

Effects of Classroom Structure on Student Achievement Goal Orientation

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ABSTRACT The authors assessed how classroom structure influenced student achievement goal orientation for mathematics. Three elementary school classes were assigned randomly to 1 classroom structure condition: token economy, contingency contract, or control. Students in each condition were required to set individual achievement goals on a weekly basis. The authors assessed differences in goal orientation by comparing the number of learning vs. performance goals that students set within and across classroom structure conditions. Results indicated that students in the contingency-contract condition set significantly more learning goals than did students in other classroom structure conditions. No significant differences were found for performance goals across classroom structure conditions. Within classroom structure conditions, students in the contingency-contract group set significantly more learning goals than performance goals, whereas students in the token-economy condition set significantly more performance goals than learning goals.

Key words: classroom structure, goal orientation, mathematics

Over the last 35 years, considerable research and writings have addressed the relationship between the classroom learning environment and student goal orientation. However, only a paucity of research has focused on establishing a link between the classroom evaluation structure, differences in students' goal orientation, and classroom strategies for the creation of specific goal orientations within the classroom (Ames, 1992c). In this study, we addressed those issues.

Students' goal orientation has been linked to contrasting patterns that students exhibit when they attend to, interpret, and respond to academic tasks (Dweck & Leggett, 1988). One leading model of goal orientation focuses on two goal orientations—performance goals and learning goals. According to the model, students who set performance goals are focused on demonstrating their abilities to outside observers such as teachers, whereas students who set learning goals seek to increase their competence regardless of the presence of outside observers (Kaplan & Migdley, 1997). Researchers have found consistent patterns of behavior that are related directly to the types of goals that

students establish (Dweck, 1986; Nichols, 1984; Schunk, 1990).

Generally, researchers have concluded that a negative relationship exists between performance goals and productive achievement behaviors (Greene & Miller, 1996; Zimmerman & Martinez-Pons, 1990). Adoption of a performance goal orientation means that ability is evidenced when students do better than others, surpass normative-based standards, or achieve success with little effort (Ames, 1984; Covington, 1984). Consequently, those students often avoid more difficult tasks and exhibit little intrinsic interest in academic activities (Ames, 1992c; Dweck, 1986; Nicholls, 1984). Students with a performance goal orientation can become vulnerable to helplessness, especially when they perform poorly on academic tasks. That result occurs because failure implies that students have low ability and that the amount and quality of effort expended on tasks is irrelevant to the outcome (Ames, 1992c).

In contrast, researchers have consistently found evidence for a positive relationship between learning goals and productive achievement behaviors (Ames & Archer, 1988; Greene & Miller, 1996; Meece, Blumenfeld, & Hoyle, 1988). Students who are focused on learning goals typically prefer challenging activities (Ames & Archer, 1988; Elliot & Dweck, 1988), persist at difficult tasks (Elliot & Dweck; Schunk, 1996), and report high levels of interest and task involvement (Harackiewicz, Barron, & Elliot, 1998; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000). Those students engage in a mastery-oriented belief system for which effort and outcome covary (Ames, 1992a). For students who are focused on learning goals, failure does not represent a personal deficiency but implies that greater effort or new strategies are required. Such persons will increase their efforts in the face of difficult challenges and seek opportunities that promote learning (Heyman & Dweck, 1992). Overall, researchers have concluded that a learning-goal orientation is associated with more adaptive patterns of behavior, cognition, and affect than is a performance-goal orientation

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(Ames & Archer, 1988; Dweck & Leggett, 1988; Nicholls, Patashnick, & Nolen, 1985).

In several empirical studies, researchers have established a relationship between the salience of certain goal orientations and changes in individual behavior (Ames, 1984; Elliot & Dweck, 1988; Heyman & Dweck, 1992; Schunk, 1996). Previous laboratory studies have created learning and performance goal conditions by manipulating the instructions provided to children regarding the tasks at hand (Ames, 1984; Elliot & Dweck, 1988). Results from those studies indicate that children who participated in performance goal conditions, in which instructions made salient the external evaluation of skills and/or competitive goals, most often attributed their performance on tasks to ability. Those children also exhibited reactions that were characteristic of a helpless orientation, giving up easily and avoiding challenging tasks. In contrast, children exposed to learning-goal conditions, for which instructions focused on improving individual performance and further developing skills, typically attributed their performance to effort. Those children demonstrated mastery-oriented responses toward tasks by interpreting failures as opportunities to acquire information about how to alter their responses in order to increase their competence.

