Short-Term and Long-Term Consequences of Achievement Goals: Predicting Interest and Performance Over Time

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Why do some students excel in their college classes and develop interest in an academic discipline? The authors examined both the short-term and long-term consequences of students’ achievement goals in an introductory psychology course. Mastery goals positively predicted subsequent interest in the course, but not course grades. Performance goals positively predicted grades, but not interest. Three semesters later, the authors obtained measures of continued interest in the discipline and long-term performance. Mastery goals predicted subsequent enrollment in psychology courses, whereas performance goals predicted long-term academic performance. These positive and complementary effects of mastery and performance goals on different measures of academic success are consistent with a multiple-goals perspective in which both goals can have beneficial consequences in college education.

College students often pursue multiple goals in their classes. Some goals may be fairly general and concern students’ reasons for taking a class, whereas other goals are more specific to what students hope to accomplish in the course—for example, to learn as much as they can about the subject or to obtain a high grade. These latter types of goals have been labeled achievement goals (Ames, 1992; Dweck, 1986; Nicholls, 1989), and they can influence how students approach, experience, and perform in their courses. A great deal of research has investigated the relationship between achievement goals and a wide range of educationally relevant measures such as learning strategies, attributions for success, and academic performance (see Ames, 1992, for a review). However, there has been relatively little research attention given to motivational variables such as interest and intrinsic motivation (see Harackiewicz, Barron, & Elliot, 1998, for review), and even less attention to the long-term consequences of achievement goals.

We believe that educational research needs to consider not only how well students perform in their courses, but also whether students develop interest in the topics taught in those courses (Harackiewicz et al., 1998; Jackson, 1968; Maehr, 1976; Nicholls, 1979). Students who perform well in an introductory course should be well prepared for future courses in that discipline. Whether they actually enroll in more courses in that discipline, however, may depend on whether they become interested in the course material and want to learn more about the subject. Our focus is on the interest that develops during a course (Deci, 1992; Lepper & Hodell, 1989), and we believe that it can influence continuing interest in a discipline. Thus, interest and academic performance are both important indicators of success in the short term, and they may also predict future success in related courses.

In fact, motivational variables may be especially important at the college level, where students play a major role in deciding whether they take any more courses in a particular field. Although courses are often required across a general education plan and within fields of specialization, students typically choose the field in which to concentrate their studies, and they often have considerable latitude in selecting the particular courses they take. They may choose their subsequent courses on the basis of their interest in the material, their prior performance in related courses, or some combination of these factors, and achievement goals may play a critical role in this motivational process.

In sum, the present research has two major objectives. The first is to examine the role of students’ achievement goals in promoting two important short-term educational outcomes: interest and performance in an introductory college course. The second is to examine the longer term consequences of achievement goals by tracking their effects on subsequent academic performance and continued interest beyond an introductory course.

Achievement Goals and Short-Term Consequences

Recent years have seen a convergence of theory and research around the constructs of mastery and performance goals, which represent two different ways of pursuing competence in achievement situations (Ames, 1992; Dweck & Leggett, 1988; Nicholls, 1989). Mastery goals are self-referential and focus on learning and developing skills. Performance goals are normative in nature and focus on demonstrating competence. Of course, not all students are positively motivated in the classroom, and theorists have also...
identified work avoidance goals, which focus on effort minimization (Brophy, 1983; Nicholls, 1989). Each of these goal orientations fosters distinct patterns of cognition, affect, and behavior. For example, mastery goals have been linked to a number of adaptive learning behaviors such as task involvement, challenge seeking, and deep processing of course material (Ames & Archer, 1988; Nicholls, Cheung, Lauer, & Patashnick, 1989; Nolen & Haladyna, 1990). Performance goals have been linked to maladaptive learning strategies such as challenge avoidance and surface level processing (E. S. Elliott & Dweck, 1988; Nolen, 1988). Work avoidance goals have been associated with the most negative effects on learning (Archer, 1994; Duda & Nicholls, 1992; Meece, 1991; Meece, Blumenfeld, & Hoyle, 1988).

For these reasons, achievement goal theorists have long advocated mastery goals as opposed to performance or work avoidance goals as the optimal approach to course work. Although there is little controversy concerning the effects of work avoidance goals, there has been more recent debate about the effects of performance goals. In fact, results have recently begun to accumulate suggesting that strong conclusions about the negative consequences of performance goals may be premature (Harackiewicz et al., 1998; Hidi & Harackiewicz, in press; Urdan, 1997). A number of theorists have suggested that the performance goal construct may be too general, confounding theoretically distinct and separable components. For example, Elliot and colleagues (A. J. Elliot, 1997; A. J. Elliot & Harackiewicz, 1996) distinguish between approach and avoidance performance goals, and Wolters, Yu, and Pintrich (1996) distinguish between extrinsic goals and relative ability goals, which are similar to performance-approach goals. When both components are taken into consideration, performance-avoidance and extrinsic goals have been linked to the most negative outcomes (A. J. Elliot & Church, 1997; Middleton & Midgley, 1997; Skoalvik, 1997; Wolters et al., 1996). When the definition of performance goals is constrained to positive approach strivings toward normative competence (which is the definition we will use throughout this paper), a different pattern of findings emerges.

In a recent review, Harackiewicz et al. (1998) noted that performance goals are both conceptually and empirically independent of mastery goals and that positive mastery goal effects do not necessarily imply negative performance goal effects. They examined studies in which researchers tested the independent effects of mastery and performance (approach) goals and found several positive effects of performance goals on measures of adaptive learning strategies and academic performance (Archer, 1994; Bourfard, Boisvert, Vezeneau, & Larouche, 1995; A. J. Elliot & Church, 1997; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Kaplan & Midgley, 1997; Midgley & Urdan, 1995). For example, Harackiewicz et al. (1997) found that performance goals positively predicted academic performance in introductory college classes, whereas mastery goals did not. They argued that performance goals can promote academic performance because they are consistent with the general context in which performance is assessed and grades are assigned. Specifically, large lecture classes in college typically use normative grading structures that explicitly define success in terms of outperforming others. Moreover, introductory college courses tend to rely on multiple-choice exams that may assess superficial rather than deep understanding. Either of these factors may create a performance-oriented classroom environment. In such contexts, students who adopt performance goals may actually be striving to attain good grades in an optimal manner.

