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Classroom Applications of Cognitive Theories of Motivation

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This article examines cognitive theories of motivation and their application to classroom experiences of students and teachers. Students' explanations of their school experiences are considered within the frameworks of expectancy × value theory, self-efficacy theory, goal orientation theory, and attribution theory. These same theories are used as lens through which teachers' classroom behaviors are viewed. Suggestions are offer for incorporating cognitive theories of motivation into pre-service and in-service programs for teachers.

KEY WORDS: cognitive theories of motivation; student effort and achievement; teacher self-efficacy; classroom interactions.

INTRODUCTION

The question of why some students attain educational outcomes deemed important by schools and the larger society and others do not has interested teachers, psychologists, and educational reformers for decades. With the current interest in America's schools and the achievement of American students, attention is once again focused on students and teachers and how they interact in schools. To some, the problems in schools lie with students, their attitudes toward the subject matter, and their willingness to expend effort on school tasks. To others, the problem is the teachers and their ability to interest and challenge students from diverse social and economic backgrounds. Others define the problem as an outgrowth of societal values and a lack of commitment to children and youth. To cognitive

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psychologists, the issue is one of students' and teachers' beliefs about the probability of students' success in school and how these beliefs influence teacher–student interactions and subsequently student achievement. It is the latter view of understanding student achievement-related behaviors that is addressed in this paper.

Attribution theories of motivation start from the premise that people try to bring order into their lives by developing personal, sometimes called implicit, theories about why things happen as they do in their lives and in the lives of others. Heider (1958) and Kelley (1967, 1972) were among the first to describe the causal attribution process that people use to explain events that occur in their lives. Weiner has related attribution theory to achievement motivation and (in this issue) presents two attribution theories of motivation: one, an intrapersonal theory, addresses how individuals explain their successes and failures; the other, an interpersonal theory, addresses how they explain other's successes or failures. Weiner uses the metaphor of person as scientist to illustrate the intrapersonal theory of motivation, and the metaphor of person as judge to illustrate the interpersonal theory of motivations. Teachers can use theories of motivation to analyze their interactions with students and to develop patterns of interactions with their students that may enhance their students' willingness to expand effort in achievement-related tasks.

STUDENTS' EXPLANATION FOR CLASSROOM OUTCOMES

In the context of person as scientist, children enter school and go about the task of discovering what it takes to be successful in the school environment. Based upon the judgments they make about the personal characteristics that are necessary for success in school, children begin to develop implicit theories about whether they can be successful in school. Once the theories are developed, students' classroom behaviors reflect their personal, implicit theories about the variables that produce success or failure in school. The attribution–behavior link is both subtle and complex (Cooper and Good, 1983), and researchers have studied the link between attribution and behavior in controlled settings (Ames, 1984; Nicholls, 1975) and in classroom settings. School-based research has shown that students who expect to do well in school earn higher grades than students with like ability who expect to fail (Battle, 1966; Eccles, 1983).

From an attributional perspective, if children enter school, experience success, and explain their success by ability and/or effort expended, they will most likely conclude that ability and effort are important to success in school, and that they can, with the right combination of effort and ability,

be successful in school. The process of discovering how much effort one needs to expend to achieve a particular educational outcome is an ongoing process for most students. In the scientist metaphor, students are constantly in the process of (a) selecting among a diverse set of educational and personal goals, (b) collecting information about the task, either how to increase their mastery of the task or how they have performed on the task relative to the performance of others, and (c) making and testing their judgments about the amount of effort needed to achieve the goals. Within this view of person as scientist, it is possible to explain students' differential expectancies for success in different subject areas and with different teachers as well as to explain changes in students' expectancy for success over time as the stimulus demands of the school environment change.

STUDENTS' WILLINGNESS TO EXPEND EFFORT ON SCHOOL TASKS

Several theories have been developed to explain differences in students' willingness to expend effort in school. Most of these theories view differences in effort expenditure in relationship with ability and, in some cases, task difficulty as explaining differences in student achievement. Furthermore, differences in effort expenditure are postulated to be related to differences in students' confidence in their ability to perform well in school (Feather 1969; Pintrich and De Groot, 1990), their self-efficacy (Bandura 1977, 1988), their goal orientations (Dweck, 1986, Nicholls, 1984), the differentiated concept of ability that emerges with age (Nicholls, 1978; Nicholls and Miller, 1983), and their attributions for success and failure at academic tasks (Weiner, 1979, 1986). Each of these factors will be discussed in the following sections of the paper.

