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THE ROLE OF GOAL ORIENTATION IN SELF-REGULATED LEARNING

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Self-regulated learning concerns the application of general models of regulation and self-regulation to issues of learning, in particular, academic learning that takes places in school or classroom contexts. There are a number of different models of self-regulated learning that propose different constructs and different conceptualizations (e.g., Boekaerts & Niemivirta, 2000, this volume; Butler & Winne, 1995; Corno, 1993; Pintrich & De Groot, 1990; Pintrich, Wolters, & Baxter, in press; Pressley, 1986; Schunk, 1994; Schunk & Zimmerman 1994; Winne, 1995; Zimmerman, 1986; 1989; 1990; 1998a, 1998b, 2000, this volume), but all of these models share some general assumptions and features. One purpose of this chapter is to discuss some of the common features of these models to provide a synthetic overview and general framework for theory and research in self-regulated learning.

At the same time, a number of different motivational constructs have been linked to the processes of self-regulation (Pintrich, Marx, & Boyle, 1993; Pintrich & Schrauben, 1992) and there is a need for models of self-regulated learning that include both motivational and cognitive processes. Accordingly, a second purpose of this chapter involves a discussion of how motivational constructs, specifically goal orientation, may be related to processes of self-regulated learning. To accomplish these two

general goals, a general framework for self-regulated learning is discussed first, followed by a summary of different goal orientations and how they may be linked to the different components of self-regulated learning. As part of this discussion of goal orientations, a taxonomy of goal orientations is presented to help organize the research. Given the nature of this handbook and space constraints for all the chapters, these two sections are not intended to be comprehensive reviews of all the extant research on self-regulated learning and goal orientation, but rather an integrative review with citations to illustrative research. This chapter concludes with some suggestions for future theory and research.

I. A GENERAL FRAMEWORK FOR SELF-REGULATED LEARNING

There are many different models of self-regulated learning that propose different constructs and mechanisms, but they do share some basic assumptions about learning and regulation. One common assumption might be called the *active, constructive assumption*, which follows from a general cognitive perspective. That is, all the models view learners as active, constructive participants in the learning process. Learners are assumed to actively construct their own meanings, goals, and strategies from the information available in the external environment as well as information in their own minds (the internal environment). Learners are not just passive recipients of information from teachers, parents, or other adults, but rather active, constructive meaning makers as they go about learning.

A second, but related, assumption is the *potential for control assumption*. All the models assume that learners can potentially monitor, control, and regulate certain aspects of their own cognition, motivation, and behavior as well as some features of their environments. This assumption does not mean that individuals will or can monitor and control their cognition, motivation, or behavior at all times or in all contexts; rather, just that some monitoring, control, and regulation is possible. All of the models recognize that there are biological, developmental, contextual, and individual difference constraints that can impede or interfere with individual efforts at regulation.

A third general assumption that is made in these models of self-regulated learning, as in all general models of regulation stretching back to Miller, Galanter, & Pribram (1960), is the *goal, criterion, or standard assumption*. All models of regulation assume that there is some type of criterion or standard (also called goals or reference value) against which comparisons are made in order to assess whether the process should continue as is or if some type of change is necessary. The commonsense

example is the thermostat operation for the heating and cooling of a house. Once a desired temperature is set (the goal, criterion, standard), the thermostat monitors the temperature of the house (monitoring process) and then turns the heating or air conditioning units (control and regulation processes) on or off to reach and maintain the standard. In a parallel manner, the general example for learning assumes that individuals can set standards or goals to strive for in their learning, monitor their progress toward these goals, and then adapt and regulate their cognition, motivation, and behavior to reach their goals.

A fourth general assumption of most of the models of self-regulated learning is that self-regulatory activities are *mediators* between personal and contextual characteristics and actual achievement or performance. That is, it is not just individuals' cultural, demographic, or personality characteristics that influence achievement and learning directly, or just the contextual characteristics of the classroom environment that shape achievement, but the individuals' self-regulation of their cognition, motivation, and behavior that mediate the relationships between the person, context, and eventual achievement. Most models of self-regulation assume that self-regulatory activities are directly linked to outcomes such as achievement and performance, although much of the research examines self-regulatory activities as outcomes in their own right.

Given these assumptions, a general working definition of self-regulated learning is that it is an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment. These self-regulatory activities can mediate the relationships between individuals and the context, and their overall achievement. This definition is similar to other models of self-regulated learning (e.g., Butler & Winne, 1995; Zimmerman, 1989, 1998a, 1998b, 2000). Although this definition is relatively simple, the remainder of this section outlines in more detail the various processes and areas of regulation, and their application to learning and achievement in the academic domain that reveals the complexity and diversity of the processes of self-regulated learning.

Table 1 displays a framework for classifying the different phases and areas for regulation. The four phases that make up the rows of the table are processes that many models of regulation and self-regulation share (e.g., Zimmerman, 1998a, 1998b; 2000) and they reflect goal-setting, monitoring, and control and regulation processes. Of course, not all academic learning follows these phases, because there are many occasions for students to learn academic material in more tacit or implicit or unintentional ways without self-regulating their learning in such an explicit manner as suggested in the model. These phases are suggested as a heuristic to

TABLE 1   Phases and Areas for Self-Regulated Learning

Phases	Areas for regulation			
	Cognition	Motivation/affect	Behavior	Context
1. Forethought, planning, and activation	Target goal setting	Goal orientation adoption	[Time and effort planning]	[Perceptions of task]
	Prior content knowledge activation	Efficacy judgments	[Planning for self-observations of behavior]	[Perceptions of context]
	Metacognitive knowledge activation	Ease of learning judgements (EOLs); perceptions of task difficulty		
		Task value activation		
		Interest activation		
2. Monitoring	Metacognitive awareness and monitoring of cognition (FOKs, JOLs)	Awareness and monitoring of motivation and affect	Awareness and monitoring of effort, time use, need for help	Monitoring changing task and context conditions
			Self-observation of behavior	
3. Control	Selection and adaptation of cognitive strategies for learning, thinking	Selection and adaptation of strategies for managing motivation and affect	Increase/decrease effort	Change or renegotiate task
			Persist, give up	Change or leave context
			Help-seeking behavior	
4. Reaction and reflection	Cognitive judgments	Affective reactions	Choice behavior	Evaluation of task
	Attributions	Attributions		Evaluation of context

organize our thinking and research on self-regulated learning. Phase 1 involves planning and goal setting as well as activation of perceptions and knowledge of the task and context and the self in relationship to the task. Phase 2 concerns various monitoring processes that represent metacognitive awareness of different aspects of the self or task and context. Phase 3 involves efforts to control and regulate different aspects of the self or task and context. Finally, Phase 4 represents various kinds of reactions and reflections on the self and the task or context.

The four phases do represent a general time-ordered sequence that individuals would go through as they perform a task, but there is no strong assumption that the phases are hierarchically or linearly structured such that earlier phases always must occur before later phases. In most models of self-regulated learning, monitoring, control, and reaction can be ongoing simultaneously and dynamically as the individual progresses through the task, with the goals and plans being changed or updated based on the feedback from the monitoring, control, and reaction processes. In fact, Pintrich et al. (in press) suggest that much of the empirical work on monitoring (phase 2) and control/regulation (phase 3) does not find much separation of these processes in terms of people's experiences as revealed by data from self-report questionnaires or think-aloud protocols.

The four columns in Table 1 represent different areas for regulation that an individual learner (the personal self) can attempt to monitor, control, and regulate. The first three columns of cognition, motivation/affect, and behavior reflect the traditional tripartite division of different areas of psychological functioning (Snow, Corno, & Jackson, 1996). As Snow et al. (1996) noted, the boundaries between these areas may be fuzzy, but there is utility in discussing them separately, particularly because much of traditional psychological research has focused on the different areas in isolation from the others. These first three areas in the columns in Table 1 represent aspects of the individual's own cognition, motivation/affect, and behavior that he or she can attempt to control and regulate. These attempts to control or regulate are "self-regulated" in that the individual (the personal self) is focused on trying to control or regulate his or her own cognition, motivation, and behavior. Of course, other individuals in the environment such as teachers, peers, or parents can try to "other" regulate an individual's cognition, motivation, or behavior as well, by directing or scaffolding the individual in terms of what, how, and when to do a task. More generally, other task and contextual features (e.g., task characteristics, feedback systems, evaluation structures) can facilitate or constrain an individual's attempts to self-regulate his or her learning.

The cognitive column in Table 1 concerns the different cognitive strategies individuals may use to learn and perform a task as well as the metacognitive strategies individuals may use to control and regulate their cognition. In addition, both content knowledge and strategic knowledge

are included in the cognitive column. The motivation and affect column concerns the various motivational beliefs that individuals may have about themselves in relation to the task such as self-efficacy beliefs and values for the task. In addition, interest or liking of the task would be included in this column as well as positive and negative affective reactions to the self or task. Finally, any strategies that individuals may use to control and regulate their motivation and affect would be included in this column. The behavior column reflects the general effort the individual may exert on the task as well as persistence, help seeking, and choice behaviors.

The fourth column in Table 1, context, represents various aspects of the task environment or general classroom or cultural context where the learning is taking place. Given that this column concerns the external environment, attempts to control or regulate it would not be considered self-regulating in some models because the context is not assumed to be part of the individual. In these models, self-regulation usually refers only to aspects of the self that are being controlled or regulated. On the other hand, individuals do try to monitor and control their environment to some extent and, in fact, in some models of intelligence (e.g., Sternberg, 1985) attempts to selectively control and change the context are seen as very adaptable. In the same manner, in this model, it is assumed that individual attempts to monitor and control the environment are an important aspect of self-regulated learning, because the self or person tries to actively monitor and regulate the context. It is the self or person who is acting on the context and attempting to change it as well as adapt to it that makes attempts to regulate the context a part of self-regulated learning. In this case, it is not the area that is being regulated that determines the label "self-regulating," but the fact that the personal self is involved and the strategies the individual person is using to monitor, control, and regulate the context that makes it an important aspect of self-regulated learning.

This general description of the rows and columns of Table 1 provides an overview of how the different phases of regulation relate to different areas for regulation. The next section describes in more detail the cells in the table, organized by column.

A. REGULATION OF COGNITION

Table 1 displays the four general phases of self-regulation that can occur, and within the column for cognition, there are four cells that represent how these different phases may be applied to various aspects of cognition. Each cell is discussed separately for rhetorical and logical reasons, including ease of presentation, although as noted previously, the phases may overlap or occur simultaneously with multiple interactions among the different processes and components. There is no strong assumption of a simple linear, static process with separable noninteracting components.

Cognitive Planning and Activation

As shown in Table 1, there are three general types of planning or activation: (1) target goal setting, (2) activation of relevant prior content knowledge, and (3) activation of metacognitive knowledge. Target goal setting involves the setting of task-specific goals that can be used to guide cognition in general and monitoring in particular (Harackiewicz, Barron, & Elliot, 1998; Pintrich et al., in press; Pressley & Afflerbach, 1995; Schunk, 1994; Zimmerman, 1989; Zimmerman & Martinez-Pons, 1986, 1988). As noted before, the goal acts as a criterion against which to assess, monitor, and guide cognition, just as the temperature setting of a thermostat guides the operation of the thermostat and the heating–cooling system. Of course, goal setting is most often assumed to occur before starting a task, but goal setting actually can occur at any point during performance. Learners may begin a task by setting specific goals for learning, goals for time use, and goals for eventual performance, but all of these can be adjusted and changed at any time during task performance as a function of monitoring, control, and reflection processes.

