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The Dilemma of Performance-Approach Goals: The Use of Multiple Goal Contexts to Promote Students' Motivation and Learning

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The study examines the effects of a quasi-experimental classroom goal condition (mastery, performance-approach, combined mastery/performance-approach) and entering personal goal orientations on motivation, emotional well-being, help seeking, cognitive engagement, and achievement for 237 upper elementary students during a 5-week math unit emphasizing small groups. The classroom goal condition had a significant effect on help seeking and achievement, with the combined condition showing the most beneficial pattern. Personal mastery goals were beneficial for 11 of 12 outcomes including achievement; personal performance-approach goals were detrimental for achievement and test anxiety and unrelated to the remaining outcomes. The effect of the classroom goal condition did not vary on the basis of entering personal goal orientations. Implications for the current achievement goal theory debate regarding multiple goals are discussed.

Keywords: achievement goal orientation, classroom goal structure, socio-emotional well-being, mathematics achievement, small-group instruction

The consideration of multiple goals is currently an important issue within achievement goal theory (Barron & Harackiewicz, 2001; Pintrich, 2000b). Central to this issue is the idea that endorsing performance-approach goals is beneficial, especially when mastery goals are also endorsed (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). However, not all researchers agree with this perspective, which has generated some debate regarding how performance-approach goals relate to a variety of learning-related outcomes (Kaplan & Middleton, 2002; Midgley, Kaplan, & Middleton, 2001). In addition, implications of this debate for classroom reform need to be considered, especially in terms of the type of classroom contexts that are created. Yet, there is very little research on the relation of multiple goal contexts (with mastery and performance-approach goal structures) to student learning. Furthermore, it is not clear whether students with different personal goals respond to classroom goal contexts in the same way (Linnenbrink & Pintrich, 2001). Investigating these potential Person × Context interactions is essential if researchers are to make reasonable suggestions to educators regarding the creation of classroom goal structures. Accordingly, the purpose of the current study is twofold. First, the ongoing achievement goal theory debate is addressed by examining how three classroom goal contexts (mastery, performance-approach, combined mastery/performance-approach) relate to students' motivation, emotional well-being, help seeking, cognitive engagement, and achievement. Second, the potential interaction between entering personal goals and the three classroom goal contexts on the aforementioned student outcomes is considered.

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Theoretical Framework

Achievement goal theory is used as the theoretical basis for the current study. According to achievement goal theory, goal orientations provide a framework for interpreting and reacting to events (Dweck & Leggett, 1988). There are thought to be two primary goals that provide the reasons why students engage in achievement behavior: a mastery goal orientation, where the focus is developing one's competence, and a performance goal orientation, where the focus is demonstrating one's competence. Traditionally, mastery goals have been associated with adaptive patterns of behavior such as adaptive motivation, emotional well-being, cognitive engagement, and achievement, whereas performance goals have been associated with less adaptive patterns (Ames, 1992b). Recently, however, with the differentiation between performance-approach and performance-avoidance goals, achievement goal theorists have begun to reconsider the detrimental effects of performance-approach goals (Harackiewicz, Barron, & Elliot, 1998; Harackiewicz et al., 2002; Pintrich, 2000b). The possibility that performance-approach goals may be adaptive has led these goal theorists to suggest a *multiple goal perspective*, whereby endorsing

Table 1
Predicted Pattern of Effects and Empirical Findings for Achievement Goals for Dependent Variables

Outcome	Hypothesized findings						Results	
	Mastery goal perspective goal condition			Multiple goal perspective goal condition				
	Mastery	Performance-approach	Combined	Mastery	Performance-approach	Combined	Goal condition	Pretest personal goals
Self-efficacy	High	Low	Low	High	Low	High	*ns*	Mastery
Interest	High	Low	Low	High	Low	High	*ns*	Mastery
Utility	High	Low	Low	High	Low	High	*ns*	Mastery
Positive affect	High	Low	Low	High	Low	High	*ns*	Multiple
Negative affect	Low	High	High	Low	High	Low	*ns*	Mastery
Test anxiety	Low	High	High	Low	High	Low	*ns*	Mastery
Adaptive help seeking	High	Low	Low	High	Low	High	*ns*	Mastery
Expedient help seeking	Low	High	High	Low	High	Low	Multiple	Mastery
Avoidant help seeking	Low	High	High	Low	High	Low	*ns*	Mastery
Quantity self-regulation	High	Mod	Mod	Mod	High	High	*ns*	Mastery
Quality self-regulation	High	Low	Low	High	Mod	High	*ns*	Mastery
Achievement	High	Low	Low	Mod	High	High	Multiple	Mastery

Note. *Mastery* refers to the mastery goal perspective; *multiple* refers to the multiple goal perspective. Mod = moderate.

both mastery and performance-approach goals may be most adaptive in that a person may reap the benefits of both goals (Barron & Harackiewicz, 2001; Pintrich, 2000a, 2000b).

Barron and Harackiewicz (2001) have suggested four ways in which mastery and performance-approach goals may combine. There may be (a) *additive effects* (each goal is independently beneficial for a single outcome), (b) *interactive effects* (the adoption of both goals simultaneously is more adaptive than endorsing either goal alone for a single outcome), (c) *specialized effects* (there are unique effects of both goals across multiple outcomes such that mastery goals are adaptive for outcomes such as interest or emotional well-being and performance-approach goals are adaptive for outcomes such as achievement), or (d) *selective effects* (the effect of personal goals depends on the match with the goal context). The selective effect deals more with Person × Context interactions and is therefore considered in the discussion on classroom goal structures.

This proposed revision is not accepted by all goal theorists. Rather, there is continued support for a *mastery goal perspective*[1] in which mastery goals are thought to be the most beneficial for all students across socioemotional, cognitive, and achievement outcomes (Kaplan & Middleton, 2002; Midgley et al., 2001). The mastery goal perspective acknowledges that performance-approach goals may be adaptive for some outcomes (e.g., cognitive engagement) and that these benefits may occur in conjunction with mastery goals. However, this perspective contends that performance-approach goals are detrimental for other outcomes (e.g., help seeking). Thus, if one considers the whole child and looks at a variety of cognitive and socioemotional outcomes, it will become clear that performance-approach goals are maladaptive.

The mastery goal and multiple goal perspectives are derived from similar research on achievement goals, based primarily on self-report measures completed by upper elementary through college-aged participants. The major difference between these two perspectives concerns the interpretation of findings. Both perspectives agree that mastery goals are beneficial for most learning-related outcomes including motivational outcomes such as efficacy, interest, and value (e.g., Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Pintrich & De Groot, 1990; Wolters, Yu, & Pintrich, 1996), emotional well-being including higher positive affect and lower negative affect (e.g., Kaplan & Maehr, 1999; Meyer, Turner, & Spencer, 1997; Middleton & Midgley, 1997), help seeking including higher levels of adaptive help seeking and lower levels of avoidant and expedient help seeking (e.g., Nadler, 1998; Newman, 1998a; Ryan & Pintrich, 1998), and cognitive engagement including higher levels of persistence and self-regulatory strategies (Pintrich, 2000c; see Table 1). The multiple goal perspective further contends that performance-approach goals are also beneficial for cognitive engagement (e.g., Meece, Blumenfeld, & Hoyle, 1988; Wolters et al., 1996) and achievement (e.g., Bouffard, Vezeau, & Bordeleau, 1998; Harackiewicz et al., 2000; Pintrich, 2000b; Wolters et al., 1996) so that a combined emphasis on mastery and performance-approach goals is most beneficial (see Table 1). In contrast, the mastery goal perspective suggests that performance-approach goals have been associated with detrimental patterns in terms of lower self-efficacy (e.g., Skaalvik, 1997), higher negative affect and test anxiety (e.g., Kaplan & Maehr, 1999; Meyer et al., 1997; Middleton & Midgley, 1997), and higher avoidant help seeking (e.g., Nadler, 1998; Newman, 1998a; Ryan & Pintrich, 1998). Thus, although performance-approach goals may be beneficial for cognitive engagement and achievement, they come at a cost (see Table 1). The mastery goal perspective also suggests that mastery goals are beneficial for achievement (Church, Elliot, & Gable, 2001; Kaplan & Maehr, 1999) and that the failure to consistently find this pattern in all studies (e.g., Bouffard et al., 1998; Pintrich, 2000b) is based on the way achievement is assessed. To resolve the debate, one must examine the pattern of relations for mastery and performance-approach goals across a variety of outcomes in a single study to determine (a) whether performance-approach goals are detrimental for certain types of outcomes and (b) whether there is any added

[1] Following Barron and Harackiewicz (2001), this second perspective is called the *mastery goal perspective*, given the focus on the benefits of mastery goals. However, this has also been referred to as the *normative perspective* (Pintrich, 2000b).

benefit for both mastery and performance-approach goals across multiple outcomes.

A second issue associated with this debate concerns the recommendations to teachers regarding the most adaptive goal structure to create in classrooms (Midgley et al., 2001). To resolve this issue, one must consider how a mastery, performance, or combined mastery–performance structured classroom context might relate to patterns of outcomes. Achievement goal theorists (Ames, 1992a; Maehr & Midgley, 1996) have described classroom goal contexts based on six primary structures: tasks, authority, recognition, grouping, evaluation, and time (TARGET; originally created by Epstein, 1988). For instance, varied and authentic tasks, an emphasis on autonomy, recognition for improvement and learning, heterogeneous ability grouping and the use of small groups, evaluation based on preset criteria or improvement, and flexible timing are all thought to create a mastery-structured context. In contrast, a performance-oriented context is created when students are not given varied tasks, the teacher maintains authority, students are recognized for their ability relative to others, homogeneous ability groups and tracking are used, evaluation is based on normative grading practices, and time is inflexible. Educational contexts where both mastery and performance structures are prominent might create a combined mastery–performance context.