EXPECTANCY OF SUCCESS

Expectancy $\times$ value theory postulates that the degree to which students will expend effort on a task is a function of (a) their expectation they will be able to perform the task successfully and by so doing obtain the rewards associated with successful completion of the task and (b) the value they place on the rewards associated with successful completion of the task (Feather, 1969). The model assumes the amount of effort invested is a product of the expectation of success and the value of the reward. Effort will not be expended if the reward for completing the task has little or no value to the student. Likewise, a task that has a valued reward associated

with it will not be attempted by students who do not expect they will be able to performance the task successfully.

Take the case of a group of students who have been assigned a set of complicated problems in mathematics. Assume the students like mathematics and have a history of success in math courses. These students expect to complete the assignment successfully and to reap the rewards of success on the assignment. The rewards may be external such as a high grade or internal such as a sense accomplishment and/or pride associated with completing a difficult task that others are not able to complete as quickly or as easily as they are. These students will expend maximum effort on the assignment. Now, consider a second group of students who have been given the same assignment. These students do not have a history of success in mathematics and find completing math assignments to be time-consuming and difficult. These students expect to complete the assignment but not necessarily to earn a high grade. For these students completing the assignment will eliminate the possibility of failing the assignment and the external and internal consequences of receiving a failing grade. If the value placed on the removal of the negative consequence of failure is high, these students will attempt and complete the assignment even if they do not expect to perform well. However, they are unlikely to expend maximum effort on the assignment. Finally, consider a group of students who have a history of difficulty in school and for whom passing grades in mathematics seem to them to be out of their reach. These students may not even attempt any of the problems even those for which they might be able to earn partial credit. These students may value the external rewards of school such as good grades and approval from teachers. However, they do not expend effort because the value they assign to the expectation of success in the expectancy/valance equation is 0.

Vollmer (1986) tested the central idea of effort calculation theory that individuals calculate expectancies for different possible levels of effort expenditure based upon perception of task difficulty and personal ability. Data about past achievement, perceived ability, time spent studying for an exam, effort expenditure on a course exam measured as number of words in an essay, expected grade, and actual grade were collected from 145 undergraduate psychology students. Path analysis indicated that time spent studying for the exam and perceived ability were significant predictors of expected grade. When past achievement, time spent preparing, and perceived ability were controlled, expected grade predicted actual grade. Contrary to theory, expected grade and effort expended on the exam showed only a weak relationship. Vollmer notes that the measure of effort expenditure, number of words in the exam response, may have been confounded by students' prior knowledge.

Pintrich and DeGroot (1990) found that seventh graders who valued achievement tasks—that is they believed the tasks were important and interesting—reported higher use of cognitive and self-regulation strategies. Level of strategy usage and self-regulation of study behaviors, in turn, were significantly correlated with student achievement measures. Value assigned to the task was correlated with higher achievement when a simple linear regression was computed, but not when a multiple regression analysis that included level of strategy usage and self-regulation of study behaviors was conducted. The authors concluded that the value seventh-grade students assigned to seat work, exams, and essays influenced their willingness to engage in cognitive and self-regulation strategies that were in turn related to higher classroom achievement.

SELF-EFFICACY

Bandura's (1977, 1988) social learning theory also offers explanations for differences in the amounts of effort students expend on school tasks. Bandura's theory rests on two premises. One is that students make personal interpretations of their past accomplishments and failures and set goals based upon these interpretations. According to Bandura, people tend to avoid situations they believe exceed their capabilities, but undertake and perform with assurance those tasks or activities they judge themselves capable of accomplishing successfully. The second premise is that students set individual goals that become their personal standards for evaluating their performance. Self-satisfaction is the reward for goal attainment, and commitment of effort necessary to attain the goal is the means by which people avoid the discontentment associated with below standard performance. According to Bandura, internal rewards for goal attainment can be more powerful influences on effort and achievement than external rewards such as praise or grades.

Individuals' beliefs about their abilities make up their sense of self-efficacy. Self-efficacy beliefs, according to Bandura, are important determinants of whether individuals will expend effort on a task and persist in the face of difficulty. Persons with high self-efficacy attempt tasks and persist even if tasks are difficult. Persons with low self-efficacy expend minimum effort and, in many cases, give up easily. Bandura distinguishes between outcome expectations and efficacy expectations. Outcome expectations are beliefs that particular courses of action lead to particular outcomes; efficacy expectations are beliefs that the person is capable of successfully completing the course of action that will lead to success. Students may believe that particular courses of action will lead to success in school, but not believe

that they are capable of successfully completing the actions required for success. Thus for any task, a person will have a high or low outcome expectation and a high or low efficacy expectation. Students who have high outcome expectations and high efficacy expectations approach academic tasks with confidence and persist even when the tasks are difficult because they believe that success is possible and that they personally have the abilities and skills needed to be successful. Bandura (1993) argues that stronger self-efficacy beliefs are associated with higher goals and firmer commitment to attaining the goal. Students with low efficacy expectations (i.e., self-perceptions of low ability) are easily discouraged by failure and decrease effort expenditures when confronted by difficult tasks.