The second aspect of forethought and planning involves the activation of relevant prior knowledge. At some level, this process of activation of prior knowledge can and does happen automatically and without conscious thought. That is, as students approach a task in a particular domain, for example, mathematics, some aspects of their knowledge about mathematics will be activated automatically and quickly without conscious control. This type of process would not be considered self-regulatory and involves general cognitive processing, because it is not under the explicit control of the learner. At the same time, students who are more self-regulating or metacognitive, actively can search their memory for relevant prior knowledge before they actually begin performing the task. This prior knowledge can include content knowledge as well as metacognitive knowledge about the task and strategies (Alexander, Schallert, & Hare, 1991; Flavell, 1979; Pintrich et al., in press).

The activation of prior knowledge of the content area can happen automatically, but it also can be done in a more planful and regulatory manner through various prompts and self-questioning activities, such as asking oneself, "What do I know about this domain, subject area, topic, problem type, etcetra?," as well as the construction of better problem representations. It appears that both domain experts and self-regulating learners do engage in these type of planning activities (cf. Chi, Feltovich, & Glaser, 1981; Larkin, McDermott, Simon, & Simon, 1980; Zimmerman & Martinez-Pons, 1986).

The third entry in the cell in Table 1, the activation of metacognitive knowledge, includes the activation of knowledge about cognitive tasks and cognitive strategies, and seems to be useful for learning (Pintrich et al., in press; Schneider & Pressley, 1997). Again, as with prior content knowl-

edge, this activation can be rather automatic, stimulated by individual, task, or contextual features, or it can be more controlled and conscious. Metacognitive task knowledge includes knowledge about how task variations can influence cognition. For example, if there is more information provided in a question or a test, then it generally will be more easily solved than when there is little information provided. Most students come to understand this general idea and it becomes part of their metacognitive knowledge about task features. Other examples include knowing that some tasks, or the goals for the task, are more or less difficult, like trying to remember the gist of a story versus remembering the story verbatim (Flavell, 1979).

Knowledge of strategy variables includes all the knowledge individuals can acquire about various procedures and strategies for cognition, including memorizing, thinking, reasoning, problem solving, planning, studying, reading, writing, and so forth. This is the area that has seen the most research and is probably the most familiar category of metacognitive knowledge. Knowledge that rehearsal strategies can help in recalling a telephone number or that organizational and elaboration strategies can help in the memory and comprehension of text information are examples of strategy knowledge.

Metacognitive knowledge has been further broken down into declarative, procedural, and conditional metacognitive knowledge (Alexander et al., 1991; Paris, Lipson, & Wixson, 1983; Schraw & Moshman, 1995). Declarative knowledge of cognition is the knowledge of the *what* of cognition and includes knowledge of the different cognitive strategies, such as rehearsal or elaboration, that can be used for learning. Procedural knowledge includes knowing *how* to perform and use the various cognitive strategies. It may not be enough to know that there are elaboration strategies like summarizing and paraphrasing; it is important to know how to use these strategies effectively. Finally, conditional knowledge includes knowing *when* and *why* to use the various cognitive strategies. For example, elaboration strategies may be appropriate in some contexts for some types of tasks (learning from text); other strategies such as rehearsal may be more appropriate for different tasks or different goals (trying to remember a telephone number). This type of conditional knowledge is important for the flexible and adaptive use of various cognitive strategies.

Cognitive Monitoring

Cognitive monitoring involves the awareness and monitoring of various aspects of cognition and is an important component of what is classically labeled metacognition (Baker 1979; Baker 1989; Brown, Bransford, Ferrara, & Campione, 1983; Flavell, 1979; Koriat & Goldsmith, 1996; Nelson, 1996; Pintrich et al., in press; Schraw & Dennison 1994; Schraw, Dunkle, Bendixen & Roedal, 1995; Schneider & Pressley, 1997). In contrast to metacognitive knowledge, which is more static and "statable" (individuals

can tell if they know it or not), metacognitive judgments and monitoring are more dynamic and process oriented, and reflect metacognitive awareness and ongoing metacognitive activities individuals may engage in as they perform a task.

One type of metacognitive judgment or monitoring activity involves *judgments of learning* (JOLs) and comprehension monitoring (Nelson & Narens, 1990; Pintrich et al., in press). These judgments may manifest themselves in a number of activities, such as individuals becoming aware that they do not understand something they just read or heard, or becoming aware that they are reading too quickly or slowly given the text and their goals. Judgments of learning also would be made as students actively monitor their reading comprehension by asking themselves questions. Judgments of learning also could be made when students try to decide if they are ready to take a test on the material they just read and studied or in a memory experiment as they try to judge whether they have learned the target words (Nelson & Narens, 1990). Pressley & Afflerbach (1995) provided a detailed listing of monitoring activities that individuals can engage in while reading. In the classroom context, besides reading comprehension or memory judgments, JOLs could involve students making judgments of their comprehension of a lecture as the instructor is delivering it or whether they could recall the lecture information for a test at a later point in time.

Another type of metacognitive awareness process is termed the *feeling of knowing* (FOK; Nelson & Narens, 1990; Koriat, 1993). A typical instance of FOK occurs when a person cannot recall something when called upon to do so, but knows he or she knows it, or at least has a strong feeling that he or she knows it. In colloquial terms, this experience is often called the tip of the tongue phenomenon and it occurs as a person attempts to recall something. In the Nelson and Narens (1990) framework, FOKs are made after failure to recall an item and involve a determination of whether the currently unrecallable item will be recognized or recalled by the individual at a later point in time. Koriat (1993) points out that there is evidence that FOK judgments are better than chance predictors of future recall performance, albeit not a perfect correlate. In a reading comprehension task, FOKs would involve the awareness of reading something in the past and having some understanding of it, but not being able to recall it on demand. FOKs in the classroom context could involve having some recall of the teacher lecturing on the material or the class discussing it, but not being able to recall it on the exam.

Cognitive Control and Regulation

Cognitive control and regulation includes the types of cognitive and metacognitive activities that individuals engage in to adapt and change their cognition. In most models of metacognition and self-regulated learning, control and regulation activities are assumed to be dependent on, or at

least strongly related to, metacognitive monitoring activities, although metacognitive control and monitoring are conceived as separate processes (Butler & Winne, 1995; Nelson & Narens, 1990; Pintrich et al., in press; Zimmerman, 1989, 1994). As in any model of regulation, it is assumed that attempts to control, regulate, and change cognition should be related to cognitive monitoring activities that provide information about the relative discrepancy between a goal and current progress toward that goal. For example, if a student is reading a textbook with the goal of understanding (not just finishing the reading assignment), then as the student monitors his or her comprehension, this monitoring process can provide the student with information about the need to change reading strategies.

One of the central aspects of the control and regulation of cognition is the actual selection and use of various cognitive strategies for memory, learning, reasoning, problem solving, and thinking. Numerous studies have shown that the selection of appropriate cognitive strategies can have a positive influence on learning and performance. These cognitive strategies range from the simple memory strategies very young children through adults use to help them remember (Schneider & Pressley, 1997) to sophisticated strategies that individuals have for reading (Pressley & Afflerbach, 1995), mathematics (Schoenfeld, 1992), writing (Bereiter & Scardamalia, 1987), problem solving, and reasoning (see Baron, 1994; Nisbett, 1993). Although the use of various strategies is probably deemed more cognitive than metacognitive, the decision to use them is an aspect of metacognitive control and regulation as is the decision to stop using them or to switch from one strategy type to another.

In research on self-regulated learning, the various cognitive and learning strategies that individuals use to help them understand and learn the material would be placed in this cell. For example, many researchers have investigated the various rehearsal, elaboration, and organizational strategies that learners can use to control their cognition and learning (cf. Pintrich & De Groot, 1990; Pintrich, Smith, Garcia, & McKeachie, 1993; Pressley & Afflerbach, 1995; Schneider & Pressley, 1997; Weinstein & Mayer, 1986; Zimmerman & Martinez-Pons, 1986). These strategies include the use of imagery to help encode information on a memory task as well as imagery to help one visualize correct implementation of a strategy (e.g., visualization in sports activities as well as academic ones; cf. Zimmerman, 1998a). The use of mnemonics also would be included in this cell as well as various strategies like paraphrasing, summarizing, outlining, networking, constructing tree diagrams, and notetaking (see Weinstein & Mayer, 1986).

Cognitive Reaction and Reflection

The processes of reaction and reflection involve learners' judgments and evaluations of their performance on the task as well as their attributions for performance. As Zimmerman (1998b) pointed out, good self-regulators

do evaluate their performance in comparison to learners who avoid self-evaluations or are not aware of the importance of self-evaluation in terms of the goals set for the task. In addition, it appears that good self-regulators are more likely to make adaptive attributions for their performance (Zimmerman, 1998b). Adaptive attributions are generally seen as making attributions to low effort or poor strategy use, not lack of general ability (e.g., I did poorly because I'm stupid or dumb.) in the face of failure (Weiner, 1986; Zimmerman & Kitsantas, 1997). These adaptive attributions have been linked to deeper cognitive processing and better learning and achievement (Pintrich & Schrauben, 1992) as well as a host of adaptive motivational beliefs and behaviors such as positive affect, positive efficacy and expectancy judgments, persistence, and effort (Weiner, 1986).

B. REGULATION OF MOTIVATION AND AFFECT

In the same manner that learners can regulate their cognition, they can regulate their motivation and affect. However, there is not as much research on how students can regulate their motivation and affect as there has been on regulation of cognition, given all the research on metacognition and academic learning by cognitive and educational psychologists. The area of motivational regulation has been discussed more by personality, motivational, and social psychologists (e.g., Kuhl, 1984, 1985), not educational psychologists (for exceptions, see Boekaerts, 1993; Cantor & Kihlstrom 1987; Corno, 1989, 1993; Garcia, McCann, Turner, & Roska, 1998), but this trend is changing as researchers on learning and self-regulation recognize the importance of motivation in general and attempts to regulate motivation in the classroom (Wolters, 1998).

Regulation of motivation and affect includes attempts to regulate various motivational beliefs that have been discussed in the achievement motivation literature (see Pintrich & Schunk, 1996; Wolters, 1998) such as goal orientation (purposes for doing task) and self-efficacy (judgments of competence to perform a task), as well as task value beliefs (beliefs about the importance, utility, and relevance of the task) and personal interest in the task (liking the content area, domain). Kuhl (1984, 1985) as well as Corno (1989, 1993) discussed, under the label of volitional control, various strategies that individuals might use to control their motivation. They also included in their more global construct of volitional control, strategies for emotion control, as did Boekaerts (1993), which includes coping strategies for adapting to negative affect and emotions such as anxiety and fear.

Accordingly, some of the volitional control strategies discussed by these researchers are included in the motivation/affect column in Table 1. However, rather than introduce another term, "volition" or "volitional control," it seems more parsimonious to just discuss regulation of motivation and affect, paralleling the discussion of the regulation of cognition. In the same manner, there is a literature on metacognition that is fairly well

established on the awareness of and control of cognition, but there is little on "metamotivation" (but see Boekaerts, 1995), which would include student awareness of and attempts to control motivation. Again, in the interests of parsimony, the term "metamotivation" will not be used, but the model does include motivational self-awareness and control. Finally, although goal orientation is listed in Table 1 in the cell for activation of motivation, it will not be discussed in the current section, because it is the central focus of the second half of this chapter.

Motivational Planning and Activation

In terms of the phases in Table 1, planning and activation of motivation involve judgments of efficacy as well as the activation of various motivational beliefs about value and interest. In terms of self-efficacy judgments, Bandura (1997) and Schunk (1989, 1991, 1994) have shown that individuals' judgments of their capabilities to perform a task have consequences for affect, effort, persistence, performance, and learning. Of course, once a learner begins a task, self-efficacy judgments can be adjusted based on actual performance and feedback, as well as individual attempts to actively regulate or change one's efficacy judgments (Bandura, 1997).