Schunk (1996) conducted a study in a classroom setting to investigate the influence of achievement goal orientation on the acquisition of fractions (Schunk, 1996). Similar to the laboratory studies, learning and performance goal conditions were established through a distinction in teacher instructions. Results indicated that students in the learning-goal condition had higher motivation and achievement outcomes than did students in the performance-goal condition. The results of that study suggested that varying goal instruction within the classroom can influence students' goal perceptions and achievement-related behavior on academic tasks.

Given that achievement goal orientation is an important predictor of student outcomes in educational settings, researchers must attend to the classroom environment variables that are necessary so that children orient toward a learning-goal orientation versus a performance-goal orientation (Church, Elliot, & Gable, 2001). Researchers have suggested that such variables as the instructional and management practices that teachers use can influence the type of achievement goals that students set (Ames & Ames, 1981; Kaplan & Maehr, 1999; Meece, 1991). One major element of instructional and management practices within a classroom is the structure of classroom evaluation that teachers use in their daily practices. A focus on the type of evaluation, that is, striving for personal improvement or performing to attain a teacher's goal for external reward may be related to students' goal orientation (Ames, 1992c).

Typical evaluation in elementary classrooms compares students against a normative standard, such as that required to pass a course or to receive a reward within a token econ-

omy system (Brophy, 1983). Token economy systems provide students with tangible reinforcers and external incentives for meeting normative standards. Although token economy programs have received empirical support for improving student behavior and academic responding in a variety of school subjects, this classroom structure can have paradoxical and detrimental effects when applied with no regard for the varying degrees of students' capabilities (Lepper & Hodell, 1989). For instance, a student who has a learning disability in mathematics will not be motivated by the same amount of tokens to complete mathematics assignments as other students in the same classroom who have average abilities in this subject. In addition, the type of evaluative structure that stems from a token economy tends to increase the perceived importance of ability and public performance in the classroom, which makes performance-goal orientation salient to students (Ames, 1992c).

To promote a learning-goal orientation, Ames (1992c) suggested a type of classroom structure in which student evaluation is based on personal improvement and progress toward individual goals. The use of contingency contracts as an evaluative tool likely would place emphasis on these variables. Contingency contracting creates an agreement for learning and performing between a student and teacher. Success is based solely on each student's individual performance, according to the goal that he or she sets (Piggott & Heggie, 1986). Contracting allows each student to consider his or her unique needs and competencies when setting goals and places responsibility for learning and performing on the student (Kurvnick, 1993). The use of contingency contracting has been an effective intervention for improving students' academic behavior in a variety of academic subjects (Murphy, 1988). It encourages students to become active participants in their learning with a focus on effortful strategies and a pattern of motivational processes that are associated with adaptive and desirable achievement behaviors (Ames, 1992c). One question that remains, however, is whether an intervention such as contingency contracting will lead to an increase in learning goals relative to performance goals. In this study, we addressed that question.

We manipulated classroom structures to assess the effects on student goal orientation. Each intact classroom was assigned randomly to either a token-economy classroom structure, contingency-contract classroom structure, or a control classroom structure. We assessed student goal orientation by comparing the number of learning and performance goals that students set according to the classroom-structure condition. On the basis of previous research, we hypothesized that the type of classroom structure would be linked directly to the achievement goals that students set. Our prediction was as follows: (a) The token-economy classroom structure would be related positively to student performance-goal orientation, (b) the contingency contract classroom structure would be related positively to student learning-goal orientation, and (c) the control classroom structure would be unrelated to student goal orientation.

Method

Participants

Students from three classrooms at a local elementary school participated in this study. Participants included 2 fifth-grade classes and 1 fourth-grade class. Each of the three intact classrooms was randomly assigned to one of the three classroom evaluation structure conditions. Twenty-five 5th-grade students were assigned to the token economy condition, 18 fourth-grade students to the contingency contract condition, and 28 fifth-grade students to the control condition.

Materials

Materials varied according to the classroom evaluation structure condition. The conditions are described in the following paragraphs.

Token economy. Students in this condition were given a contract that (a) described explicitly how tokens were earned and distributed and (b) listed the back-up reinforcers for which tokens could be exchanged. Students received a contract folder so that the contract could be kept at their desk at all times. Students also received a goals chart that was divided into two sections: token economy goals and individual goals. The token economy goals section listed the student behaviors that could earn tokens and the amount of tokens that each behavior was worth. The individual goals section allowed students to list weekly goals and long-term goals for mathematics. Other materials used for this condition included tokens, which were in the form of play dollars, and back-up reinforcers such as candy, pens, keychains, and computer time cards.