Goal structures are not generally characterized in terms of the approach–avoidance dimension. However, suggestions for altering the goal structure based on TARGET (Maehr & Midgley, 1996) and most assessments of goal structures (e.g., Patterns of Adaptive Learning Survey [PALS]; Midgley et al., 2000) focus on the approach dimension (see Kaplan, Gheen, & Midgley, 2002, for a preliminary attempt at distinguishing approach and avoidance dimensions for performance goal structures). Thus, it seems appropriate to refer to the research on performance goal structures as generally reflecting performance-approach goal contexts.

Mastery and performance-approach classroom and school contexts have been linked to students' motivation, emotional well-being, help seeking, cognitive engagement, and achievement (e.g., Ames & Archer, 1988; Kaplan & Midgley, 1999; Roeser & Eccles, 1998; Roeser, Midgley, & Urdan, 1996; Ryan, Gheen, & Midgley, 1998) as well as students' adoption of mastery and performance goals (e.g., Nolen & Haladyna, 1990; Roeser et al., 1996). In this way, classroom or school goal structures may be directly related to changes in students' academic-related outcomes or there may be an indirect link through students' personal goal adoption. However, this research is not extensive, leaving several concerns with the direct application of the extant research to the achievement goal theory debate.

One issue is that much of the research was conducted in traditional classrooms (for an exception, see Meece et al., 1988), where students typically received whole-class instruction or worked on individual seat work (e.g., Patrick, Anderman, Ryan, Edelin, & Midgley, 2002; Turner et al., 2002). Given the increased prominence of small-group instruction, it is important to consider classroom goal structures where instruction includes more student-centered practices such as small-group work. This broader view of instruction also requires the consideration of whether small groups create a mastery-oriented context, as suggested by Ames (Ames, 1992a; Ames & Ames, 1984) or whether small groups might also create a performance-oriented context.

A brief examination of two common small-group instructional strategies suggests that these instructional strategies may create different classroom goal structures. For instance, Student Teams-Achievement Division (STAD; Slavin, 1995) uses group points that are posted in the classroom to create interdependence among group members. This practice may encourage a performance-approach focus, given that the relative performance of each group is made salient through the posting of group points. In contrast, Complex Instruction (Cohen, 1994) de-emphasizes competition between groups and uses ill-defined, complex tasks with multiple solutions. This may indeed create a mastery-oriented context in that the tasks tend to vary among groups, are typically authentic, and grant students much autonomy. Thus, because small-group contexts may create different goal structures, it is important for achievement goal theorists to more closely examine classrooms using small-group instruction.

A second issue is the overreliance on students' perceptions of the classroom goal structure (Kaplan, Middleton, Urdan, & Midgley, 2002; Linnenbrink, 2004). This practice creates difficulties when making suggestions for educators, as it is not clear how objective changes to the context will impact student-related outcomes. It is therefore important to attempt to alter the "objective" classroom context and examine the effects on students' motivation, engagement, and learning.

A final issue concerns how students with different personal goal orientations respond to varying classroom goal structures (Kaplan, Middleton, et al., 2002; Linnenbrink, 2004; Linnenbrink & Pintrich, 2001; Urdan, 2001). Linnenbrink and Pintrich (2001) have proposed two competing hypotheses. The first is a *buffering hypothesis*, which suggests that either a personal mastery goal or a mastery-oriented classroom context will buffer the negative effects of endorsing personal performance-approach goals or working in a performance-oriented context (see Table 2). An alternative hypothesis is the *matching hypothesis*, which suggests that classroom contexts that match students' personal goal orientations are most beneficial in that they will support students' personal goal pursuits (see Table 2). One way to meet this match is to create classroom contexts that emphasize both mastery and performance-approach goals (e.g., a combined mastery and performance-approach classroom goal structure), which is consistent with the selective pattern proposed by Barron and Harackiewicz (2001). In this way, a combined mastery–performance context would allow students with mastery goals, performance-approach goals, or both to readily pursue those goals in the classroom.

Current Study

The current study was designed to advance the debate between the mastery and multiple goal perspectives and to address the aforementioned limitations regarding research on classroom goal contexts. This study focused specifically on the approach dimension of performance goals, both in terms of personal goal orientation and classroom goal contexts, as the mastery goal perspective and the multiple goal perspective disagree regarding performance-approach goals but agree that performance-avoidance goals are detrimental. Three objective classroom goal contexts (mastery, performance-approach, combined mastery/performance-approach) were included to address a major limitation of prior research, namely that researchers do not know how objective changes to the classroom context relate to various student outcomes. The classroom goal effects were assessed for 12 student outcomes: academic self-efficacy, interest, utility, positive affect and negative

Table 2
Predicted Patterns and Results of Personal Goal × Classroom Goal Interactions for All Outcomes (on Average Across Dependent Variables) Based on the Buffering Versus Matching Hypothesis

	Hypothesized findings						
	Buffering hypothesis goal condition			Matching hypothesis goal condition			
Personal goal orientation	Mastery	Performance-approach	Combined	Mastery	Performance-approach	Combined	Results
High mastery/low performance-approach	High	Mod	Mod	High	Low	Mod-High	*ns*
High mastery/high performance-approach	Mod	Low-Mod	Low-Mod	Mod-High	Mod-High	High	*ns*
Low mastery/low performance-approach	Mod-High	Low	Low-Mod	Low	Low	Low	*ns*
Low mastery/high performance-approach	Mod	Low	Low-Mod	Low	High	Mod-High	*ns*

Note. Mod = moderate.

affect in school, test anxiety, adaptive help seeking, expedient help seeking, avoidant help seeking, quantity and quality of self-regulation, and achievement. These 12 dependent variables were chosen because there have been conflicting findings regarding how mastery and performance-approach goals relate to them, as discussed previously. Furthermore, the inclusion of socioemotional outcomes in addition to the more traditional cognitive outcomes is important in evaluating the potential cost of performance-approach goals and benefits of mastery goals, as both sides of the debate make different predictions regarding the overall relation of achievement goals to these types of outcomes. Finally, the study was conducted at the beginning of the school year, with personal goal orientations assessed at the very start of school, in order to see if and how students with different entering personal goal orientations responded to the three classroom goal contexts. Again, this was designed to advance theory, by testing the buffering and matching hypotheses, and inform practice so that educators might better understand how students with different goal orientations respond to the various objective goal contexts.

Two primary research questions were examined. The first question addressed the debate regarding performance-approach goals and asked, what is the most adaptive classroom goal context (mastery, performance-approach, or combined mastery/performance-approach) for promoting motivation, emotional well-being, help seeking, cognitive engagement, and achievement? It was expected that if the mastery goal perspective were more accurate, the mastery condition would be most beneficial across outcomes, whereas the performance-approach and combined mastery/performance-approach condition would be least beneficial given the costs associated with performance-approach goals (see Table 1). If the multiple goal perspective were more accurate, the combined mastery/performance-approach condition would be most adaptive across outcomes, with the mastery condition having some benefits in terms of motivation, emotional well-being, help seeking, and cognitive engagement, and the performance-approach condition having some benefits for cognitive engagement and achievement (see Table 1). The second question, which addressed Person × Context interactions, asked how do personal goal orientations interact with classroom goal structures to influence students' motivation, emotional well-being, help seeking, cognitive engagement, and achievement outcomes? Under the buffering hypothesis, a personal or classroom mastery goal was expected to be beneficial and to reduce some of the negative effects of personal performance-approach goals or a performance-approach structured classroom. Under the matching hypothesis, the greatest benefits were expected when personal and classroom goals matched (see Table 2).

Method

Participants

Participants were 237 upper elementary students (107 fifth graders, 130 sixth graders) from 10 classrooms in three elementary schools located in ethnically diverse, working-class neighborhoods in the suburb of a large metropolitan midwestern city. There were approximately equal numbers of male (122) and female (115) students in the study. The school records indicated that the majority of the students were either Caucasian (105) or African American (126), with the remaining students listed as Native American (3) or Hispanic–Latino (1). Ethnicity information from the school records was not available for 2 students because they had moved from the district before record data were collected. Prior to the start of the study, the school district had assigned students to 1 of 10 classrooms. All classrooms were heterogeneous with regard to ability. This district emphasized the use of small groups; thus, participants had experience with group work in the past.

Procedure

Before the start of the school year, the five participating teachers were given a self-report questionnaire assessing their use of mastery or performance-oriented instructional techniques. These scales were taken from the teacher version of PALS (Midgley et al., 2000). The mastery scale assessed the use of instructional strategies that encouraged students to develop their competence (e.g., "I consider how much students have improved when I give them report card grades"). The performance-approach scale assessed whether teachers encouraged the demonstration of competence (e.g., "I display the work of the highest achieving students as an example"). Using the responses to this questionnaire as a guide, I assigned each of the 10 classes to one goal condition (mastery, performance-approach, combined mastery/performance-approach). Two teachers taught multiple classes and were therefore assigned to the two classroom goal conditions most closely aligned with their self-reported instructional techniques. I then met with each teacher before the school year began and discussed how to create the assigned goal condition. Teachers were also provided with an outline of the curriculum at this time.