In contrast, Harackiewicz et al. (1997) found that mastery goals predicted interest in an introductory class, whereas performance goals did not. Thus, each goal was positively associated with one indicator of success (interest or performance) but not the other, suggesting that students who endorsed both goals were the most likely to attain both outcomes. Furthermore, A. J. Elliot and Church (1997) found a similar pattern of results in an intermediate-level college course at a different university. Considered together, the results support a multiple-goals model, in which adopting both mastery and performance goals can facilitate motivation and performance in college classes (Barron & Harackiewicz, in press).

Achievement Goals and Long-Term Consequences

The goals that students adopt in an introductory course may also influence their motivation and performance in subsequent courses in that discipline. Although Harackiewicz et al. (1997) found that performance goals were the sole predictor of grades in an introductory psychology course, a different pattern of results might emerge over time. Mastery goals could prove advantageous in more advanced courses where course work may require deep processing, thoughtful integration of the course content, and sustained effort and involvement. Mastery goals might also have indirect effects on later grades by fostering interest in a particular discipline, which may facilitate learning and subsequent performance in related courses (Alexander, Kulikowich, & Jetton, 1994; Hidi, 1990; Maehr, 1976; Sansone & Harackiewicz, 1996). Thus, we might see direct or indirect effects of mastery goals on performance in later courses in that discipline.

However, even as advanced courses require more integrative work from students, the general climate of later college courses may continue to be performance oriented as professors evaluate students' work relative to others and assign grades on a normative curve. In this case, we should continue to find positive performance goal effects on subsequent academic performance, and these effects may be mediated by students' performance in the introductory course. In other words, performance goals may facilitate subsequent performance by promoting learning and performance in an introductory course that provides a strong foundation for later courses. In sum, mastery and performance goals might both contribute to academic performance over the long term.

As noted earlier, college students typically decide for themselves whether to enroll in further courses, and their subsequent course choices may serve as a behavioral indicator of their continued interest in a particular discipline (Maehr, 1976). We would expect to find positive mastery goal effects on continued interest, and these effects should be mediated by students' interest in an introductory course. In other words, the interest developed in an introductory course should promote continued interest in a particular field, and mastery goals may promote continued interest through their effects on interest in an introductory course. Performance goals might also have indirect effects on continued interest, if students choose their subsequent courses on the basis of their prior performance in related courses.

In sum, although mastery and performance goals may have some indirect effects over time, we predict that long-term goal
goals were moderated by performance expectations. Specifically, mastery goals should affect continued interest in a particular discipline by promoting interest in an introductory class, and performance goals should influence subsequent performance by promoting performance in an introductory course.

Interest: Catch Versus Hold Components

In addition to our primary objectives, a third objective of this research was to explore the nature of interest in college classes. Theorists have identified two types of interest: individual interest, which reflects a relatively enduring predisposition to reengage in particular activities over time, and situational interest, which is used to characterize engagement that arises in a particular context (Krapp, Hidi, & Renninger, 1992). As Alexander (1997) points out, both types of interest may contribute to the development of continuing interest in a topic. For example, the decision to enroll in a college course reveals a certain level of interest, and some students may enter a course with knowledge about the topic and individual interest (Alexander, Kulkowich, & Schulze, 1994; Renninger, 1999a; Schiefele & Krapp, 1996). This preexisting interest may be strengthened and deepened in the course. Other students may only develop continuing interest if the course stimulates their interest (Hidi & Harackiewicz, in press; Hidi & McLaren, 1990, 1991).

Hidi and Baird (1986) raised an important distinction between factors that “catch” interest and those that “hold” it (Mitchell, 1993). In a college classroom, for example, an entertaining lecture or high-tech audiovisuals might grab students’ attention and catch their interest, but course material that is inherently interesting or that becomes personally valued may better hold students’ interest over time (Malone & Lepper, 1987; Rathunde, 1993; Schiefele, 1991). Thus, interest based on hold factors should predict continuing interest in a discipline more strongly than interest based on catch factors.

Mediators and Moderators

A fourth objective of the current research was to examine potential mediators and moderators of achievement goal effects in the short term. First, to explore the link between achievement goals and academic performance, we measured students’ study strategies and tested whether they mediated goal effects. A number of theorists have distinguished between two dimensions of learning strategies, and although labels and measures differ, these distinctions converge on one between deep or elaborative processing of materials versus surface or shallow learning (Biggs, 1993; Marton, Hounsell, & Entwistle, 1984; Nolen, 1988; Pintrich & Schrauben, 1992; Schmeck, 1983). We therefore included measures of both dimensions to assess the link between students’ achievement goals and their self-reported strategy use and, in turn, the link between strategy use and performance in their introductory class. Second, Dweck and Leggett (1988) argued that negative performance goal effects may only be revealed when students experience lower levels of perceived competence. Therefore, in this study, we also measured students’ performance expectations at the outset and midpoint of the semester to test whether the effects of performance goals were moderated by performance expectations.

Our Study

We used a prospective longitudinal design to examine the consequences of students’ achievement goals over the course of an academic semester, measuring achievement goals and performance expectations at the outset of an introductory psychology course, study strategies and performance expectations at the midpoint of the semester, interest (both catch and hold factors) near the end of the course, and performance at the end of the course. We then tracked students’ course choices and subsequent academic performance over the following three semesters. To measure continued interest, we counted the number of psychology credits taken over the subsequent three semesters and also counted the total number of credits taken over that same time period.

The measurement of academic performance was more complex. To examine performance in the introductory class, we measured final course grades. Then, for those students who did enroll in additional psychology courses, we computed a grade-point average (GPA) for their subsequent psychology courses. Because we could not measure subsequent performance in psychology courses for all students, however, we also examined more general measures on which we could compare short- and long-term effects for all students. Specifically, we computed a GPA for the semester of the introductory course, as well as an overall GPA for subsequent semesters. Thus, we collected both psychology-specific and general measures of performance in both the short and long term.

We expected that achievement goals for the introductory psychology course would predict interest and specific measures of performance and that they might also be related to more general measures of performance. Specifically, we predicted that mastery goals, but not performance goals, would be associated with interest in the short term, as well as continued interest in psychology. In contrast, we predicted that performance goals, but not mastery goals, would be associated with performance in the short term (as in Harackiewicz et al., 1997, and A. J. Elliot & Church, 1997), but that both mastery and performance goals would have positive effects on subsequent performance in psychology courses.

Method

Overview

The initial component of the study took place over the course of a semester in introductory psychology classes at a large, Midwestern university and consisted of three assessment waves during the semester. We measured students’ achievement goals for the class 2 to 3 weeks into the semester, their study strategies midway through the semester, and their interest in the class near the end of the semester. We also obtained their final grades in the course. Three semesters later, we obtained students’ academic records to measure their subsequent course choices and grades.