In the cognitive research on memory, individuals can make determinations of the difficulty level of the task such as how hard it will be to remember or learn the material, which, in the Nelson and Narens (1990) framework is called ease of learning judgments (EOL). These EOL judgments draw on both metacognitive knowledge of the task and metacognitive knowledge of the self in terms of past performance on the task. In the classroom context, students could make these EOL judgments as the teacher introduces a lesson or assigns a worksheet, project, or paper. These EOL judgments are similar to self-efficacy judgments, although the emphasis is on the task rather than the self. In this sense, EOL judgments and self-efficacy judgments reflect the task difficulty perceptions and self-competence perceptions from expectancy-value models (e.g., Eccles, 1983).

Along with judgments of competence, learners also have perceptions of the value and interest the task or content area has for them. In expectancy-value models (Eccles, 1983; Wigfield, 1994; Wigfield & Eccles, 1992), task value beliefs include perceptions of the relevance, utility, and importance of the task. If students believe that the task is relevant or important for their future goals or generally useful for them (e.g., chemistry is important because I want to be a doctor; math is useful because I need it to be a good consumer), then they are more likely to be engaged in the task as well as choose to engage in the task in the future (Wigfield, 1994; Wigfield & Eccles, 1992). In terms of a model of self-regulated learning, it seems likely that these beliefs can be activated early on, either consciously or automatically and unconsciously, as the student approaches

or is introduced to the task by teachers or others. In addition, in the current model of self-regulated learning, it is assumed that students can attempt to regulate or control these value beliefs (e.g, Wolters, 1998).

Beside value beliefs, learners also have perceptions of their personal interest in the task or in the content domain of the task (e.g., liking and positive affect toward math, history, and science). The research on personal interest suggests that it is a stable enduring characteristic of an individual, but that the level of interest can be activated and can vary according to situational and contextual features; this construct is labeled the psychological state of interest (Krapp, Hidi, & Renninger, 1992; Schiefele, 1991). In addition, this research has shown that interest is related to increased learning, persistence, and effort. Although the research on interest has been pursued from both an expectancy-value framework (Wigfield, 1994; Wigfield & Eccles, 1992) and from intrinsic motivation or needs-based models (see Deci & Ryan, 1985; Renninger, Hidi, & Krapp, 1992), it seems clear that interest can be activated by task and contextual features and that learners also can try to control and regulate it (Sansone, Weir, Harpster, & Morgan, 1992; Wolters, 1998).

Finally, just as interest can be a positive anticipatory affect, learners also can anticipate other more negative affects such as anxiety or fear. In the academic learning domain, test anxiety would be the most common form of anxiety and the most researched in terms of its links with learning, performance, and achievement (Hembree 1988; Hill & Wigfield, 1984; Wigfield & Eccles, 1989; Zeidner, 1998). Students who anticipate being anxious on tests and worry about doing poorly even before they begin the test can set in motion a downward spiral of maladaptive cognitions, emotions, and behaviors that lead them to do poorly on the exam (Bandura, 1997; Zeidner, 1998). In this way, the anticipatory affects such as anxiety or fear can influence the subsequent learning process and certainly set up conditions that require active and adaptive self-regulation of cognition, motivation, and behavior.

Motivational Monitoring

In terms of monitoring motivation and affect, there is not as much research on how individuals become aware of their motivation and affect as there is on metacognitive awareness and monitoring, but it is implied in the research on individuals attempts to control and regulate their motivation and affect. That is, as in the cognitive research, it can be assumed that for individuals to try to control their efficacy, value, interest, or anxiety, they would have to be aware of these beliefs and affects, and monitor them at some level. In fact, paralleling the cognitive strategy intervention research (Pressley & Woloshyn, 1995), research on interventions to improve motivation often focus on helping students become aware of their own motivation and adapting it to the task and contextual demands. For

example, in the research on self-efficacy, the focus is on having individuals become aware of their own efficacy levels and self-doubts, and then changing their efficacy judgments to make them more realistic and adaptive (Bandura, 1997). Research on attributional retraining attempts to help individuals become aware of their maladaptive attributional patterns and then change them (Foersterling, 1985; Peterson, Maier, & Seligman, 1993). In the test anxiety research, in addition to attempts to change the environmental conditions that increase anxiety, there are a host of suggested coping strategies that individuals can adopt that include monitoring both the emotionality (negative affect) and cognitive (negative self-thoughts and doubts) components of anxiety (Hill & Wigfield, 1984; Tryon, 1980; Zeidner, 1998). In all these cases, the monitoring of motivation and affect is an important prelude to attempts to control and regulate motivation and affect.

Motivational Control and Regulation

There are many different strategies that individuals can use to control motivation and affect; not as many perhaps as have been discussed by cognitive researchers investigating strategies to control cognition, but still there are a fair number of different motivation and emotion control strategies. Kuhl (1984, 1985), Corno (1989, 1993), and Boekaerts (1993; Boekaerts & Niemivirta, 2000) all have discussed various strategies for motivation and emotion control.

These strategies include attempts to control self-efficacy through the use of positive self-talk (e.g., I know I can do this task; see Bandura, 1997). Students also can attempt to increase their extrinsic motivation for the task by promising themselves extrinsic rewards or making certain positive activities (taking a nap, watching TV, talking with friends, etc.) contingent on completing an academic task (Wolters, 1998; called self-consequenting in Zimmerman and Martinez-Pons, 1986, and incentive escalation in Kuhl, 1984). Wolters (1998) also found that college students intentionally would try to evoke extrinsic goals such as getting good grades to help them maintain their motivation. Students also can try to increase their intrinsic motivation for a task by trying to make it more interesting (e.g., make it into a game; Sansone et al., 1992; Wolters, 1998) or to maintain a more mastery-oriented focus on learning (Wolters, 1998). Finally, Wolters (1998) also found that students would try to increase the task value of an academic task by attempting to make it more relevant or useful to them or their careers, experiences, or lives. In all these cases, students are attempting to change or control their motivation in order to complete a task that might be boring or difficult.

In other cases, students may use a self-affirmation strategy whereby they decrease the value of a task to protect their self-worth, especially if they have done poorly on the task (Garcia & Pintrich, 1994). For example,

students who fail on an academic task might try to affirm their self-worth by saying it does not matter to them and that school is not that important compared to other aspects of their lives that they value more. Steele (1988, 1997) suggested that self-affirmation and disidentification with school (devaluing school in comparison to other domains) might help explain the discrepancy between African–American students' achievement and their self-esteem.

In addition, there are strategies that students can use to try to control their emotions that might differ from those that they use to control their efficacy or value (Boekaerts, 1993; Boekaerts & Niemivirta, 2000; Corno, 1989, 1993; Kuhl, 1984, 1985; Wolters, 1998). Self-talk strategies to control negative affect and anxiety (e.g., don't worry about grades now, don't think about that last question, move on to the next question) have been noted by anxiety researchers (Hill and Wigfield, 1984; Zeidner, 1998). Students also may invoke negative affects such as shame or guilt to motivate them to persist at a task (Corno, 1989; Wolters, 1998). Defensive pessimism is another motivational strategy that students can use to actually harness negative affect and anxiety about doing poorly to motivate them to increase their effort and perform better (Garcia & Pintrich, 1994; Norem & Cantor, 1986). Self-handicapping, in contrast to defensive pessimism, involves the decrease of effort (little or no studying) or procrastination (only cramming for an exam, writing a paper at the very end of the deadline) to protect self-worth by attributing the likely poor outcome to low effort, not low ability (Baumeister & Scher, 1988; Berglas, 1985; Garcia & Pintrich, 1994; Midgley, Arunkumar, & Urdan, 1996).

Motivational Reaction and Reflection

After the students have completed a task, they may have emotional reactions to the outcome (e.g., happiness at success, sadness at failure) as well as reflect on the reasons for the outcome; that is, make attributions for the outcome (Weiner, 1986). Following attribution theory, the types of attributions that students make for their success and failure can lead to the experience of more complicated emotions like pride, anger, shame, and guilt (Weiner, 1986, 1995). As students reflect on the reasons for their performance, both the quality of the attributions and the quality of the emotions experienced are important outcomes of the self-regulation process. Individuals actively can control the types of attributions they make to protect their self-worth and motivation for future tasks. Many of the common attributional biases identified by social psychologists (Fiske & Taylor, 1991) may be used rather automatically (e.g., the fundamental attribution error, or the actor–observer bias), but they could also be more intentional strategies used to protect self-worth (e.g., the self-serving or hedonic bias or the self-centered bias; see Fiske & Taylor, 1991; Pintrich & Schunk, 1996).

In fact, much of the attributional retraining literature is focused on helping individuals change their attributions or attributional style to have more adaptive cognitive, motivational, affective, and behavioral reactions to life events (Peterson et al., 1993; Foersterling, 1985). Finally, these reflections and reactions can lead to changes in the future levels of self-efficacy and expectancy for future success, as well as value and interest (Pintrich & Schunk, 1996; Weiner, 1986, 1995). In this manner, these potential changes in efficacy, value, and interest from phase 4 flow back into phase 1 and become the entry level motivational beliefs that students bring with them to new tasks.

C. REGULATION OF BEHAVIOR

Regulation of behavior is an aspect of self-regulation that involves individuals' attempts to control their own overt behavior. Some models of regulation would not include this as an aspect of self-regulation, because it does not explicitly involve attempts to control and regulate the personal self and would just label it behavioral control. In contrast, the framework in Table 1 follows the triadic model of social cognition (Bandura, 1986; Zimmerman, 1989), where behavior is an aspect of the person, albeit not the internal self that is represented by cognition, motivation, and affect. Nevertheless, individuals can observe their own behavior, monitor it, and attempt to control and regulate it, and, as such, these activities can be considered self-regulatory for the individual.

At the same time, as signaled by the brackets for the cell that represents the intersection of the row for phase 1—forethought, planning, and activation—and the column for behavior, this cell for time and effort planning really represents cognitions. In this sense, it could be placed in the cell that reflects the intersection of forethought and cognition. That is, there may not really be any behavioral planning that is not also cognitive. However, there are models of intentions and intentional planning (e.g., Gollwitzer, 1996) that do conceptualize behavioral intentions as an aspect of volitional and regulatory control. Accordingly, in terms of the structure of the taxonomy in Table 1, it seems reasonable to place students' attempts to intentionally plan their behavior in this cell and to discuss them as part of the column for behavioral regulation.

Behavioral Forethought, Planning, and Activation

Models of intentions, intentional planning, and planned behavior (e.g., Ajzen, 1988, 1991; Gollwitzer, 1996) have shown that the formation of intentions is linked to subsequent behavior in a number of different domains. In the academic learning domain, time and effort planning or management would be the kinds of activities that could be placed in this cell in Table 1. Time management involves making schedules for studying

and allocating time for different activities, which are classic aspects of most learning and study skills courses (see Hofer, Yu, & Pintrich, 1998; McKeachie, Pintrich, & Lin, 1985; Pintrich, McKeachie, & Lin, 1987; Simpson, Hynd, Nist, & Burrell, 1997). Zimmerman and Martinez-Pons (1986) have shown that self-regulating learners and high achievers do engage in time management activities. In addition, Zimmerman (1998a) discussed how expert writers, musicians, and athletes also engage in time management activities, not just students. As part of time management, students also may make decisions and form intentions about how they will allocate their effort and the intensity of their work. For example, students might plan to study regularly 1 or 2 hours a night during the semester, but during midterms or finals intend to increase their effort and time spent studying.

Zimmerman (1998a, 2000,) also has discussed how individuals can observe their own behavior through various methods and then use this information to control and regulate their behavior. For example, writers can record how many pages of text they produce in a day and record this information over weeks, months, and years (Zimmerman, 1998b). To enact these self-observational methods, some planning must be involved to organize the behavioral record keeping. Many learning strategy programs also suggest some form of behavioral observation and record keeping in terms of studying so as to provide useful information for future attempts to change learning and study habits. Again, the implementation of these self-observational methods requires some planning and the intention to actually implement them during learning activities.