Contingency contract. Students in this condition were given a contingency contract that described the weekly process of meeting with the researcher to set and discuss mathematics goals. Students received a contract folder so that the contract could be kept at their desk at all times. Participants also received a goals chart in which they listed weekly and long-term goals for mathematics. Gold star stickers on the goals chart signified when a goal was met.

Control. Students in this condition received a goals chart identical to the one described in the contingency contract condition. No other materials were used in this condition.

Design

In the analysis in this study, we examined the effect of classroom evaluation structure on students' achievement goals. The independent variable in the analysis was classroom structure, which consisted of three levels: token economy, contingency contract, and control. The dependent variable was goal type (performance or learning goals) that students set for mathematics. We used a two-way analysis of variance (ANOVA) to analyze the data.

Procedure

Each of three intact classrooms was assigned randomly to one of three classroom evaluation structure conditions: token economy, contingency contract, or control. We applied those classroom evaluation structure conditions to mathematics. The mathematics instruction in each classroom was on grade level. Throughout the study, teachers in the participating classrooms continued to evaluate their students with a traditional grading system that included graded evaluation of mathematics classwork, homework, and weekly tests.

Student participants in each classroom structure condition completed a mathematics goal chart each week during a one-on-one meeting with the first author. The author assessed goals by defining them as performance goals or learning goals, according to Dweck's (1986) definitions. Further procedures were specific to the classroom structure condition. The treatments are described in the following paragraphs.

Token economy. The first author gave a contract to the students, which she discussed individually with each of them. When the student demonstrated an understanding of the terms of the contract, the student and author signed the contract. Reinforcement procedures were written in the contract and explained verbally by the author, as follows:

For the next six weeks you can earn school dollars for completing your math assignments and/or for making A's or B's on math assignments. For each assignment you complete, you will earn two school dollars. For every A or B you make on a math assignment, you will earn four school dollars. At the end of the five weeks, if you have an A or B average in math and/or have turned in all your math assignments, you will earn ten school dollars. These are the only behaviors for which you can earn school dollars. Your teacher will pay you the dollars you earn on a daily basis following math class.

Tokens were exchanged on a weekly basis when students met with the author. The process was explained to students as follows: "Once a week you can exchange your school dollars for computer time, pens, markers, keychains, notepads, or candy. You must earn at least ten school dollars in order to purchase an item."

A goals chart also was provided for the students in the token economy condition. At the top of the goals chart, target behaviors that could earn tokens were identified. Beneath the token economy goals, a section was provided in which students could write their own mathematics goals. During the weekly meeting time that students met with the author, they (a) traded tokens for back-up reinforcers, (b) received reminders of the target behaviors that could earn tokens, and (c) wrote individual mathematics goals on the goals chart.

Contingency contract. Students who participated in this condition received a folder with a contract provided by the author. The terms of the contract were presented verbally by the author, as follows:

TABLE 1. Means and Standard Deviations for Learning Goals and Performance Goals, by Classroom Structure

Classroom structure	Learning goals		Performance goals	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Token economy	.75	1.59	4.95	2.15
Contingency contract	14.27	3.98	5.55	3.95
Control	5.36	5.39	5.61	1.96

TABLE 2. Summary of Tukey Post Hoc Test for Classroom Structure-by-Goals Interaction

<i>Classroom structure results</i>	
Token economy	Performance goals > learning goals
Contingency contract	Learning goals > performance goals
Control	Performance goals = learning goals
<i>Goals results</i>	
Learning goals	Token economy < control < contingency contract
Performance goals	Token economy = control = contingency contract

Each week we will meet so that you can set goals for math. You will be allowed to set weekly goals and long-term goals. When we meet we will look over the goals you set for the previous week. We will identify the goals you have met and place a gold star beside them on your goals chart form. We will discuss the goals you did not meet and you can decide whether to set those goals again or set new ones.

Contracts were discussed individually with each student, and once the student demonstrated an understanding for the terms of the contract, the student and the author signed the contract.

Students in the contingency contract condition received a goals chart, which was divided into sections according to the week of the study. Below the weekly sections, a long-term goals section was provided. During the weekly meeting time, the previous week's goals were reviewed. Students received gold stars and positive verbal feedback, contingent on effort when they met a particular goal. Students then set weekly and long-term mathematics goals for the upcoming week.

Control. Students in this condition received an individual goals chart identical to the one used in the contingency contract condition. The author met one-on-one with students on a weekly basis so they could write short-term and long-term goals for mathematics on their goals chart. The students did not discuss their goals with the author. Furthermore, the students did not receive verbal feedback or external rewards for achieving their goals from the teacher or author. Thus, this condition simply served as a control for goal setting and time spent with the author.