Participants and Setting

Students were recruited from four sections of Introductory Psychology. This is a general survey course, typically taken by freshmen and sophomores before they have selected a major. Departmental records indicate that approximately 10% of the students who take Introductory Psychology go on to major in psychology. Sections of the course were taught by one of two instructors (average enrollment of 55 students per section). The size of the classes and the lecture format necessarily limited opportunities for instructor–student interactions. Students’ grades were determined by
their performance on multiple-choice exams, and grades were assigned according to normative curves recommended by the Psychology Department. A sample of 648 introductory psychology students (218 men and 430 women) participated in the initial study and received extra credit for participating.

Goals Wave

Two to three weeks into the term, after students became familiar with the course and their instructor but before they had taken any quizzes or exams, they completed an 18-item questionnaire. The questionnaire was designed to assess students' self-reported adoption of mastery, performance, and work avoidance goals in their introductory psychology class. Items were based on those used in Harackiewicz et al. (1997), which were originally adapted from Meece et al. (1988) and Pintrich and De Groot (1990; Pintrich, Smith, Garcia, & McKeachie, 1993). These scales differed slightly from those used by Harackiewicz et al. (1997). The major difference was that items in this study emphasized goals adopted in the specific class, as opposed to more general goal orientations. Because our scales were developed for use in college classes, they cannot be directly compared with other scales developed for elementary, middle-school, and high-school populations. However, our measures of mastery and performance goals appear quite comparable to the mastery and relative ability scales developed by Midgley et al. (1998).

In addition, three items assessed students' performance expectations for the class. Students were instructed to indicate the extent to which they believed each item to be true of them on a 1 (not at all) to 7 (very) scale. The mastery, performance, work avoidance, and performance expectations items appear in Table 1.

Study Strategies Wave

At mid-semester (7 to 8 weeks into the term), students completed a 16-item questionnaire. The questionnaire was designed to measure students' strategies for studying their psychology course material and to obtain another measure of performance expectations. Study strategy items were adapted from Pintrich and De Groot (1990) and Pintrich et al. (1993) to reflect recent theorizing on cognitive styles for learning. In particular, items measured the extent to which students used elaboration and rehearsal learning strategies. Elaboration strategies reflect a deep-level approach to learning (e.g., trying to connect and integrate information that is being learned with what one already knows), whereas rehearsal strategies reflect a more superficial and surface-level approach to learning (e.g., simply trying to memorize important information). In addition, we assessed whether students lacked a study strategy. Study strategy and mid-semester performance expectations items appear in Table 2.

Interest Wave

Near the end of the semester, but before taking their last exam and receiving their final course grades, students' interest in the class was measured. Students indicated their agreement with each of 13 items on a 1 (strongly disagree) to 7 (strongly agree) scale. Items were derived from our previous work (Harackiewicz et al., 1997), but we also added new items to test for a distinction between enjoyment of the class (catch) and more substantive interest in psychology (hold). Interest items are presented in Table 3.

Grades

Final grade in psychology. Students' final course grades were obtained from departmental records. Students could receive 1 of 8 possible grades, based on the university's 4-point scale. The average grade for students in our study was 2.82 (SD = .92). Grades were distributed as follows: A = 20.7%, AB = 17.9%, B = 14.6%, BC = 16.1%, C = 23.2%, D = 6.8%, and F = 0.8%. The average grade for students in our sample was higher than the average grade for all students enrolled in Introductory

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**Table 1**

Goals Wave

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mastery</td>
<td>1. I want to learn as much as possible in this class.</td>
</tr>
<tr>
<td></td>
<td>2. In a class like this, I prefer course material that really challenges the content as thoroughly as possible.</td>
</tr>
<tr>
<td></td>
<td>3. The most important thing for me is trying to understand what I learn.</td>
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<tr>
<td></td>
<td>4. Understanding psychology is important to me.</td>
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<tr>
<td></td>
<td>5. I like it best when something I learn makes me want to find out more.</td>
</tr>
<tr>
<td></td>
<td>6. In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.</td>
</tr>
<tr>
<td>Performance</td>
<td>1. It is important for me to do better than other students.</td>
</tr>
<tr>
<td></td>
<td>2. My goal in this class is to get a better grade than most of the other students.</td>
</tr>
<tr>
<td></td>
<td>3. It is important for me to do well compared to others in this class.</td>
</tr>
<tr>
<td></td>
<td>4. I want to do well in this class to show my ability to my family, friends, advisors, or others.</td>
</tr>
<tr>
<td></td>
<td>5. Getting a good grade in this class is the most important thing for me right now.</td>
</tr>
<tr>
<td></td>
<td>6. It is important for me to establish a good overall grade-point average, so my main concern in this class is getting a good grade.</td>
</tr>
<tr>
<td>Work Avoidance</td>
<td>1. I want to do as little work as possible in this class.</td>
</tr>
<tr>
<td></td>
<td>2. I just want to do as much as I have to in order to get by in this class.</td>
</tr>
<tr>
<td></td>
<td>3. I like my classes best when the tests are easy.</td>
</tr>
<tr>
<td>Initial Performance Expectations</td>
<td>1. Considering the difficulty of this course and my skills, I think I will do well in this class.</td>
</tr>
<tr>
<td></td>
<td>2. I expect to do well in this class.</td>
</tr>
<tr>
<td></td>
<td>3. I think I will do poorly in this class (reversed).</td>
</tr>
</tbody>
</table>
Table 2

Study Strategy Wave Items and Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elaboration</td>
<td>1. When I study, I try to explain the key concepts in my own words.</td>
</tr>
<tr>
<td></td>
<td>2. When reading, I try to connect the things I am reading about with what I already know.</td>
</tr>
<tr>
<td></td>
<td>3. When I study for a test, I try to put together the information from class and from the book.</td>
</tr>
<tr>
<td></td>
<td>4. When I am studying a topic, I try to make everything fit together.</td>
</tr>
<tr>
<td></td>
<td>5. When reading the text, I am interested in the &quot;big picture&quot; and how concepts relate to each other.</td>
</tr>
<tr>
<td>Rehearsal</td>
<td>1. When I study for this course, I go through the readings and my class notes and try to find the most important ideas to memorize.</td>
</tr>
<tr>
<td></td>
<td>2. When I study for this class, I practice saying important facts to myself over and over.</td>
</tr>
<tr>
<td></td>
<td>3. When I study, I try to memorize as many facts as I can.</td>
</tr>
<tr>
<td></td>
<td>4. When studying for this class, I read my class material to myself over and over again.</td>
</tr>
<tr>
<td></td>
<td>5. When studying, I make up memory cues that I can use during tests to help me recall the material.</td>
</tr>
<tr>
<td>Lack of Strategy</td>
<td>1. I’m not sure how to study for this course.</td>
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<tr>
<td></td>
<td>2. I often find that I don’t know what to study or where to start.</td>
</tr>
<tr>
<td></td>
<td>3. I really don’t have a strategy for studying for this class.</td>
</tr>
<tr>
<td>Mid-Semester Performance Expectations</td>
<td>1. Considering the difficulty of this course and my skills, I think I will do well in this class.</td>
</tr>
<tr>
<td></td>
<td>2. I expect to do well in this class.</td>
</tr>
<tr>
<td></td>
<td>3. I think I will do poorly in this class (reversed).</td>
</tr>
</tbody>
</table>

Psychology ($M = 2.58; N = 1,542$), but the distribution of grades across all sections was comparable to that of our sample.

