# Classrooms: Goals, Structures, and Student Motivation

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This article examines the classroom learning environment in relation to achievement goal theory of motivation. Classroom structures are described in terms of how they make different types of achievement goals salient and as a consequence elicit qualitatively different patterns of motivation. Task, evaluation and recognition, and authority dimensions of classrooms are presented as examples of structures that can influence children's orientation toward different achievement goals. Central to the thesis of this article is a perspective that argues for an identification of classroom structures that can contribute to a mastery orientation, a systematic analysis of these structures, and a determination of how these structures relate to each other. The ways in which interventions must address the independency among these structures are discussed in terms of how they influence student motivation.

Over the past 25 years, considerable research and writings have addressed how classroom learning environments influence student learning, but more recent attention has focused on how classroom environments influence students' views about the nature and purposes of learning. In an earlier article, Ames and Ames (1984) described how learning environments can be differentiated in terms of specific informational cues (e.g., social comparative vs. self-referenced feedback) and how they influence students' processing of information and cognitions about their performance. In that article, Ames and Ames examined how the structure of learning environments can make different goals salient and consequently affect how students think about themselves, their tasks, and others.

Considerable research is now focused on describing how different goals elicit qualitatively different motivational patterns and how these goals are reflected in the broader context of classroom learning environments. Establishing linkages between the environment, goals, and student motivational outcomes has been very important; determining how to create these goals in the classroom is a next step, albeit not an easy one. The purpose of this article is to move in this direction, that is, toward defining those classroom structures that are theoretically related to different goals but that also have practical elements because they are manipulable by teachers

and can be designed to achieve desired goals. I begin with a brief overview of two contrasting goals and then examine how these goals relate to specific classroom structures and how ongoing classroom processes might be conceptualized.

## Achievement Goals: Overview

Research on achievement motivation has long emphasized the cognitive bases of behavior, but the recent literature has advanced an achievement goal framework that integrates cognitive and affective components of goal-directed behavior (see Ames & Archer, 1987, 1988; Dweck, 1986; Dweck & Elliott, 1983; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Maehr, 1984; Maehr & Nicholls, 1980; Nicholls, 1979, 1984b, 1989). An *achievement goal* concerns the purposes of achievement behavior. It defines an integrated pattern of beliefs, attributions, and affect that produces the intentions of behavior (Weiner, 1986) and that is represented by different ways of approaching, engaging in, and responding to achievement-type activities (Ames, 1992b; Dweck & Leggett, 1988). Elliott and Dweck (1988) defined an achievement goal as involving a "program" of cognitive processes that have "cognitive, affective, and behavioral consequences" (p. 11).

Two contrasting achievement goal constructs have received the most attention in the research literature. These two goals have been differentiated by their linkage to contrasting patterns of motivational processes and have been alternatively labeled learning and performance goals (Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988), task-involvement and ego-involvement goals (e.g., Maehr & Nicholls, 1980; Nicholls, 1984a), and mastery and performance goals (Ames & Archer, 1987, 1988). Conceptually, learning, task-involvement, and mastery goals can be distinguished from perform-

ance and ego-involvement goals; I have adopted the mastery and performance labels.[1] Mastery and performance goals represent different conceptions of success and different reasons for approaching and engaging in achievement activity (see Nicholls, Patashnick, Cheung, Thorkildsen, & Lauer 1989) and involve different ways of thinking about oneself, one's task, and task outcomes (Butler, 1987, 1988; Corno & Rohrkemper, 1985; Nicholls, 1984a).

Central to a mastery goal is a belief that effort and outcome covary, and it is this attributional belief pattern that maintains achievement-directed behavior over time (Weiner, 1979, 1986). The importance of this long-term view is underscored by those (e.g., Eccles, Midgley, & Adler, 1984; Maehr, 1984; Paris & Newman, 1990; Pascarella, Walberg, Junker, & Haertel, 1981; Pintrich & De Groot, 1990) who argue that researchers and educators should focus on quality of involvement and a continuing commitment to learning as consequences of different motivation patterns. The focus of attention is on the intrinsic value of learning (Butler, 1987; Meece & Holt, 1990; Nicholls, 1984b), as well as effort utilization. One's sense of efficacy is based on the belief that effort will lead to success or a sense of mastery (see Ames, 1992a, Ames & Archer, 1988). With a mastery goal, individuals are oriented toward developing new skills, trying to understand their work, improving their level of competence, or achieving a sense of mastery based on self-referenced standards (Ames, 1992b; Brophy, 1983b; Meece, Blumenfeld, & Hoyle, 1988; Nicholls, 1989). Compatible with this goal construct is Brophy's (1983b) description of a "motivation to learn" whereby individuals are focused on mastering and understanding content and demonstrating a willingness to engage in the process of learning.

Central to a performance goal is a focus on one's ability and sense of self-worth (e.g., Covington, 1984; Dweck, 1986; Nicholls, 1984b), and ability is evidenced by doing better than others, by surpassing normative-based standards, or by achieving success with little effort (Ames, 1984b; Covington, 1984). Especially important to a performance orientation is public recognition that one has done better than others or performed in a superior manner (Covington & Beery, 1976; Meece et al., 1988). As a result, learning itself is viewed only as a way to achieve a desired goal (Nicholls, 1979, 1989), and attention is directed toward achieving normatively defined success. When a person adopts a performance goal, a perceived ability–outcome linkage guides his or her behavior so that the person's self-worth is determined by a perception of his or her ability to perform (see Covington & Beery, 1976; Covington & Omelich, 1984). As a consequence, the expenditure of effort can threaten self-concept of ability when trying hard does not lead to success, and in this way, effort becomes the double-edged sword (Covington & Omelich, 1979).

Although mastery and performance goals have been described as representing two forms of "approach tendencies" (Nicholls, Patashnick et al., 1989), they are elicited by different environmental or instructional demands and result in qualitatively different motivational patterns. Research has identified patterns of cognitive-based, as well as affective-based, processes that are "set in motion" when a particular goal is adopted over the short- or long-term (Elliott & Dweck,

1988, p. 11). Considerable research linking mastery and performance achievement goals to different ways of thinking about oneself and learning activities suggests that a mastery goal elicits a motivational pattern that is associated with a quality of involvement likely to maintain achievement behavior, whereas a performance goal fosters a failure-avoiding pattern of motivation (see, e.g., Covington, 1984; Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Nicholls 1984b, 1989; Nicholls, Patashnick, & Nolen, 1985).

Research evidence suggests that a mastery goal is associated with a wide range of motivation-related variables that are conducive to positive achievement activity and that are necessary mediators of self-regulated learning. Of particular importance is evidence (Ames & Archer, 1988; Nicholls et al., 1985) that links mastery goals to an attributional belief that effort leads to success, supporting an effort–outcome perception that is central to the attributional model of achievement-directed behavior (Weiner, 1979). When mastery goals are adopted, pride and satisfaction are associated with successful effort (Jagacinski & Nicholls, 1984, 1987), and guilt is associated with inadequate effort (Wentzel, 1987, cited in Wentzel, 1991). Mastery goals have also been associated with a preference for challenging work and risk taking (Ames & Archer, 1988; Elliott & Dweck, 1988), an intrinsic interest in learning activities (Butler, 1987; Meece et al., 1988; Stipek & Kowalski, 1989), and positive attitudes toward learning (Ames & Archer, 1988; Meece et al., 1988).