During the very first 2 weeks of the school year, students completed a pretest math exam, a pretest questionnaire, and three group-training sessions. Assignment of students to 4-person groups occurred at the end of this initial 2-week period. Students worked with the same group for the entire mathematics unit. The groups were heterogeneous with respect to math

knowledge, with each group consisting of 1 low-knowledge student, 2 medium-knowledge students, and 1 high-knowledge student. The distribution of gender and ethnicity within each group approximately mirrored the distribution within the class.

Instruction for the mathematics unit and the start of the goal treatment began during the third week of school. The instruction was based on the first unit on statistics and graphing from the fifth- and sixth-grade district-approved mathematics textbooks. Students were taught how to read and interpret graphs and how to calculate basic statistics such as the mean, median, and mode. The math unit lasted approximately 5 weeks and was broken into three sections. Each section followed the same basic sequence: whole-class instruction and individual seat work based on the accompanying teacher's manual (3–4 days), small-group work designed to complement and enhance the math curriculum (2–3 days), and a quiz taken from the textbook (1 day). The classroom teachers presented all instructional materials including the whole-class instruction and small-group work.

The whole-class instruction generally consisted of an introduction of the main concepts using an interactive lecture. The teacher presented general information from the mathematics text, questioned students about different concepts, and asked them to work through examples together as a class. Students were also assigned problems from the textbook as homework. The small-group instruction required students to apply the concepts introduced during whole-class instruction. The small groups could be characterized as combining elements from cooperative and collaborative group instruction. For instance, the entire group was given one set of materials that they needed to share in order to solve the group task. This, coupled with an emphasis on higher order thinking (e.g., after calculating the mean, median, and mode for each graph, students were asked to write a paragraph describing which statistic best represented the data), suggested that the groups were collaborative in nature. Nevertheless, some groups divided up the tasks among group members, suggesting a more cooperative approach to the problems. Regardless of the students' decision to cooperate or collaborate, the small-group context was designed to encourage students to work together as a team. To facilitate this collaborative interaction among students, I assigned students roles (facilitator, recorder, materials manager, presenter). Group interdependence was also created in that the group's score on the group activity and their individual quiz scores were used to award extra points at the end of the unit. Thus, the group would benefit most if all students in the group learned and engaged with the material for the group task.

At the end of the unit, students completed a posttest questionnaire similar to the pretest questionnaire. A few days after completing the questionnaire and reviewing for the exam, students took the posttest math exam. Finally, approximately 5 weeks after the end of the math unit, students completed a surprise follow-up exam, which assessed students' retention of the math unit material. Trained graduate assistants and I administered the questionnaires, quizzes, and exams to ensure uniformity and student confidentiality on the questionnaires.

Dependent Variables

Math achievement. The end of unit math exam, which was taken from the teacher's manual for the appropriate grade level, was used for the pretest, posttest, and follow-up measures of achievement. The exam consisted of open-ended questions and assessed lower-order understanding, such as calculating the mode or reading information from a graph, as well as higher order understanding, such as determining whether a graph was misleading and explaining why. Scores were converted to the total percentage correct and could range from 0% to 100%.

Self-report measures. Students completed pretest and posttest questionnaires assessing their motivation, emotional well-being, help seeking, and cognitive engagement. Similar scales were used at the pretest and posttest measures. All items were rated on a 5-point Likert scale (1 = *not at all true*, 3 = *somewhat true*, 5 = *very true*). The factor structure for each set of scales was examined using exploratory factor analysis, with oblimin rotation and principal-axis factoring extraction; reliabilities for each scale were also computed. The majority of scales were established measures, whose factor structure, reliability, and validity have been previously examined and are therefore not reported (see Midgley et al., 1998; Pintrich, Smith, Garcia, & McKeachie, 1993; Ryan, Patrick, & Shim, 2005, this issue; Ryan & Shim, 2004). The factor structure for the two sets of scales not based on established measures (emotional well-being and cognitive engagement) are available in the Appendix.

Three aspects of students' motivation were assessed. The academic self-efficacy scale from PALS (Midgley et al., 2000) assessed students' confidence in their ability to learn math. The pretest (α = .73) and posttest (α = .72) scales each consisted of five items including, "I'm certain I can figure out how to do even the most difficult math work." Students completed a modified version of the task value scale from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1993), which assessed how much students valued and were interested in math. On the basis of exploratory factor analysis, this scale was broken into two subcomponents: interest and utility. At the pretest (α = .89) and posttest (α = .92) surveys, personal interest in mathematics was assessed with three items including "I'm interested in math." Students' views about the utility of mathematics in their lives were assessed with two items, "Math is useful for me to learn" and "I think math is useful outside of school" (pretest: α = .60; posttest: α = .71).

Emotional well-being was assessed with three scales: positive affect, negative affect, and test anxiety. The positive and negative affect scales asked students to report about their general affect in math class and were developed based on Watson and Tellegen's (1985) and Thayer's (1986) mood structures. Positive affect (pretest: α = .91; posttest: α = .92) was assessed with 10 items including "When I'm in math class, I generally feel happy." Negative affect (pretest: α = .87; posttest: α = .89) was assessed with nine items including "When I'm in math class, I generally feel sad." Test anxiety was assessed with the test anxiety scale from the MSLQ (Pintrich et al., 1993), which consisted of both the worry and emotionality components. The pretest measure (α = .65) focused on general test anxiety in math, and the posttest measure (α = .67) asked students to report on their levels of anxiety during the quizzes taken as part of the math unit. The scale consisted of five items including "I have an uneasy, upset feeling when I take a math exam."

Help-seeking behavior was assessed with three measures of help seeking (adaptive, expedient, and avoidant) from Ryan's help-seeking scales (Ryan et al., 2005; Ryan & Pintrich, 1997; Ryan & Shim, 2004). The adaptive help-seeking scale (four items; pretest: α = .64; posttest: α = .68) queried students about how often they asked for help in understanding or learning (e.g., "When I do not understand how to do something in math, I usually want someone to give me examples of similar problems we have done"). In contrast, the expedient help-seeking scale (six items; pretest: α = .79; posttest: α = .78) assessed how often students asked for the answer (e.g., "If I do not understand something in math, I usually want someone to just give me the answer"). Finally, the avoidant help-seeking scale (six items; pretest: α = .72; posttest: α = .73) assessed how often students skipped a problem or guessed rather than asked for help (e.g., "When I don't understand my math work, I often guess instead of asking someone for help").

Cognitive engagement included both quality and quantity of self-regulation. The Quality of Self-Regulation scale included five items (pretest: α = .76; posttest: α = .76) and queried students about how often they planned, monitored, and checked their understanding when working on their math work. A sample is "When I do math, I ask myself questions to help me understand what to do." The Quantity of Self-Regulation scale assessed persistence behaviors using four items (pretest: α = .60; posttest: α = .72). In particular, students were asked to report how often they forced themselves to keep working on their math work even when they did not want to do the work (e.g., "Even when I do not want to work on math, I force myself to do the work").

Independent Variables

Classroom goal condition. The classroom goal condition (mastery, performance-approach, combined mastery/performance-approach) was set up by altering the general classroom goal structure as well as the feedback students received in their small groups. The mastery goal condition (n = 52) emphasized the importance of learning, understanding, and improvement. The performance-approach condition (n = 92) emphasized the importance of demonstrating both individual and group-level competence, with a particular emphasis on competition for high scores among the groups. The combined mastery/performance-approach condition (n = 93) included elements of both the mastery and performance-approach conditions, with an emphasis on doing better than others and trying to learn and understand. These conditions were based primarily on the evaluation and recognition components of TARGET, as these dimensions are typically very salient in classrooms.

I met with participating teachers prior to the start of the school year and provided them with materials describing the assigned classroom goal structure and providing specific suggestions for practice. For instance, in the mastery condition, teachers received a list of characteristics of a mastery-focused classroom that contained statements such as, "Success is defined as improvement, progress, mastery, innovation." They were also given specific examples of how to emphasize mastery (e.g., "Emphasize that mistakes show students the areas where they need to improve and learn. For example, 'Now that you have received your corrected papers, you know the areas where you should focus on really trying to learn and improve. This is useful information'"). In contrast, the list of characteristics for the performance-approach condition focused on demonstrating competence (e.g., "Success is defined as high grades, high performance compared to others"). Specific suggestions included "Focus on pointing out the best student so that others can strive to reach that level. For example, 'Look, John got the highest grade. We should all try to do as well as John next time.'" Finally, the combined condition included the mastery and performance-approach elements. For instance, teachers were told, "*Success* is defined as learning and improving, getting high grades, high performance compared to other students." And, the specific suggestions for practice emphasized both mastery and performance-approach goal orientations (e.g., "Recognize students for improvement and being the best student. For example, 'Suzie, you have really been improving. I think you have improved more than anyone else' or 'Billy, you have improved so much you are now the best student in the class'").

