self-worth (e.g., Eccles 1993, Harter 1998).

THEORIES INTEGRATING MOTIVATION AND COGNITION

Motivation theorists increasingly are interested in the ways in which motivation and cognition work together. One large body of this work concerns how individuals regulate their behavior to meet their learning goals (see Boekaerts et al. 2000, Schunk & Zimmerman 1994). Other theorists have studied the links between motivation and the use of various cognitive strategies (e.g., Alexander et al. 1994,

Pintrich et al. 1993). Furthermore, theorists such as Kuhl (1987) and Corno (1993) have argued for the distinction between motivation and volition, with motivation guiding decisions about engaging in particular activities, and volition guiding the behaviors used to attain the goal. Broadly, these theorists focus on two issues: how motivation gets translated into regulated behavior, and how motivation and cognition are linked.

Social Cognitive Theories of Self-Regulation and Motivation

Reviewing the extensive literature on the self-regulation of behavior is beyond the scope of this chapter (see Boekaerts et al. 2000). We focus on the work of Zimmerman, Schunk, and their colleagues, because they directly link motivation to self-regulation. Zimmerman (1989) described self-regulated students as being metacognitively, motivationally, and behaviorally active in their own learning processes and in achieving their own goals. Zimmerman posited reciprocally related personal, environmental, and behavioral determinants of self-regulated learning that allow individuals to control the extent to which they are self-regulated through personal and behavioral actions and choices. He also acknowledged that context is important in that some environments do not allow much latitude in choice of activities or approaches, making self-regulation more difficult.

According to Zimmerman (2000), self-regulated learners have three important characteristics: They use a variety of self-regulated strategies (active learning processes that involve agency and purpose); they believe they can perform efficaciously; and they set numerous and varied goals for themselves. Furthermore, self-regulated learners engage in three important processes: self-observation (monitoring of one's activities); self-judgment (evaluation of how well one's own performance compares to a standard or to the performance of others); and self-reactions (reactions to performance outcomes). When these reactions are favorable, particularly in response to failure, students are more likely to continue. The favorableness of one's reaction to failure is determined by how individuals interpret their difficulties and failures.

In his discussions of self-efficacy and self-regulation, Schunk (e.g., 1990, Schunk & Zimmerman 1994, Schunk & Ertmer 2000) emphasized the reciprocal roles of goal setting, self-evaluation, and self-efficacy. He discussed goals in two ways: Initially, he demonstrated that when goals are proximal, specific, and challenging they are most effective in motivating children's behavior and increasing their sense of self-efficacy (see Schunk 1990). More recently, Schunk & Zimmerman (1994) discussed how self-efficacy might be influenced by the learning and performance goal types discussed earlier, suggesting that self-efficacy should be higher under learning than under performance goals; some research supports this claim (e.g., Elliott & Dweck 1988, Meece et al. 1988).

In sum, the social cognitive view of self-regulation emphasizes the importance of self-efficacy beliefs, causal attributions, and goal setting in regulating behavior directed at accomplishing a task or activity. Once children engage in a task, then

they must monitor their behavior, judge its outcomes, and react to those outcomes in order to regulate what they do. Schunk & Zimmerman (1994) concluded that assessing the interactions of self-efficacy, goals, and attributions is one of the most important tasks for future research in this area.

Theories Linking Motivation and Cognition

Some motivation researchers are interested in how motivation and cognition interact to influence self-regulated learning (e.g., Borkowski & Muthukrishna 1995, Winne & Marx 1989). Winne & Marx (1989) posited that motivation should be conceived in cognitive processing terms, and that motivational thoughts and beliefs are governed by the basic principles of cognitive psychology, differing from other thoughts and beliefs only in their content. Winne & Marx further discussed the conditions under which tasks are performed, the operations needed to complete the task, the product the student produces when the task is completed, and the evaluation of the task and how motivation can influence each aspect.

Borkowski and his colleagues (Borkowski et al. 1990, Borkowski & Muthukrishna 1995) developed a model highlighting the interaction of the following cognitive, motivational, and self-processes: knowledge of oneself (including one's goals, possible selves, and sense of self-worth), domain-specific knowledge, strategy knowledge, and personal-motivational states (including attributional beliefs, self-efficacy, and intrinsic motivation). Together these components are assumed to influence performance.