Mastery goals increase the amount of time children spend on learning tasks (Butler, 1987) and their persistence in the face of difficulty (Elliott & Dweck, 1988) but more importantly the quality of their engagement in learning. Active engagement is characterized by the application of effective learning and problem-solving strategies, and students' use of these strategies is dependent on a belief that effort leads to success and that failure can be remedied by a change in strategy (Garner, 1990; McCombs, 1984). Of course, students' ability to use self-regulatory strategies is also related to their awareness and knowledge of appropriate strategies and knowing when and how to apply them (McCombs, 1984; Pintrich & De Groot, 1990); low-achieving children may lack knowledge of these strategies to the degree that they are unwilling to make a commitment to effort utilization (Covington, 1983, 1985). Nevertheless, these effort-based strategies are more likely to occur when students are focused on mastery goals (Diener & Dweck, 1978); when students are focused on the task, "How can I understand this?" (Nicholls, 1979) "How can I do this?" (Ames & Ames, 1984) or "How can I master this task?" (Elliott & Dweck, 1988); and when students are willing to apply effort in the interest of learning (Carr, Borkowski, & Maxwell, 1991; Corno & Mandinach, 1983; Corno & Rohrkemper, 1985; Pintrich & De Groot, 1990). Indeed, students endorsing mastery goals have reported valuing and

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[1] *Mastery goal orientation* should not be confused with *mastery learning*. The mastery achievement goal label derives from research (e.g., Elliott & Dweck, 1988) that has differentiated "mastery," or adaptive motivational response patterns, from "learned helplessness," or maladaptive motivational response patterns. Mastery learning refers to a model for the delivery of instruction.

using those learning strategies that are related to attending, processing, self-monitoring, and deep processing of verbal information (Ames & Archer, 1988; Meece et al., 1988; Nolen, 1987, 1988; Nolen & Haladyna, 1990a). Because self-regulatory strategies are so important to students' performance on many classroom tasks, the contributing role of a mastery goal orientation to strategic thinking (see Covington, 1985), as well as "failure tolerance" (see Clifford, Kim, & McDonald, 1988), is especially important.

It also seems reasonable to suggest that a mastery goal can influence more global perceptions of the self (e.g., the variable "belongingness" as noted by Weiner, 1990, p. 621). In the area of sports, Chambliss (1989) discussed the importance of the belief "I belong here, this is my world" to the development and commitment of the athlete. A sense of belongingness has affective and cognitive components, but it is not a self-focus or task focus. It represents an integration of self with task and others. In the classroom, a sense of "I belong here" is more than a feeling of acceptance by one's peers; it is a belief that one is an important and active participant in all aspects of the learning process. It is an identification with the purposes of schooling, and this self-perception ought to be more easily attained under those conditions in which the focus is not on the adequacy of one's ability.

In contrast to a mastery goal, a performance goal orientation has been associated with a pattern of motivation that includes, for example, an avoidance of challenging tasks (Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988); negative affect following failure, accompanied by a judgment that one lacks ability (Jagacinski & Nicholls, 1987); positive affect following success with little effort (Jagacinski & Nicholls, 1984); and use of superficial or short-term learning strategies, such as memorizing and rehearsing (Meece et al., 1988; Nolen, 1988; Ryan & Grolnick, 1986). When a performance goal is adopted, self-concept of ability becomes an important determinant of students' achievement-related behaviors (e.g., Dweck, 1986). Because the focus is on ability and normative performance, students with low self-concept of ability are less likely to choose challenging tasks or use self-regulatory strategies (Dweck, 1986; Pintrich & De Groot, 1990). Self-concept of ability, then, is a significant mediator of cognitive, affective, and behavioral variables when students are focused on doing better than others but not when they are focused on trying and learning, as a mastery goal orientation (Covington & Omelich, 1984; Dweck, 1986).

Thus, research evidence suggests that it is a mastery goal orientation that promotes a motivational pattern likely to promote long-term and high-quality involvement in learning. How and when is a mastery goal orientation evoked in the classroom? What aspects of classroom structure influence the salience of a mastery or performance goal, and as a consequence, elicit qualitatively different motivational patterns in children? Although the particular goal a student adopts may be influenced by certain prior experiences, achievement history (Wentzel, 1991), or parents' goals and beliefs (Ames & Archer, 1987), a guiding premise of this article is that classroom structures can influence the salience of a particular goal and hence its adoption. These questions are worth attention both because they contribute to understanding of the ways in

which achievement orientations develop and change and because they can contribute to practice.

## Classroom Structures and Achievement Goals

Classroom and other learning environments have frequently been described in terms of the ways in which certain kinds of instructional demands, situational constraints, or psychosocial characteristics relate to various cognitive and affective outcomes in students. However, there has been little systematic analysis of actual classroom structures examining how certain structures within the classroom can make different goals salient. In an attempt to move in this direction, I argue for an approach that places emphasis on identifying (a) salient structures in the classroom environment that can contribute to a mastery goal orientation, (b) the ways in which these structures relate to each other and how they are experienced by individual students, and (c) interventions that focus on modifying or changing these structures.

In addressing these issues, the first question is, What are the structures of the classroom environment that lead to a mastery goal orientation and what characteristics of these structures affect how students approach and engage in learning? Converging in the research literature (e.g., Brophy, 1987; Epstein, 1988; Marshall, 1988; Marshall & Weinstein, 1984, 1986; Mac Iver, 1987, 1988; Meece, 1991; Rosenholtz & Rosenholtz, 1981; Rosenholtz & Simpson, 1984; Stipek & Daniels, 1988) is an identification of certain structures that have been found to impact a range of motivational variables, especially how students view their ability and the degree to which ability becomes an evaluative dimension of the classroom. These structures include, but are not limited to, the design of tasks and learning activities, evaluation practices and use of rewards, and distribution of authority or responsibility. They are described in the following sections.

### Tasks

A central element of classroom learning is the design of tasks and learning activities. Students' perceptions of tasks and activities not only influence how they approach learning; these perceptions also have important consequences for how they use available time (Good, 1983). Embedded in tasks is information that students use to make judgments about their ability, their willingness to apply effortful strategies, and their feelings of satisfaction.

What characteristics of tasks foster a willingness in students to put forth effort and become actively engaged in learning? Tasks that involve variety and diversity are more likely to facilitate an interest in learning and a mastery orientation (e.g., Marshall & Weinstein, 1984; Nicholls, 1989; Rosenholtz & Simpson, 1984). Moreover, students are more likely to approach and engage in learning in a manner consistent with a mastery goal when they perceive meaningful reasons for engaging in an activity; that is, when they are focused on developing an understanding of the content of the activity, improving their skills, or gaining new skills and when task presentations emphasize personal relevance and meaningfulness of the content (Brophy, 1987; Corno & Rohrkemper,

1985; Lepper & Hodell, 1989; Meece, 1991; Nicholls et al., 1985).