Semester GPA. We also obtained students’ grades for all other courses taken that semester and computed a GPA for the semester (semester GPA).

Long-Term Follow-Up

Three semesters later, we obtained students’ permission to access their academic records. We used these records to count the number of course credits taken in psychology over the three semesters, which provided a behavioral measure of subsequent interest in psychology (courses taken). At this university, psychology courses range from 1 to 5 credits each, and the typical lecture course is taken for 3 credits. We also computed an overall GPA for all courses taken in the three semesters following the semester of the initial study (subsequent GPA) and one specifically for subsequent psychology courses (psychology GPA).

A total of 648 students participated in the initial study, but 33 students could not be reached for permission to access their subsequent records. Of the 615 students who participated in the initial study and gave permission for access to their academic records, 11 took no more college courses after Introductory Psychology (9 dropped out of college and 2 graduated). Thus,

Table 3

Interest Wave

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest in Psychology</td>
<td>1. I think what we are learning in this class is interesting.</td>
</tr>
<tr>
<td></td>
<td>2. I think I will be able to use what I learn in this course in other courses.</td>
</tr>
<tr>
<td></td>
<td>3. I would recommend this class to others.</td>
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<tr>
<td></td>
<td>4. I am enjoying this psychology class very much.</td>
</tr>
<tr>
<td></td>
<td>5. I think the field of psychology is very interesting.</td>
</tr>
<tr>
<td></td>
<td>6. This class has been a waste of my time (reversed).</td>
</tr>
<tr>
<td></td>
<td>7. I’m glad I took this class.</td>
</tr>
<tr>
<td></td>
<td>8. I think the course material in this class is useful for me to learn.</td>
</tr>
<tr>
<td></td>
<td>9. I would like to take more psychology classes after this one.</td>
</tr>
<tr>
<td></td>
<td>10. I am more likely to register for another psychology class because of my experience in introductory psychology.</td>
</tr>
<tr>
<td>Enjoyment of Lectures</td>
<td>1. The lectures in this class really seem to drag on forever (reversed).</td>
</tr>
<tr>
<td></td>
<td>2. I don’t like the lectures very much (reversed).</td>
</tr>
<tr>
<td></td>
<td>3. I like my professor.</td>
</tr>
</tbody>
</table>
the final sample (used in all data analyses, unless otherwise noted) included 604 students (204 men and 400 women).

Results

Scale Construction

To verify whether the items assessed at each wave conformed to our a priori classification, a series of factor analyses was conducted. Scales were constructed with unweighted linear combinations of variables with sufficiently high loadings on primary factors and sufficiently low cross-loadings. For all analyses, items loaded at least .50 on the primary factor and below .30 on other factors.

For the goals wave questionnaire, principal components factor analysis with varimax rotation yielded a four-factor solution reflecting our a priori identification of Mastery, Performance, Work Avoidance, and Performance Expectations factors. The eigenvalues for Mastery, Performance, Work Avoidance, and Performance Expectations were 3.72, 3.42, 1.30, and 1.70, respectively. Cronbach's alphas reached acceptable levels for the six-item Mastery ($\alpha = .79$), the six-item Performance ($\alpha = .80$), and the three-item Performance Expectations ($\alpha = .79$) scales. The three-item Work Avoidance scale was not as internally consistent ($\alpha = .51$) and was therefore not included in the primary analyses. We did however conduct supplemental analyses including work avoidance goals for comparisons with previous research that will be reported separately as ancillary analyses.

For the study strategies wave questionnaire, principal components factor analysis with varimax rotation yielded a four-factor solution mirroring our a prior classification of elaboration, rehearsal, lack of strategy, and performance expectations items. The eigenvalues for Elaboration, Rehearsal, Lack of Strategy, and Performance Expectations were 2.48, 1.40, 1.10, and 4.75, respectively. Cronbach's alphas reached acceptable levels for the five-item Elaboration ($\alpha = .76$), the five-item Rehearsal ($\alpha = .61$), the three-item Lack of Strategy ($\alpha = .72$), and three-item Performance Expectations ($\alpha = .82$) scales.

For the 13-item interest wave questionnaire, we used a principal components factor analysis with oblimin rotation because we expected factors to be correlated. This analysis yielded two factors, one with 10 items (eigenvalue = 7.05; $\alpha = .93$) reflecting general interest in psychology (Interest in Psychology), and one with three items (eigenvalue = 1.22; $\alpha = .72$) reflecting specific enjoyment of the class (Enjoyment of Lectures).

Descriptive and Correlational Analyses

The means and standard deviations for all variables are reported in Table 4; zero-order intercorrelations are reported in Table 5. Although the structure, content, and grading distributions of the four class sections were comparable, we tested for instructor and section differences in all variables. The only significant instructor effect was on Enjoyment of Lectures, indicating that students enjoyed sections taught by one instructor more than the other. Therefore, we included a contrast code term to test and control for differences between the two instructors in all subsequent analyses (Cohen & Cohen, 1983).

Regression Models

Overview. We conducted a series of multiple regression analyses to examine the effects of achievement goals on outcome variables measured during the semester in which students took Introductory Psychology (the short term) and on measures collected in the follow-up assessment (the long term). This data analytic strategy allowed us to retain the continuous nature of the variables and to test the independent effects of each goal variable as well as the interactions between them. For the following analyses, all main effect terms were standardized, and multiplicative two- and three-way interaction terms were created with these variables (Aiken & West, 1991). We set alpha at .01 as our criterion for significance because our large sample size yielded considerable statistical power.