Behavioral Monitoring and Awareness

In phase 2, students can monitor their time management and effort levels, and attempt to adjust their effort to fit the task. For example, in phase 1, students may plan to spend only 2 hours reading two textbook chapters for the course, but once they begin reading, they realize that it is more difficult than they foresaw and that it will take either more time or more concentrated effort to understand the chapter. They also could realize that although they set aside 2 hours for reading the chapters in the library, they spent 1 hour of that time talking with friends who were studying with them. Of course, this type of monitoring should lead to an attempt to control or regulate their effort (e.g., set aside more time, do not study with friends; the next cell in Table 1). This type of monitoring behavior is often helped by formal procedures for self-observation (e.g., keeping logs of study time, diaries of activities, and record keeping) or self-experimentation (Zimmerman, 1998a, 2000). All of these activities will help students become aware of and monitor their own behavior, which provides information that can be used to actually control or regulate behavior.

Behavioral Control and Regulation

Strategies for actual behavioral control and regulation are many as attested to by the chapters in this volume that address issues of behavioral control of physical health, mental health, work behaviors, and social relationships with others, as well as behavioral control of activities for academic learning. As noted in the previous section, students may regulate the time and effort they expend studying two textbook chapters based on their monitoring of their behavior and the difficulty of the task. If the task is harder than they originally thought, they may increase their effort, depending on their goals, or they may decrease effort if the task is perceived as too difficult. Another aspect of behavioral control includes general persistence, which is also a classic measure used in achievement motivation studies as an indicator of motivation. Students may exhort themselves to persist through self-talk (keep trying, you'll get it) or they may give up if the task is too difficult, again depending on their goals and monitoring activities.

The motivational strategies mentioned earlier such as defensive pessimism and self-handicapping included attempts to control anxiety and self-worth, but also had direct implications for an increase in effort (defensive pessimism) or decrease in effort (self-handicapping). As such, these strategies are also relevant to behavioral control efforts. One aspect of self-handicapping is procrastination, which is certainly behavioral in nature in terms of putting off studying for an exam or writing a paper until the last minute. Of course, because effort and persistence are two of the most common indicators of motivation, most of the motivational strategies mentioned in the earlier section will have direct implications for the behaviors of effort and persistence.

Another behavioral strategy that can be very helpful for learning is help seeking. It appears that good students and good self-regulators know when, why, and from whom to seek help (Karabenick & Sharma, 1994; Nelson-Le Gall, 1981, 1985; Newman, 1991, 1994, 1998a, 1998b; Ryan & Pintrich, 1997). Help seeking is listed here as a behavioral strategy because it involves the person's own behavior, but it also involves contextual control because it necessarily involves the procurement of help from others in the environment and as such is also a social interaction (Ryan & Pintrich, 1997). Help seeking can be a dependent strategy for students who are seeking the correct answer without much work or who wish to complete the task quickly without much understanding or learning. In terms of this goal of learning and understanding, dependent help seeking would be a generally maladaptive strategy, in contrast to adaptive help seeking where the individual is focused on learning and is only seeking help to overcome a particularly difficult aspect of the task.

Behavioral Reaction and Reflection

Reflection is a more cognitive process and so there may be no behavioral reflection per se, but just as with forethought, the cognitions an individual has about behavior can be classified in this cell. For example, reflections on actual behavior in terms of effort expended or time spent on task can be important aspects of self-regulated learning. Just as students can make judgments or reflect on their cognitive processing or motivation, they can make judgments about their behaviors. They may decide that procrastinating studying for an exam may not be the most adaptive behavior for academic achievement. In the future, they may decide to make a different choice in terms of their effort and time management. Certainly, in terms of reaction, the main behavior is choice. Students cannot decide only to change their future time and effort management; they also may make choices about what classes to take in the future (at least for high school and college students) or, more generally, what general course of study they will follow. This kind of choice behavior results in the selection of different contexts and leads us into the last column in Table 1.

D. REGULATION OF CONTEXT

As previously noted, Table 1 includes the individual's attempts to monitor, control, and regulate the context as an important aspect of self-regulated learning, because the focus is on the personal self or individual who is engaged in these activities. Given that it is the active, personal self who is attempting to monitor, control, and regulate the context, it seems important to include these activities in a model of self-regulated learning.

Contextual Forethought, Planning, and Activation

This cell in Table 1 includes individuals' perceptions of the task and context. As in the behavioral column, this cell is in brackets because these perceptions are really cognitions, not aspects of the context, but the focus of the perceptions is outward, away from the individual's own cognition or motivation, and toward the tasks and contexts. In a classroom context, these perceptions can be about the nature of the tasks in terms of the classroom norms for completing the task (e.g., the format to be used or the procedures to be used to do the task, such as working with others is permitted or is considered cheating), as well as general knowledge about the types of tasks and classroom practices for grading in the classroom (Blumenfeld, Mergendoller, & Swarthout, 1987; Doyle, 1983).

In addition, perceptions of the classroom norms and classroom climate are important aspects of the students' knowledge activation of contextual information. For example, when students enter a classroom, they may

activate knowledge about general norms or perceive certain norms (talking is not allowed, working with others is cheating, the teacher always has the correct answer, students are not allowed much autonomy or control, etc.) that can influence their approach to the classroom and their general learning. Other aspects of the classroom climate, such as teacher warmth and enthusiasm as well as equity and fairness for all students (e.g., no bias on the basis of gender or ethnicity), can be important perceptions or beliefs that are activated when students come into a classroom (Pintrich & Schunk, 1996). Of course, these perceptions can be veridical and actually represent the classroom dynamics, but there is also the possibility that the students can misperceive the classroom context because they are activating stereotypes without reflecting on the actual nature of the classroom. For example, there may be occasions when females accurately perceive a male math teacher's bias against females in math, but there also can be cases where this is a more stereotypical perception that is not reflected in the teacher's behavior. In any case, these perceptions, veridical or not, offer opportunities for monitoring and regulation of the context.

Contextual Monitoring

Just as students can and should monitor their cognition, motivation, and behavior, they also can and should monitor the task and contextual features of the classroom. In classrooms, just as in work and social situations, individuals are not free to do as they please; they are involved in a social system that provides various opportunities and constraints that shape and influence their behavior. If students are unaware of the opportunities and constraints that are operating, then they will be less likely to be able to function well in the classroom. Awareness and monitoring of the classroom rules, grading practices, task requirements, reward structures, and general teacher behavior are all important for students to do well in the classroom. For example, students need to be aware of the different grading practices and how different tasks will be evaluated and scored for grades. If they are not aware that format can count (e.g., good penmanship in early grades) or that original thinking is important in a report, not just summarizing material from books or encyclopedias, then they will be less likely to adjust their behavior to be in line with these requirements. In college classrooms, entering freshmen often have difficulty in their first courses because they are not monitoring or adjusting their perceptions of the course requirements to the levels expected by the faculty. Many college learning strategy or study skills courses attempt to help students become aware of these differences and adjust their strategy use and behavior accordingly (Hofer et al., 1998; Simpson et al., 1997).

Contextual Control and Regulation

Of course, as with cognition, motivation, and behavior, contextual monitoring processes are intimately linked to efforts to control and regu-

late the tasks and context. In comparison to control and regulation of cognition, motivation, and behavior, control of the tasks or context may be more difficult because they are not always under direct control of the individual learner. However, even models of general intelligence (e.g., the contextual subtheory; see Sternberg, 1985) often include attempts to shape, adapt, or control the environment as one aspect of intelligent behavior. Models of volitional control usually include a term labeled environmental control, which refers to attempts to control or structure the environment in ways that will facilitate goals and task completion (Corno, 1989, 1993; Kuhl, 1984, 1985). In terms of self-regulated learning, most models include strategies to shape, control, or structure the learning environment as important strategies for self-regulation (Zimmerman, 1998a).

In the traditional classroom context, the teacher controls most of the aspects of the tasks and context and therefore, there may be little opportunity for students to engage in contextual control and regulation. However, students often may attempt to negotiate the task requirements downward (can we write 5 pages instead of 10?; can we use our books and notes on the exam?; etc.) to make them simpler and easier for them to perform (Doyle, 1983). This kind of task negotiation probably has been experienced by all teachers from elementary through graduate school faculty and does represent one attempt by students to control and regulate the task and contextual environment even in classrooms with high levels of teacher control.

In more student-centered classrooms, such as communities of learners classrooms and project-based instruction (e.g., Blumenfeld, et al., 1991; Brown, 1997), students are asked to do much more actual control and regulation of the academic tasks and classroom climate and structure. They often are asked to design their own projects and experiments, design how their groups will collect data or perform the task, develop classroom norms for discourse and thinking, and even work together with the teacher to determine how they will be evaluated on the tasks. These types of classrooms obviously offer a great deal more autonomy and responsibility to the students and they provide multiple opportunities for contextual control and regulation. Of course, this does not mean that developmentally all students, especially those in the early elementary years, are able to regulate the academic tasks, classroom context, and themselves, but these types of classrooms do highlight the potential types of contextual regulation that is possible in the classroom context.

In postsecondary settings, students have much more freedom to structure their environment in terms of their learning. Much of the learning that goes on takes place outside the college lecture hall or classroom, and students have to be able to control and regulate their study environment. Monitoring of their study environment for distractions (music, TV, talkative friends or peers) and then attempts to control or regulate their study

environment to make it more conducive for studying (removing distractions, having an organized and specific place for studying) can facilitate learning and seems to be an important part of self-regulated learning (Hofer et al., 1998; Zimmerman, 1998a). Zimmerman (1998a) also discusses how writers, athletes, and musicians attempt to exert contextual control over their environment by structuring it in ways that facilitate their learning and performance.

Contextual Reaction and Reflection

Finally, in terms of contextual reaction and reflection, students can make general evaluations of the task or classroom environment. These evaluations can be made on the basis of general enjoyment and comfort, as well as more cognitive criteria regarding learning and achievement. In some of the more student-centered classrooms, there is time set aside for occasional reflection on what is working in the classroom and what is not working in terms of both student and teacher reactions (Brown, 1997). As with cognition and motivation, these evaluations can feed back into phase 1 components when the student approaches a new task.

In summary, the four phase by four area taxonomy for regulation in Table 1 represents a general framework for conceptualizing self-regulated learning in the academic domain. It provides a taxonomy of the different processes and components that can be involved in self-regulated learning. The format of the taxonomy also allows for the integration of much of the research on self-regulated learning that has spawned a diversity of terms and constructs, but organizes it in such a manner that the similarities and differences can be seen easily. As researchers traverse the different areas of self-regulated learning, the taxonomy allows them to locate their own efforts within this topography as well as to spy underexplored territories in need of further investigation and examination. The next section of this chapter turns to how the adoption of different goal orientations can influence self-regulated learning.

II. GOAL ORIENTATION AND
SELF-REGULATED LEARNING

As noted before, a key assumption of all models of regulation is that some goal, standard, criterion, or reference value exists that can serve as a gauge against which to assess the operation of the system and then guide regulatory processes. In self-regulated learning research, two general classes of goals have been discussed under various names such as target and purpose goals (e.g., Harackiewicz et al., 1998; Harackiewicz & Sansone, 1991) or task-specific goals and goal orientations (e.g., Garcia & Pintrich, 1994; Pintrich & Schunk, 1996; Wolters, Yu, & Pintrich, 1996;

Zimmerman & Kitsantas, 1997). The general distinction between these two classes of goals is that target and task-specific goals represent the specific outcome the individual is attempting to accomplish. In academic learning contexts, it would be represented by goals such as wanting to get 8 out of 10 correct on a quiz or trying to get an A on a midterm exam. These goals are specific to a task and are most similar to the goals discussed by Locke and Latham (1990) for workers in an organizational context such as wanting to make 10 more widgets an hour or to sell 5 more cars in the next week. They also are probably most similar to the goals discussed in many of the chapters in this volume on self-regulation (e.g., trying to stay physically healthy, trying to lose weight, and trying to stay mentally healthy).