Pintrich and his colleagues outlined a model of the relations between motivation and cognition (Pintrich 2000a,b). This model incorporates several components including student entry characteristics (such as prior achievement levels); the social aspects of the learning setting (e.g., the social characteristics of the tasks and the interactions between students and teachers during instruction); several motivational constructs derived from expectancy-value and goal theories (expectancies, values, and affect); and various cognitive constructs (e.g., background knowledge, learning strategies, and self-regulatory and metacognitive strategies). Pintrich and colleagues postulated that the cognitive and motivational constructs influence each other as well as being influenced by the social context. In turn, both the cognitive and motivational constructs are assumed to influence students' involvement with their learning and, consequently, achievement outcomes. In support, Pintrich & De Groot (1990) found that students' achievement values determined initial engagement decisions and that their self-efficacy facilitated both engagement and performance in conjunction with cognitive and self-regulation strategies.

Both the Borkowski & Muhukrishna and Pintrich models are important because they specify possible links between motivation and cognition, which each research group has begun to test. Many of the possible links remain unexamined, however. Pintrich et al. (1993) presented a more fully articulated discussion of links of motivation and cognition, with specific reference to conceptual change. They discussed how traditional "cold" cognitive psychological models of conceptual change do not

consider the motivational and contextual factors that likely influence conceptual development. They described and provided preliminary evidence of how various classroom and motivational factors such as goals, achievement values, efficacy beliefs, and control beliefs can influence whether students change their mental concepts. They also stressed the relative paucity of research on these relations.

Theories of Motivation and Volition

The term "volition" refers to both the strength of will needed to complete a task, and the diligence of pursuit (Corno 1993). Kuhl (e.g., 1987) argued that many motivational theorists have ignored volitional processes by assuming that motivation leads directly to outcomes. He argued instead that motivational processes only lead to the decision to act. Once the individual engages in action, volitional processes take over and determine whether or not the intention is fulfilled (see also Zimmerman 1989). A variety of distracters and other opportunities can waylay even the strongest intentions to complete a task or activity. Kuhl (1987) proposed several specific volitional strategies to explain persistence in the face of distractions and other opportunities: cognitive control strategies that help individuals stay focused on the relevant information, avoid distracting information, and optimize decision-making including selective attention, encoding control, and parsimony of information processing. Emotional control strategies involve keeping inhibiting emotional states like anxiety and depression in check. Motivational control strategies involve strengthening the current behavior's motivational base, particularly when the intention is weak relative to other possible competing intentions. Environmental control means constraining (or enhancing) one's environment to facilitate the motivated behavior, e.g., turning off the TV while studying. Finally, Kuhl proposed that some individuals (those with an "action orientation") are more likely to engage in these volitional strategies than "state-oriented" individuals.

Corno (1993) provided several examples of the volitional challenges students face (e.g., coordinating multiple demands and desires such as doing homework, watching TV, or calling a friend; dealing with the many distractions in any particular context, such as a classroom; and clarifying often vaguely specified goals and assignments). She focused on Kuhl's (1987) motivation and emotion control strategies because strengthening one's motivation to complete a task and managing one's negative emotional states are often crucial to successful academic performance. Corno also argued that volition is a broader concept than self-regulation because volition includes personality characteristics, aptitudes, and other cognitive processes, whereas most models of self-regulation focus more narrowly on self-monitoring and self-evaluation (see also Corno & Kanfer 1993).

Integrating Theories of Self-Regulation and Expectancy-Value Models of Motivation

Wigfield & Eccles (2001) discussed possible integrations of self-regulatory and expectancy-value models. They noted that a variety of models of self-regulation include competence or efficacy beliefs as crucial influences on self-regulation.

Some models of self-regulation include a consideration of achievement values (e.g., Rheinberg et al. 2000, Schunk & Ertmer 2000). Rheinberg et al. specified different questions individuals pose to themselves concerning potential links of their actions to desired outcomes. One of the questions is a "values" question: Are the consequences of the action important enough to me? If the answer is yes, the individual more likely will undertake the action. If no, then engagement is less likely.