The evaluation and competition structures of the small groups were also manipulated to further emphasize the assigned goal condition. In all conditions, groups received extra credit points based on their individual quiz scores and their scores on the group assignments. The point system was based on Slavin's (1995) STAD. Before students began the next section, they received written feedback describing how many points they had received on the previous section and emphasizing the assigned goal condition. Groups in the mastery condition received improvement points based on improvement in their section quiz scores and the group project. In the performance-approach condition, groups received bonus points based on how well their group performed compared with the other groups. They were also told their group's rank for the section, and their group scores were recorded on a large yellow chart that was displayed in the classroom. In the combined condition, students received improvement points, similar to the mastery condition. Groups were told how much their group had improved compared with other groups in their class, and each group's improvement points and rank were displayed on a large yellow chart in the room.

I took several steps to ensure that the goal condition was enacted as specified. First, I provided all of the written group-feedback sheets with the students' scores (performance-approach condition) or improvement points (combined and mastery conditions) listed. In the combined and performance-approach conditions, the written feedback sheets also listed the group's rank relative to the other groups for that section of the unit and their overall rank thus far in the unit. Second, observations of the classrooms during the group work revealed that the groups' score charts were displayed prominently in the combined and performance-approach conditions so that the groups could examine their status relative to the other groups in their classes; scores were not posted in the mastery condition. It was also clear that students attended to these posted scores in the combined and performance-approach conditions, as there were comments such as "How did they [referring to another group] get 12? We have ___ points." Students were also observed walking to the yellow group charts and pointing out their scores in comparison with other groups' scores.

Third, trained research assistants and I made informal observations during the whole-class instruction to ensure that teachers were enacting the assigned goal condition and were covering the assigned material. Each classroom was visited at least twice during the whole-class instruction. The observations suggested a pattern of instructional and management practices consistent with the assigned condition.

For instance, in the mastery condition, teachers focused on the process of solving the math problems rather than the solution. This was seen as teachers prompted students for explanations of how they solved the homework problems and as teachers encouraged students who struggled to answer a question to continue rather than turning to another student for the answer. There was no evidence of direct social comparisons and no reference to competition with other students. In the performance-approach condition, the overall pattern suggested that social comparison was prominent, as teachers pointed out that some groups or individual students had solved a problem correctly or were following directions. There were also frequent instances of public recognition, both positive (e.g., "Tina answered it best") and negative (e.g., pointing out students who are misbehaving). In general, the teachers seemed to focus more on getting the correct answer (e.g., telling students to "Get them all right" or "Try to get 100%") than in the process or explanation of an answer. In the combined condition, there was a mixture of mastery and performance-oriented structures. For example, the teachers emphasized understanding when completing class work (e.g., "Speed is not what matters; the key is understanding it") and when checking homework by having students explain how they got each answer. Students also checked their own work and were asked to record their individual scores for their speed tests to track their improvement. Performance-approach structures were seen in terms of social comparison (e.g., students raised their hands to indicate that they knew the answer), public recognition of correct answers (positive) and misbehaviors (negative), and intermittent use of high authority in terms of classroom management.

In interpreting these patterns, one must remember that this research was conducted in real classrooms and was therefore not as carefully controlled as is typical of experimental studies. In this way, it is not surprising that the there were some differences in the teachers' enactment of the goal conditions and that there were some instances when a teacher used strategies consistent with a different goal condition. Nevertheless, the overall pattern observed in each classroom supported the assigned condition. Furthermore, there were differences observed in the practices of teachers assigned to more than one goal condition, again suggesting that teachers were making an effort to enact the appropriate practices for the assigned condition.

Finally, the effectiveness of the goal condition was more formally assessed using self-report measures of students' personal mastery and performance-approach goals at the posttest (scales were adapted from PALS; Midgley et al., 2000). This assessment of personal goals at the end of the unit to check the goal condition was based on the premise that a change in the classroom goal condition should influence students' personal goal orientations (Ames, 1992b). Personal mastery goals were assessed with six items (α = .84) such as "My goal was to make sure that I learned how to read and interpret graphs." Performance-approach goals were assessed with five items (α = .84) such as "I wanted to be better at reading and interpreting graphs than the students in the other groups."

An analysis of variance was conducted on students' posttest mastery goal orientations, with two planned contrasts comparing the mastery versus performance-approach conditions and the combined versus the perfor-

Table 3
Repeated Measures Multivariate Analysis of Covariance Across All Pretest–Posttest Dependent Variables (Self-Efficacy, Interest, Utility, Positive Affect, Negative Affect, Test Anxiety, Adaptive Help Seeking, Expedient Help Seeking, Avoidant Help Seeking, Quantity of Self-Regulation, Quality of Self-Regulation, Achievement)

Source	*df*	*Error df*	*F*	η^2
Between subjects				
Gender	12	166	0.97	.07
Ethnicity	12	166	2.52**	.15
Goal condition	24	332	1.51	.10
Personal mastery	12	166	3.86***	.22
Personal performance-approach	12	166	2.13*	.13
Goal Condition × Personal Mastery	24	332	0.72	.05
Goal Condition × Personal Performance-Approach	24	332	0.81	.06
Personal Mastery × Personal Performance-Approach	12	166	1.42	.09
Goal Condition × Mastery × Performance-Approach	24	332	1.12	.08
Within subjects				
Time	12	166	10.14***	.42
Time × Goal Condition	24	332	1.86*	.12
Time × Personal Mastery	12	166	0.61	.04
Time × Personal Performance-Approach	12	166	1.28	.09
Time × Goal Condition × Mastery	24	332	0.62	.04
Time × Goal Condition × Performance-Approach	24	332	1.07	.07
Time × Mastery × Performance-Approach	12	166	0.81	.06
Time × Condition × Mastery × Performance-Approach	24	332	1.01	.07

Note. Gender was coded as 1 = *female,* 0 = *male;* ethnicity was coded as 1 = *minority,* 0 = *nonminority;* and goal condition was coded as 1 = *mastery,* 2 = *performance-approach,* 3 = *combined mastery/performance-approach. F* ratios are Wilks's approximation of *F*.
* $p < .05$. ** $p < .01$. *** $p < .001$.

mance-approach conditions to ensure that students in the mastery and combined conditions endorsed mastery goals after working in those conditions. The goal condition seemed to be having the desired effect, with students in the mastery condition reporting significantly higher mastery goals ($M = 4.10$, $SD = 0.85$) than students in the performance-approach condition ($M = 3.78$, $SD = 0.99$), $F(1, 220) = 4.23$, $p < .05$, $\eta^2 = .02$. There was no significant difference between students in the combined condition ($M = 4.03$, $SD = 0.78$) and those in the performance-approach condition, $F(1, 220) = 3.58$, $p = .06$, $\eta^2 = .02$, on mastery goals; however, the means were in the expected direction and approached significance.

Similarly, an analysis of covariance examined students' posttest performance-approach goals across the three conditions, with two planned contrasts comparing students in the mastery versus performance-approach conditions as well as the combined versus mastery conditions. For these analyses, pretest personal performance-approach goals were included as a covariate, as the three conditions differed significantly on this measure. As expected, students in the performance-approach condition reported significantly higher posttest performance-approach goals ($M = 3.01$, $SE = 0.11$) than did students in the mastery goal condition ($M = 2.37$, $SE = 0.15$), $F(1, 203) = 11.33$, $p < .01$, $\eta^2 = .05$. There were no significant differences for students in the combined mastery/performance-approach condition ($M = 2.68$, $SE = 0.11$) and those in the mastery condition, $F(1, 203) = 2.65$, $p = .105$, $\eta^2 = .01$, on performance-approach goals, but the means were in the expected direction.

Entering personal goal orientations. Students' entering personal goals were assessed using the mastery and performance-approach goal orientations scales from PALS (Midgley et al., 2000). In particular, mastery goals were assessed with five items ($\alpha = .75$) including "It is important to me that I learn a lot of new math concepts this year." Performance-approach goals were assessed with five items ($\alpha = .82$) including "It is important to me that I look smart in math compared to others in my class." It is assumed that these initial measures of personal goals reflect students' goal orientations at the beginning of the school year but that these goal orientations are likely to be altered on the basis of students' experiences in their math classes. In order to use the personal goal orientations as independent variables in the subsequent analyses, I converted personal mastery and performance-approach goals into dichotomous variables. Students were divided into groups using median splits for personal mastery goals (high-mastery goals: $M = 4.88$, $SD = 0.16$, range: 4.60 to 5.00, $n = 127$; low-mastery goals: $M = 3.82$, $SD = 0.57$, range: 1.40 to 4.40, $n = 95$) and personal performance-approach goals (high-performance-approach goals: $M = 3.84$, $SD = 0.61$, range: 2.80 to 5.00, $n = 115$; low-performance-approach goals: $M = 1.80$, $SD = 0.53$, range: 1.00 to 2.60, $n = 106$).

Results

Preliminary Analyses

Given the large number of analyses required to examine the research questions across the 12 dependent variables, several preliminary analyses were conducted. First, a series of *t* tests revealed significant differences between boys and girls and minority (primarily African American) and nonminority (Caucasian) students across a number of the dependent variables. To check whether gender or ethnicity could be included as covariates, I conducted a repeated measures multivariate analysis of variance across the 12 dependent variables, with the relevant interaction terms of gender or ethnicity with the goal condition and personal goals included. There were no significant interactions involving gender or ethnicity; therefore, gender and ethnicity were entered as covariates in the subsequent analyses (R. A. Johnson & Wichern, 1998).