In contrast, purpose goals or goal orientations reflect the more general reasons an individual does a task and are related more to the research on achievement motivation (Elliot, 1997; Urdan, 1997): it is an individual's general orientation (or schema or theory) for approaching the task, doing the task, and evaluating their performance on the task (Ames, 1992; Dweck & Leggett, 1988; Pintrich, in press). In this case, purpose goals or goal orientations refer to *why* individuals want to get 8 out of 10 correct, *why* they want to get an A, or *why* they want to make more widgets or sell more cars as well as the standards or criteria (8 out of 10 correct, an A) they will use to evaluate their progress toward the goal. The inclusion of the reasons why an individual is pursuing a task allows for an integration of the achievement motivation literature into our models of self-regulated learning, because the achievement motivation literature is concerned with what, why, and how individuals are motivated to achieve in different settings (Pintrich & Schunk, 1996). The what, why, and how of motivation forms a general theory or orientation to the task that can influence many of the different processes of self-regulation (Meece, 1994). For example, if individuals are motivated to master and learn the material, then they should orient their monitoring processes to cues that show progress in learning and invoke certain types of cognitive strategies for learning (e.g., deeper processing strategies) so as to make progress toward their goal of learning and mastery. In contrast, if they are oriented to demonstrating their superiority over others in terms of grades or scores on academic tasks, then their monitoring and control processes may be qualitatively different because they monitor others' work and grades, and attempt to regulate their motivation and cognition to demonstrate their superiority.

Moreover, a focus on broader purpose goals or goal orientations may offer more potential for generalizability, as well as specific implications for practice, in contrast to a focus on more specific target goals. Given that there are an infinite number of specific target goals that individuals can adopt, it is not clear how a focus on the specific goal contents will offer much direction for educational practice, beyond the usual suggestion that

setting specific proximal goals is generally positive for learning and performance (Pintrich & Schunk, 1996). In contrast, a focus on general goal orientations might offer some parsimonious, but powerful and useful, ways to characterize individuals' motivation and how their motivation is linked to their self-regulated learning. In turn, these generalizations should lead to some specific suggestions for the improvement of educational practice (e.g., Maehr & Midgley, 1996). Finally, there has been a fair amount of research on how goal orientations are linked to various self-regulatory processes in the academic learning and achievement motivation literatures. The remainder of this section discusses two general goal orientations that have been proposed in different models and how different approach and avoidance forms of these goals may be linked to the different self-regulatory processes that were outlined in Table 1.

A. MODELS OF GOAL ORIENTATION

There are a number of different models of goal orientation that have been advanced by different achievement motivation researchers (cf. Ames, 1992; Dweck & Leggett, 1988; Harackiewicz et al., 1998; Maehr & Midgley, 1991; Nicholls, 1984; Pintrich, 1989; Wolters et al., 1996). These models vary somewhat in their definition of goal orientation and the use of different labels for similar constructs. They also differ on the proposed number of goal orientations and the role of approach and avoidance forms of the different goals. Finally, they also differ in the degree to which an individual's goal orientations are more personal, based on somewhat stable individual differences, or the degree to which an individual's goal orientations are more situated or sensitive to the context and a function of the contextual features of the environment. Most of the models assume that goal orientations are a function of both individual differences and contextual factors, but the relative emphasis along this continuum does vary between the different models. Much of this research also assumes that classrooms and other contexts (e.g., business or work settings and laboratory conditions in an experiment) can be characterized in terms of their goal orientations (see Ford, Smith, Weissbein, Gully, & Salas, 1998, for an application of goal orientation theory to a work setting), but for the purposes of this chapter the focus will be on individuals' personal goal orientation. All of these differences have made integration of the findings somewhat difficult across different research programs.

Most models propose two general goal orientations that concern the reasons or purposes individuals are pursuing when approaching and engaging in a task. In Dweck's model, the two goal orientations are labeled *learning* and *performance* goals (Dweck & Leggett, 1988), where learning goals reflect a focus on increasing competence and performance goals involve either the avoidance of negative judgments of competence or the

attainment of positive judgments of competence. Ames (1992) labels these orientations *mastery* and *performance* goals, where mastery goals orient learners to "developing new skills, trying to understand their work, improving their level of competence, or achieving a sense of mastery based on self-referenced standards" (p. 262). In contrast, performance goals orient learners to focus on their ability and self-worth, to determine their ability with reference to besting other students, surpassing others, and receiving public recognition for their superior performance (Ames, 1992).

Maehr and Midgley and their colleagues (e.g., Anderman & Midgley, 1997; Kaplan & Midgley, 1997; Maehr & Midgley, 1991, 1996; Middleton & Midgley, 1997; Midgley, et al., 1996; Midgley et al., 1998;) mainly have used the terms *task* goals and *performance* goals in their research program, and these terms parallel the two main goals from Dweck and Ames. Task-focused goals involve an orientation to mastery of the task, increasing one's competence, and progress in learning, all of which are similar to the learning and mastery goals of Dweck and Ames. Performance goals involve a concern with doing better than others and demonstrating ability to the teacher and peers, similar to the performance goals discussed by Dweck and Ames.

In a similar, but somewhat different vein, Nicholls and his colleagues (Nicholls, 1984, 1989; Thorkildsen & Nicholls, 1998) have proposed *task-involved* and *ego-involved* goals or *task orientation* and *ego orientation*. In this research, the focus and operationalization of the goals has been on when individuals feel most successful, which is a somewhat different perspective than the more general reasons or purposes learners might adopt when approaching or performing a task. Nevertheless, they are somewhat similar to the goals proposed by others in that task-involved goals are defined as experiencing success when individuals learn something new, gain new skills or knowledge, or do their best. Ego-involved goals involve individuals feeling successful when outperforming or surpassing their peers or avoiding looking incompetent.

Finally, Harackiewicz and Elliot and their colleagues (e.g., Elliot, 1997; Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Harackiewicz et al., 1997, 1998) have investigated two general goal orientations, a *mastery orientation* and a *performance orientation*. In their work, a mastery goal orientation reflects a focus on the development of knowledge, skill, and competence relative to one's own previous performance and thus is self-referential. Performance goals concern striving to demonstrate competence by trying to outperform peers on academic tasks. These two general orientations are in line with the other definitions of goals discussed in this chapter. More importantly, however, Elliot and his colleagues (e.g., Elliot, 1997; Elliot & Church, 1997) also made a distinction between two different types of performance goals: a *performance-approach* goal and a *performance-avoidance* goal. They suggest that individuals can be positively

motivated to try to outperform others and to demonstrate their competence and superiority, which reflects an approach orientation to the general performance goal. In contrast, individuals also can be negatively motivated to try to avoid failure and to avoid looking dumb, stupid, or incompetent, which they label an avoidance orientation to the performance goal.

In the same vein, Midgley and her colleagues (Middleton & Midgley, 1997; Midgley et al., 1998) have separated out both approach and avoid ability goals, which parallels the work by Elliot and his colleagues on approach- and avoidance-performance goals. Other researchers (e.g., Wolters et al., 1996; Urdan, 1997) have examined what they have called *relative ability goals*, but this construct seems to reflect the same construct as the approach-performance goal of Elliot and his colleagues. Finally, Skaalvik and his colleagues (Skaalvik, 1997; Skaalvik, Valas, & Sletta, 1994) also have proposed two dimensions of performance or ego goals, a *self-enhancing ego orientation*, where the emphasis is on besting others and demonstrating superior ability, as in the approach-performance goal, and *self-defeating ego orientation*, where the goal is to avoid looking dumb or to avoid negative judgments, as in the avoidance-performance orientation. The approach-performance orientation focused on besting others and superior performance relative to peers is similar to the performance and ego orientation in the models of Dweck, Ames, and Nicholls. In addition, although not formally separated as two distinct performance or ego goals in the models of Dweck and Nicholls, both of those models did include concerns of avoiding judgments of incompetence or feeling dumb or stupid in their conceptualizations of performance and ego orientations, similar to the avoidance-performance orientation of Elliot and Midgley or the self-defeating ego orientation of Skaalvik.

Research on goal orientation also has revealed a number of other goals that students might adopt in classroom settings. For example, Pintrich and his colleagues (Pintrich 1989; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; Pintrich, Roeser, & De Groot, 1994; Pintrich et al., 1993; Wolters et al., 1996), as well as others (e.g, Urdan, 1997), have discussed an extrinsic orientation to the classroom where the focus is on getting good grades or seeking approval or avoiding punishment from teachers or other adults. This extrinsic orientation is most similar to extrinsic motivation as discussed in self-determination theory (Deci & Ryan, 1985). Nicholls and his colleagues have found two other goals, beyond ego- and task-involved goals, which they labeled work avoidance and academic alienation (Nicholls, 1989; Nicholls, Cheung, Lauer, & Patashnick, 1989). Work avoidant goals concern feeling successful when work or tasks are easy, whereas academic alienation goals are defined in terms of feeling successful when the students feel they can fool around and not do their school work and get away with it. Meece, Blumenfeld, & Hoyle (1988) also discussed work

avoidant goals in terms of a desire to complete school work without putting forth much effort, a goal of reducing effort. Urdan (1997; Urdan & Maehr, 1995) and Wentzel (1991a, 1991b) have discussed the role of social goals, where the focus is on seeking friendships or being socially responsible, and how these goals are linked to self-regulation and achievement.

Given all these different goals and orientations, which share some similar and some different features, future research needs to clarify the relations among these goals and their links to self-regulated learning. At the same time, given space considerations in this chapter, the remaining discussion will focus on the role of mastery and performance goals, and their approach and avoidance forms, which seems appropriate given that most of the research has addressed these two general goals. There is clearly a role for extrinsic, work avoidant, and social goals in self-regulated learning given some of the extant research, but that discussion will not be the focus here.

To organize the literature on mastery and performance goals, it seems helpful to propose a general framework that allows for the classification of the two goals and their approach and avoidance versions. Table 2 represents one attempt at such a taxonomy. The columns in Table 2 reflect the general approach–avoidance distinction that has been a hallmark of achievement motivation research (Atkinson, 1957; McClelland, Atkinson, Clark, & Lowell, 1953; Elliot, 1997) since its inception, as well as more

TABLE 2   Two Goal Orientations and Their Approach and Avoidance Forms

	Approach focus	Avoidance focus
Mastery orientation	Focus on mastering task, learning, understanding	Focus on avoiding misunderstanding, avoiding not learning or not mastering task
	Use of standards of self-improvement, progress, deep understanding of task (Learning goal, task goal, task-involved goal)	Use of standards of not being wrong, not doing it incorrectly relative to task
Performance orientation	Focus on being superior, besting others, being the smartest, best at task in comparison to others	Focus on avoiding inferiority, not looking stupid or dumb in comparison to others
	Use of normative standards such as getting best or highest grades, being top or best performer in class	Use of normative standards of not getting the worst grades, being lowest performer in class
	(Performance goal, ego-involved goal, self-enhancing ego orientation, relative ability goal)	(Performance goal, ego-involved goal, self-defeating ego orientation)

recent social cognitive perspectives on approaching and avoiding a task (e.g., Covington & Roberts, 1994; Harackiewicz et al., 1998; Higgins, 1997). In particular, recent social cognitive models of self-regulation such as Higgins (1997) explicitly use this distinction of approach–avoidance (or promotion–prevention focus in his terms) to discuss different self-regulatory processes. An approach or promotion focus leads individuals to move toward positive or desired end states and to try to promote their occurrence, whereas an avoidance or prevention focus leads individuals to move away from negative or undesired end states and to prevent them from occurring (Higgins, 1997). As such, there should be some important distinctions between approaching and avoiding certain goals with concomitant influences on self-regulated learning. For example, a promotion or approach orientation might be expected to have some generally positive relations with cognition, motivation, and behavior, whereas a prevention or avoidance orientation should be negatively related to these aspects of self-regulated learning.