Regression model for short-term analyses. To investigate the direct effects of goals on the short-term outcomes, interest, enjoyment, final grade, and semester GPA were each regressed on a preliminary model that included the goals measures and also controlled for gender and instructor effects. Initial regression models included the main effects of mastery and performance goals, gender (coded +1 for females and -1 for males), instructor (coded +1 for one instructor and -1 for the other), and all two- and three-way interactions among these five variables. Preliminary analyses revealed no significant interactions with gender or instructor on any measures, and thus the only interaction term that we retained in our final model was that between mastery and performance goals. We therefore tested a basic model that simultaneously tested four main effects and one interaction.

Short-Term Effects of Goals

Interest in psychology. The overall model was significant, $F(5, 598) = 27.10, p < .001, R^2 = .18$. A main effect was found for mastery goals, $F(1, 598) = 121.36, p < .001$, such that students who adopted mastery goals reported higher levels of interest in psychology than students who did not endorse mastery goals ($\beta = .41$). Neither the main effect of performance goals ($\beta = -.06$) nor the Performance × Mastery goal interaction ($\beta = .00$) was significant, and no other effects were significant.
Table 5  
Zero-Order Correlations for Goals and Outcome Variables  

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mastery goals</td>
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| 15. Note. GPA = grade-point average. *p < .01.  

Enjoyment of the lectures. The overall model was significant, $F(5, 598) = 26.25, p < .001, R^2 = .18$. The main effects of mastery goals, gender, and instructor were significant, $F(1, 598) = 33.25, 11.76, 82.42$, respectively, all $p$s < .001. Individuals who adopted mastery goals enjoyed the lectures more ($\beta = .22$). Women enjoyed the class more ($\beta = .13$), and students of one instructor enjoyed their class more than students of the other instructor ($\beta = .34$). Neither the main effect of performance goals ($\beta = -.01$) nor the Performance × Mastery goal interaction ($\beta = .01$) was significant.

Final grade. The overall model was significant, $F(5, 598) = 4.46, p < .001, R^2 = .04$, and a main effect was found for performance goals, $F(1, 598) = 12.97, p < .001$. Students who adopted performance goals achieved higher grades in the course than those who did not endorse performance goals ($\beta = .15$). Neither the main effect of mastery goals ($\beta = .02$) nor the Performance × Mastery goal interaction ($\beta = -.07$) was significant, and no other effects were significant.

Semester GPA. The overall model was significant, $F(5, 598) = 5.91, p < .001, R^2 = .05$, and the main effects of performance goals and gender were significant, $F(1, 598) = 10.77$ and $13.89$, respectively, $p$s < .01. Students who adopted performance goals in their psychology class attained higher grades in all their classes that semester ($\beta = .13$). In addition, women attained higher grades than men ($\beta = .15$). No other effects were significant. Figure 1 displays a path model illustrating the short-term consequences of goals.

The Effects of Interest and Enjoyment on Performance

Because we measured interest and enjoyment before the end of the semester, it was also possible to test these variables as predictors of graded performance in the course. However, students had already received feedback on two exams by the point in the semester that we measured interest, and it is therefore possible that their knowledge about their performance to date affected their reports of interest and enjoyment. Thus, the causal ordering between interest, enjoyment, and final grade is more ambiguous than for other variables tested in our process models.

Mediators and Moderators of Short-Term Goal Effects

Study strategies are one hypothesized link between achievement goals and performance (Pintrich & Schrauben, 1992). We there-
fore conducted analyses, following the procedures outlined by Judd and Kenny (1981), to test whether the direct goal effects on final grade established in the previous analyses were mediated or partially mediated by students’ self-reported study strategies. To reveal mediational effects, three criteria must be satisfied. First, as documented previously, a direct effect between a predictor and an outcome must be documented. Next, a link between the predictor and the hypothesized mediator must be established. Finally, when the original predictor and mediator are tested simultaneously as predictors of the outcome, the mediator should significantly affect the outcome variable. Moreover, the effect of the original predictor should be substantially or completely reduced to document partial or complete mediation, respectively. Therefore, to establish that achievement goals were linked to the hypothesized mediators, we regressed each of the study strategy variables on the basic regression model.

**Elaboration.** The overall model was significant, $F(5, 598) = 20.54, p < .001, R^2 = .15,$ and the main effect of mastery goals was significant, $F(1, 598) = 86.43, p < .001.$ Students who adopted mastery goals were more likely to report using elaboration strategies than students who did not endorse mastery goals ($\beta = .36$). No other effects were significant.

**Rehearsal.** The overall model was significant, $F(5, 598) = 11.82, p < .001, R^2 = .09.$ Main effects were found for performance goals and gender, $F(1, 598) = 30.44$ and 15.99, respectively, $p < .001.$ Students who adopted performance goals were more likely to use rehearsal strategies ($\beta = .22$), and women reported more rehearsal use than men ($\beta = .16$). No other effects were significant.

**Lack of strategy.** The overall model was significant, $F(5, 598) = 5.01, p < .001, R^2 = .04.$ A main effect was found for mastery goals, $F(1, 598) = 17.68, p < .01.$ Students who adopted mastery goals were less likely to report being confused about how to study for their psychology course ($\beta = -.17$). No other effects were significant.

**Mediational effects on final grade.** A direct effect of performance goals on final grade was documented earlier (see Figure 1), so the three study strategy variables were added to the basic model to test for possible mediation. The overall model was significant, $F(8, 595) = 11.90, p < .001, R^2 = .14.$ Although a main effect was found for lack of strategy, $F(1, 595) = 56.71, p < .001, \beta = -.30,$ neither elaboration nor rehearsal strategies had significant effects.

Moreover, the performance goal effect remained significant, $F(1, 595) = 17.78, p < .001, \beta = .17.$ Study strategies therefore failed to mediate this effect. Figure 3 displays a path model illustrating the predictors and correlates of study strategies.

**Performance expectations.** Dweck and Leggett (1988) argued that performance goals should have their most detrimental consequences at lower levels of perceived competence. We therefore conducted analyses to test whether the effects of performance goals were moderated by performance expectations. We measured performance expectations at two points in time: in the goals wave at the outset of the class and in the study strategies wave, midway through the semester, when students had received some performance feedback in the class. We regressed interest, enjoyment, final grade, and semester GPA on two models, each of which included one measure of performance expectations and its interactions with the two goals measures. First, we added the main effect of initial performance expectations and the two-way interactions with mastery and performance goals to the basic model tested earlier. There was a significant main effect of initial performance expectations on final grade, $F(1, 595) = 11.64, p < .001, \beta = .15,$ and on semester GPA, $F(1, 595) = 7.71, p < .01, \beta = .12,$ but there were no significant interactive effects of performance expectations on any measure. Moreover, the basic pattern of findings reported earlier remained the same.