Malone and Lepper (1987; see also Lepper & Hodell, 1989) described challenge, interest, and perceived control as factors that should be embedded in the structure and design of learning tasks. They argued for tasks that offer personal challenge, give students a sense of control over either the process or product, and tap students' interest over time. Lepper and Hodell found that when tasks are enriched or involve these "motivational embellishments" (p. 89), they are more likely to create an intrinsic purpose to learning. Others (Marshall & Weinstein, 1984, 1986; Rosenholtz & Simpson, 1984) have shown that with a diverse and varied task structure, students have less opportunity or need to engage in social comparison, and as a consequence, performance differences within the classroom are less likely to translate into perceived ability differences.

Students' beliefs that they can accomplish a task with reasonable effort, and their willingness to apply the effort, can be enhanced when tasks are defined in terms of specific and short-term goals (Schunk, 1984, 1989). As children make these judgments about tasks, they are also involved in metacognitive appraisals about the utility of planning, organizing, and monitoring strategies (Corno & Mandinach, 1983; Corno & Rohrkemper, 1985). The application of these self-regulatory skills, to a great extent, is dependent on whether students feel enabled to manage their own learning (Paris & Winograd, 1990). When students are focused on the task or on skill improvement and value the learning, they are likely to feel "empowered" in their pursuits (Paris & Winograd, 1990, p. 43), to exhibit active engagement (Brophy, 1987; Brophy, Rohrkemper, Rashid, & Goldberger, 1983), and to feel more satisfied with school learning in general (Nicholls et al., 1985).

Tasks also have social components, as they are embedded in the social organization of the classroom (Blumenfeld & Meece, 1987). Student engagement, therefore, is shaped by the nature of the work itself as well as by how tasks are delivered by the teacher and how it interacts with other structures in the classroom, as exemplified in the following two scenarios:

> Mr. D., at the beginning of each mathematics class, puts a challenge problem on the board. He gives the students 5 min to work on the problem and then asks for volunteers to offer different solutions.

> Mr. R. similarly puts a challenge mathematics problem on the board but gives the students 5 min to work on the problem in groups of three. He then asks the groups to share their solutions with each other.

In both situations, the teacher has tried to select problems with multiple paths to solution and has tried to create a low-risk situation, but in Mr. D.'s class, few students volunteer and even fewer actually remember the problem or solutions once class has ended. In contrast, more students participate in Mr. R.'s class, and the discussion reflects the active involvement of strategic thinking. This scenario is only illustrative, and group learning may have differential benefits depending on the type of task and students (e.g., Rohrkemper & Corno, 1988). Nevertheless, the different locus of responsibility, grouping arrangements, and methods of evaluation can create

different tasks and engender different judgments and cognitive engagement patterns.

## Evaluation and Recognition

The ways in which students are evaluated is one of the most salient classroom factors that can affect student motivation. Evaluation practices include standards, criteria, and methods, as well as the frequency and the content of evaluation (Epstein, 1988; Mac Iver, 1988). The issue is not merely a question of whether students are evaluated; more importantly, it concerns students' perceptions of the meaning of the evaluative information (Mac Iver, 1987). Depending on how evaluation is structured, students may be oriented toward different goals and elicit different patterns of motivation (Ames & Ames, 1984).

Brophy (1983a, 1983b) characterized much classroom learning as highly product oriented. Children are focused on the quantity of their work, and the high visibility of these products orients children away from the task of learning. This product orientation soon shifts to a performance orientation when correctness, absence of errors, and normative success are emphasized. The consequences of this emphasis on performance are especially evident in the field of music education. Music educators decry the evolution of music programs that stress production and performance outcomes. In such programs the learning of different kinds of music and appreciation of complex arrangements is subordinate to achieving a public-ready production. As a consequence, the study of music becomes synonymous with musical performance (see O'Neil, 1990).

What aspects of evaluation practices have detrimental effects on children's motivation? Social comparison, when imposed, appears to be an especially salient factor affecting students' judgments about themselves, others, and tasks (Ames, 1984a). The range of examples in which social comparison is imposed and made public in the classroom is extensive, including announcements of highest and lowest scores; public charts of students' papers, scores, and progress; ability grouping; and displays of selected papers and achievements. The impact of social comparison on children when they compare unfavorably can be seen in their evaluations of their ability, avoidance of risk taking, use of less effective or superficial learning strategies, and negative affect directed toward the self.

Students' perceptions of their ability appear to be especially responsive to social comparison information. Children's self-evaluations of their ability and self-directed affect are decidedly more negative when they are focused on winning, outperforming another, or surpassing some normative standard than when they are focused on trying hard, improving their performance, or just participating (e.g., Ames, 1984a, 1984b). In classrooms characterized by frequent grades and public evaluation, students become focused on their ability and the distribution of ability in the classroom group. Many students not only come to believe that they lack ability but this perception becomes shared among peers (Rosenholtz & Simpson, 1984). This external evaluative pressure and emphasis on social comparison information also appears to have nega-

tive consequences for children's interest (Boggiano, Main, & Katz, 1987; Deci & Ryan, 1985), their pursuit of challenging tasks (Elliott & Dweck, 1988), and their use of learning strategies (Ames, 1984a).

Grades are the most common evaluative tool in the classroom, but research by Mac Iver (1987) suggests that the actual frequency of grades may be less important than the dispersion of grades in the classroom. In his work, high, but not low, dispersion of grades seemed to be related to a perceived ability stratification. Grades have also been found to increase the amount of time students spend attending to others' work and to decrease the amount of time students spend working on their own task (Butler, 1987). It is the normative component of grading that induces this ability focus. In fact, if grades are accompanied by an opportunity to improve, the performance–ability connection is severed (Covington & Omelich, 1984), and effort becomes a more salient self-evaluative factor. Students' use of effective learning and problem-solving strategies depends on whether they perceive a valuing of effort (Garner, 1990; McCombs, 1984). Even quite capable students have reported that they are more likely to use such strategies when they perceive the classroom as supporting an emphasis on effort (Ames & Archer, 1988). Graham and Golan (1991) have also shown that when students are focused on self-improvement, rather than on comparison with another, they exhibit better recall of material. Graham and Golan concluded that the focus on social comparison standards interferes with effort-based strategies that require deeper levels of information processing.

Because performance-oriented or competitively oriented environments encourage an ability focus, they do not support the use of strategies that require sustained effort over time (Garner, 1990). As a consequence, conceptual learning can be negatively affected when evaluation is perceived as having direct consequences for oneself. Grolnick and Ryan (1987a, 1987b) described this type of evaluation as being perceived as controlling by students (see also Ryan, Connell, & Deci, 1985). Grolnick and Ryan found that students' conceptual learning and interest in learning were inhibited when they expected to be tested and evaluated on the basis of whether they were "learning well." Grolnick and Ryan argued that when the evaluation is perceived as an attempt to control, rather than inform, metacognitive processes are short-circuited.

Research by Dweck and her colleagues (e.g., Dweck & Leggett, 1988; Elliott & Dweck, 1988) suggests that children who lack confidence in their ability are especially at risk for exhibiting a learned helpless response pattern when performance goals are salient. When these low-confident children expect normative evaluations of their performance, they respond with ineffective problem-solving strategies and negative self-attributions of ability. This maladaptive pattern, however, is not apparent when the purpose of a task is described in a non-normative manner (e.g., as "sharpening their minds"; see Elliott & Dweck, 1988, p. 7). It is not the mere availability of social comparison information that is problematic; it is when this information becomes emphasized (Jagacinski & Nicholls, 1987) that the linkage between effort, outcome, and affect becomes undermined.