Generally, however, those posing models of self-regulation emphasize goals rather than values; goals are given a prominent role in leading people to action (e.g., Boekaerts & Niemivirta 2000; Carver & Scheier 2000; Pintrich 2000a,b; Schunk & Ertmer 2000; Zimmerman 2000). Furthermore, Carver & Scheier (2000) and Shah & Kruglanski (2000) posit that some goals are organized in hierarchies. For Carver & Scheier the importance of the goal is a basis for the goal hierarchy; goals at higher levels of the hierarchy are thought to be more important to the individual. From the perspective of expectancy-value theory, goal hierarchies also could be organized around the other aspects of task value. Different goals may be more or less useful to the individual or more or less interesting. We have predicted that the relative value attached to the goal should influence its placement in a goal hierarchy, as well as the likelihood that the individual will try to attain the goal (see Eccles 1987, Wigfield & Eccles 2001, for further discussion). The further integration of work on cognition, motivation, and self-regulation will remain an important topic for motivation researchers during the next decade.

CONCLUSION

By focusing on individuals' beliefs, values, and goals, motivation researchers have learned much about the reasons why individuals choose to engage or disengage in different activities, and how individuals' beliefs, values, and goals relate to their achievement behaviors. Various theoretical perspectives on these issues are flourishing, and motivation research remains very active.

We close by noting three important issues that need further study. First, although various theoretical models are flourishing, there is a need for theoretical integration in the field, particularly with respect to models that incorporate competence and expectancy belief constructs. Although there are some differences across these constructs, the similarities likely outweigh the differences. The proliferation of different terms (and measures) for similar constructs makes theoretical integration more difficult.

Second, the focus on belief, values, and goal constructs has led to important advances in the field of motivation. Yet as noted earlier, this focus may overemphasize rational, cognitive processes in motivation, at the expense of affective and other processes. Those writing about cognitive-motivational links also have discussed how "cold" cognitive models cannot adequately capture conceptual change; there is a need to consider affect as well (Pintrich et al. 1993). Within the motivation field, affective processes have not received systematic attention, except in the case of attribution theory. It is time for motivation researchers to investigate such processes more fully (see Roeser 1997).

Finally, as in many areas of psychology, the role of context has become increasingly important to motivation theorists (e.g., Eccles & Midgley 1989, Turner & Meyer 1999, Urdan 1999). Space does not allow for a consideration of contextual influences in this chapter, but it is clear from recent work that the kinds of classroom and school contexts children are in greatly influence their motivation and achievement in complex ways (see Eccles et al. 1998b, Stipek 1998, Stipek & Seal 2001). It is difficult if not impossible to understand students' motivation without understanding the contexts they are experiencing. The complex interactions of context and the individual need further explication.

Visit the Annual Reviews home page at www.AnnualReviews.org

LITERATURE CITED

Alexander PA, Kulikowich JM, Jetton TL. 1994. The role of subject-matter knowledge and interest in the processing of linear and nonlinear texts. *Rev. Educ. Res.* 64:201–52

Amabile TM, Hill KG, Hennessey BA, Tighe EM. 1994. The Work Preference Inventory: assessing intrinsic and extrinsic motivational orientations. *J. Pers. Soc. Psychol.* 66:950–67

Ames C. 1992. Classrooms: goals, structures, and student motivation. *J. Educ. Psychol.* 84:261–71

Ames R, Ames C, eds. 1989. *Research on Motivation in Education*, Vol. 3. New York: Academic

Anderman EM, Austin AC, Johnson DM. 2001. The development of goal orientation. See Wigfield & Eccles 2001. In press

Atkinson JW. 1964. *An Introduction to Motivation*. Princeton, NJ: Van Nostrand

Bandura A. 1997. *Self-Efficacy: The Exercise of Control*. New York: Freeman

Bandura A, Barbaranelli C, Caprara GV, Pastorelli C. 2001. Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Dev.* 72:187–206

Battle E. 1966. Motivational determinants of academic competence. *J. Pers. Soc. Psychol.* 4:534–642

Benware CA, Deci EL. 1984. Quality of learning with an active versus passive motivational set. *Am. Educ. Res. J.* 21:755–65

Blumenfeld PC. 1992. Classroom learning and motivation: clarifying and expanding goal theory. *J. Educ. Psychol.* 84:272–81

Boekaerts M, Niemivirta M. 2000. Self-regulated learning: finding a balance between learning goals and ego protective goals. See Boekaerts et al. 2000, pp. 417–50

Boekaerts M, Pintrich PR, Zeidner MH, eds. 2000. *Handbook of Self-Regulation*. San Diego, CA: Academic