Next, we added the main effect of mid-semester performance expectations and the two-way interactions with mastery and performance goals to the basic model tested earlier. In these regressions, the main effect of mid-semester performance expectations was significant on interest, $F(1, 595) = 41.69, p < .001, \beta = .25,$ enjoyment, $F(1, 595) = 17.77, p < .001, \beta = .17,$ final grade, $F(1, 595) = 90.60, p < .001, \beta = .38,$ and semester GPA, $F(1, 595) = 45.05, p < .001, \beta = .28.$ Students who believed they would perform well in their psychology course reported higher levels of interest and enjoyment and obtained higher grades in that course and all other courses that semester. However, there were no significant interactions of performance expectations with goals on

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**Figure 2.** Path model of interest and enjoyment as predictors of final grade. Paths represent significant ($p < .01$) effects, and path coefficients are standardized regression coefficients.

**Figure 3.** Path model of the predictors and consequences of study strategies. Paths represent significant ($p < .01$) effects, and path coefficients are standardized regression coefficients.
any measure, and the pattern of findings reported earlier was not altered by the inclusion of these mid-semester expectations terms.

Long-Term Effects of Goals

Regression model for long-term analyses. To investigate the direct effects of goals on the long-term outcomes, courses taken, subsequent GPA, and psychology GPA were regressed on the basic five-term model established in the short-term analyses. Next, to examine the long-term effects in the context of the short-term effects documented earlier, we added interest, enjoyment, and a measure of graded performance to the basic model. This second model allowed us to test for mediated and/or indirect effects of goals on the long-term consequences. When the long-term outcome variable was a general GPA measure (subsequent GPA), we used a general short-term measure (semester GPA) to control for initial performance; when the long-term outcome was specific to psychology (courses taken or psychology GPA), we used a specific short-term measure (final grade) to control for performance. Although the regression models tested were identical for the three long-term outcome measures, the psychology GPA analyses were conducted with the subset of the sample that actually took additional psychology courses, and these analyses will be reported separately.

Direct effects on long-term outcomes. The overall model on courses taken was significant, $F(5, 598) = 5.10, p < .001, R^2 = .04$, and the only significant predictor was mastery goals, $F(1, 598) = 16.8, p < .001, \beta = .16$. Students who adopted mastery goals in Introductory Psychology were more likely to take more psychology courses over the next three semesters. The overall model on subsequent GPA was significant, $F(5, 598) = 5.51, p < .001, R^2 = .04$, and two terms were significant. There was a main effect of performance goals, $F(1, 598) = 10.68, p < .01, \beta = .13$, and a main effect of gender, $F(1, 598) = 15.03, p < .001, \beta = .16$. Students who adopted performance goals in Introductory Psychology had higher grades over the course of three subsequent semesters, and women obtained higher grades over the following semesters. Figure 4 displays a path model illustrating the direct effects of goals on the measures of long-term consequences.

Indirect and mediated effects on courses taken. The addition of interest, enjoyment, and final grade to the model on courses taken resulted in a significant overall model, $F(8, 595) = 8.57, p < .001, R^2 = .10$, and it accounted for significantly more variance than the direct effects model, $p < .001$. In this model, the main effect of interest was significant, $F(1, 595) = 33.91, p < .001, \beta = .31$. We found no evidence of indirect performance goal effects ($\beta$ for final grade $= .05, \text{ns}$). The fact that the mastery goal effect was reduced in size ($\beta = .06, \text{ns}$, from .16 in the direct effects model) indicates that the direct mastery goal effect was partially mediated through interest (Judd & Kenny, 1981).

It is interesting to note that we also found a significant negative effect of enjoyment, $F(1, 595) = 8.75, p < .01, \beta = -.15$, reflecting a suppression effect (Cohen & Cohen, 1975; Conger, 1974). Suppression occurs when one variable increases the predictive validity of another variable when both are tested in a regression equation, revealing a beta for one variable that is larger than its zero-order correlation with the dependent variable. In addition, the beta for the suppressor variable frequently changes sign from its zero-order correlation. When interest and enjoyment were tested simultaneously as predictors of courses taken, the value of the beta for interest (.31) was greater than the zero-order correlation between interest and courses taken, $r(604) = .27, p < .05$. In addition, the beta for enjoyment (−.13) did indeed change sign from its zero-order correlation with courses taken, $r(604) = .06, p > .05$. Thus, controlling for enjoyment (the suppressor variable) increased the association between interest and courses taken. No other effects were significant.

We also tested this model with a revised version of our interest measure. Because two of the items referred to taking more psychology classes, we removed them from our Interest scale and tested a revised eight-item interest measure as a predictor of courses taken. In this model, the eight-item Interest scale was a significant predictor of courses taken, $F(1, 595) = 20.65, p < .001, \beta = .25$, but enjoyment was not ($\beta = -.12$).

Indirect and mediated effects on subsequent GPA. The addition of interest, enjoyment, and semester GPA to the model on subsequent GPA resulted in a significant overall model, $F(8, 595) = 65.39, p < .001, R^2 = .47$, and accounted for significantly more variance than the direct effects model, $p < .001$. The main effect of semester GPA was the only significant predictor, $F(1, 595) = 471.21, p < .001, \beta = .67$. Students who received higher grades in the semester in which they took Introductory Psychology received higher grades over the next three semesters. Thus, we found no evidence of indirect mastery goal effects ($\beta$ for interest $= -.05, \text{ns}$; $\beta$ for enjoyment $= .01, \text{ns}$). The fact that the performance goal effect was reduced in size ($\beta = .04, \text{ns}$, from .13 in the direct effects model) indicates that the direct performance goal effect was partially mediated through semester GPA (Judd & Kenny, 1981). Figure 5 displays a path model illustrating the long-term effects of goals, as mediated through the short-term consequences.

Grades in subsequent psychology courses. For the psychology GPA analysis, our sample was limited to the group of 148 students who actually enrolled in additional psychology classes and received grades in them. Because of the reduction in power due to this smaller sample size, we set our criterion for significance to .05 for analyses conducted with this subset of 148 students. To examine the direct effects of goals on subsequent psychology grades, we regressed psychology GPA on the basic model. This model was not significant, $F(5, 142) = 2.10, p < .07, R^2 = .07$, but the main

![Figure 4](image-url)

Figure 4. Path model of the direct effects of mastery and performance goals and gender on courses taken and subsequent grade-point average (GPA). Paths represent significant ($p < .01$) effects, and path coefficients are standardized regression coefficients.
Ancillary Analyses

Well as lower grades in all of their classes that semester ($\beta = -.17$), as on semester GPA, $F(1, 597) = 12.66$, $p < .001$. Students who adopted work avoidance goals received lower grades in the class less ($\beta = -.17$). There were also main effects of work avoidance goals on interest, $F(1, 597) = 7.62$, $p < .01$, $\beta = .23$. No other effects were significant.