Students develop outcome and efficacy beliefs associated with success in school. For example, students may accept a teacher's statement on the first day of class that everyone who works hard can be successful in class and have initial high outcome and efficacy expectancies for the class. However, as the class progresses, students receive feedback on their performance. As a result of the feedback, some students may begin to change their self-efficacy expectancies to believe that, while it is possible for students to be successful in class, they personally do not have the skills, abilities, and/or work ethic needed to be successful. These students who have high outcome expectancies and low self-efficacy expectancies may begin to decrease their effort expenditures over the course of the school year. Likewise, students may enter classrooms with low outcome expectancies; they may not believe, for example, that a factor such as effort expenditure determines success in school. Teachers' attempts to convince them they should expend effort and persist when schoolwork becomes difficult are not effective. These students do not believe that expending effort will lead to success in school, and for this reason are unwilling to put effort into their school work.

According to Bandura, people develop their personal sense of efficacy from four sources: (a) performance accomplishment, (b) observation of the performance of others, (c) verbal persuasion and related types of social influence, and (d) states of physiological arousal from which they judge personal capabilities and vulnerability (Bandura, 1982). Students' efficacy expectations are most strongly influenced by mastery experiences (Bandura, 1977). When students master a task, their expectation that they will master similar tasks in the future increases. However, while success generally contributes to enhanced efficacy expectations, attributions of success to ease of the task or help from others may not lead to increased efficacy expectations. For efficacy expectations to be enhanced by mastery or success on a task, success on the task needs to be attributed to ability or effort. Therefore, teachers assigning students easy tasks or assisting them to com-

plete tasks that they could not complete independently will not necessarily enhance students' efficacy expectations.

Research with middle school students suggests that the relationship between efficacy and student achievement occurs through the relationship between efficacy and level of students' cognitive engagement. In a regression analysis of seventh-grade students' responses to the Motivated Strategies Learning Questionnaire, Pintrich and DeGroot (1990) found significant correlations between higher self-efficacy scores and higher performance on seat work, exams, and essays and between higher self-efficacy scores and increased use of cognitive strategies. However, when cognitive strategies were included in the multiple regression analysis, self-efficacy scores did not explain a significant proportion of the variance in achievement scores. The authors concluded, "Students who believed they were capable were more likely to report use of cognitive strategies, to be more self-regulating in terms of reporting more use of metacognitive strategies, and to persist more often at difficult or uninteresting academic tasks" (p. 37). The results of this study suggest that students who hold the outcome expectancy that effective study behaviors are related to higher achievement and who believe that they can personally implement these effective study behaviors are more likely to use cognitive strategies that in turn lead to higher achievement outcomes.

For the classroom teacher, the initial task is to establish the means–end belief (Skinner, 1996) that effective study behaviors lead to high achievement. Once the outcome expectancy has been established, the task becomes one of teaching students that they can implement the desired study behaviors and that doing so will increase their achievement. Control of the difficulty of the task and the amount of effort needed for a successful achievement outcome is critical to developing outcome and efficacy beliefs that promote achievement.

GOAL ORIENTATION

Dweck (1986) describes two types of achievement goals and proposes that students' goals interact with their self-efficacy beliefs and influence the amount of effort they expend on school tasks. Performance goals (also labeled ability-focused or ego-involved goals by Nicholls, 1984) emphasize positive evaluations from others; learning goals (also termed task-focused goals by Anderman and Maeher, 1994) focus on gaining new skills and knowledge even if failures occur during the process. Students with high self-efficacy, irrespective of goal orientation, expend effort as tasks become more difficult or if they experience failure. Students with low self-efficacy

have different patterns of persistence depending upon their goal orientation. Students with performance goals are most likely to interpret failure as a sign of low ability and to withdraw effort. Students with learning goals see failure as a cue to change their strategy for completing the task and increase their efforts. The increased effort often enables students with learning goals to improve their performance (Elliot and Dweck, 1988).