The rows in Table 2 reflect two general goals that students might be striving for and represent the general goals of mastery and performance that have been proposed by every one of the different models discussed here. The cells included in parentheses in Table 2 give some of the different labels that have been proposed for the two main goal orientations in different models. All the models agree that mastery goals (learning, task, task involved) are represented by attempts to improve or promote competence, knowledge, skills, and learning, and that standards are self-set or self-referential with a focus on progress and understanding. In all the models discussed, mastery goals have been discussed and researched only in terms of an approach orientation, that is, that students were trying to approach or attain this goal, not avoid it. As such, most models have proposed only the first cell in the first row in Table 2; it is not clear if there is an avoidance-mastery goal theoretically, and there has been no explicit empirical research on an avoidance-mastery goal.

On the other hand, there may be occasions when students are focused on avoiding misunderstanding or avoiding not mastering the task. Some students who are more "perfectionistic" may use standards of not getting it wrong or doing it incorrectly relative to the task. These students would not be concerned about doing it wrong because of comparisons with others (an avoidance-performance goal), but rather in terms of their own high standards for themselves. Future empirical research will have to be done to determine if avoidance-mastery goals exist or if adopting avoidance-mastery goals leads to differential predictive relations with other motivational, cognitive, and affective outcomes (such as those outlined in Table 1) in comparison to avoidance-performance goals.

The second row in Table 2 reflects the general performance goal orientation that all the models propose, but the approach and avoidance

columns allow for the separation of the goal of trying to outperform or best others using normative standards from the goal of avoiding looking stupid, dumb, or incompetent relative to others. This distinction was formally made in the work of Elliot, Midgley, Skaalvik, and their colleagues, and all the studies have shown that there are differential relations between other motivational and cognitive outcomes and an approach-performance goal and an avoidance-performance goal (Harackiewicz et al., 1998; Middleton & Midgley, 1997; Midgley et al., 1998: Skaalvik, 1997). In Dweck's model, the performance orientation included both trying to gain positive judgments of the self as well as trying to avoid negative judgments (Dweck & Leggett, 1988). In Nicholls's model, ego-involved or ego orientation also included both feeling successful when doing better than others or avoiding looking incompetent (Nicholls, 1984; Thorkildsen & Nicholls, 1998). Accordingly, most of the models did recognize the possibility that students could be seeking to gain positive judgments of the self by besting or outperforming others as well as trying to avoid looking stupid, dumb, or incompetent, although Dweck and Nicholls did not separate the constructs conceptually as did Elliot, Midgley, and Skaalvik. In this case, within this performance row in Table 2 and in contrast to the mastery row in Table 2, there is no doubt that both approach and avoidance goal orientations are possible, that students can adopt them, and that they can have differential relations to other motivational or cognitive outcomes.

The remainder of this section applies the four cells of Table 2 to the various areas for regulation from Table 1. The purpose is to discuss how the different types of goal orientations may be differentially related to aspects of self-regulation. If the proposed four cells of the taxonomy in Table 2 are to be theoretically productive and useful, they should result in differential predictions for how they are linked to motivation, cognition, and behavior. In addition, the review will point out gaps in the literature where there is little or no research on how the different goals are linked to self-regulation.

B. MASTERY GOALS AND SELF-REGULATED LEARNING

Given that all the different models of goal orientation have included approach-mastery goals in their empirical research, there is a good deal of converging evidence on the positive influence mastery goals have on the different components of self-regulated learning. Whereas all models of self-regulated learning include some goal construct, a general goal or focus on mastery, improvement, and learning should be propaedeutic for learning. That is, if individuals set their general criterion or standard for academic tasks to be learning and improving, then as they monitor their performance and attempt to control and regulate it, this standard should guide them toward the use of more self-regulatory processes. In fact, the

vast majority of the empirical evidence from both experimental laboratory studies and correlational classroom studies suggests just such a stable generalization. Students who adopt or endorse an approach-mastery goal orientation do engage in more self-regulated learning than those who do not adopt or endorse to a lesser extent a mastery goal (Ames, 1992; Pintrich & Schrauben, 1992; Pintrich & Schunk, 1996).

Mastery Goals and Cognitive Self-Regulation

In terms of the four phases of the model presented in Table 1, most of the research in the cognitive column has focused on phases 2 through 4. There has been less research on the linkages between mastery goals and activation of content knowledge or metacognitive knowledge. This is certainly an area for future research, because there has been little investigation of how goal orientations, once adopted, result in the activation of different kinds of knowledge. This is an area where there is a need for more experimental research on knowledge representation and how it can be influenced by different goals and, reciprocally, how knowledge representations and activation may influence the adoption of different goals.

In terms of phases 2 through 4 in the cognitive column in Table 1, the research suggests that students who adopt a mastery goal are more likely to report monitoring and attempting to control their cognition through the use of various learning and cognitive strategies. Much of this research is based on self-report data from correlational classroom studies, although Dweck and Leggett (1988) summarized data from experimental studies. The classroom studies typically assess students' goal orientations and then measure students' reported use of different strategies for learning either at the same time or longitudinally. Although there are some problems with the use of self-report instruments for measuring self-regulatory strategies (see Pintrich et al., in press), these instruments do display reasonable psychometric qualities. Moreover, the research results are overwhelmingly consistent in terms of mastery goals accounting for between 10% to 30% of the variance in the cognitive outcomes. Studies have been done with almost all age groups from elementary to college students and have assessed students' goals for school in general as well as in the content areas of English, math, science, and social studies.

The studies have found that students who endorse a mastery goal are more likely to report attempts to self-monitor their cognition and to seek ways to become aware of their understanding and learning (phase 2) such as checking for understanding and comprehension monitoring (e.g., Ames & Archer, 1988; Dweck & Leggett, 1988; Meece, et al., 1988; Meece & Holt, 1993; Middleton & Midgley, 1997; Nolen, 1988; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; Pintrich et al., 1994; Pintrich & Schrauben, 1992; Wolters et al., 1996). In addition, this research consistently has shown that students' use of various cognitive strategies (phase 3) is

positively related to mastery goals. In particular, this research has shown that students reported use of deeper processing strategies, such as the use of elaboration strategies (i.e., paraphrasing, summarizing) and organizational strategies (networking, outlining), is positively correlated with the endorsement of mastery goals (Ames & Archer, 1988; Bouffard, Boisvert, Vezeau, & Larouche, 1995; Graham & Golen, 1991; Kaplan & Midgley, 1997; Meece et al., 1988; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; Pintrich et al., 1993, 1994; Wolters et al., 1996).

Finally, in some of this research, mastery goals have been negatively correlated with the use of less effective or surface processing strategies (i.e., rehearsal), especially in older students (Anderman & Young, 1994; Kaplan & Midgley, 1997; Pintrich & Garcia, 1991; Pintrich et al., 1993). In contrast to this research on the use of various self-regulatory and learning strategies, there has not been much research on how mastery goals are linked to the use of other problem solving or thinking strategies. This is clearly an area that will be investigated in the future.

Although there has been no research on avoidance mastery goals formally, it would be predicted that they would be less helpful in self-regulated learning than approach mastery goals. It could be that avoidance-mastery goals would lead to less adaptive monitoring processes because the student would focus on not making mistakes, rather than on learning and progress. This might lead to the use of less deep processing strategies and perhaps more memorization of the material because the student tries to not be incorrect and relies on the text or content material to define what is correct. Avoidance-mastery goals also would seem to lead to less risk taking or less willingness to explore the material using different types of cognitive or thinking strategies. These are predictions that need to be tested in empirical research, but they do suggest that approach- and avoidance-mastery goals could set up different ways to approach and engage in an academic task in terms of cognition.

Mastery Goals and Motivational Regulation

There has been a great deal of research on how mastery goals are linked to other motivational beliefs such as efficacy, value, interest, attributions, and affect. Much of this research is not necessarily in a paradigm of research on self-regulated learning and has not explicitly conceptualized motivational beliefs as components that can be controlled and regulated. Rather, the research has been generated from a general achievement motivation paradigm and it investigated how goal orientations can give rise to different patterns of motivation, attributions, interest, and affect. Nevertheless, within the framework of this chapter, this research is relevant for building theoretical linkages between goals and motivational regulation.

Again, as in the cognitive domain, summarizing the research on approach-mastery goals and how they are related to other motivational

constructs is fairly straightforward. Generally, the research shows that adopting a mastery goal has positive implications for self-efficacy, task value, interest, attributions, and affect. In one of the original formulations of mastery goals, Dweck and Leggett (1988) summarized mainly laboratory research that showed that students who were oriented to mastery and learning were able to maintain positive and adaptive efficacy beliefs and perceptions of competence in the face of difficult tasks. Other more correlational classroom research also has shown the same general pattern (e.g., Ames, 1992; Kaplan & Midgley, 1997; Middleton & Midgley, 1997; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991; Pintrich et al., 1993; Thorkildsen & Nicholls, 1998; Wolters et al., 1996). Students who are focused on improving and learning would be more likely to interpret performance feedback in terms of the progress they have made, thereby supporting their efficacy beliefs.

Dweck and Leggett (1988) also showed that students who adopted a mastery goal were much more likely to make adaptive attributions for their performance. In fact, it was the search for factors that predicted why some individuals seemed to make adaptive attributions for failure and did not show a pattern of learned helplessness that generated some of the original goal theory research. In some of the early research, making certain kinds of attributions was seen as part of a general mastery goal orientation. Although it seems theoretically useful to separate goal orientations, which can be adopted at the start of a task, from attributions, which are reactive cognitions after task performance, the linkages between goals and attributions are strong. Most of the research repeatedly shows that students who adopt a mastery goal orientation are more likely to believe that effort will lead to success (positive effort–outcome covariation), that effort does not necessarily mean low ability (positive effort–ability covariation rather than inverse covariation), and that failure can be attributed to low effort or poor strategy selection (Ames, 1992; Dweck & Leggett, 1988; Nicholls, 1984; Pintrich & Schunk, 1996). This is an adaptive pattern of attributions for students who will often confront difficult tasks or tasks that they will fail, but with attributions to effort or strategy use, their future expectancies will not necessarily drop and their affect will remain positive, following the general findings in the attributional literature (Weiner, 1986).

In terms of the links between interest, task value, and mastery goals, the empirical research shows strong positive relations. In some cases, mastery goals have been measured in ways that are similar to personal interest or the mastery scales include items that reflect interest, but it is important for future research to separate these constructs conceptually. In general, the research shows that students who adopt an approach-mastery goal report more personal interest or intrinsic interest or enjoyment in the task (e.g., Butler, 1987; Harackiewicz, et al., 1998; Meece et al., 1988) as well as higher levels of task value in terms of ratings of the utility and importance of school work (e.g., Wolters et al., 1996). Future research needs to

examine the causal ordering of these constructs because it may be that high levels of personal interest or task value for a domain or task may be part of the personal characteristics that give rise to mastery goals as would be suggested by interest and intrinsic motivation theories (Deci & Ryan, 1985; Renninger et al., 1992), rather than vice versa, as goal theory assumes.

The research on mastery goals and the use of motivational strategies is not as voluminous as that on mastery goals and cognitive strategy use. Studies of self-handicapping (e.g., Midgley et al., 1996) show little relation of mastery goals to self-handicapping, although it is positively related to performance goals. Wolters (1998) found that college students' adoption of a mastery goal was positively related to their attempts to regulate their efficacy, interest, and value, what he labeled regulation of intrinsic motivation. He also found that mastery goals were negatively related to the use of extrinsic regulation strategies such as the use of rewards for regulating effort and motivation.

The general positive influence of mastery goals also appears in studies that have examined affective reactions. Given that mastery goals seem to be tied closely to an adaptive attributional pattern as noted previously, it is not surprising, following the general principles and findings of attribution theory (Weiner, 1986), that mastery goals are linked to more positive affective reactions. Studies have found that mastery goals are associated with less anxiety and more pride and satisfaction (Ames, 1992; Dweck & Leggett, 1988; Jagacinski & Nicholls, 1984, 1987).