Table 4
Pearson Bivariate Correlations (n = 183)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Ethnicity	—											
2. Pretest mastery goal	.17	—										
3. Pretest performance-approach goal	.23	.22	—									
4. Pretest self-efficacy	.03	.41	.18	—								
5. Posttest self-efficacy	.11	.29	.10	.60	—							
6. Pretest interest	.15	.45	.27	.42	.26	—						
7. Posttest interest	.23	.31	.18	.39	.47	.60	—					
8. Pretest utility	−.01	.21	.03	.05	.09	.08	.07	—				
9. Posttest utility	.12	.24	.07	.11	.32	.12	.20	.50	—			
10. Pretest positive affect	.13	.42	.32	.54	.40	.72	.52	.06	.14	—		
11. Posttest positive affect	.14	.27	.20	.38	.33	.41	.59	.01	.09	.58	—	
12. Pretest negative affect	.03	−.29	.07	−.49	−.29	−.48	−.32	−.05	−.15	−.55	−.31	—
13. Posttest negative affect	.04	−.29	.08	−.43	−.36	−.37	−.42	−.16	−.13	−.39	−.56	.55
14. Pretest test anxiety	.10	.00	.11	−.40	−.27	−.20	−.22	.11	.02	−.30	−.17	.50
15. Posttest test anxiety	.16	−.11	.19	−.29	−.19	−.20	−.16	−.03	.06	−.20	−.13	.39
16. Pretest adaptive help seeking	.14	.28	.14	.10	.22	.11	.14	.25	.15	.21	.20	−.06
17. Posttest adaptive help seeking	.13	.23	.14	.15	.31	.13	.25	.24	.28	.26	.22	−.10
18. Pretest expedient help seeking	−.01	−.35	.09	−.49	−.29	−.27	−.18	−.02	−.08	−.28	−.19	.43
19. Posttest expedient help seeking	−.07	−.32	.01	−.43	−.33	−.27	−.31	−.13	−.15	−.33	−.33	.40
20. Pretest avoidant help seeking	.17	−.20	.19	−.41	−.32	−.18	−.18	−.05	−.13	−.27	−.21	.54
21. Posttest avoidant help seeking	.07	−.24	.08	−.35	−.33	−.27	−.28	−.14	−.10	−.31	−.27	.40
22. Pretest quantity of self-regulation	.00	.56	.13	.38	.28	.19	.19	.19	.22	.32	.19	−.21
23. Posttest quantity of self-regulation	−.01	.37	−.02	.27	.33	.10	.28	.31	.40	.20	.28	−.21
24. Pretest quality of self-regulation	.23	.59	.29	.51	.35	.48	.39	.16	.19	.58	.41	−.31
25. Posttest quality of self-regulation	.17	.43	.21	.41	.43	.33	.39	.19	.29	.44	.56	−.27
26. Pretest exam	−.04	.12	−.04	.27	.16	.16	.11	.03	.15	.25	.18	−.21
27. Posttest exam	−.32	.04	−.27	.17	.10	−.10	−.11	.14	.06	−.06	−.08	−.28
28. Follow-up exam	−.23	.09	−.27	.22	.23	−.02	.05	.12	.17	.03	.00	−.36

Note. All correlations of .15 and higher are statistically significant at $p < .05$.

Second, an overall repeated measures multivariate analysis of covariance (MANCOVA) was conducted across all 12 dependent measures (pretest–posttest), with goal condition, personal mastery goals, and personal performance-approach goals included as between-subjects factors; gender and ethnicity included as covariates; and time (pretest–posttest) included as a within-subject factor. The omnibus MANCOVA was used to test the two main research questions at the multivariate level. In particular, the significant Time × Classroom Goal Condition interaction suggested that the classroom goal condition effect varied from the pretest (prior to instruction and goal manipulation) to the posttest (after instruction and the implementation of the goal condition) measures (see Table 3). This meant that the classroom goal condition had an effect on the learning-related outcomes and that follow-up analyses could be conducted to see whether the pattern of outcomes better fit the mastery goal perspective or the multiple goal perspective. The omnibus MANCOVA was also used to test whether there were any Personal Goal × Classroom Goal Condition interactions. Surprisingly, there were no significant interactions (see Table 3), which is not in line with either the buffering or matching hypothesis and generally suggests that students' entering personal goal orientations did not alter the way in which they responded to the classroom goal context. However, there were main effects of personal goals (see Table 3). Therefore, follow-up analyses also considered the pattern of findings relating personal achievement goals to the various learning outcomes as a way to test the mastery versus multiple goal perspective for personal goals. Finally, gender was not a significant predictor in these analyses and was therefore dropped from all subsequent analyses.

Using the overall repeated measures MANCOVA as a guide, I conducted a series of follow-up repeated measures MANCOVAs for each type of outcome (motivation, emotional well-being, help seeking, cognitive engagement, achievement) to determine whether the pattern of results better fit the mastery goal or multiple goal perspective. Bivariate correlations among all outcomes and personal goals are presented in Table 4. Only significant effects from the omnibus MANCOVA were considered in the follow-up analyses as a way to offset the large number of analyses conducted.

Relation of Quasi-Experimental Classroom Goal Condition to Outcomes

Overall, there were significant Time × Goal Condition effects for help seeking and achievement but not for motivation, emotional well-being, and cognitive engagement (see Table 5). Accordingly, follow-up analyses for help seeking and achievement are presented. Significant effects of ethnicity are presented in Table 5 but are not discussed, as they were not the focus of the current research.

The follow-up univariate analyses for help seeking showed that the Time × Goal Condition effect was significant for expedient help seeking, $F(2, 199) = 3.78$, $p < .05$, $\eta^2 = .04$, but not for adaptive, $F(2, 199) = 3.04$, $p > .05$, $\eta^2 = .03$, or avoidant, $F(2, 199) = 0.44$, $p > .05$, $\eta^2 = .00$, help seeking. To test whether the mastery goal perspective or multiple goal perspective better explained the results for expedient help seeking, I used two planned contrasts. The first contrast tested whether the mastery and combined conditions differed, which would be expected on the basis of

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
—															
.34	—														
.45	.54	—													
−.15	.14	.10	—												
−.14	.08	.23	.48	—											
.34	.36	.25	−.04	−.09	—										
.54	.24	.25	−.18	−.17	.64	—									
.45	.41	.28	−.06	−.18	.54	.46	—								
.54	.37	.47	−.17	−.28	.44	.53	.65	—							
−.29	.01	−.12	.29	.22	−.36	−.29	−.27	−.27	—						
−.29	.00	−.03	.46	.49	−.23	−.26	−.32	−.36	.50	—					
−.35	−.13	−.12	.30	.32	−.37	−.41	−.29	−.32	.48	.36	—				
−.35	−.04	−.01	.37	.52	−.31	−.38	−.32	−.39	.29	.55	.60	—			
−.13	−.17	−.19	.02	.06	−.22	−.18	−.25	−.14	.19	.21	.24	.22	—		
−.19	−.12	−.25	.10	.03	−.17	−.13	−.27	−.28	.22	.21	.03	.03	.19	—	
−.29	−.20	−.35	.10	.05	−.23	−.22	−.32	−.33	.18	.22	.02	.07	.29	.72	—

the mastery goal perspective. The second contrast tested whether the performance-approach condition differed from both the mastery and combined condition, which would be expected on the basis of the multiple goal perspective (see Table 1).

The Time × Goal Condition effect was not significant for the first contrast, $F(1, 199) = 0.57$, $p > .05$, $\eta^2 = .00$, which suggests that students in the combined and mastery conditions had a similar level of decline in expedient help seeking across the math unit (see Figure 1). For the second contrast, the Time × Goal Condition effect was significant, $F(1, 199) = 5.77$, $p < .05$, $\eta^2 = .03$, suggesting that the change from the pretest to posttest measures of expedient help seeking varied for those in the performance-approach condition versus the mastery and combined conditions (see Figure 1). That is, students in the performance-approach condition experienced an increase in expedient help seeking, which is a maladaptive pattern, whereas those in the mastery and combined conditions experienced a decrease in expedient help seeking, which is an adaptive pattern. Because the combined condition was beneficial in reducing expedient help seeking, the results for expedient help seeking better support the multiple goal perspective (see Table 1).

There was also a significant Time × Goal Condition interaction for achievement (see Table 5 and Figure 2), which was analyzed using two planned contrasts. The first contrast tested whether the performance-approach and combined conditions were different. Neither the linear contrast, $F(1, 199) = 2.78$, $p > .05$, $\eta^2 = .01$, nor the quadratic contrast, $F(1, 199) = 0.54$, $p > .05$, $\eta^2 = .00$, were significant, suggesting that the pattern of achievement across the three time points (pretest, posttest, and follow-up) was the same for students in both the performance-approach and combined conditions. The second contrast tested whether the mastery condition differed from both the performance-approach and the combined conditions. The linear effect for the second contrast was not significant, $F(1, 199) = 3.56$, $p > .05$, $\eta^2 = .02$, but there was a significant quadratic effect, $F(1, 199) = 11.26$, $p < .01$, $\eta^2 = .05$. As shown in Figure 2, it is clear that the pattern across the pretest, posttest, and follow-up measures differed for students in the mastery condition versus the performance-approach and combined conditions, with students' scores in the mastery condition gradually increasing between the pretest and posttest measures but then staying relatively stable between the posttest and follow-up measures. In contrast, students' scores in the performance-approach condition and combined condition had a larger increase between the pretest and posttest measures but then a small decrease between the posttest and follow-up measures. This pattern is more consistent with the multiple goal perspective than the mastery goal perspective (see Table 1) in that students in the combined and performance-approach conditions showed greater gains in achievement during the unit and, although they did forget some of what was learned, still scored higher than those in the mastery condition at the follow-up measure.