Research on the relationship between efficacy expectations and effort expenditure has been conducted in controlled settings (Ames, 1984; Nicholls, 1975) and in classroom settings. MacIver *et al.* (1991) studied high school students' effort expenditure over the course of one semester. They concluded "change in ability perceptions (assumed to reflect self-efficacy beliefs) has an important direct effect on changes in effort." Fleming (1995) collected information about self-efficacy, goal orientation, and effort expenditures from undergraduate calculus students at a midwestern university. When learning and performance goal scores were compared, the interaction between goal orientation and self-efficacy was a significant predictor of student effort at the midterm, and the learning goal by self-efficacy interaction was a significant predictor of effort at the final. Students with higher self-efficacy who reported learning goals expended higher amounts of effort. Fleming also classified students as having either learning or performance goals. When goal orientation scores were dichotomized, only self-efficacy scores were significant predictors of student effort.

CONCEPTIONS OF ABILITY AND AGE

Young children view ability as developing through effort and learning, and they attribute success to effort rather than ability. For them, mastery of tasks is considered possible even in test-like situations where normative comparisons are made (Butler, 1989). By age 7 or 8, children begin to understand normative comparisons and the relationship between effort expenditure and ability. By the time students enroll in middle schools, they recognize a differentiated concept of ability and come to realize that differences in ability place limits on the outcomes that can be expected from differential expenditures of effort. When a differentiated concept of ability interacts with a performance or ego-involved goal (i.e., the goal is to demonstrate superiority in performance to others), students with low perceptions of ability may reduce effort to maintain a sense of self-worth. On the other hand, if the goal is to acquire skills or mastery, students of different ability levels may continue to expend effort to achieve mastery or acquire new skills. Jagacinski (1992) reviews experimental studies where

effort expenditure was increased or maintained on tasks presented as an opportunity to learn and acquire new skills.

Butler (1999) reports the results of two studies, one with students in grades four and eight and a second with students in grades five and six, in which she studied the relationships between learning environment (task involved or ego involved), type of information requested by students (task information, objective information, or normative information), performance, and intrinsic motivation. As predicted, she found that eighth-grade students in the task-involving condition requested information about the best solutions to the task more frequently than normative information about their individual performance on the task and that their problem-solving and intrinsic motivation also improved. Contrary to expectation, she found that fourth-grade students in both the ego-involved and task-involved conditions requested normative information. Furthermore, the requests for normative information were not associated with performance deterioration following information indicating low performance. Butler attributes the difference in the responses of students at middle childhood and early adolescence to the task-involved and ego-involved conditions to the fact that the concept of ability as capacity develops in early adolescence.

By creating classrooms that engage students in task-involved lessons and by encouraging students to compete with themselves rather than others, elementary teachers may prepare students with different levels of ability to accept that different levels of effort are required for them to achieve the same level of achievement. When students, particularly those with lower levels of ability, enter adolescence, these classroom experiences may provided some insulation for the normative comparisons that occur in all school settings. If middle and secondary teachers continue to create task-involved lessons, adolescents may not view school tasks as a measure of their ability and withdraw effort to protect their views of themselves as capable individuals.

ATTRIBUTIONS AND EFFORT EXPENDITURE

Weiner (1979, 1986) postulates that differences in effort expenditure by students of similar age can be explained by differences in how the students explain their school-based successes and failures. As Weiner and his colleagues (Weiner *et al.,* 1972; Weiner and Kukla, 1970) have shown, successful students explain successful achievement outcomes in terms of ability and effort. They explain failure by lack of effort or unstable external factors. Ability is an internal, stable, uncontrollable factor. Effort is an internal, unstable, controllable factor. Attributing successful outcomes to

ability and effort brings with it feelings of pride and continued expectations for success in school. Attributing academic failures to lack of effort permits students to maintain their views of themselves as competent students because level of effort expenditure is under the control of students. Students who fail and explain their failure by lack of interest in the task or by limited time to devote to the task (i.e., the value assigned to successful completion of the task is low) can maintain their views of themselves as competent, because they could have been successful if they had been interested in the task and expended the necessary effort.

Although attribution theorists assign effort a pivotal role in achievement outcomes, attributing either success to effort or failure to lack of effort is not without problems. As Covington and Omelich (1979) have explained, attributing either success or failure to effort is a ''double-edged sword.'' On one hand, expending effort and being successful brings a sense of accomplishment and pride. However, having to expend extraordinary effort to be successful implies that one has lower ability than persons who can successfully complete the task with limited or moderate effort expenditures. Students who believe they lack the ability to complete academic tasks successfully may not expend effort because failure would be a public admission of low ability. Covington and Omelich explain that not trying and failing is ''not really failing,'' because ''true failure'' occurs only in the case where an individual tries hard to accomplish a task and fails to do so. They also explain failure resulting from lack of effort as an attempt to protect and preserve a sense of self-worth.