Borkowski JG, Carr M, Relliger E, Pressley M. 1990. Self-regulated cognition: interdependence of metacognition, attributions, and self-esteem. In *Dimensions of Thinking and Cognitive Instruction*, Vol. 1, ed. B Jones, L Idol. Hillsdale, NJ: Erlbaum

Borkowski JG, Muthukrisna N. 1995. Learning environments and skill generalization: how contexts facilitate regulatory processes and efficacy beliefs. In *Recent Perspectives on Memory Development*, ed. F Weinert, W Schneider. Hillsdale, NJ: Erlbaum

Butler R. 1993. Effects of task- and ego-achievement goals on information seeking during task engagement. *J. Pers. Soc. Psychol.* 65:18–31

Cameron J, Pierce WD. 1994. Reinforcement, reward, and intrinsic motivation: a meta-analysis. *Rev. Educ. Res.* 64:363–423

Carver CS, Scheier MF. 2000. On the structure of behavioral self-regulation. See Boekaerts et al. 2000, pp. 41–84

Connell JP. 1985. A new multidimensional

measure of children's perception of control. *Child Dev.* 56:1018–41

Connell JP, Spencer MB, Aber JL. 1994. Educational risk and resilience in African American youth: context, self, and action outcomes in school. *Child Dev.* 65:493–506

Connell JP, Wellborn JG. 1991. Competence, autonomy, and relatedness: a motivational analysis of self-system processes. In *Minnesota Symposia on Child Psychology*, ed. M Gunnar, LA Sroufe, 23:43–77. Hillsdale, NJ: Erlbaum

Corno L. 1993. The best-laid plans: modern conceptions of volition and educational research. *Educ. Res.* 22:14–22

Corno L, Kanfer R. 1993. The role of volition in learning and performance. In *Review of Research in Education*, Vol. 29, ed. L Darling-Hammond. Washington, DC: Am. Educ. Res. Assoc.

Covington MV. 1992. *Making the Grade: A Self-Worth Perspective on Motivation and School Reform*. New York: Cambridge Univ. Press

Covington MV. 1998. *The Will to Learn: A Guide for Motivating Young People*. New York: Cambridge Univ. Press

Covington MV. 2000. Goal theory, motivation, and school achievement: an integrative review. *Annu. Rev. Psychol.* 51:171–200

Covington MV, Omelich CL. 1979. Effort: the double-edged sword in school achievement. *J. Educ. Psychol.* 71:169–82

Crandall VC, Katkovsky W, Crandall VJ. 1965. Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations. *Child Dev.* 36:91–109

Csikszentmihalyi M. 1988. The flow experience and its significance for human psychology. See Csikszentmihalyi & Csikszentmihalyi 1988, pp. 15–35

Csikszentmihalyi M, Csikszentmihalyi IS, eds. 1988. *Optimal Experience: Psychological Studies of Flow in Consciousness*. Cambridge, MA: Cambridge Univ. Press

Csikszentmihalyi M, Massimini F. 1985. On the psychological selection of bio-cultural information. *New Ideas Psychol.* 3:15–138

deCharms R. 1968. *Personal Causation: The Internal Affective Determinants of Behavior*. New York: Academic

Deci EL, Koestner R, Ryan RM. 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychol. Bull.* 125:627–68

Deci EL, Ryan RM. 1985. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum

Dweck C. 1999. *Self-Theories: Their Role in Motivation, Personality, and Development*. Philadelphia: Psychol. Press

Eccles JS. 1987. Gender roles and women's achievement-related decisions. *Psychol. Women Q.* 11:135–72

Eccles JS. 1993. School and family effects on the ontogeny of children's interests, self-perceptions, and activity choice. In *Nebraska Symposium on Motivation, 1992: Developmental Perspectives on Motivation*, ed. J Jacobs, pp. 145–208. Lincoln: Univ. Nebr. Press

Eccles JS, Adler TF, Meece JL. 1984. Sex differences in achievement: a test of alternate theories. *J. Pers. Soc. Psychol.* 46:26–43

Eccles JS, Barber B, Jozefowicz D. 1998a. Linking gender to educational, occupational, and recreational choices: applying the Eccles et al. model of achievement-related choices. In *Sexism and Stereotypes in Modern Society: The Gender Science of Janet Taylor Spence*, ed. WB Swann, JH Langlois, LA Gilbert, pp. 153–92. Washington, DC: Am. Psychol. Assoc.