Results

We computed an ANOVA by using a two-factor mixed design (classroom structure by goal type) to determine the

frequency of learning and performance goals set according to classroom structure condition. Table 1 shows the cell means for learning and performance goals that students set as a function of classroom structure. Results indicated a significant main effect for classroom structure, $F(2, 67) = 36.70, p < .0001$, as well as a significant classroom structure-by-goals interaction, $F(2, 67) = 31.35, p < .0001$.

We computed a Tukey post hoc test to determine the significant differences between classroom structure-by-goals on the ANOVA. A summary of post hoc results are shown in Table 2. In our post hoc analysis, we concluded that students in the contingency contract condition set significantly more learning goals than did students in the other conditions. Students in the control condition set significantly more learning goals than did students in the token-economy group. There were no significant differences between the numbers of performance goals that students set according to classroom structure conditions.

Within the contingency contract group, students set significantly more learning goals than performance goals. In the control group, there were no significant differences between the number of learning and performance goals that students set. In the token-economy group, students set significantly more performance goals than learning goals.

Discussion

Results from the goal analyses indicated significant differences within and across classroom structure conditions. Those results were consistent with the theoretical relationship predicted by Ames (1992c) and the hypothesis in this study that the type of classroom evaluation structure would

influence student goal orientation. Students who were in the contingency-contract condition set significantly more learning goals than performance goals and significantly more learning goals than did students in the other classroom structure conditions. Students in the token-economy condition set significantly more performance goals than learning goals. There were no significant differences within the control classroom for the number of learning versus performance goals that students set. However, students in that classroom did set significantly more learning goals than did students in the token-economy condition. There were no significant differences for the amount of performance goals that students set across classroom-structure conditions.

Our results support the idea that a contingency contract classroom structure, in which students were evaluated individually and allowed to determine their own achievement goals, led students to adopt a learning-goal orientation versus a performance-goal orientation. In this classroom structure, student evaluation was focused on individual gains, improvement, and progress. Success was measured by whether students met their individual goals, which creates an environment in which failure is not a threat. If goals were met, then students could derive personal pride and satisfaction from the efforts that they placed toward the goals. If goals were not met, then students could reassess the goal, make the changes needed, or eliminate the goal. A classroom structure that promotes a learning-goal orientation for students has the potential to enhance the quality of students' involvement in learning, increase the likelihood that students will opt for and persevere in learning and challenging activities, and increase the confidence they have in themselves as learners (Ames, 1992b).

In contrast, students in the token-economy classroom structure were rewarded for meeting normative standards and tended to adopt a performance-goal orientation. That is an important finding because token economies have been successful in changing student behavior in classrooms, so teachers may implement this intervention without concern for the special needs of students (McLaughlin, 1981). Students are not motivated by the same amount of tokens for given assignments because of individual differences. Students with lower abilities will likely become frustrated and helpless. According to Boggiano & Katz (1991), children in that type of learning environment typically prefer less challenging activities, work to please the teacher and earn good grades, and depend on others to evaluate their work. As a result, the token-economy classroom evaluation structure makes ability a highly salient dimension of the learning environment and discourages students from setting goals that involve learning and effort.

The number of performance goals that students set did not differ across classroom structure conditions. Students in the contingency-contract and control conditions set similar numbers of performance goals as compared with those in the token-economy condition. That result likely occurred because throughout the study teachers continued to evaluate

all students on their schoolwork with a traditional grading system. It would have been ideal if a nontraditional, individually based evaluative system could have been implemented in the contingency-contract condition to assess whether this would have altered the results.

There were limitations to this study. One limitation was that it did not control for teacher expectancies and how these may have influenced students' goal setting. Another potential limitation was that mathematics was the only subject area used for this study. Further studies should include additional academic areas, such as social studies, humanities, and science to investigate whether similar results will ensue.

This study provides strong evidence that the classroom evaluation structure can influence student achievement goal orientation. Specifically, we demonstrated that in a classroom structure that emphasizes the importance of individual goals and effort, learning goals become more salient to students. That result can lead to many positive effects on elementary student's learning strategies, self-conceptions of ability and competence, and task motivation (Smiley & Dweck, 1994). Students' achievement goal orientation obviously is not contingent on any one variable, but it is comprised of the comprehensive relationship between classroom processes and student experiences. Understanding the influence of classroom evaluation structure on student goal orientation provides a foundation for further research of other potentially related variables.

NOTES

Shannon Self-Brown is now in the Department of Psychology at Louisiana State University.

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