In the American culture, students often agree with the idea that the person who is ''really good at an academic or physical task'' is the one who can be successful with very little effort. Graham and Barker (1990) found a negative correlation between ability and effort for 11- and 12-year-olds. Students reasoned that ''if two students achieve the same outcome, the more competent one would not have to work as hard as the less competent one.'' Nicholls (1984) points out that adolescents define high ability in relation to others. Demonstration of high ability requires that students succeed on tasks where others fail and that they succeed while expending little effort at a task for which others had to expend a lot of effort to succeed. For many adolescents, having to expend large amounts of effort to accomplish an academic or physical task is taken as evidence that they are not very smart or that they are not very physically gifted. The relationship between amount of effort expended and sense of accomplishment and pride is not a linear one.

Jagacinski and Nicholls (1990) tested the hypothesis that college students would choose a deliberate effort reduction strategy to attempt to convince others that lack of effort rather than low ability explained their

inability to complete a task. In three experiments, they asked college students in an introductory psychology class if they would use a deliberate effort reduction strategy if they wanted other students to view them as intelligent. They found students did not see effort reduction as a viable strategy for them personally, but they thought other students might use such a strategy. The authors note that trying to convince others of one's ability by a deliberate reduction of effort strategy means that the person employing the strategy has to acknowledge low ability as the cause of probable low performance.

Because the relationship between effort expenditure, success, and feelings of pride is complex, teachers and parents need to recognize that telling students to "try harder" and rewarding them for expending effort will not necessarily encourage students to expend additional effort. The task demands, the value of the rewards associated with the task, students' outcome and efficacy expectations, goal orientations, levels of task involvement, age, and attributions for success and failure on school-related tasks all interact to explain why some students are willing to expend effort and others are not.

TEACHERS' EXPLANATIONS FOR CLASSROOM OUTCOMES

The motivational theories that form the basis for students' implicit theories about the factors that explain success in school also form the basis for teachers' implicit theories of the factors that explain teachers' success, typically defined as the ability to promote high levels of achievement among diverse groups of students. Over the course of their teaching careers, teachers develop outcome expectations (beliefs about whether all students can learn the material taught in their classrooms or their disciplines) and efficacy expectations (beliefs about their personal ability to assist children from diverse backgrounds to achieve the academic standards of the school) (Ashton and Webb, 1986; Gibson and Dembo, 1984). Teachers' outcome and efficacy expectations exert strong influence on their classroom interactions with students and on their willingness to expend effort working with students with different abilities and different levels of interest in school tasks (Brophy and Good, 1970; Eccles and Wigfield, 1985). Like students, teachers behave in ways that will enhance their views of themselves as competent teachers.

For students to change their classroom behavior, teachers may have to first change their teaching styles, and for teachers to change their teaching behaviors, the structure of schools may need to be altered to encourage and facilitate professional development of teachers (Carnegie Council on

Adolescent Development, 1989; Louis *et al.,* 1996). The organization of the school day into short periods of time devoted to unrelated subjects and a division of labor that assigns elementary teachers responsibility for 25–30 students for an entire day and secondary teachers responsibility for groups of 25–30 students for shorter periods of time prevents the sharing of information and contributes to teacher isolation (Little and McLaughlin, 1993; Lortie, 1975). Teachers rarely observe their fellow teachers working, and thus have limited opportunities to observe the effectiveness of their personal teaching routines in comparison to those of their colleagues. Staff development activities introduce teachers to new teaching strategies, but procedures are rarely in place for teachers to practice the strategies and to receive feedback or coaching. Current recommendations (Erb, 1987; Powell and Mills, 1994;) to organize middle and high school teachers into interdisciplinary teams represents an attempt to change how schools are organized and how teachers teach and interact with students.

Organizing middle and secondary schools into interdisciplinary teams encourages teachers to help students see the connections between discipline-based knowledge. It encourages team planning of lessons and provides an opportunity for teachers to observe each other's teaching and management routines. It also provides an opportunity for teachers to become better acquainted with the needs and achievements of smaller group of students, and for students to interact with smaller groups of students within a large middle or high school.

A qualitative study conducted by Ashton and Webb (1986) found teachers working in a middle school setting in contrast to a junior high setting had higher expectancy for positive student outcomes, higher personal teaching efficacy, and were more satisfied with teaching. However, they also reported that they had more difficulty with collegial relationships than teachers in a junior high setting reported. The teaming concept common to middle school settings emphasizes team teaching, common planning time for teachers, and collective responsibility for student achievement.