When the effects of interest, enjoyment, and final grade were added to this direct effects model, the overall model became significant, $F(8, 139) = 61.52$, $p < .001$, $R^2 = .66$, and accounted for significantly more variance than the direct effects model, $p < .001$. The main effect of final grade was significant, $F(1, 139) = 61.52$, $p < .001$. Students who received higher grades in Introductory Psychology received higher grades in their later psychology courses ($\beta = .57$). The performance goal effect was no longer significant and it was reduced in size ($\beta = .13$, $ns$, from .23 in the direct effects model), suggesting that the direct performance goal effect was partially mediated through final grade. We found no evidence of indirect mastery goal effects ($\beta$ for interest $= -.11$, $ns$). No other effects were significant. Figure 6 displays a path model illustrating the predictors of grades in subsequent psychology courses.

Discussion

Our primary objectives in this research were to examine the short-term consequences of achievement goals adopted in an introductory psychology course for interest and performance in that class and to track the long-term consequences of these goals for continued interest in psychology and subsequent performance in psychology classes. Goal theorists have argued that achievement goals play an important role in shaping how students approach, experience, and react to achievement situations, and we found that students’ goals, measured early in the semester, were related to their interest in psychology, enjoyment of lectures, and final grades in the course. Specifically, we found that mastery goals were predictive of interest in psychology and enjoyment of the course, but failed to predict academic performance. In contrast, we found that performance goals were unrelated to interest and enjoyment, but predicted graded performance in two different samples. These short-term results, observed over the course of a

Work avoidance goals. Despite its low reliability, we conducted supplemental analyses including work avoidance goals for comparisons with previous research (Harackiewicz et al., 1997; Meece et al., 1988). We added work avoidance goals to our basic model and tested for short-term and long-term effects. The inclusion of work avoidance goals in these models did not alter the pattern of significant effects reported in the primary analyses. There were significant main effects of work avoidance goals on interest, $F(1, 597) = 7.23$, $p < .01$, and on enjoyment, $F(1, 597) = 17.61$, $p < .001$. Students who adopted work avoidance goals were less interested in psychology ($\beta = -.11$) and enjoyed the class less ($\beta = -.17$). There were also main effects of work avoidance goals on final grade, $F(1, 597) = 14.98$, $p < .001$, and on semester GPA, $F(1, 597) = 12.66$, $p < .001$. Students who adopted work avoidance goals received lower grades in the class than those not endorsing work avoidance goals ($\beta = -.17$), as well as lower grades in all of their classes that semester ($\beta = -.15$). There were no effects of work avoidance goals on long-term measures.

Selection bias and restriction of range. Because approximately half the students in the course participated in the study, and because they obtained somewhat higher grades than students who did not participate, restriction of range (in grades or goals) may have attenuated the findings reported here. Moreover, these results may be affected by selection bias and may not generalize to all students in Introductory Psychology. To address these issues, we analyzed data collected as part of another project in a different semester. We obtained goals measures collected on the first day of class from all Introductory Psychology students ($N = 1,592$) as well as their final grades in the course. We were therefore able to test the same model in a sample with no selection bias and the full range of grades and goals. We tested the same five-term basic model on final grades in this sample, and the overall model was significant, $F(5, 1586) = 15.13$, $p < .001$, $R^2 = .05$. The only significant predictor was performance goals, $F(1, 1586) = 23.79$, $p < .001$, $\beta = .12$. These findings therefore replicate those reported in the primary analyses and are evidence for the generalizability of the findings.
college semester, replicate those found by Harackiewicz et al. (1997) and extend our previous findings in several ways. We obtained these results with a much larger and more representative sample of introductory students, developed differentiated measures of interest in the course, measured general academic performance (in addition to performance in the psychology class), and included measures of performance expectations and study strategies to test for potential moderators and mediators of goal effects. Most important, however, we extended the scope of this study beyond the semester in which achievement goals were adopted.

To track the long-term consequences of achievement goals, we obtained a behavioral measure of continued interest (the number of additional psychology credits students chose to take) and assessed academic performance over the three semesters following the introductory course. Our measure of long-term interest reflects continuing motivation in the field of psychology and is conceptually similar to the behavioral measures of intrinsic motivation used in laboratory research (e.g., Deci, 1971; Lepper, Greene, & Nisbett, 1973). For example, Harackiewicz and Elliot (1993) collected self-report measures of interest in pinball and also recorded how much time participants spent playing pinball in a subsequent free-choice period. To our knowledge, ours is the first study to use such a behavioral measure of continuing motivation in an educational context, and we believe that it is an important outcome measure to include in educational research (Maehr, 1976).

Over the long term, we found that the goals adopted in an introductory course continued to predict students' interest in psychology and academic performance, although the effects were weaker over time. Specifically, mastery goals predicted continued interest in psychology, and performance goals were associated with subsequent grades in psychology courses (for those students who actually enrolled in additional psychology courses), as well as subsequent academic performance (for all students in our sample). Although we had hypothesized that mastery goals might have positive effects on performance in later psychology classes, we did not find evidence of direct mastery goal effects on performance in subsequent psychology classes, nor did we find mastery goal effects on the more general measure of overall academic performance. Thus, the same pattern of goal effects obtained in the short term was also observed on measures of continued interest and performance collected over the following three semesters. In sum, the goals adopted by students in an introductory class may have implications for their interest and academic work in subsequent courses.

**Mediated and Indirect Effects on Long-Term Outcomes**

In addition to documenting these direct effects of achievement goals on long-term outcome measures, we also examined whether goals had mediated or indirect effects on these long-term outcomes. We hypothesized that performance goals should promote subsequent academic performance by facilitating performance in an introductory course that provides foundational knowledge in a particular discipline. In addition, we hypothesized that mastery goals might indirectly affect subsequent performance in psychology courses by fostering interest in psychology. When goals, interest, enjoyment, and final grade in Introductory Psychology were tested simultaneously as predictors of subsequent psychology grades, however, final grade emerged as the only significant predictor, suggesting that final grades were indeed partial mediators of the direct effect of performance goals on subsequent psychology grades. We found no evidence of indirect mastery goal effects. Similarly, when goals, interest, enjoyment, and semester GPA were tested simultaneously as predictors of overall GPA in subsequent courses, semester GPA emerged as the only significant predictor, indicating that it partially mediated the direct effect of performance goals.