As children progress through school, evaluation becomes more formal and more closely tied to performance criteria than to simple assignment completion. When evaluation is normative, emphasizes social comparison, is highly differentiated, and is perceived as threatening to one's sense of control, it contributes to a negative motivational climate. Moreover, this type of evaluation undoubtedly contributes to "failure-avoiding" and "failure-accepting" patterns of achievement behavior (see Covington & Omelich, 1985). Covington and Beery (1976) pointed out that the pervasiveness of evaluation in schools makes it difficult for children to focus on learning, and as a result, they quickly learn that what is not evaluated is not worth learning.

Not only is evaluation a pervasive phenomenon in schools, there is widespread use of incentives to induce children to engage in desired behaviors or to reward them for behaving in a certain way or for achieving certain goals. These incentives are used to "motivate" the child, and as noted by Lepper and Hodell (1989), they are often used without regard to students' initial interests and aptitudes (see also Boggiano, Barrett, Weiher, McClelland, & Lusk, 1987). In the classroom, extrinsic rewards are often given with good intentions, but they can have paradoxical and detrimental effects when they are applied to an entire group of students with varying abilities and levels of interest (Lepper & Hodell, 1989, p. 89). Moreover, rewards are often used indiscriminately; they are seen as equally effective for initiating behavior (e.g., "the child who does not enjoy reading") as for maintaining behavior (e.g., "the child who reads often and enjoys reading"; see Boggiano, Barrett, et al., 1987). A heavy reliance on rewards has been observed, especially among first-year teachers (Newby, 1991). In contrast to a literature that depicts a positive relationship between the use of intrinsic-based strategies and on-task behaviors, the first-year teachers in Newby's study were found to use the amount of recess time, stickers, and privileges as incentives to induce children to complete their work or to behave in a certain manner.

There is considerable research evidence demonstrating the undermining effects of rewards when they are perceived as bribes or controlling and when they have little relevance to the behavior in question (e.g., Deci & Ryan, 1985). Moreover, because rewards are often public and given on a differential basis, they can render ability salient. Nevertheless, when made contingent on student effort (Brophy, 1987; Stipek & Kowalski, 1989), on progress in relation to short-term goals (Schunk, 1989), or on meaningful aspects of performance (Brophy, 1983a, 1983b) rewards can enhance achievement-directed behavior. There is even some evidence to suggest that rewards can sometimes increase task persistence on ego-involving tasks by shifting the focus away from one's ability (Miller & Hom, 1990).

## Authority

The locus of responsibility in the classroom, which has often been operationally defined as teachers' orientation toward autonomy (e.g., Deci, Schwartz, Sheinman, & Ryan, 1981), and the degree to which teachers involve children in decision making (e.g., Ryan & Grolnick, 1986) have been

related to adaptive or positive motivation patterns in children. A positive relationship between the autonomy orientation of the classroom environment and students' intrinsic motivation has been supported across numerous studies (e.g., de Charms, 1976; Deci, Nezlek, & Sheinman, 1981; Grolnick & Ryan, 1987a, 1987b; Hughes, Sullivan, & Beaird, 1986; Ryan et al., 1985; Ryan & Grolnick, 1986).

Whether teachers are autonomy supporting or controlling is evidenced especially by whether they give students options or offer choices. Giving students choices is viewed as supporting student decision making, but this is true only when those choices are perceived as equal or structured in such a way that the child's choice is guided by interest and not by an intent to minimize effort, protect feelings of self-worth, or avoid failure (see Ryan et al., 1985). Allowing students to have a say in establishing priorities in task completion, method of learning, or pace of learning is also a way of imparting responsibility to the student. However, assigning responsibility to students for planning and completing long-term assignments may not enhance feelings of "self-determination" (Ryan et al., 1985) or personal control if there is no support for selecting, planning, and applying appropriate strategies (see Corno & Rohrkemper, 1985). Opportunities to develop self-management and self-regulatory strategies must accompany the assignment of responsibility. Controlling types of behaviors include the use of rewards and other external inducements to get children to engage in certain types of activities or behaviors. Even when such activity may result in increased skills and a positive self-perception of ability, the reasons for engagement may never become intrinsic.

The perception of control appears to be a significant factor affecting children's engagement in learning and quality of learning. When teachers are seen as emphasizing independent thinking in addition to content mastery, students are more likely to place value on using effective learning strategies (Nolen & Haladyna, 1990b). Conceptual understanding appears to be facilitated by conditions that minimize external controls and, at the same time, focus children on the task (e.g., Benware & Deci, 1984; Grolnick & Ryan, 1987b). Shifting the locus of responsibility from the teacher to the student has also been argued as an effective means of reducing the salience of differential ability levels in the classroom (Mac Iver, 1987; Marshall & Weinstein, 1984). As noted by Stigler, Lee, and Stevenson (1987), however, the prevalence of children "working on their own" in many U.S. classrooms cannot be viewed as supporting autonomous achievement activity. Students may be doing their own work, but their activity often lacks meaningful direction or is in fact teacher defined and structured. Although students' perceptions of control have important consequences for their level of interest and engagement (Meece, 1991; Ryan, Connell, & Deci, 1985; Ryan & Grolnick, 1986), students have few opportunities to control the selection of tasks, materials, method of learning, product, or pace in most classrooms.

The discussion addresses only a few of many classroom structures; nevertheless, it does suggest how the structures of the classroom can make certain goals salient to students. As outlined in Figure 1, a mastery goal is made salient when value is placed on the process of learning through emphasis

on meaningful learning, self-referenced standards, and opportunities for self-directed learning. The learning or identification of effective strategies is an integral part of task design and delivery of instruction. The application of effort and the willingness to use these effort-based learning strategies is facilitated by providing appropriate levels of challenge and realistic goal setting and is supported by non-normative evaluation practices and recognition of students' effort. Engagement and involvement are fostered by task variety and differentiation, opportunities for choices, and reasonable demands. A sense of self-worth that is tied to one's effort rather than performance is fostered by evaluation that focuses on personal progress and individual mastery and is private and informative.

The classroom structures described above are specific, as opposed to what might be referred to as global classroom structure. The specific structures can be defined along normative dimensions, and they can be used to differentiate the goal orientation of classrooms. Moreover, these structures are overlapping (see Epstein, 1988, 1989). They are overlapping because they impact a common set of dependent variables. They relate to students' focusing on effort versus ability, to intrinsic interest in learning, and to use of effective learning strategies, in particular.

These structures, however, should not be viewed as autonomous or as independent contributors to student motivation. As we look in classrooms, we may find teachers who are very effective in designing tasks that offer variety and appropriate challenges to students. These same teachers, however, may use evaluation practices that encourage social comparison. In other words, if the task structure is mastery oriented but the evaluation structure is performance oriented, what kind of motivation pattern results? I suggest that these structures need to work in concert, that they need to be coordinated, and that instructional practices need to be directed toward the same mastery goal (see also Marshall, 1988). If these requirements are not met, motivation outcomes are confused. The positive contribution of one structure (e.g., designing tasks with challenge or offering choices) on student motivation may very well be negated or undermined by inappropriate strategies in another structural area (e.g., evaluation practices that are normative or that can make social comparison salient).