Expectancy $\times$ value theory suggests that teachers' willingness to change their teaching practices is related to teachers' expectations that they will be able to implement new practices effectively, that they will be rewarded for making the changes in their classroom practices, and that they will value rewards they receive. Teachers' willingness to expend the effort needed to maintain highly interactive, individualized learning activities (e.g., cooperative groups, cross-age peer tutoring, problem-based learning) is related to teachers' beliefs that such activities enhance student learning, that they personally have the ability to implement such activities effectively, and that they will be rewarded for the hard work it takes to implement these types of instructional strategies. Furthermore, teachers

would have to set personal goals that emphasize high levels of achievement for all students. Such goals, from Bandura's efficacy theory, would be the variable that would make a teacher's sense of personal satisfaction conditional upon high levels of achievement for all students. Many states are currently developing statewide goals and accountability systems that target high levels of achievement for all students. However, for such endeavors to be successful, it would seem that teachers rather than policymakers need to adopt a goal of high achievement for all students. Teachers' willingness to adopt such goals is related to the teachers' outcome and efficacy expectations.

TEACHERS' EXPLANATIONS OF STUDENTS' ACHIEVEMENT PATTERNS

Teachers also construct explanations for why students are successful or unsuccessful in school. Like students, teachers see ability and effort as important determinants of students' success in school. Teachers also view students' entry level skills (i.e., basic language and math skills needed for success at different grade levels) and students' home environments as major determinants of students' classroom academic and social behaviors (Armor *et al.,* 1976). Teachers who view student ability, level of effort expenditure, skill level, and home environment as important determinants of academic success, and at the same time as essentially stable factors, may develop low outcome expectancies for their students and for themselves. Bar-Tal and Guttmann (1981) compared the causal attributions of students, parents, and teachers for students' academic achievement as indicated by students' fall trimester grades. Teachers viewed fewer students as failing than did parents and students, but rated students' probability of future success as lower than did either the parent or the student samples. Furthermore, teachers judged lack of parent help to be more responsible for student failure than student factors, external factors, or teacher factors.

Parents and students view low ability as one of the principal casual factors for failing grades (i.e., students fail because they can't do the work). Teachers distinguish between low achievement that occurs because students can't do grade level work and low achievement that occurs because students won't complete required work. Teachers view level of effort expenditure and interest in the task as important to success in school and in life. Thus teachers who attribute student low achievement to lack of interest, low levels of effort of expenditure, or lack of parent support are not likely to view these students as failing in sense that they lack the ability to complete the schoolwork. However, they are likely to assign a low probability of

future success for these students because they view the factors that explain their low achievement as stable factors.

A recent review of teacher efficacy literature (Tschannen-Moran *et al.,* 1998) summarizes studies that have found a relationship between student achievement and teachers' general and personal teaching efficacy. Two of these studies (Anderson *et al.,* 1988; Ross, 1992) conducted with elementary students in Canadian schools compared the achievement test scores of students taught by teachers with different levels of general and personal teaching efficacy. In general, students taught by teachers with higher scores on the personal teaching efficacy measure earned higher scores on end-of-year, norm-referenced measures of achievement. Statistically significant differences in achievement scores were found for different subject areas at different grade levels.

The explanations teachers construct for student success or failure influence how teachers interact with their students. Central to teachers' interactions with students is the controllability dimension of the attributions teachers make (Weiner, 1994). The controllability dimension of attributions is related to willingness to help, to liking and positive affect, and to the emotions of anger and sympathy (Weiner, 1979, p. 15). In general, if a teacher views student outcomes as outside the control of the student, the teacher is likely to help, to feel sympathy, and to like and interact positively with the student. Thus poor achievement outcomes attributed to students' low ability are likely to bring feelings of sympathy, acts of kindness toward the student, and expressions of willingness to help from teachers, and, in some cases, other students. However, poor achievement outcomes attributed to low expenditures of student effort lead teachers, and fellow students, to express anger, to punish the student, and to withhold help. Similar affective responses are given to families who teachers believe should exert more control over their children's behavior or should be more supportive of school personnel's suggestions.