All of this research on mastery goals and motivation has examined only approach-mastery goals, not avoidance-mastery goals. Accordingly, research on the role of avoidance-mastery goals is needed. However, given the general predictions of goal theory and avoidance forms of motivation (Higgins, 1997), it is hypothesized that avoidance-mastery goals would give rise to some negative motivational beliefs and affect. First, given the focus on not being wrong, it is predicted that anxiety would be higher under an avoidance-mastery goal than under an approach-mastery goal. In addition, interest might be lower and self-efficacy also might be lower. Again, these predictions need to be tested in future empirical research, but they seem to follow the general model and may be more likely than the hypotheses offered for cognitive self-regulation in the previous section. It may be that avoidance-mastery goals may not interfere greatly with cognition, but have their costs in terms of student motivation and affect. The important issue is that the separation of these goals into approach and avoidance forms allows for the clarification of these potential differential relations.

Mastery Goals and Behavioral and Contextual Regulation

There has not been as much research on goals and how individuals regulate their own behavior or attempt to shape or control their environment. There is a clear need for more research on how both approach- and

avoidance-mastery goals are related to behavioral and contextual regulation. Studies have shown that approach-mastery goals are more positively related to college students' attempts to manage their time and effort (Pintrich, 1989; Pintrich & Garcia, 1991; Pintrich et al., 1993), an important aspect of behavioral self-regulation. Research on help seeking has shown consistently that adopting a personal mastery goal is positively associated with adaptive help seeking (Newman, 1994, 1998a, 1998b; Ryan & Pintrich, 1997, 1998). Students who approach a task with a mastery orientation focused on learning would not see help seeking as a negative reflection on their ability (e.g., showing others that they are unable). They would be more likely to see help seeking as a strategy to help them learn (Newman, 1994, 1998a). Classroom research also shows that contexts that foster a mastery orientation in the classroom climate and structure lead to more adaptive help seeking (Newman, 1998b; Ryan, Gheen, & Midgley, 1998). In contrast, avoidance-mastery goals may lead to less adaptive help seeking and more dependent help seeking, because the student is only concerned with not being incorrect, not with actual mastery.

In summary, approach-mastery goals are generally related to positive outcomes, including the use of more self-regulatory strategies for cognition, positive motivational beliefs and strategies, and behavior. There is a need for research on how mastery goals are linked to the activation of knowledge about cognition as well as self-knowledge and the clarification of the causal relations between goals and other motivational constructs (i.e., interest). It seems likely that these relations are reciprocal, with mastery goals leading to interest and interest leading to mastery goals, but further specification of the dynamics of these reciprocal processes would be helpful for both theory and practice. For example, in terms of practice, goal theorists would concentrate on making classrooms more mastery and learning focused by changing the structural characteristics of the classrooms (feedback, opportunities for social comparison, reward structures, etc.), whereas interest theorists would focus on making the tasks more personally interesting to students. Of course, these intervention strategies are not mutually exclusive, but the example does highlight how practice might vary, depending on the causal relations expected by the different theories. Finally, there is a need for more research on the meaning and operation of an avoidance-mastery goal and if there are differential and more negative relations with self-regulation outcomes in comparison to an approach-mastery goal.

C. PERFORMANCE GOALS AND SELF-REGULATED LEARNING

The research on performance goals and self-regulated learning is not as easily summarized as the results for mastery goals. The original goal theory research generally found negative relations between performance goals

and various cognitive, motivational, and behavioral outcomes (Ames, 1992; Dweck & Leggett, 1988; Pintrich & Schunk, 1996), although it did not discriminate empirically between approach- and avoidance-performance goals. The more recent research that has made the distinction between approach- and avoidance-performance goals does show some differential relations between approaching a task focused on besting others and approaching a task focused on trying not to look stupid or incompetent. In particular, the general distinction between an approach and an avoidance orientation suggests that there could be some positive aspects of an approach-performance orientation. If students approach a task by trying to promote certain goals and strategies, this might lead them to be more involved in the task than students who are trying to avoid certain goals, which could lead to more withdrawal and less engagement in the task (Harackiewicz et al., 1998; Higgins, 1997).

Performance Goals and Cognitive Regulation

Most of the research on performance goals that did not distinguish between approach and avoidance versions finds that performance goals are negatively related to students' use of deeper cognitive strategies (e.g., Meece et al., 1988; Nolen, 1988; cf., however, Bouffard et al., 1995). This would be expected given that performance goals that include items about besting others as well as avoiding looking incompetent would guide students away from the use of deeper strategies. Students focused on besting others may be less likely to exert the time and effort needed to use deeper processing strategies, because the effort needed to use these strategies could show to others that they lack the ability, given that the inverse relation between effort and ability is usually operative under performance goals, and trying hard in terms of strategy use may signify low ability. For students who want to avoid looking incompetent, the same self-worth protection mechanism (Covington, 1992) may be operating, whereby students do not exert effort in terms of strategy use so that they have an excuse for doing poorly, which can be attributed to lack of effort or poor strategy use.

However, more recent research with measures that reflect only an approach- or avoidance-performance goal suggests that there may be differential relations between these two versions of performance goals. For example, Wolters et al. (1996), in a correlational study of junior high students, found that, independent of the positive main effect of mastery goals, an approach-performance goal focused on besting others was positively related to the use of deeper cognitive strategies and more regulatory strategy use. However, Kaplan and Midgley (1997), in a correlational study of junior high students, found no relation between an approach-performance goal and adaptive learning strategies, but approach-performance goals were positively related to more surface processing or maladaptive

learning strategies. These two studies did not include separate measures of avoidance-performance goals. In contrast, Middleton and Midgley (1997), in a correlational study of junior high students, found no relation between either approach- or avoidance-performance goals and cognitive self-regulation. Some of the differences in the results of these studies stem from the use of different measures, classroom contexts, and participants, making it difficult to synthesize the results. Clearly, there is a need for more theoretical development in this area and empirical work that goes beyond correlational self-report survey studies to clarify these relations.

Nevertheless, it may be that approach-performance goals could lead to deeper strategy use and cognitive self-regulation, as suggested by Wolters et al. (1996), when students are confronted with overlearned classroom tasks that do not challenge them, interest them, or offer opportunities for much self-improvement. In this case, the focus on an external criterion of besting others or being the best in the class could lead the students to be more involved in these boring tasks and to try to use more self-regulatory cognitive strategies to accomplish this goal. On the other hand, it may be that approach-performance goals are not that strongly related to cognitive self-regulation in either a positive or negative way as suggested by the results of Kaplan and Midgley (1997) and Middleton and Midgley (1997). Taken together, the conflicting results suggest that approach-performance goals do not have to be negatively related to cognitive self-regulatory activities in comparison to avoidance-performance goals. This conclusion suggests that there may be multiple pathways between approach- and avoidance-performance goals, cognitive strategy use and self-regulation, and eventual achievement. Future research should attempt to map out these multiple pathways and determine how approach- and avoidance-performance goals may differentially relate to cognitive self-regulation activities.

Performance Goals and Motivational Regulation

One factor that adds to the complexity of the results in discussing approach- and avoidance-performance goals is that in Dweck's original model (Dweck & Leggett, 1988), the links between performance goals and other cognitive, motivational, and achievement outcomes were assumed to be moderated by efficacy beliefs. That is, if students had high perceptions of their competence to do the task, then performance goals should not be detrimental for cognition, motivation, and achievement, and these students should show the same basic pattern as mastery-oriented students. Performance goals were assumed to have negative effects only when efficacy was low. Students who believed they were unable and who were concerned with besting others or wanted to avoid looking incompetent did seem to show the maladaptive pattern of cognition, motivation, and behavior (Dweck & Leggett, 1988).

Other more correlational research that followed this work did not always explicitly test for the predicted interaction between performance goals and efficacy, or did not replicate the predicted moderator effect. For example, neither Kaplan and Midgley (1997) nor Miller, Behrens, Greene, & Newman (1993) found an interaction between approach-performance goals and efficacy on cognitive outcomes such as strategy use. Harackiewicz et al. (1998), using both experimental and correlational designs, did not find moderator or mediator effects of efficacy in relation to the effects of approach mastery or approach-performance goals on other outcomes such as actual performance or intrinsic motivation.

Correlational studies also have revealed a mixture of findings with regard to the linear relations between performance goals and efficacy. For example, Anderman and Midgley (1997) showed that approach-performance goals were positively related to perceptions of competence for sixth graders, but unrelated to perceptions of competence for fifth grades. Wolters et al. (1996) found that approach-performance goals were positively related to self-efficacy for junior high students, but Middleton and Midgley (1997) found, in another sample of junior high students, that approach-performance goals were unrelated to efficacy, but avoidance-performance goals were negatively related to efficacy. In two studies of junior high students, Skaalvik (1997) showed that approach-performance goals were positively related to efficacy and avoidance-performance goals were negatively related to efficacy.

It seems possible that students who are focused on approach-performance goals would have higher perceptions of efficacy as long as they are relatively successful in besting others and demonstrating their high ability. Some of the conflicting findings might be due to differences in the samples and who is represented in the approach-performance groups (e.g., actual high vs. low achievers). In contrast, students oriented to avoiding looking incompetent or stupid would seem likely to have lower perceptions of self-efficacy. In fact, these students seem to have some consistent self-doubts or concerns about their own competence, reflecting a schema that should generate low efficacy judgments. In addition, it may be that this relation may be moderated by the classroom context. In many of the studies the positive relations are found in junior high classrooms, but not in elementary classrooms. The literature suggests that junior high classrooms are more performance oriented than elementary classrooms, which are generally more mastery oriented (see review by Midgley, 1993). In this case then, in junior high classrooms there may be good reasons for efficacy to be positively related to approach-performance goals, but not in elementary classrooms, which are generally more mastery oriented (Anderman & Midgley, 1997).

In terms of other motivational outcomes, like interest or value, the results for performance goals are also mixed. Harackiewicz et al. (1998)

have shown in both experimental and correlational studies that approach performance goals do not necessarily lead to less interest, intrinsic motivation, or task involvement in comparison to mastery goals. In their experimental studies of college students playing pinball games or solving puzzles, an approach-performance orientation did increase intrinsic motivation and task involvement, especially for students high in achievement motivation (a traditional personality measure of nAch) or in more competitive contexts (a situational variable). They suggest that both mastery and approach-performance goals can draw students into an activity, depending on the students' personal characteristics and the context in which they are doing the task. At the same time, it is noted that avoidance-performance goals generally have negative effects on intrinsic motivation and performance (e.g., Elliot, 1997).

Some of the correlational studies generally support this view of the positive relations between approach-performance goals and interest, intrinsic motivation, and task value, and the negative relationships between avoidance-performance goals and these outcomes (e.g., Skaalvik, 1997; Wolters et al., 1996). In addition, work that has examined affective reactions shows that students who are oriented to avoiding negative judgments of their competence are clearly more anxious about tests and their performance (Middleton & Midgley, 1997; Skaalvik, 1997), in line with the original research on a general performance orientation (Ames, 1992; Dweck & Leggett, 1988). In contrast, approach-performance goals are either uncorrelated with anxiety (Wolters et al., 1996) or show relatively low negative relations with anxiety (Middleton & Midgley, 1997; Skaalvik, 1997).

Performance Goals and Behavioral and Contextual Regulation

There has not been as much research on aspects of behavioral and contextual regulation activities as on cognition and motivation. However, the studies on self-handicapping show that students who are concerned with approach-performance goals are more likely to report using self-handicapping strategies such as procrastination and low levels of effort (Midgley et al., 1996). Studies of help seeking also suggest that students who are concerned with besting others or with not looking incompetent are less likely to seek help (Newman, 1991, 1994, 1998b; Ryan & Pintrich, 1997). These are more public displays of behavior in the classroom in contrast to the use of cognitive strategies (which are generally covert), so it is not surprising that students who are concerned about either approach- or avoidance-performance issues are less likely to engage in behavior that can reflect poorly on their ability.