Classroom structures are interdependent, which argues for an integrative approach to the study of classroom environments (see Marshall & Weinstein, 1984). However, the issue of exactly how these structures relate to each other remains. Do classroom structures operate in an additive or a multiplicative manner? If they are additive, the structures become complementary, and inadequacies in one structure can be attenuated by strengths in another. However, if the structures are multiplicative, they cannot compensate for each other. For example, a teacher who challenges small groups to design a new product and promises a substantial prize to the group with the winning entry would not be able to achieve a mastery goal orientation in his or her students. When the structures convey mixed goals, how do students interpret and make sense of the incongruous messages?

Finally, those structures that are salient and important to the elicitation of goals may change as children progress

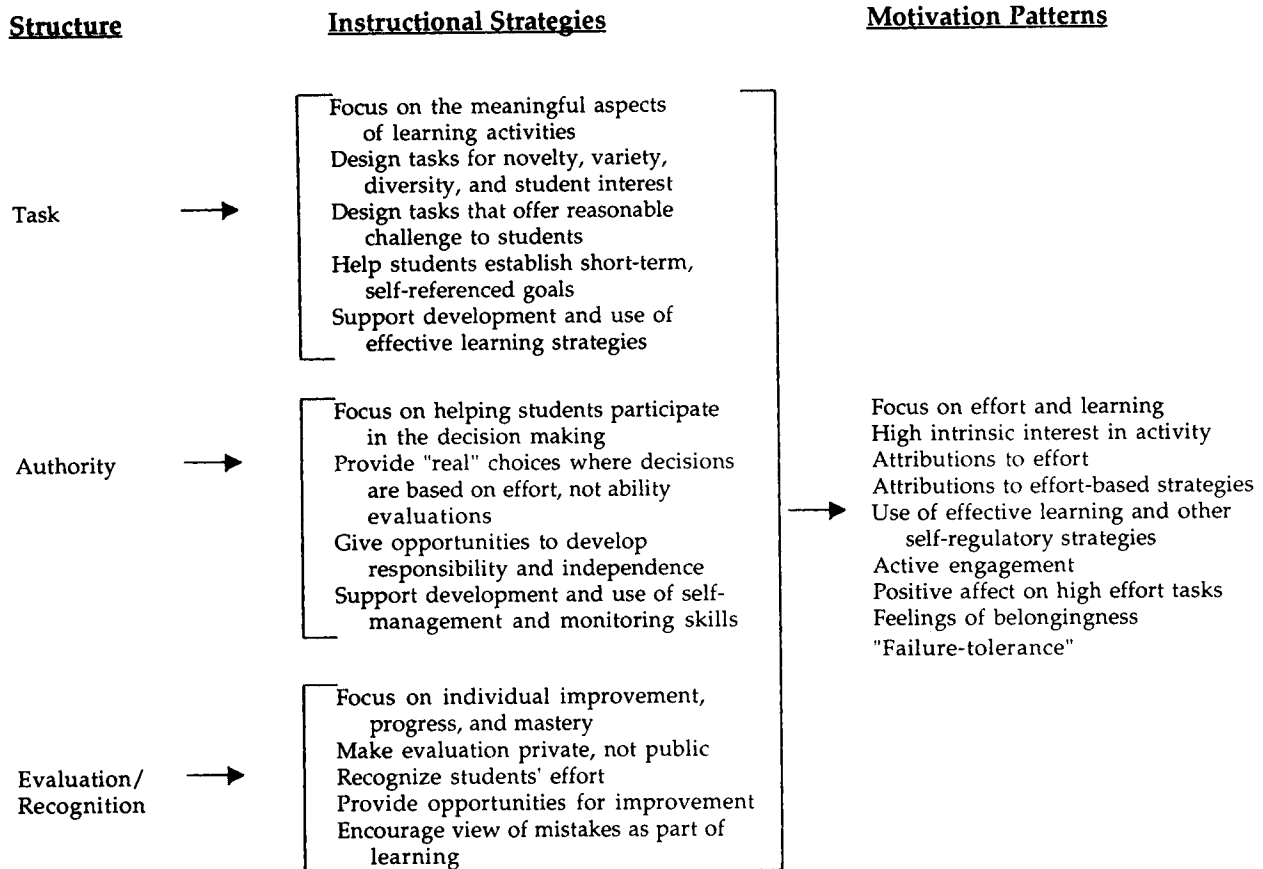| Structure | Instructional Strategies | Motivation Patterns |
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Figure 1.   Classroom structure and instructional strategies supporting a mastery goal.

through school. These shifts may reflect developmental changes, but they may also represent changes in the larger structures of schooling. The impact of mastery-oriented structures on student motivation may be enhanced or even subverted by school policies and programs that, for example, make performance salient (e.g., public recognition and award programs), attempt to exert considerable external control over behavior (e.g., incentive or discipline programs), or encourage social comparison (e.g., tracking, honor rolls, contests).

## Classroom Structures: Student Perceptions

The discussion thus far may lead one to believe that the classroom learning environment provides a common experience for all students when, in fact, research on teacher effectiveness shows that there is considerable variation in teacher behavior within classrooms (e.g., Good, 1983). Just as expectancy effects occur in some classrooms but not others (Brophy, 1983b; Brophy & Good, 1974), children in the same classroom are treated differently and therefore have different experiences. Brophy's (1981) analysis of teacher praise provides a good example of how praise and verbal rewards are not evenly distributed in the classroom, but equally important is Brophy's point that praise can be interpreted quite differently by students, as a function of their prior experiences.

Similarly, Marshall and Weinstein (1986; see also Weinstein, 1989; Weinstein, Marshall, Brattesani, & Middlestadt, 1982) found that certain grouping practices and evaluation methods make differential treatment salient to high- and low-achieving students, but Marshall and Weinstein also found considerable within-class variability in how students perceived opportunities for making choices, feedback from the teacher, and the general work orientation of the classroom.

The importance of student perceptions in depicting classroom climate is well-recognized and evidenced by the shift away from observational approaches to studying classroom processes. However, more recently attention has been directed toward the role of individual student perceptions and interpretations (e.g., Ames & Archer, 1988; Ryan & Grolnick, 1986). Maehr (1984) referred to this as the personal meaning of classroom events and later suggested that classroom climate may be more appropriately conceived of as "psychological environment" (Maehr & Midgley, 1991, p. 405). Students have different classroom experiences, but because they also bring different prior experiences with them, they may interpret a teacher–student interaction or event quite differently (e.g., Meece et al., 1988).

Thus, to predict and examine motivated cognitions, affect, and behavior of a student, it is necessary to attend to how that student perceives and gives meaning to classroom expe-

riences. Ryan and Grolnick (1986) argued effectively for attending to the "functional significance" (p. 550) of the environment, referring to the meaning children give their own experiences. This is consistent with a cognitive mediation model of motivation, which focuses on the active role of the individual student in constructing meaning (Meece et al., 1988; Weinstein, 1989). Students' thoughts, perceptions, and interpretations mediate the effects of teacher behavior. At the same time, however, it is important to note that there are patterns in how judgments are made. The developmental changes in children's understanding of the compensatory relationship between effort and ability (Nicholls, 1984a), along with developmental changes in properties of perception, attribution, and interpretation, suggest that children's conceptions about their role in the classroom follow certain patterns (e.g., Wentzel, 1989).