Analysis of teachers' and college students' helping behaviors suggests that both teachers' and students' willingness to help is related to teachers' perception of the causes of students' need for help. Brophy and Rohrkemp (1981) found that teachers reported a willingness to help students when the student's need for help resulted from low ability or shyness and an unwillingness to help when the need for help occurred because of inattention or lack of effort. Weiner found similar results with college students who were asked if they would be willing to share their class notes with a student who had missed class. Students reported a willingness to share notes if uncontrollable factors prevented the student from attending class and a unwillingness to share notes if controllable factors prevented the students from attending class.

Baker and Graham have analyzed how helping behavior may convey to others the perception of low ability. They have shown in two sets of experiments how teachers' behaviors such as praise for success on easy tasks, absence of blame for failure, and expressions of sympathy for poor performance (Baker and Graham, 1987) and provision of unsolicited assistance (Graham and Baker, 1990) may convey perceptions of low ability. Graham and Baker (1990) created two videos one with a male peer and one with a female teacher in a classroom where two 10-year-old boys were completing a set of 10 math problems. The teacher or peer moved around the room monitoring student work and offered unsolicited assistance to one boy. After the target boys completed the problems, the teacher scored the problems and announced that both boys had answered 8 of the 10 problems correctly. Elementary students ranging in age from 5–12 watched the videotapes and rated the helped and nonhelped boys on ability and effort. Analysis of variance for four grade level groups yielded a significant main effect for ability. The student receiving unsolicited help from either the teacher or the peer was judged to have lower ability than the student who received no help. Ratings of the role of effort and ability in achievement varied across age groups, and the authors concluded that unsolicited assistance may convey low ability to children as young as 6.

SOURCES OF CONFLICT BETWEEN TEACHERS AND STUDENTS

The importance teachers place on student effort contributes to conflict between teachers and students. One source of conflict occurs when teachers do not agree with students' judgments about the appropriate amount of effort to expend on school tasks. Teachers value effort expenditure even if students are not successful. Students who do not try because they fear failure are placed in a very difficult position. Their behavior angers teachers; however, it protects them from the shame that is associated with expending maximum effort and failing and the consequent attribution of low ability and expectation of continued failure. Under this scenario, students select between two undesirable outcomes: experiencing teachers' anger and neglect or experiencing the personal shame associated with public displays of effort expenditure followed by failure.

Challenging two widely held beliefs may provide a point of entry into this conflict. One is the belief that having to expend high levels of effort means low ability; the other is the belief that ability is fixed rather than malleable (Dweck, 1985). If teachers select tasks that students can achieve by expending effort and if they encourage students to set learning or task-

focused goals, students may learn that effort as well as ability contributes to success in school. Defining success as improvement or acquiring knowledge and skills that one did not have previously, rather than as performing at a particular level or as well as most other students in the classroom, may encourage students to expend effort, and by so doing, to learn through personal experience that it is possible for them to achieve success in school (Ames and Archer, 1988; Fuchs *et al.,* 1997).

Classrooms are filled with students who teachers believe could be successful if these students would expend even a moderate amount of effort. The unwillingness of students to expend effort following failure on tasks that they could accomplish successfully with a moderate amount of effort has been labeled "learned helplessness" (Dweck, 1978; Eccles, 1983). Students with a learned helpless orientation believe that they lack the ability to complete the task and that their ability is fixed (Dweck, 1985).

Attribution retraining programs have been developed that focus on teaching students that effort rather than ability determines success in school (i.e., that students control the amount of effort expended and that effort expenditure is causally related to achievement outcomes). See Chapin and Dych (1976) for an attribution retraining program for elementary students and Fosterling (1985) for a review of attribution retraining programs.) Skinner (1996) offers a framework for understanding the concept of control or causality and distinguishes among agents of control, means of control, and ends of control. She notes, "in attempts to improve attributions, it is essential to determine which set of beliefs need to be adjusted: causal beliefs (as implied by attribution theory) or beliefs about the competence of self" (p. 558) (as considered in efficacy theory). From Skinner's framework, if one attempts to increase individuals' sense of control through interventions such as attribution retraining, the intervention must be tailored to changing specific beliefs such as a means–ends belief that level of effort causes academic success or failure.

Knowledge of motivation theory and experience in creating classroom environments that foster student motivation and engagement in the learning process need to be an important component of both pre-service and in-service educational programs if teachers are to develop strong efficacy beliefs and also to help their students develop strong efficacy beliefs. Ames (1990) offers five recommendations to teachers for enhancing student motivation, one of which relates to attribution training. She cautions teachers against admonishing students to try harder. Such admonitions, she notes, are counterproductive for young children who believe they always try hard and for older students who are discouraged rather than encouraged by a belief that maximum effort is required for success. Instead, she recommends that teachers structure their classrooms to maximize task involvement. The

tasks teachers select, the feedback they provide to students about the students' mastery of the tasks, and the evaluation systems teachers use must emphasize engagement in learning and mastery of tasks rather than performance relative to others.