Although it was somewhat surprising that the classroom goal condition did not relate to more of the outcomes, the pattern of significant outcomes is more in line with the multiple goal perspective than the mastery goal perspective (see Table 1). That is, the mastery condition was only adaptive for help seeking, and the performance-approach condition was only beneficial for achievement, but neither condition was beneficial across outcomes. This

Table 5
Effects of Goal Condition and Personal Goals Over Time for All Dependent Variables

Source	Motivation[a] (academic self-efficacy, interest, utility; $n = 201$)			Emotional well-being[a] (positive affect, negative affect, test anxiety; $n = 205$)			Help seeking[a] (adaptive, expedient, avoidant; $n = 205$)			Cognitive engagement[a] (quality, quantity of self-regulation; $n = 207$)			Achievement[b] ($n = 205$)		
	*df*s	*F*	η^2	*df*s	*F*	η^2	*df*s	*F*	η^2	*df*s	*F*	η^2	*df*s	*F*	η^2
Between subjects															
Ethnicity	3, 192	1.67	.03	3, 197	2.61	.04	3, 197	3.42*	.05	2, 200	3.75_a	.04	1, 199	8.60**	.04
Goal condition	6, 384	0.44	.01	6, 394	2.83*	.04	6, 394	0.85	.01	4, 400	0.34	.00	2, 199	4.31_a	.04
Personal mastery	3, 192	11.14***	.15	3, 197	5.85**	.08	3, 197	9.97***	.13	2, 200	31.69***	.24	1, 199	7.12**	.04
Personal performance-approach	3, 192	1.38	.02	3, 197	8.03***	.11	3, 197	1.04	.02	2, 200	3.39_a	.03	1, 199	9.77**	.05
Within subjects															
Time	3, 192	5.52**	.08	3, 197	10.68***	.14	3, 197	0.82	.01	2, 200	0.83	.01	1.7, 341.2	134.42***	.40
Time × Goal Condition	6, 384	1.53	.02	6, 394	0.42	.01	6, 394	2.31*	.03	4, 400	0.23	.00	3.4, 341.2	4.20**	.04

Note. Personal mastery and personal performance-approach goals were coded as 0 = *low,* 1 = *high;* ethnicity was coded as 0 = *nonminority,* 1 = *minority;* goal condition was coded as 1 = *mastery,* 2 = *performance-approach,* 3 = *combined mastery/performance-approach.* The assumption that the covariance matrices are equal was violated for some analyses. The multivariate analysis of covariance is not robust to violations of this assumption when the cell sizes are uneven, as was the case for the current study (R. A. Johnson & Wichern, 1998). Thus, the analyses were rerun with a reduced sample (with participants randomly dropped from the combined and performance-approach conditions so that the cell sizes for these two conditions were within 1.5 times of the mastery cell) to ensure that any effects observed in the full sample were not due to the violation of the assumptions. The significant effects presented in the table reflect results that were consistently significant across the full and reduced samples. Effects sharing subscripts were significant in the full sample but not in the reduced sample.

[a] *F* ratios are Wilks's approximation of *F*s. [b] *F* ratios and degrees of freedom for within-subjects effects are adjusted using Huynh–Feldt adjustment for violation of sphericity.

* $p < .05$. ** $p < .01$. *** $p < .001$.

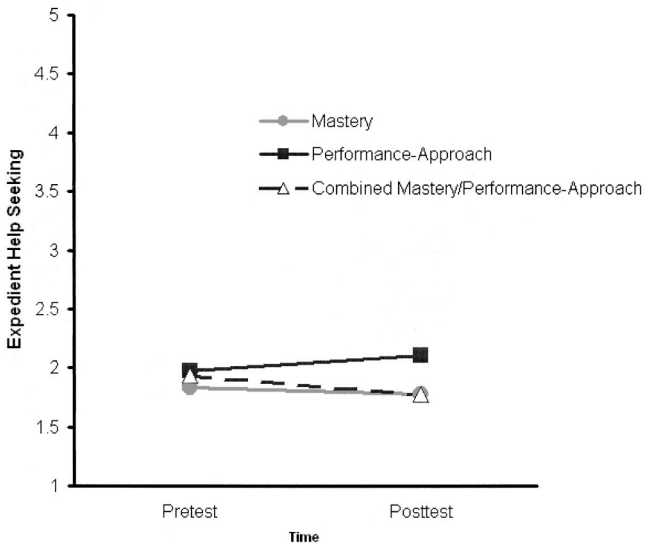

Figure 1. Time × Goal Condition for expedient help seeking.

pattern is consistent with the specialized hypothesis of the multiple goal perspective. Only the combined mastery/performance-approach condition was beneficial for both help seeking and achievement, which is consistent with the interactive hypothesis of the multiple goal perspective in that students seemed to benefit when both goals were emphasized.

Relation of Personal Achievement Goals to Outcomes

The second set of analyses focused on the main effects of pretest personal mastery and pretest personal performance-approach goals on the 12 dependent variables. The omnibus test suggested that it was only appropriate to examine the main effects, as there were no significant interactions among the personal goals or between the personal goals and goal condition or time (see Table 3). There were significant main effects of mastery goals in all of the follow-up analyses (see Table 5). There were main effects of performance-approach goals for emotional well-being and achievement but not for motivation, help seeking, or cognitive engagement (see Table 5). Estimated means and standard errors for all outcomes are reported in Table 6 for students reporting high- versus low-mastery goals and high- versus low-performance-approach goals.

The main effects for personal mastery goals are presented first (see Table 6). For motivation, students with high personal mastery goals reported higher levels of academic self-efficacy, $F(1, 194) = 26.77$, $p < .001$, $\eta^2 = .12$, interest, $F(1, 194) = 12.23$, $p < .01$, $\eta^2 = .06$, and utility, $F(1, 194) = 8.64$, $p < .01$, $\eta^2 = .04$, on average across the pretest–posttest measures. Students with high mastery goals at the pretest also reported higher levels of positive affect, $F(1, 199) = 9.74$, $p < .01$, $\eta^2 = .05$, and lower levels of negative affect, $F(1, 199) = 15.13$, $p < .001$, $\eta^2 = .07$, but did not differ in terms of test anxiety, $F(1, 199) = 0.84$, $p > .05$, $\eta^2 = .00$. A similar beneficial pattern was seen for help seeking, with students who strongly endorsed mastery goals at the pretest reporting higher levels of adaptive help seeking, $F(1, 199) = 18.04$, $p < .001$, $\eta^2 = .08$, and lower levels of expedient, $F(1, 199) = 13.60$, $p < .001$, $\eta^2 = .06$, and avoidant, $F(1, 199) = 10.39$, $p < .01$, $\eta^2 = .05$, help seeking than did students who did not strongly endorse mastery goals. High pretest mastery goals were also associated with higher reports of quantity of self-regulation, $F(1, 201) = 43.47$, $p < .001$, $\eta^2 = .18$, and quality of self-regulation, $F(1, 201) = 48.88$, $p < .001$, $\eta^2 = .20$, suggesting that students who strongly endorsed mastery goals were more likely to persist and engage in planning, monitoring, and evaluating their math work. Finally, in terms of achievement, strongly endorsing mastery goals at the pretest was associated with higher scores on the math exam, $F(1, 199) = 7.12$, $p < .01$, $\eta^2 = .04$, on average across the pretest, posttest, and follow-up measures. Thus, overall, mastery goals were beneficial for 11 of the 12 outcomes and unrelated to test anxiety.

Table 6
Estimated Means and Standard Errors for Pretest Personal Goals on Average Across Pretest–Posttest Measures

	Mastery goals				Performance-approach goals			
	Low		High		Low		High	
Measure	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Academic self-efficacy	3.37	0.08	3.93	0.07	3.65	0.08	3.65	0.08
Interest	3.08	0.13	3.67	0.11	3.22	0.12	3.53	0.12
Utility	3.74	0.11	4.18	0.10	3.98	0.11	3.94	0.11
Positive affect	2.88	0.10	3.26	0.08	2.90	0.09	3.24	0.09
Negative affect	2.74	0.09	2.26	0.08	2.41	0.09	2.58	0.09
Test anxiety	2.85	0.09	2.74	0.08	2.68	0.09	2.92	0.08
Adaptive help seeking	3.36	0.08	3.82	0.07	3.57	0.08	3.60	0.08
Expedient help seeking	2.10	0.08	1.71	0.07	1.82	0.08	1.98	0.08
Avoidant help seeking	2.39	0.08	2.05	0.07	2.14	0.08	2.30	0.07
Quantity of self-regulation	3.66	0.07	4.29	0.06	3.99	0.07	3.96	0.07
Quality of self-regulation	3.34	0.07	4.02	0.07	3.57	0.07	3.79	0.07
Achievement[a]	54.69	1.58	60.15	1.37	60.71	1.54	54.13	1.46

Note. All scales range from 1 to 5 except Achievement, which ranges from 0 to 100.
[a] Average math exam score across pretest, posttest, and follow-up measures.