This notion of subjective experience and meaning has important implications for examining the effects of classroom environments or structures on student motivation outcomes. The goal orientation of structures cannot be studied through behavioral checklists or observations. Although we can describe the structures in terms of principles and exemplary strategies, assessment involves students' perceptions. Specific treatments or interventions may have different effects on different students, depending on the students' prior experiences and the meaning they give to their current experiences. Focusing on how students change with regard to their perceptions and progress in other ways may provide a meaningful approach to evaluation (see Good & Weinstein, 1986).

## Classroom Interventions

A qualitative approach to student motivation is concerned with how students think about themselves in relation to learning activities and to the process of learning itself. The salience of specific goals in classroom structures can orient students toward qualitatively different patterns. I suggest that the goal orientation experienced by students in the classroom is shaped by specific structures. These structures can be defined along normative dimensions and can be described in relation to mastery and performance goals. These structures are overlapping in their effects on student motivation, and they are interdependent.

How, then, should the classroom learning environment be changed to enhance the probability that students will adopt a mastery goal orientation? To design such an intervention, first the structures need to be identified and described with respect to how they can be modified to reflect a mastery orientation. To this end, the literature on achievement motivation offers many principles and strategies that are conceptually consistent with a mastery goal orientation and that, when mapped onto classroom structures, could contribute to the definition and design of a mastery-oriented classroom (e.g., Ames, 1992b; Brophy, 1987). Second, if these structures are mutually dependent on each other and interact in a multiplicative manner, a comprehensive approach to classroom intervention is not only desirable, it becomes essential. To intervene and change the task structure, for example, may have only short-

term effects if changes are not also made in other structures. Educators who focus on a single structure ignore the joint dependence among the classroom structures. In a similar way, those who focus their attention solely on changing students' motivated cognitions ignore the contributing role of multiple classroom structures to these processes. Perhaps the point has been reached at which these principles and strategies need to be incorporated into more comprehensive field-based interventions (see, e.g., Ames, 1990; Ames & Maehr, 1988, Brophy, 1987; Brophy & Merrick, 1987). A comprehensive intervention requires attention to salient classroom structures, identification of principles and strategies that can be mapped onto these structures, and generation of exemplary practices that can be integrated into all curriculum areas and within all aspects of day-to-day classroom routine.

However, it is also the case that teachers structure the classroom, and their own goals most assuredly influence their beliefs about the efficacy of certain strategies and their instructional decisions (e.g., Ames & Ames, 1984; Dweck, 1986). In one study, for example, Ames, Maehr, Fisher, Archer, and Hall (1989) found that when preservice teachers were given instructions to orient them toward mastery or performance goals, they endorsed a wide range of instructional strategies that were consistent with their goal orientation. Their beliefs about the efficacy of specific instructional practices were influenced by whether they were focused on inadequacies in student interest or inadequacies in skills and knowledge as the reason for poor performance. As a consequence, changing classroom structures may also require changing teachers' goals for children's learning, belief systems, or broader views about school learning (Good, Grouws, Mason, Slavings, & Cramer, 1990; Marshall 1988; Nicholls, Cheung, Lauer, & Patashnick, 1989; Paris & Newman, 1990).

In considering approaches to motivation enhancement, it is important to note that motivation is too often equated with quantitative changes in behavior (e.g., higher achievement, more time on task) rather than qualitative changes in the ways students view themselves in relation to the task, engage in the process of learning, and then respond to the learning activities and situation. In the school and the classroom, motivation enhancement often means using extrinsic incentives to get students to engage in certain behaviors, and motivation strategies translate into free time or special activities that are not woven into the fabric of instructional practice. As noted by Dweck (1986; see also Elliott & Dweck, 1988), there are also many programs directed toward the enhancement of self-esteem through attempts to improve students' self-confidence and self-image. This is often done through reinforcement programs, by attempts to provide occasions of frequent success, or by attempts to convince students that they are indeed capable. Enhancing student motivation, however, is not about enhancing self-concept of ability. Nor is this what is to be accomplished by designing mastery-oriented structures. Within a mastery goal orientation, the focus is on effort, not ability, and belief in the efficacy of one's effort mediates approach and engagement patterns. Enhancing motivation means enhancing children's valuing of effort and a commitment to effort-based strategies through the design of mastery-oriented classroom structures.

## References

Ames, C. (1984a). Achievement attributions and self-instructions under competitive and individualistic goal structures. *Journal of Educational Psychology, 76,* 478–487.

Ames, C. (1984b). Competitive, cooperative, and individualistic goal structures: A motivational analysis. In R. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 1, pp. 177–207). San Diego, CA: Academic Press.

Ames, C. (1990, April). *Achievement goals and classroom structure: Developing a learning orientation.* Paper presented at the annual meeting of the American Educational Research Association, Boston.

Ames, C. (1992-a). Achievement goals and adaptive motivation patterns: The role of the environment. In G. Roberts (Ed.), *Motivation in sport and exercise* (pp. 161–176). Champaign, IL: Human Kinetics.

Ames, C. (1992-b). Achievement goals and classroom motivational climate. In J. Meece & D. Schunk (Eds.), *Students' perceptions in the classroom* (pp. 327–348). Hillsdale, NJ: Erlbaum.

Ames, C., & Ames, R. (1984). Systems of student and teacher motivation: Toward a qualitative definition. *Journal of Educational Psychology, 76,* 535–556.

Ames, C., & Archer, J. (1987). Mothers' beliefs about the role of ability and effort in school learning. *Journal of Educational Psychology, 79,* 409–414.

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80,* 260–267.

Ames, C., & Maehr, M. L. (1988). *Home and school cooperation in social and motivational development* (Contract No. DE-H023T80023). Washington, DC: U. S. Department of Education, Office of Special Education Programs.

Ames, C., Maehr, M. L., Fisher, A., Archer, J., & Hall, H. (1989, March). *Achievement goals and the structure of classroom learning.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Benware, C., & Deci, E. L. (1984). Quality of learning with an active versus passive motivational set. *American Educational Research Journal, 21,* 755–766.

Blumenfeld, P. C., & Meece, J. L. (1987). Task factors, teacher behavior, and students' involvement and use of learning strategies in science. *Elementary School Journal, 88,* 235–250.

Boggiano, A. K., Barrett, M., Weiher, A. W., McClelland, G. H., & Lusk, C. M. (1987). Use of maximal-operant principle to motivate children's intrinsic interest. *Journal of Personality and Social Psychology, 53,* 866–879.

Boggiano, A. K., Main, D. S., & Katz, P. A. (1987). Children's preference for challenge. The role of perceived competence and control. *Journal of Personality and Social Psychology, 54,* 134–141.

Brophy, J. E. (1981). Teacher praise: A functional analysis. *Review of Educational Research, 51,* 5–32.

Brophy, J. E. (1983a). Conceptualizing student motivation. *Educational Psychologist, 18,* 200–215.