In summary, the results for approach- and avoidance-performance goals cannot be summarized easily in a simple generalization as was done for approach-mastery goals. It does seem clear that an avoidance-performance

orientation is not an adaptive approach to academic tasks in the classroom, as would be predicted by both goal theory as well as the general framework proposed here. Students who are concerned about looking dumb or incompetent generally show a maladaptive pattern of cognition, motivation, affect, and behavior. However, it appears that an approach-performance goal can have some positive relations with cognition and motivation, contrary to normative goal theory predictions, but in line with the general approach–avoidance framework presented here and by others (e.g., Elliot, 1997; Harackiewicz et al., 1998; Higgins, 1997). Students who are somewhat more competitive and trying to best others can engage tasks in a manner that involves some adaptive aspects of cognition (more use of strategies) and motivation (increased interest and value). At the same time, this focus on besting others can have some costs in terms of increases in anxiety and negative affect, as well as decreases in the use of some adaptive strategies such as help seeking. These results for approach-performance goals may be moderated by both personal characteristics (need for achievement, efficacy level, actual achievement level, or success) and situational features (the competition level of the classroom or context). There is a need for more research on the various factors that might moderate and mediate the relations between approach-performance goals and achievement.

III. CONCLUSIONS AND FUTURE DIRECTIONS FOR THEORY AND RESEARCH

The framework presented in this chapter and represented most explicitly in Tables 1 and 2 attempts to show how different self-regulatory processes and goal orientations can be categorized and then linked together to provide a comprehensive picture of the role of goal orientation in self-regulated learning. The review of the research suggests that self-regulated learning is a complex and multifaceted phenomenon and that the links to goal orientation are not simple. The taxonomy of goal orientations in Table 2 attempts to develop a framework for conceptualizing goals that allows for a more refined perspective on their role in self-regulated learning. The general proposal is that approach versions of goals can have some positive features, whereas avoidance versions are generally negative. Within this general principle, the exact type of goal orientation, mastery or performance, may have differential relations to adaptive or maladaptive cognition, motivation, or behavior. This framework suggests that different goal orientations are not simply good or bad, or that they always have the same costs and benefits. Instead, the proposal is that by tracing the linkages between the different types of goals and different cognitive, motivational, and behavioral mediators and outcomes,

we will be able to develop a more complex, sophisticated, but realistic, view of goals and self-regulated learning.

For example, the research clearly suggests that approach-mastery goals are related to very adaptive patterns of cognition, motivation, and behavior. There is very little disagreement with this generalization in the literature. Whereas the cell involving avoidance-mastery goals is a new proposal, there is a clear need for research on the existence and operation of this form of a mastery goal and how it may be related to self-regulated learning. In contrast, the distinctions between approach- and avoidance-performance goals suggest that they can have both costs and benefits for students' self-regulated learning. It may be that adopting one kind of approach-performance goal may result in some benefit for cognition and motivation, but it also may come at the cost of increased anxiety or negative affect. We need more carefully designed research that builds upon the existing research and attempts to tease out when these different performance goals are adaptive and when they are maladaptive for self-regulated learning. The research needs to move beyond simplistic good–bad distinctions and investigate when these goals are adaptive, for what kinds of cognitive, motivational, or behavioral mediators and outcomes, for whom (different types of individuals, ages, genders, ethnic groups, cultures), and where and under what contextual conditions (types of tasks, classrooms, schools, other settings). This will help us clarify our theories and models, but it also will help us develop better applications and interventions to improve schooling.

Besides this general suggestion for research and the specific areas mentioned in the preceding sections, there are a number of general themes that can serve as directions for future research on the role of goal orientation and self-regulated learning. These include the following:

1. *Definition and measurement of goals and self-regulated learning processes.* As pointed out throughout this chapter, the research has used different definitions of goals and self-regulatory processes, different measures (self-reports, interviews, etc.), and different types of methodologies (experimental, correlational, observational, qualitative). For the field to advance, there needs to be more systematic attention to all of these theoretical and methodological issues. There is a clear need for goal theorists to agree on general definitions and a taxonomy of goal orientations so that future research can build on the existing research without inventing new terms and labels (Pintrich, in press). In the same manner, research on self-regulated learning could prosper from a careful consideration of definitions and terms. Whereas these definitional issues are not just theoretical, but also depend on empirical relations, more research of a multitrait, multimethod (MTMM) nature, such as Howard-Rose and Winne

(1993), would be helpful in clarifying the theoretical and methodological differences in this research area. The key issue for future research is to maintain distinctions between terms and constructs when they reflect important and real differences in the terms, theories, and supporting empirical data, but not to let terms proliferate when they signify distinctions without any real theoretical or empirical differences.

2. *The role of personal characteristics and potential moderator relations.* Most of the research discussed in this chapter has not explicitly examined the role of how different personal characteristics (e.g., personality, intelligence, etc.) or demographic factors (age, gender, ethnicity, socioeconomic status, etc.) may moderate the relations between self-regulation and goals (for an exception, see Harackiewicz et al., 1998). However, there may be important moderating differences in the relations and generalizations that depend on these personal characteristics. For example, Graham (1994) pointed out that African–American students often maintain high efficacy perceptions, even in the face of frequent academic failure. This lack of calibration between efficacy and performance may be detrimental from a self-regulatory perspective, because the students may not believe they need to change some of their self-regulatory and cognitive strategies for learning. However, the high efficacy beliefs can be adaptive in terms of helping the students maintain their general level of effort and persistence. This type of dynamic needs to be explored more so as to understand how these processes work for different types of students.

Beyond ethnicity, there may be other personal characteristics that might moderate the general findings on the relations between goals and self-regulated learning. Gender could play a role in moderating the relations, although many studies do not report gender differences in the overall levels of endorsement of mastery and performance goals (Pintrich & Schunk, 1996). Developmentally, the relations between goals and self-regulation may change with age or the development of expertise. It is clear that younger children are less likely to be metacognitive and self-regulating than older children and adults, but most of the models of self-regulation and goals are not explicitly developmental in nature. There may be important developmental variations in how goals are linked to self-regulatory processes. Moving beyond age and gender, there may be other more psychological characteristics of individuals that could moderate the relations between goals and self-regulated learning. The potential moderating role of self-efficacy already has been mentioned, and given the conflicting findings, more research is needed to clarify the relation. General levels of achievement or prior knowledge or expertise in a domain could also play a moderating role. Individuals who are high achievers or experts who have a depth of prior knowledge and skill in a domain may not be as adversely affected by performance goals as low achievers or novices in a domain.

Finally, personality characteristics such as general temperament or emotionality (see Snow et al., 1996) may create a context where the relations between goals and regulation are modulated or exacerbated. For example, an individual who is higher in emotionality in general and prone to higher levels of both positive and negative emotions may have to be more self-regulating in general and then different goals may make this emotional regulation task easier or harder.

3. *The role of multiple goals.* Related to this issue of the moderating effects of different personal characteristics is the role of multiple goals and how to conceptualize them and trace their operation. This chapter, for rhetorical reasons mainly, has discussed the role of the different goal orientations separately. However, it seems possible that students can adopt multiple goals for academic tasks. The experimental research usually induces goals and students are assigned to different goal groups, a design that does not allow for testing interactions between different goals. The correlational studies usually assess two or three different goal orientations at the same time. Much of this research has focused on the main effects of the different goals using regression analyses, and even when interactions were explicitly examined (e.g., Wolters et al., 1996), the results were not substantial or systematic. In other studies (e.g., Meece & Holt, 1993), cluster analyses have been used to create different groups of students that show different goal profiles and some different patterns of self-regulation and performance. There is a need for more empirical work that explicitly examines the potential interactions among goals, but there also is a need for more theoretical work that conceptualizes how students represent and react to the multiple goals they may have for academic tasks (Pintrich, in press). There may be a hierarchy of goal orientations or more dynamic cognitive processes (see Shah and Kruglanski, 2000, this volume) that allow students to switch between different goal orientations within a task with concomitant changes in self-regulation and processing. This is an important direction for future research.

4. *The role of control, regulation, intentionality, and automaticity.* All models of self-regulated learning assume that attempts to monitor and control one's own learning through various adaptive cognitive, motivational, or behavioral regulatory strategies are basically positive for learning and achievement. There is certainly a great deal of evidence to suggest that students who engage in these kinds of adaptive self-regulatory processes do better in school, learn more, and achieve at high levels. At the same time, there may be a limit to how far these regulatory models can take us in understanding academic learning. There are still a host of issues related to the role of automaticity in cognitive processing and learning, and how these automatic processes may support, constrain, or conflict with attempts to self-regulate learning. There just has not been that much

theoretical or empirical work that has tried to integrate the research on automatic, implicit, and even unconscious processes with the research on self-regulated learning.

In addition, there are problems with the role of intentionality in our models of self-regulated learning and how to characterize what is considered intentional and adaptive self-regulation. For example, most models assume that students construct personal goals for their learning in the classroom and then they try to monitor and regulate their learning to accomplish these goals. However, what if the goals are maladaptive for learning in the classroom (e.g., avoiding work or effort), but the student is quite good at regulating toward these maladaptive goals? Is this still adaptive self-regulation because it is in the service of the student's own goals? In contrast, if students adopt goals given to them by others, such as teachers and parents, and then regulate toward those goals, this may not be considered self-regulation in some models, because the goals are not the students' own goals. Although most models of self-regulation would not consider students to be self-regulating if they use regulatory strategies by luck, accident, or under the direct instruction or control of the teacher, there are still developmental issues regarding when a strategy that is taught by others becomes "internalized" or adapted by the student to be considered the students' own intentionally used strategy.

5. *The role of tasks, contexts, and environments.* Most of the research discussed in this chapter has not been focused on the role of the different tasks and contexts that students confront in classrooms. Self-regulated learning research is based on the social cognitive assumption that how students construct their own cognition, motivation, behavior and perceptions of the environment is central to understanding their academic performance and achievement. This can lead to a lack of attention to the contextual affordances and constraints in the environment. Of course, some research has investigated how different environments can teach or foster self-regulation formally through classroom or other types of interventions (see Schunk & Zimmerman, 1998), but there has not been as much research on how self-regulation develops in natural contexts, especially different types of classrooms. There is a clear need for more descriptive, ethnographic, and observational research on how different features of the context can shape, facilitate, and constrain self-regulated learning.

6. *Cross-cultural generalizability of models of self-regulated learning.* Much of the research on self-regulated learning has a distinct Western and even, North American, flavor to it. The emphasis on the individual and the self is certainly paramount in models of self-regulation. Nevertheless, there may be other cultures both within North America as well as externally with different values and perspectives, where our models may not generalize or at least operate in the same manner (see Betancourt & Lopez, 1993;

Boekaerts, 1998; Graham, 1992). There is a clear need for research on how well our models of goal orientation and self-regulated learning transfer when applied in different cultures. It would seem that some of the processes should be very similar, but there may be important differences in the relations between goals and self-regulation. An understanding of these potential cultural differences would help us refine our models and improve our own research and practice on these important issues.

In conclusion, current research on goal orientation and self-regulated learning has suggested a general framework for examining learning and motivation in academic contexts. Moreover, there are some important generalizations that are emerging from this research. It seems clear that an approach-mastery goal orientation is generally adaptive for cognition, motivation, learning, and performance. The roles of the other goal orientations need to be explored more carefully in empirical research, but the general framework of mastery and performance goals seems to provide a useful way to conceptualize the academic achievement goals that students may adopt in classroom settings and their role in facilitating or constraining self-regulated learning. There is much theoretical and empirical work to be done, but the current models and frameworks are productive and should lead to research on classroom learning that is both theoretically grounded as well as pedagogically useful.

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