Thorkildsen and Nicholls (1998) studied the motivational orientation of individual students and classes of students in a large-scale study of 30 fifth grade classrooms in rural and small urban areas. They concluded that classrooms, like students, have motivational orientations, and that children, regardless of their personal motivational orientation, see school climates as competitive. If classrooms in the study typify classrooms throughout the United States, it would seem that teachers either individually or collectively find it easier to create or feel that society demands that they create ego-involved rather than task-involved classrooms.

A second source of conflict occurs when teachers and students disagree on "acceptable" reasons for not expending effort. Students often explain failure to expend effort by lack of interest in the task, task difficulty, or external factors (i.e., the book needed to write a report had been checked out the day the student went to the library). The students essentially argue that the task was not interesting to them, that the reward for mastering the material was unappealing to them, or that external factors beyond their control prevented them from completing the task as they wished to do. Teachers, on the other hand, do not want to think of themselves as presenting uninteresting, unimportant material, and so they are quick to point to the students' lack of experience and perspective on the importance and value of the rewards associated with mastering class work. Teachers are also reluctant to permit students to "blame" external forces because they believe such explanations discourage students from accepting personal responsibility for their behavior.

Teachers who view students as uninterested learners are often reluctant to expand maximum effort to increase students' interest in the coursework, because failure to develop student interest would signal poor teaching skills. Tschannen-Moran (1998) note that "one of the things that makes teacher efficacy so powerful is its cyclical nature" (p. 233) "Lower efficacy leads to less effort and giving up easily, which leads to poor teaching outcomes, which then produce decreased efficacy" (p. 234). When faced with students who appear uninterested, and unwilling to invest effort in schoolwork, it is often easier for teachers to protect their sense of personal teaching efficacy by altering their outcome expectancies. It is comforting to believe that one's lack of success with students does not reflect negatively on the teacher, because no other teacher would be able to interest these students in the task. To fail at a task that no teacher or only very few teachers could accomplish, does not bring the emotional consequence of shame that "true"

failure brings. Thus, the students and their teachers enter into an agreement where neither tries very hard and each blames the other for students' poor academic attitudes and performance.

For this cycle of blame to be broken, it is necessary that either the teachers or the students change their outcome and efficacy expectations. The starting point for the change needs to come from changes in teachers' efficacy expectations. Teachers with high level of personal teaching efficacy believe that they have the ability to interest and involve students in schoolwork (Ashton and Webb, 1986; Gibson and Dembo, 1984). To develop this belief system, teachers need to be able (a) to implement a wide array of teaching routines, (b) to select and modify curriculum so that students with different levels of ability can successfully complete classroom tasks by expending a moderate amount of effort, and (c) to create classroom communities that facilitate high levels of achievement by all students (Davis and Thomas, 1989; Levine and Lezotte, 1995; Prawatt, 1992). Developing high efficacy beliefs in teachers seems to be prerequisite to developing strong efficacy beliefs in their students.

The standards movement currently in place in education may be working at cross-purposes with efforts to develop strong efficacy and outcome expectations among teachers and their students. Teachers whose students fail to achieve standards are placed in the position of attributing student failure to variables over which they have no control (e.g., student ability, low levels of student effort, nonsupportive families, school district policies that are difficult to alter, and/or lack of community support) in order not to attribute student failure to inadequate personal teaching skills. If failure to achieve standards is attributed to stable, external factors, there is little motivation for teachers to change their teaching strategies or to expend additional effort in working individually with students. If standards can reflect improvement and if building administrators recognize teachers' efforts to implement interactive, individualized teaching strategies, teachers may adopt teaching strategies that increase the likelihood of improved student achievement.

SUMMARY

Cognitive theories of motivation offer valuable schemas for understanding and, in some cases, changing the interaction patterns of teachers and students. Teachers can examine their own beliefs about students and why students succeed or fail at the tasks that the teacher assigns. Based upon these analyses, teachers can make changes, if necessary, in the tasks they assign, the learning environments they create, and their verbal interac-

tions with their students. Teachers can work together to develop school communities that will encourage students to expend effort on schoolwork and to value achievement. Teachers can talk with students about the important role that effort plays in school success, and they can encourage students to evaluate their success and failures in relationship to the amount of effort they expended. Finally, teachers can encourage students to develop learning rather than performance goals and to expend effort to attain their goals.

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