Brophy, J. E. (1983b). Fostering student learning and motivation in the elementary school classroom. In S. Paris, G. Olson, & H. Stevenson (Eds.), *Learning and motivation in the classroom* (pp. 283–305). Hillsdale, NJ: Erlbaum.

Brophy, J. E. (1987). Synthesis of research on strategies for motivating students to learn. *Educational Leadership, 44,* 40–48.

Brophy, J. E., & Good, J. L. (1974). *Teacher–student relationships.* New York: Holt, Rinehart & Winston.

Brophy, J., & Merrick, M. (1987). *Motivating students to learn: An experiment in junior high social studies classes.* East Lansing, MI: Institute for Research on Teaching.

Brophy, J., Rohrkemper, M., Rashid, H., & Goldberger, M. (1983). Relationships between teachers' presentations of classroom tasks and students' engagement in those tasks. *Journal of Educational Psychology, 75,* 544–552.

Butler, R. (1987). Task-involving and ego-involving properties of evaluation: Effects of different feedback conditions on motivational perceptions, interest, and performance. *Journal of Educational Psychology, 79,* 474–482.

Butler, R. (1988). Enhancing and undermining intrinsic motivation: The effects of task-involving and ego-involving evaluation on interest and performance. *British Journal of Educational Psychology, 58,* 1–14.

Carr, M. Borkowski, J. G., & Maxwell, S. E. (1991). Motivational components of underachievement. *Developmental Psychology, 27,* 108–118.

Chambliss, D. (1989). The mundanity of excellence: An ethnographic report on stratification and olympic swimmers. *Sociology Theory, 7,* 70–86.

Clifford, M. M., Kim, A., & McDonald, B. A. (1988). Responses to failure as influenced by task attribution, outcome attribution, and failure tolerance. *Journal of Experimental Education, 57,* 19–37.

Corno, L., & Mandinach, E. B. (1983). The role of cognitive enjoyment in classroom learning and motivation. *Educational Psychologist, 18,* 88–108.

Corno, L., & Rohrkemper, M. M. (1985). The intrinsic motivation to learn in the classroom. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 2, pp. 53–90). San Diego, CA: Academic Press.

Covington, M. V. (1983). Motivated cognition. In S. Paris, G. Olson, & H. Stevenson (Eds.), *Learning and motivation in the classroom* (pp. 139–164). Hillsdale, NJ: Erlbaum.

Covington, M. V. (1984). The motive for self worth. In R. Ames & C. Ames (Eds.), *Research on motivation in education: Student motivation* (Vol. 1, pp. 77–113). San Diego, CA: Academic Press.

Covington, M. V. (1985). Strategic thinking and the fear of failure. In J. W. Segal, S. F. Chipman, & R. Glaser (Eds.). *Thinking and learning skills* (pp. 389–416). Hillsdale, NJ: Erlbaum.

Covington, M. V., & Beery, R. G. (1976). *Self worth and school learning.* New York: Holt, Rinehart & Winston.

Covington, M. V., & Omelich, C. L. (1979). Effort: The double-edged sword in school achievement. *Journal of Educational Psychology, 71,* 169–182.

Covington, M. V., & Omelich, C. L. (1984). Task-oriented versus competitive learning structures: Motivational and performance consequences. *Journal of Educational Psychology, 76,* 1038–1050.

Covington, M. V., & Omelich, C. L. (1985). Ability and effort evaluation among failure-avoiding and failure-accepting students. *Journal of Educational Psychology, 77,* 446–459.

de Charms, R. (1976). *Enhancing motivation: Change in the classroom.* New York: Irvington.

Deci, E. L., Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology, 40,* 1–10.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum Press.

Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology, 73,* 642–650.

Diener, C. I., & Dweck, C. S. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy, and achievement cognitions after failure. *Journal of Personality and Social Psychology, 36,* 451–462.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040–1048.

Dweck, C. S., & Elliott, E. S. (1983). Achievement motivation. In P. H. Mussen (series Ed.) & E. M. Hetherington (vol. Ed.), *Handbook of child psychology: Vol. 4. Socialization, personality, and social development* (4th ed., pp. 643–691). New York: Wiley.

Dweck, C. S., & Leggett, E. L. (1988). A social–cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273.

Eccles, J., Midgley, C., & Adler, T. (1984). Grade related changes in school environment: Effects on achievement motivation. In J. Nicholls (Ed.), *The development of achievement motivation* (pp. 283–332). Greenwich, CT: JAI Press.

Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54*, 5–12.

Epstein, J. L. (1988). Effective schools or effective students: Dealing with diversity. In R. Haskins & D. MacRae (Eds.), *Policies for America's public schools: Teacher equity indicators* (pp. 89–126). Norwood, NJ: Ablex.

Epstein, J. L. (1989). Family structures and student motivation: A developmental perspective. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 259–295). San Diego, CA: Academic Press.

Garner, R. (1990). When children and adults do not use learning strategies. *Review of Educational Research, 60*, 517–530.

Good, T. (1983). Classroom research: A decade of progress. *Educational Psychologist, 18*, 127–144.

Good, T. L., Grouws, D. A., Mason, D. A., Slavings, R. L., Cramer, K. (1990). An observational study of small-group mathematics instruction in elementary schools. *American Educational Research Journal, 27*, 755–782.

Good, T. L., & Weinstein, R. S. (1986). Schools make a difference: Evidence, criticisms, and new directions. *American Psychologist, 41*, 1090–1097.

Graham, S., & Golan, S. (1991). Motivational influences on cognition: Task involvement, ego involvement, and depth of information processing. *Journal of Educational Psychology, 83*, 187–194.

Grolnick, W. S., & Ryan, R. M. (1987a). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology, 52*, 890–898.

Grolnick, W. S., & Ryan, R. M. (1987b). Autonomy support in education: Creating the facilitating environment. In N. Hastings & J. Schwieso (Eds.), *New directions in educational psychology: Behavior and motivation* (pp. 213–232). London: Talmer Press.

Hughes, B. J., Sullivan, H. J., & Beaird, J. (1986). Continuing motivation of boys and girls under different evaluation conditions and achievement levels. *American Educational Research Journal, 23*, 660–668.

Jagacinski, C. M., & Nicholls, J. G. (1984). Conceptions of ability and related affects in task involvement and ego involvement. *Journal of Educational Psychology, 76*, 909–919.

Jagacinski, C. M., & Nicholls, J. G. (1987). Competence and affect in task involvement and ego involvement: The impact of social comparison information. *Journal of Educational Psychology, 79*, 107–114.

Lepper, M. R., & Hodell, M. (1989). Intrinsic motivation in the classroom. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 73–105). San Diego, CA: Academic Press.

Mac Iver, D. (1987). Classroom factors and student characteristics predicting students' use of achievement standards during self-assessment. *Child Development, 58*, 1258–1271.

Mac Iver, D. (1988). Classroom environments and the stratification of pupils' ability perceptions. *Journal of Educational Psychology, 80*, 495–505.

Maehr, M. L. (1984). Meaning and motivation: Toward a theory of

personal investment. In R. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 1, pp. 39–73). San Diego, CA: Academic Press.

Maehr, M. L., & Midgley, C. (1991). Enhancing student motivation: A school-wide approach. *Educational Psychologist, 26*, 399–427.