In contrast, personal performance-approach goals were only significant predictors in the emotional well-being and achievement follow-up analyses (see Table 5). For emotional well-being, the results were mixed. Students who endorsed performance-approach goals at the pretest reported higher levels of positive affect, $F(1, 199) = 7.47, p < .01, \eta^2 = .05$ (see Table 6), but also higher levels of test anxiety, $F(1, 199) = 4.15, p < .05, \eta^2 = .02$. Performance-approach goals were not significant predictors of negative affect, $F(1, 199) = 1.91, p > .05, \eta^2 = .01$. Endorsing performance-approach goals at the pretest was detrimental in terms of achievement, $F(1, 199) = 9.77, p < .01, \eta^2 = .05$. That is, students focused on demonstrating their competence at the start of the study tended to score lower on average for all three math exams than students who did not report strongly endorsing a performance-approach goal (see Table 6). Thus, performance-approach goals were unrelated to the majority of outcomes (9), and the findings were mixed regarding emotional well-being and achievement.

The results for personal achievement goals provide stronger support for the mastery goal perspective in that mastery goals were beneficial across outcomes and there was a clear cost to endorsing performance-approach goals in terms of test anxiety and achievement. The findings do not support the multiple goal perspective for a number of reasons. First, the additive hypothesis was only confirmed for positive affect in that both mastery and performance-approach goals were beneficial (1 of 12 outcomes). The detrimental relation of performance-approach goals to achievement and test anxiety may cancel out some of these benefits. Second, there was no evidence to support the specialized hypothesis; students who strongly endorsed performance-approach goals did not gain any benefit for outcomes where mastery goals were not beneficial. Third, the interactive hypothesis was not supported in that there were no significant Mastery Goal × Performance-Approach Goal interactions for any outcomes based on the overall repeated measures MANCOVA. Thus, in contrast to the results for the goal condition, the findings for personal achievement goals supported the mastery goal perspective over the multiple goal perspective (see Table 1).

Discussion

A primary purpose of the current study was to consider the debate within achievement goal theory regarding the potential benefits or detriments of performance-approach goals. The debate was examined both in terms of classroom goal contexts (e.g., the quasi-experimental goal condition) and students' initial goal orientations. By considering the pattern of effects across important school-related outcomes, I hoped that some light might be shed on the current debate regarding goal theory and the relevant suggestions for classroom practice. As is often the case in educational research, however, the study instead illuminated the complexity of motivational patterns within educational contexts. The different patterns of outcomes observed for personal goals, which support the mastery goal perspective, versus the classroom goal condition, which support the multiple goal perspective (see Table 1), suggest that goal theorists should be cautious in making direct applications of the results from personal goal orientations to the goal structure of the classroom or school context. Given that the mastery goal perspective is especially concerned about the recommendations for educators (Kaplan & Middleton, 2002; Midgley et al., 2001), the current findings suggest that one possible resolution to the debate is a clear separation of findings regarding personal goals and classroom goal contexts and a better understanding of how objective classroom goal contexts relate to student-level outcomes.

A second purpose of the current study was to better understand whether changes to the classroom goal structure (goal context) might lead to different patterns of outcomes for students with different entering personal goal orientations. The current study provided a unique opportunity to address this question in that the goal context was independent from students' self-reported personal goals. It is interesting to note that the results from the current study suggest that students' responses to varying classroom goal contexts do not vary on the basis of their entering personal goals. Thus, there was no support for either the buffering or the matching hypotheses (see Table 2). These current findings are not consistent with prior research that found significant Personal Goal × Goal Condition interactions for interest (Barron & Harackiewicz, 2001; Harackiewicz & Elliot, 1998) and help seeking (Newman, 1998b); however, the goal conditions in these prior studies altered personal goals rather than the goal context and thus did not directly test this interaction.

At a broader level, the results from the current study suggest personal goal orientations and the classroom goal context may relate in different ways to important educational outcomes (see Table 1). This potentially different pattern is especially important to consider for achievement, where the findings for the classroom goal context suggest that the performance-approach and combined mastery–performance classroom goal contexts are most beneficial, whereas the findings for personal goals suggest that mastery goals are beneficial and performance-approach goals are detrimental. One possible explanation for the varying patterns is that the goal condition effects are based on the use of small groups for a significant portion of the classroom instruction.

Deutsch (1949a) found that when groups compete with other groups (between-group competition), participants had more adaptive patterns of learning, engagement, and social interactions than when participants competed within groups (within-group competition). This may be because the between-group competition helps

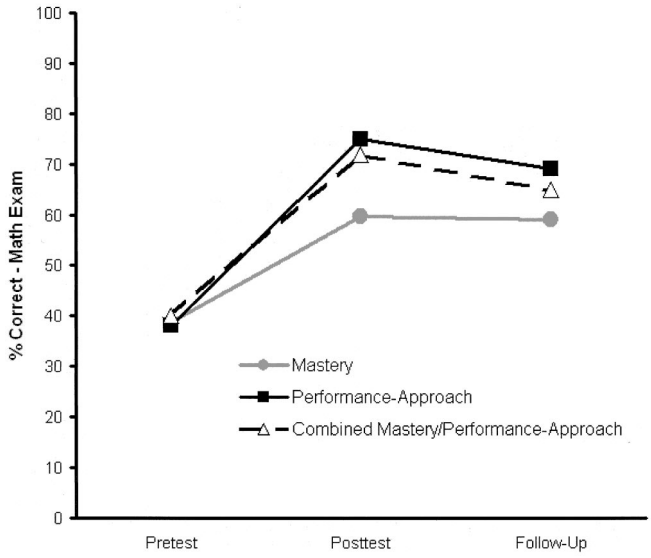

Figure 2. Time × Goal Condition for achievement.

to reinforce a sense of team or group cohesion. In the current study, the classroom goal condition may foster between-group competition, whereas personal goals may foster individual competition (both within one's own group and with individual students in other groups). In this way, the inclusion of a between-group competitive structure in the performance-approach and the combined classroom goal conditions may have promoted a sense of group cohesion and teamwork, which may have enhanced the learning in these groups, thus resulting in higher achievement.

This suggests that there may be different underlying mechanisms linking personal goals to learning and achievement versus those linking the goal context to learning and achievement. That is, personal goals may relate to achievement through traditional mediators such as emotional well-being, motivation, and cognitive engagement, whereas the goal context may enhance achievement in some other way, such as through group cohesion. This possible explanation was not, however, tested in the current study and would be important to examine in future research. Future research should also consider whether this differential pattern of findings for personal goals versus the goal context is seen in traditional classrooms that may foster competition among individuals rather than groups, as the group cohesion explanation would not account for the observed pattern when groups were not used.

In discussing the unique effects of personal goals versus classroom goals, one must also consider that the relation of students' pretest personal goals to the outcomes did not vary across the pretest and posttest measures of those outcomes and that the effect sizes for personal mastery goals were larger than those for the goal condition. This pattern occurred despite the finding that students' personal goals at the posttest were generally aligned with the assigned goal condition. This suggests that there may be an underlying trait-like element to personal goals but that the classroom context may also influence the types of goals students adopt. The notion that achievement goals emerge from more stable personal characteristics is not new. Elliot (Elliot, 1999; Elliot & Church, 1997) has suggested that achievement goals emerge from motive dispositions and views of competency, with mastery goal orientations emerging from the need for achievement motive and performance-approach goals emerging from both need for achievement and fear of failure. Similarly, Dweck (Dweck & Leggett, 1988) suggested that individuals can be characterized as holding incremental versus entity views of intelligence and that these more stable views of intelligence underlie the goal orientations that are adopted in specific situations. There is also evidence, however, that goal orientations can be shaped by the classroom context (Roeser et al., 1996; Urdan, Midgley, & Anderman, 1998). And, both Dweck and Elliot (Dweck & Leggett, 1988; Elliot, 1999; Elliot & Church, 1997) acknowledge that these more stable personal factors can be overridden by contextual situations.

This suggests that future research should examine the stable effects of personal goals, perhaps based on motives or views of intelligence, as well as the changing nature of personal goal orientations based on the classroom environment. In this future research, researchers may be better served by moving away from subjective perceptions of the goal context to more objective measures such as observations or experimental designs. This is especially important given the relatively high correlations between personal goals and perceived classroom goals (e.g., Nolen & Haladyna, 1990). Finally, a developmental perspective assessing personal goals and underlying dispositions and using objective measures of the goal context would allow one to more carefully trace the unique effects of these predictors to learning-related outcomes and the potential of a given classroom goal context to alter personal goal orientations over time. In these studies, the inclusion of performance-avoidance goals would provide a richer picture of how goal orientations may or may not emerge on the basis of the goal context. This developmental perspective would also allow researchers to consider whether entering personal goals continue to have independent effects over time or whether these are eventually altered or subsumed by the goal context.