Eccles JS, Harold RD. 1992. Gender differences in educational and occupational patterns among the gifted. In *Talent Development: Proceedings from the 1991 Henry B. and Jocelyn Wallace National Research Symposium on Talent Development*, ed. N Colangelo, SG Assouline, DL Ambroson, pp. 3–29. Unionville, NY: Trillium

Eccles JS, Midgley C. 1989. Stage/environment fit: developmentally appropriate

classrooms for early adolescents. See Ames & Ames 1989, pp. 139–81

Eccles JS, Wigfield A, Schiefele U. 1998b. Motivation. See Eisenberg 1998, pp. 1017–95

Eccles (Parsons) J, Adler TF, Futterman R, Goff SB, Kaczala CM, et al. 1983. Expectancies, values, and academic behaviors. In *Achievement and Achievement Motivation*, ed. JT Spence, pp. 75–146. San Francisco: Freeman

Eisenberg N, ed. 1998. *Handbook of Child Psychology*, Vol. 3. New York: Wiley. 5th ed.

Elliott A, Church M. 1997. A hierarchical model of approach and avoidance achievement motivation. *J. Pers. Soc. Psychol.* 72: 218–32

Elliott ES, Dweck CS. 1988. Goals: an approach to motivation and achievement. *J. Pers. Soc. Psychol.* 54:5–12

Feather NT. 1988. Values, valences, and course enrollment: testing the role of personal values within an expectancy-value framework. *J. Educ. Psychol.* 80:381–91

Feather NT. 1992. Values, valences, expectations, and actions. *J. Soc. Issues* 48:109–24

Findley MJ, Cooper HM. 1983. Locus of control and academic achievement: a literature review. *J. Pers. Soc. Psychol.* 44:419–27

Fischhoff B, Goitein B, Shapira Z. 1982. The experienced utility of expected utility approaches. In *Expectations and Actions: Expectancy-Value Models in Psychology*, ed. NT Feather, pp. 315–39. Hillsdale, NJ: Erlbaum

Ford ME. 1992. *Human Motivation: Goals, Emotions, and Personal Agency Beliefs*. Newbury Park, CA: Sage

Ford ME, Nichols CW. 1987. A taxonomy of human goals and some possible application. In *Humans as Self-Constructing Living Systems: Putting the Framework to Work*, ed. ME Ford, DH Ford, pp. 289–311. Hillsdale, NJ: Erlbaum

Gottfried AE. 1990. Academic intrinsic motivation in young elementary school children. *J. Educ. Psychol.* 82:525–38

Graham S. 1991. A review of attribution theory in achievement contexts. *Educ. Psychol. Rev.* 3:5–39

Graham S, Taylor AZ. 2001. Ethnicity, gender, and the development of achievement values. See Wigfield & Eccles 2001. In press

Grolnick WS, Gurland ST, Jacob KF, Decourcey W. 2000. The development of self-determination in middle childhood and adolescence. Motivating the academically unmotivated: a critical issue for the 21st century. *Rev. Educ. Res.* 70:151–80

Harter S. 1981. A new self-report scale of intrinsic versus extrinsic orientation in the classroom: motivational and informational components. *Dev. Psychol.* 17:300–12

Harter S. 1990. Causes, correlates and the functional role of global self-worth: a life-span perspective. In *Perceptions of Competence and Incompetence Across the Life-Span*, ed. J Kolligian, R Sternberg, pp. 67–98. New Haven, CT: Yale Univ. Press

Harter S. 1998. Developmental perspectives on the self-system. See Eisenberg 1998, pp. 553–618

Hebb DO. 1955. Drives and the C.N.S. (conceptual nervous system). *Psychol. Rev.* 62:243–54

Heckhausen H. 1991. *Motivation and Action*. Berlin: Springer-Verlag

Hidi S, Baird W. 1986. Interestingness—a neglected variable in discourse processing. *Cogn. Sci.* 10:179–94

Hidi S, Harackiewicz JM. 2001. Motivating the academically unmotivated: a critical issue for the 21st century. *Rev. Educ. Res.* 70:151–80

Juvonen J, Wentzel KR. 1996. *Social Motivation: Understanding Children's School Adjustment*. New York: Cambridge Univ. Press