Maehr, M. L., & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), *Studies in cross cultural psychology.* San Diego, CA: Academic Press.

Malone, T. W., & Lepper, M. R. (1987). Making learning fun: A taxonomy of intrinsic motivation for learning. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, learning, and instruction* (Vol. 3). Hillsdale, NJ: Erlbaum.

Marshall, H. H. (1988). In pursuit of learning-oriented classrooms. *Teaching and Teacher Education, 4*, 85–98.

Marshall, H. H., & Weinstein, R. S. (1984). Classroom factors affecting students' self-evaluations: An interactional model. *Review of Educational Research, 54*, 301–325.

Marshall, H. H., & Weinstein, R. S. (1986). Classroom context of student-perceived differential teacher treatment. *Journal of Educational Psychology, 78*, 441–453.

McCombs, B. L. (1984). Processes and skills underlying continuing intrinsic motivation to learn: Toward a definition of motivational skills training interventions. *Educational Psychologist, 19*, 199–218.

Meece, J. (1991). The classroom context and children's motivational goals. In M. Maehr & P. Pintrich (Eds.), *Advances in achievement motivation research* (Vol. 7, pp. 261–286). Greenwich, CT: JAI Press.

Meece, J. L., Blumenfeld, P. C., & Hoyle, R. H. (1988). Students' goal orientations and cognitive engagement in classroom activities. *Journal of Educational Psychology, 80*, 514–523.

Meece, J. L., & Holt, K. (1990). *Classification and validation of task-related goal patterns in elementary school children.* Unpublished manuscript.

Miller, A., & Hom, H. L., Jr. (1990). Influence of extrinsic and ego incentive value on persistence after failure and continuing motivation. *Journal of Educational Psychology, 82*, 539–545.

Newby, T. J. (1991). Classroom motivation: Strategies of first-year teachers. *Journal of Educational Psychology, 83*, 195–200.

Nicholls, J. G. (1979). Quality and equality in intellectual development: The role of motivation in education. *American Psychologist, 34*, 1071–1084.

Nicholls, J. G. (1984a). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91*, 328–346.

Nicholls, J. G. (1984b). Conceptions of ability and achievement motivation. In R. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 1, pp. 39–73). San Diego, CA: Academic Press.

Nicholls, J. G. (1989). *The competitive ethos and democratic education.* Cambridge, MA: Harvard University Press.

Nicholls, J. G., Cheung, P. C., Lauer, J., Patashnick, M. (1989). Individual differences in academic motivation: Perceived ability, goals, beliefs, and values. *Learning and Individual Differences, 1*, 63–84.

Nicholls, J. G., Patashnick, M., Cheung, P. C., Thorkildsen, T. A., & Lauer, J. M. (1989). Can achievement motivation theory succeed with only one conception of success? In F. Halisch & J. H. L. van der Bercken (Eds.), *International perspectives on achievement and task motivation* (pp. 187–208). Lisse, The Netherlands: Swets & Zeitlinger.

Nicholls, J. G., Patashnick, M., & Nolen, S. B. (1985). Adolescents' theories of education. *Journal of Educational Psychology, 77*, 683–692.

Nolen, S. B. (1987, April). *The influence of task involvement on use of learning strategies.* Paper presented at the annual meeting of the

American Educational Research Association, Washington, DC.

Nolen, S. B. (1988). Reasons for studying: Motivational orientations and study strategies. *Cognition and Instruction, 5,* 269–287.

Nolen, S. B., & Haladyna, T. M. (1990a). Motivation and studying in high school science. *Journal of Research on Science Teaching, 27,* 115–126.

Nolen, S. B., & Haladyna, T. M. (1990b). Personal and environmental influences on students' beliefs about effective study strategies. *Contemporary Educational Psychology, 15,* 116–130.

O'Neil, J. (1990, June). Music education: Experts take a look at performance, general music. *Curriculum Update,* pp. 1–8.

Paris, S. G., & Newman, R. S. (1990). Developmental aspects of self-regulated learning. *Educational Psychologist, 27,* 87–102.

Paris, S. G., & Winograd, P. (1990). How metacognition can promote academic learning and instruction. In B. F. Jones & L. Idol (Eds.), *Dimensions of thinking and cognitive instruction* (pp. 15–51). Hillsdale, NJ: Erlbaum.

Pascarella, E. T., Walberg, H. J., Junker, L. K., & Haertel, G. D. (1981). Continuing motivation in science for early and late adolescents. *American Educational Research Journal, 18,* 439–452.

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82,* 33–40.

Rohrkemper, M., & Corno, L. (1988). Success and failure on classroom tasks: Adaptive learning and classroom teaching. *Elementary School Journal, 88,* 297–312.

Rosenholtz, S. R., & Rosenholtz, S. J. (1981). Classroom organization and the perception of ability. *Sociology of Education, 54,* 132–140.

Rosenholtz, S. J., & Simpson, C. (1984). The formation of ability conceptions: Developmental trend or social construction? *Review of Educational Research, 54,* 31–63.

Ryan, R. M., Connell, J. P., & Deci, E. L. (1985). A motivational analysis of self-determination and self-regulation in education. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 2, pp. 13–51). San Diego, CA: Academic Press.

Ryan, R. M., & Grolnick, W. S. (1986). Origins and pawns in the classroom: Self-report and projective assessments of individual differences in children's perceptions. *Journal of Personality and Social Psychology, 50,* 550–558.

Schunk, D. (1984). Self-efficacy perspective on achievement behavior. *Educational Psychologist, 19,* 848–857.

Schunk, D. (1989). Self-efficacy and cognitive skill learning. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 13–44). San Diego, CA: Academic Press.

Stigler, J. W., Lee, S., & Stevenson, H. W. (1987). Mathematics classrooms in Japan, Taiwan, and the United States. *Child Development, 58,* 1272–1285.

Stipek, D. J., & Daniels, D. H. (1988). Declining perceptions of competence: A consequence of changes in the child or in the educational environment? *Journal of Educational Psychology, 80,* 352–356.

Stipek, D. J., & Kowalski, P. S. (1989). Learned helplessness in task-orienting versus performance-orienting testing conditions. *Journal of Educational Psychology, 81,* 384–391.

Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of Educational Psychology, 71,* 3–25.

Weiner, B. (1986). *An attributional theory of motivation and emotion.* New York: Springer-Verlag.

Weiner, B. (1990). History of motivational research in education. *Journal of Educational Psychology, 82,* 616–622.

Weinstein, R. S. (1989). Perceptions of classroom processes and student motivation: Children's views of self-fulfilling prophecies. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 187–221). San Diego, CA: Academic Press.

Weinstein, R. S., Marshall, H. H., Brattesani, K. A., & Middlestadt, S. E. (1982). Student perceptions of differential teacher treatment in open and traditional classrooms. *Journal of Educational Psychology, 74,* 678–692.

Wentzel, K. R. (1989). Adolescent classroom goals, standards for performance, and academic achievement: An interactionist perspective. *Journal of Educational Psychology, 81,* 131–142.

Wentzel, K. R. (1991). Social competence at school: Relationship of social responsibility and academic achievement. *Review of Educational Research, 61,* 1–24.