It is important to keep in mind some limitations when interpreting these findings. First, the effect sizes for the goal condition were small and effects were only seen for help seeking and achievement. It was expected that the classroom goal context would have wider-ranging and stronger effects; however, it is difficult to compare the findings with prior research in that previous studies of classroom goal contexts relied on students' perceptions of the classroom goal context or focused on experimentally manipulated personal goal orientations (Kaplan, Middleton, et al., 2002). It is likely that the small effect sizes reflect the difficulty of conducting a quasi-experimental study in schools, where one does not have complete control over the implementation of the experimental manipulation. For instance, differences in the teachers' enactment of the goal condition may have contributed to the small effect sizes. Future studies may want to provide more in-depth training regarding the assigned classroom goal condition and use a larger sample because of the potentially large amounts of error in classroom-based research. The effect sizes were also small to moderate for personal goals. It may be that these small effects sizes were observed because personal achievement goals were transformed into categorical variables using median splits, which may have artificially reduced the variance in personal goals.[2]

Second, although the majority of findings for personal goals were in line with prior research (Pintrich & Schunk, 2002), the findings for positive affect and achievement are worth discussing further. In particular, personal performance-approach goals were associated with higher positive affect in the current study. This may seem initially counterintuitive, but this finding is consistent with some prior research (Linnenbrink & Pintrich, 2002; Seifert, 1995), and it seems plausible that students who choose to adopt performance-approach goals gain some pleasure or enjoyment from competing with others. The findings relating personal goals to achievement are also worth noting, especially given that the potentially positive relation between performance-approach goals and achievement has fueled much of the goal theory debate. The positive relation between personal mastery goals and achievement

[2] Multiple regressions were conducted to examine the relation of the continuous pretest personal goals to the average pretest–posttest outcomes. Overall, the results were similar to the MANCOVA results; however, the regression results were slightly larger in magnitude, which might help to account for the small to moderate effect sizes for personal goals. There were also a few small significant relations between performance-approach goals that were not detected using MANCOVA. Specifically, personal performance-approach goals were positively associated with the following detrimental outcomes: negative affect ($\beta = .17$, $p < .05$), expedient help seeking ($\beta = .18$, $p < .05$), and avoidant help seeking ($\beta = .19$, $p < .01$) but were also positively related to quality of self-regulation ($\beta = .15$, $p < .05$). Despite these differences, both sets of analyses supported the mastery goal perspective for personal goals.

in the current study is only consistent with a few prior studies (Church et al., 2001; Kaplan & Maehr, 1999); most prior research found that mastery goals were unrelated to achievement (e.g., Bouffard et al., 1998; Harackiewicz, Barron, Elliot, Carter, & Lehto, 1997; Harackiewicz et al., 2000; Pintrich, 2000b). The negative relation of personal performance-approach goals to achievement is also inconsistent with prior research, which found either a positive relation (Bouffard et al., 1998; Harackiewicz et al., 1997, 2000; Pintrich, 2000b; Wolters et al., 1996) or no relation (Kaplan & Maehr, 1999; Roeser et al., 1996). Most of these studies, however, used end-of-semester grades or grade point average to assess achievement, whereas the current study used scores on an end-of-unit math exam and included a follow-up measure to assess retention. It may be that a different pattern of results is seen when learning is assessed more directly through exams, especially ones that require some higher level thinking. This highlights the need for additional research that measures achievement in a variety of ways, especially as researchers seek to further resolve the goal theory debate.

Conclusion

Although the results did not clearly resolve the achievement goal theory debate, some implications for practice can be drawn. First and foremost, the results suggest that there needs to be an emphasis on learning and understanding in the classroom environment. As personal performance-approach goals were maladaptive in the current study, it is important that the environment mainly focuses on mastery and that competition is based on groups competing rather than individuals competing. One possible way to do this would be to create a classroom based on the principles of mastery, where teachers use varied and meaningful tasks, provide opportunities for students to make choices and guide their own learning, and recognize students for learning and improving. For small-group work, groups of students could compete to see which groups improved the most. This proposed classroom context is similar to the one created in the combined mastery/performance-approach condition; however, in the combined condition, there was also an emphasis on correct answers and demonstrating individual competence during whole-group instruction. It may, however, be possible to create a learning environment that encourages personal mastery goal adoption but does not encourage personal performance-approach goal adoption by dropping this element but still encouraging groups of students to compete. Such a classroom could be a categorized as containing both mastery and performance-approach goal structures. Future researchers, however, will need to carefully consider the long-term effects of working in classrooms where there is a combined emphasis on mastery and performance-approach goals, especially in how it shapes students' own goal orientations and how that eventually relates to both socioemotional and cognitive outcomes.

For educators using small groups, the current findings may be useful in assessing current instructional practices, especially those regarding group competition. In general, research comparing cooperative, competitive, and individualistic instructional contexts touts the benefits of cooperation compared with individual competition (e.g., Deutsch, 1949a, 1949b; D. W. Johnson & Johnson, 1985, 1991). However, the instantiation of cooperation often includes between-group competition, as groups are evaluated in comparison with other groups (e.g., Deutsch, 1949a). Indeed, Slavin's (1995) popular technique for cooperative groups (STAD) encourages between-group social comparison through the posting of group scores. And, although D. W. Johnson and Johnson (1991) do not emphasize competition, they have suggested that having groups compete can be effective in energizing groups. The current findings suggest that these competitive group practices are useful but that they are more beneficial when the competition is structured around relative improvement between groups rather than relative performance. Thus, teachers who use competitive groups should be careful that groups are competing on the basis of mastery and improvement and not relative ability.

With regard to the goal theory debate, the current findings support the multiple goal perspective for classroom goal contexts, suggesting that a dual emphasis on mastery and performance-approach goal structures in classrooms where small groups are used may be beneficial for help seeking and achievement (see Table 1). The size of these effects was rather small, however, and not observed for motivation, emotional well-being, or cognitive engagement; thus, it is essential that these findings be replicated in future studies. For personal goals, the current findings provide support for the mastery goal perspective in that mastery goals were beneficial across a variety of learning-related outcomes, whereas performance goals were detrimental in terms of test anxiety and achievement. These findings certainly support the contention of the mastery goal perspective that any potential benefits of personal performance-approach goals are undermined by the psychological costs of endorsing performance-approach goals. However, it is important to keep in mind that many of the proposed costs of endorsing performance-approach goals (e.g., avoidant help seeking and lower self-efficacy) were not seen in the current study (see Table 1). Additionally, the results for achievement are rather inconsistent with prior research and should be replicated before firmly rejecting the proposed multiple goal perspective for personal goals. In this way, goal theorists may be better able to resolve the current debate for personal goals if the measures of achievement better reflect learning.

Finally, some resolution of the discrepant findings for personal goals versus the goal context is necessary. The findings from the current study suggest that goal theorists should be less concerned with potential Personal Goal $\times$ Classroom Goal Context interactions, as reflected by the buffering and matching hypotheses, and more concerned with the potentially unique effects of personal and classroom goals. This type of understanding is essential if goal theorists want to continue to apply achievement goal theory to classroom contexts. In this way, a focus on why and how personal goals versus classroom goals relate to student outcomes may be more important than the continued debate regarding performance-approach goals, especially given the possibility that the findings for personal goals cannot be directly applied to classroom goal structures.

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Table A1

Exploratory Factor Analysis for Positive and Negative Affect

Item	Positive affect	Negative affect
Positive affect		
Joyful	.85	
Excited	.78	
Enthusiastic	.71	
Pleased	.69	−.15
Energetic	.66	
Happy	.65	
At ease	.65	
Relaxed	.62	−.23
Content	.61	
Calm	.51	
Negative affect		
Depressed	.20	.91
Annoyed		.72
Exhausted		.63
Gloomy		.62
Irritated	−.11	.61
Worn out		.59
Tired	−.12	.57
Sad	.10	.53
Agitated		.52

Note. Analyses are presented for the pattern matrix of the pretest scales; posttest scales also revealed a similar pattern. All positive affect and negative affect items began with the stem "When I'm in math class, I generally feel . . ." Factor loadings below .10 are not reported in the table. A separate analysis that also included the Motivated Strategies for Learning Questionnaire test anxiety items showed that three emotional well-being scales (positive affect, negative affect, test anxiety) cleanly separated.

Table A2

Exploratory Factor Analysis for Cognitive Engagement

Item	Quantity of SRL	Quality of SRL
Quality of SRL		
When I run into difficulty doing a math problem, I go back and work out where I went wrong.	.71	
When I make a mistake, I try to figure out where I went wrong.	.69	
Before I start a math problem, I read through all of the information to see how to organize it.	.64	
When I do math, I check over my work.	.53	.22
When I do math, I ask myself questions to help me understand what to do.	.42	
Quantity of SRL		
I force myself to finish my math work even when there are other things I'd rather be doing.	−.13	.73
Even when I don't want to work on math, I force myself to do the work.		.49
Even if I don't see the importance of a particular math assignment, I still complete it.	.14	.45
Even when my math work is dull and uninteresting, I keep working until I finish.	.13	.39

Note. Analyses are presented for the pretest scales; posttest scales also revealed a similar pattern. Factor loadings below .10 are not reported in the table. These scales were developed by the Motivation Research Group, directed by Maehr and Pintrich (Maehr & Pintrich, 2001; Pintrich & Maehr, 2002). The scales have been previously reported as part of several conference presentations (Blazevski, Conley, & Pintrich, 2003; Blazevski, McKendrick, & Hruda, 2002; Conley, Zusho, Hruda, & Pintrich, 2002; Kempler, Linnenbrink, Zusho, & Maehr, 2002; Linnenbrink, Hruda, Haydel, Star, & Maehr, 1999). SRL = self-regulation.

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