Kuhl J. 1987. Action control: the maintenance of motivational states. In *Motivation, Intention, and Volition*, ed. F Halisch, J Kuhl, pp. 279–307. Berlin: Springer-Verlag

Mac Iver DJ, Stipek DJ, Daniels DH. 1991. Explaining within-semester changes in student effort in junior high school and senior high school courses. *J. Educ. Psychol.* 83:201–11

Maehr ML, Midgley C. 1996. *Transforming School Cultures*. Boulder, CO: Westview

Markus H, Wurf E. 1987. The dynamic self-concept: a social psychological perspective. *Annu. Rev. Psychol.* 38:299–337

Massimini F, Carli M. 1988. The systematic assessment of flow in daily experience. See Csikszentmihalyi & Csikszentmihalyi 1988, pp. 266–87

Matsumoto D, Sanders M. 1988. Emotional experiences during engagement in intrinsically and extrinsically motivated tasks. *Motiv. Emot.* 12:353–69

Meece JL, Blumenfeld PC, Hoyle RH. 1988. Students' goal orientations and cognitive engagement in classroom activities. *J. Educ. Psychol.* 80:514–23

Meece JL, Wigfield A, Eccles JS. 1990. Predictors of math anxiety and its consequences for young adolescents' course enrollment intentions and performances in mathematics. *J. Educ. Psychol.* 82:60–70

Midgley C, Kaplan A, Middleton M. 2001. Performance-approach goals: good for what, for whom, under what circumstances, and at what cost? *J. Educ. Psychol.* 93:77–86

Midgley C, Kaplan A, Middleton M. Maehr ML, Urdan T, et al. 1998. The development and validation of scales assessing students' goal orientations. *Contemp. Educ. Psychol.* 23:113–31

Nicholls JG. 1984. Achievement motivation: conceptions of ability, subjective experience, task choice, and performance. *Psychol. Rev.* 91:328–46

Nicholls JG, Cobb P, Yackel E, Wood T, Wheatley G. 1990. Students' theories of mathematics and their mathematical knowledge: multiple dimensions of assessment. In *Assessing Higher Order Thinking in Mathematics*, ed. G Kulm, pp. 137–54. Washington, DC: Am. Assoc. Adv. Sci.

Pintrich PR. 2000a. An achievement goal perspective on issues in motivation terminology, theory, and research. *Contemp. Educ. Psychol.* 25:92–104

Pintrich PR. 2000b. The role of goal orientation in self-regulated learning. See Boekaerts et al. 2000, pp. 452–502

Pintrich PR, De Groot EV. 1990. Motivational and self-regulated learning components of classroom academic performance. *J. Educ. Psychol.* 82:33–40

Pintrich PR, Marx RW, Boyle RA. 1993. Beyond cold conceptual change: the role of motivational beliefs and classroom contextual factors in the process of conceptual change. *Rev. Educ. Res.* 63:167–99

Pintrich PR, Schrauben B. 1992. Students' motivational beliefs and their cognitive engagement in classroom academic tasks. In *Student Perceptions in the Classroom*, ed. DH Schunk, JL Meece, pp. 149–83. Hillsdale, NJ: Erlbaum

Renninger KA, Hidi S, Krapp A, eds. 1992. *The Role of Interest in Learning and Development*. Hillsdale, NJ: Erlbaum

Rheinberg F, Vollmeyer R, Rollett W. 2000. Motivation and action in self-regulated learning. See Boekaerts et al. 2000, pp. 503–29

Roeser RW. 1997. On schooling and mental health: introduction to the special issue. *Educ. Psychol.* 33:129–34

Rokeach M. 1979. From individual to institutional values with special reference to the values of science. In *Understanding Human Values*, ed. M Rokeach, pp. 47–70. New York: Free Press

Rotter JB. 1966. Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monogr.* 80:1–28

Ryan RM, Deci E. 2000. Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemp. Educ. Psychol.* 25:54–67

Sansone C, Harackiewicz JM. 2000. *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*. New York: Academic