We also hypothesized that the long-term effect of mastery goals on continued interest would be mediated through their short-term effect on interest in the introductory course. In addition, we considered the possibility that performance goals could have indirect effects on continued interest by promoting higher grades in Introductory Psychology that might, in turn, predict taking additional psychology courses. Indeed, we did find a small zero-order correlation between final course grades and continued interest, $r(604) = .11, p < .01$, indicating some degree of support for this position. However, when goals, interest, enjoyment, and final grade were tested simultaneously as predictors of subsequent course choices, interest emerged as the only significant predictor, suggesting that it partially mediated the direct effect of mastery goals. We found no evidence of indirect performance goal effects. Thus, mastery goals influenced subsequent course choices through their direct effects on interest. Specifically, mastery goals predicted interest in psychology, and, in turn, interest predicted the number of additional psychology courses taken. The fact that students' self-reported interest during the introductory course predicted their actual course enrollment behavior over an ensuing three-semester period is evidence of the crucial role that interest can play in college education.

In sum, we tested the simultaneous effects of goals and short-term outcome variables as predictors of our long-term outcome variables and found no evidence for any type of indirect goal effects. Rather, these analyses suggested that long-term goal effects were mediated through their short-term consequences. Thus, the achievement goals adopted in an introductory course may continue to have long-term effects because of their important role in shaping students' experiences in the introductory course that provides the foundation for later work in that discipline.

**Interest: Catch Versus Hold Components**

Our third objective was to examine the nature of interest in the introductory course and to distinguish specific reactions to the lectures from more general reactions to the content of the course. Hidi and Baird (1986) noted that situational interest has a durational aspect, with triggering conditions (catch) and conditions that facilitate the continuation of interest over time (hold). This distinction is highly relevant to our consideration of continuing interest. Mitchell (1993), following Dewey (1913), argued that catching interest involves stimulating and engaging students, whereas holding interest involves making course material involving and meaningful. Several of our findings are consistent with a catch–hold interpretation of our measures. First, our two-factor analytic components of interest seem to correspond to these two aspects of interest in a college course. The Enjoyment scale reflected students' reactions to their professor and the lectures, whereas the Interest scale focused on meaningfulness and intrinsic interest in the content of the course. Second, when we tested the
interest and performance in related courses taken later in time, and performance goals influenced academic performance in unrelated courses taken later in time. Because performance goals concern a desire to outperform others, they have no direct connection to the content of a specific course. Rather, competence is defined and pursued with respect to a student's standing relative to other students, and this orientation may typify a student's orientation toward performance in all of his or her classes. In contrast, a mastery goal orientation may be more discipline specific, because this goal orientation is inherently task based. The desire to learn and to develop competence in an introductory course may depend more directly on the content of a course and the nature of the material to be learned. An important direction for future research will be the assessment of students' goals in several courses taken in a particular term to explore issues of generality versus course specificity of achievement goals.

**Optimal Motivation in College Courses**

Considered together, our short- and long-term results yield suggestive evidence for the beneficial consequences of adopting performance goals in college courses. Not only did performance goals predict grades in an introductory psychology course in two different samples, replicating earlier findings (A. J. Elliot & Church, 1997; Harackiewicz et al., 1997), but they also predicted students’ GPAs for all courses taken that semester, grades in additional psychology courses, and GPAs for all courses taken over the three-semester follow-up. Our measure of performance goals emphasized positive strivings toward competence defined in terms of relative ability and outperforming others, and this orientation appears to be adaptive for academic performance in a college setting. These results are consistent with the matching hypothesis advanced by Harackiewicz and Sansone (1991) that goal effects may depend on the general context in which goals are pursued (Harackiewicz & Elliot, 1998). In other words, students who are striving to outperform other students may be optimally motivated in a university context in which excellence is defined in terms of an individual’s achievement relative to others and in which grades are typically assigned on normative curves.

At the same time that we documented the positive correlates of a performance goal orientation for both short- and long-term consequences in this context, however, we also documented its limitations. Performance goals had no effect on students’ interest in psychology, enjoyment of the lectures, or the number of additional psychology courses taken. Only mastery goals had significant positive effects on enjoyment, interest in psychology, and continued interest, but, of course, mastery goals failed to predict performance. Success in college and university contexts depends on both performance and interest, and we have demonstrated the independent contributions of mastery and performance goals in promoting these two outcome measures. Moreover, our results suggest that the optimal pattern of goal adoption may include both mastery and performance goals because neither type of goal predicted both outcomes. In sum, our results are consistent with a multiple-goals perspective in which mastery and performance goals have independent, positive effects on different measures of success in college education (Barron & Harackiewicz, in press; Harackiewicz et al., 1998).
Although temporal precedence and the logic of goal theory (Pintrich & Schunk, 1996) served as the basis for the implied causal direction of our analyses, it is important to note that our data are correlational and that any causal inferences are tentative. For example, even though we measured goals well in advance of performance and interest, it is possible that students who perform well in general are more likely to adopt performance goals and that students who find particular academic subjects interesting are more likely to adopt mastery goals in courses about those subjects. These alternatives are less plausible in the case of an introductory psychology class, however, for two important reasons. First, this class is typically taken during the freshman year before students have a history of performance in college classes and certainly before they have a history of performance in psychology classes. Indeed, 78% of our participants were first-semester freshmen, and 96% were freshmen or sophomores; none had taken any psychology courses before the introductory course. Second, unlike other college courses that cover topics studied in high school (e.g., mathematics, foreign languages), Introductory Psychology is typically students' first systematic exposure to the field. Although they may enroll in an introductory class on the basis of initial interest in the topic, students' interests are unlikely to be based in extensive knowledge about the topic or years of prior course work (Renninger, 1992). More research is needed to tease apart these causal alternatives, and it will be important to assess both interest and goals at the outset and conclusion of courses.

In sum, we have provided evidence that mastery and performance goals have positive and complementary consequences for motivation and performance in college courses in both the short and long term. We therefore advocate a multiple-goals approach in which the role of educational context and short-term consequences is recognized in an analysis of goal dynamics over time. We believe that a comprehensive understanding of motivation in college education requires consideration of both academic performance and continuing interest in a field, and we recognize the positive potential of both types of achievement goals in predicting these educational outcomes.

References


Received November 22, 1998
Revision received August 31, 1999
Accepted August 31, 1999