Schiefele U. 1999. Interest and learning from text. *Sci. Stud. Read.* 3:257–80

Schneider K. 2001. Intrinsisch (autotelisch) motiviertes Verhalten dargestellt an den Beispielen des Neugierverhaltens sowie verwandter Verhaltenssysteme (Spielen und leistungsmotiviertes Handeln). In *Motivation, Volition, Handlung (Enzykl. Psychol. C, Ser. Motiv. Emot., Bd. 4)*, ed. H Heckhausen, J Kuhl. Gottingen: Hogrefe. In press

Schunk DH. 1990. Goal setting and self-efficacy during self-regulated learning. *Educ. Psychol.* 25:71–86

Schunk DH, Ertmer PA. 2000. Self-regulatory and academic learning self-efficacy enhancing interventions. See Boekaerts et al. 2000, pp. 631–49

Schunk DH, Zimmerman BJ, eds. 1994. *Self-Regulation of Learning and Performance.* Hillsdale, NJ: Erlbaum

Shah JY, Kruglanski AW. 2000. Aspects of goal networks: implications for self-regulation. See Boekaerts et al. 2000, pp. 86–110

Skaalvik E. 1997. Self-enhancing and self-defeating ego orientation: relations with task and avoidance orientation, achievement, self-perception, and anxiety. *J. Educ. Psychol.* 89:71–81

Skinner EA. 1995. *Perceived Control, Motivation, and Coping.* Thousand Oaks, CA: Sage

Skinner EA, Belmont MJ. 1993. Motivation in the classroom: reciprocal effects of teacher behavior and student engagement across the school year. *J. Educ. Psychol.* 85:571–81

Skinner EA, Zimmer-Gembeck MJ, Connell JP. 1998. Individual differences and the development of perceived control. *Monogr. Soc. Res. Child Dev.* 63(Ser. No. 254, No. 2–3)

Stipek DJ. 1998. *Motivation to Learn: From Theory to Practice.* Boston: Allyn & Bacon

Stipek DJ, Seal K. 2001. *Motivated Minds: Raising Children to Love Learning.* New York: Holt & Co

Turner JC, Meyer DK. 1999. Integrating classroom context into motivation theory and research: rationale, methods, and implications. See Urdan 1999, pp. 87–122

Urdan T, ed. 1999. *The Role of Context: Advances in Motivation and Achievement*, Vol. 11. Stamford, CT: JAI Press

Weiner B. 1985. An attributional theory of achievement motivation and emotion. *Psychol. Rev.* 92:548–73

Weiner B. 1992. *Human Motivation: Metaphors, Theories, and Research.* Newbury Park, CA: Sage

Weisz JP. 1984. Contingency judgments and achievement behavior: deciding what is controllable and when to try. In *The Development of Achievement Motivation*, ed. JG Nicholls, pp. 107–36. Greenwich, CT: JAI Press

Wentzel KR. 1991. Relations between social competence and academic achievement in early adolescence. *Child Dev.* 62:1066–78

Wentzel KR. 1993. Does being good make the grade? Social behavior and academic competence in middle school. *J. Educ. Psychol.* 85:357–64

Wentzel KR. 1994. Relations of social goal pursuit to social acceptance, and perceived social support. *J. Educ. Psychol.* 86:173–82

White RH. 1959. Motivation reconsidered: the concept of competence. *Psychol. Rev.* 66:297–333

Wigfield A. 1994. Expectancy-value theory of achievement motivation: a developmental perspective. *Educ. Psychol. Rev.* 6:49–78

Wigfield A, Eccles J. 1992. The development of achievement task values: a theoretical analysis. *Dev. Rev.* 12:265–310

Wigfield A, Eccles JS, eds. 2001. *The Development of Achievement Motivation.* San Diego, CA: Academic. In press

Wigfield A, Eccles JS. 2001. The development of competence-related beliefs and achievement task values from childhood to adolescence. See Wigfield & Eccles 2001. In press

Wigfield A, Eccles JS, Yoon KS, Harold RD, Arbreton A, et al. 1997. Changes in children's competence beliefs and subjective task values across the elementary school years: a three-year study. *J. Educ. Psychol.* 89:451–69

Winne PH, Marx RW. 1989. A cognitive-processing analysis of motivation with classroom tasks. See Ames & Ames 1989, pp. 223–37

Zimmerman BJ. 1989. A social cognitive view of self-regulated learning. *J. Educ. Psychol.* 81:329–39

Zimmerman BJ. 2000. Attaining self-regulation: a social-cognitive perspective. See Boekaerts et al. 2000, pp. 13–39