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ACHIEVEMENT GOALS AND PROFESSIONAL COMMITMENT IN THE EDUCATION MAJOR

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Makayla Grays

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The thesis of Makayla Grays was reviewed and approved* by the following:

Jonna M. Kulikowich
Professor of Education
Thesis Adviser

Dorothy H. Evensen
Professor of Education

Rayne A. Sperling
Associate Professor of Education
Professor-in-Charge: Educational Psychology

*Signatures are on file in the Graduate School.

ABSTRACT

This study investigated the status of mastery and performance goals among college students and how these goals are related to students' commitment to their future profession. The achievement goal scale and professional commitment scale developed for this study were completed by 104 students, mostly Education majors (78%), attending a large research university. The sample exhibited higher levels of performance goals than mastery goals. The correlation between mastery and performance goals was not significant. A significant positive correlation ($p < .01$) was found between mastery goals and professional commitment. Differences between subgroups of Education majors were observed. The study identified specific academic behaviors associated with achievement goals and demonstrated the role of grades in influencing how students approach their academic work.

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Chapter 1

INTRODUCTION

Student achievement in college can be construed in multiple ways. One is that achievement is represented by the successful completion of college coursework (papers, projects, exams) that is evaluated by instructors and oftentimes assigned a numerical or letter grade. This grade is an important measure of achievement, and it becomes even more informative when compared to other students' grades. However, achievement can also be understood without relying on external judgment or social comparison. Success can be self-defined using standards of personal improvement; the very act of learning can be considered achievement.

Between the two interpretations of achievement just described, the former is undoubtedly the one advanced through most colleges' assessment and evaluative practices. The methods through which academic achievement is judged influence students' motivation. Goal orientation theories are well suited for the study of postsecondary students' motivation given the expectations both to learn and to do well in college. These theories generally describe two types of goals that function in achievement situations: *mastery*, which focuses on learning, and *performance*, which focuses on doing well, often in relation to other people. Students approach and execute academic tasks in ways that are consistent with their goals.

Horowitz (2010) writes that today's students "often see college as just a stepping stone to a career rather than as a learning experience or developmental process" (p. 240). The lessened attention students give to the process of learning is a response to collegiate and broader societal structures that stress performance. Lieberman and Remedios (2007) describe the incongruity of mastery and performance at the college level: "One of the central

goals of a university education is to encourage intellectual curiosity and love of learning, but the pressures built into university education could actually be undermining this love rather than nurturing it" (p. 393).

Apprehension that an overemphasis on graded performance can detract from intended learning outcomes is understandable. While deep, meaningful learning is an outcome wished for all students, it is especially necessary for those students who will enter professional fields immediately or very soon after finishing college. The specialized knowledge and skills that are to be developed through professional programs at the undergraduate level must be thoroughly mastered in order for graduates to have the greatest efficacy once in their careers. Mastery goals are more likely to generate the type of learning needed for professional efficacy. Consequently, commitment to a professional field is likely to be related to the adoption of mastery goals.

This study investigated the achievement goals and professional commitment of college students majoring in Education—a professional field, which implies a need for mastery, but also one with a tendency to award high student grades, which may reinforce performance goals or attract students with performance orientations.

Research Questions and Hypotheses

Five research questions guided the present study: (1) Do specific academic behaviors separate in the pattern suggested by achievement goal theory? (2) What is the status of college students' achievement goals? (3) What is the relationship between mastery goals and performance goals? (4) How are achievement goals related to professional commitment? and (5) Are there differences among subgroups of Education majors in terms of achievement goals and professional commitment?

It was hypothesized that a pool of items developed as behavioral indices of the mastery and performance goal constructs would separate in a manner consistent with achievement goal theory. The current climate emphasizing performance in college led to a prediction that students would have higher levels of performance goals than mastery goals. Based on previous research findings, a near-zero correlation was expected between mastery and performance goals. Mastery goals were predicted to be highly correlated with professional commitment, based on the need for an effective knowledge base in one's profession and the more adaptive characteristics of mastery goals.

Chapter 2

LITERATURE REVIEW

Achievement Goal Orientations

Achievement goal theory is one of the most active areas in motivation research (Harackiewicz & Linnenbrink, 2005; Pintrich & Schunk, 2002). Developed by psychologists to explain learning and performance in achievement contexts, goal orientation theory has been designated "the most relevant and applicable goal theory for understanding and improving learning and instruction" (Pintrich & Schunk, 2002, p. 213). A likely explanation for their extensive study is that achievement goals have been found to influence a variety of important cognitive, affective, and behavioral outcomes (Elliott & Dweck, 1988).

As defined by Ames (1992), an achievement goal orientation signifies an integrated pattern of beliefs, attributions, and affect that leads to different ways of approaching, engaging in, and responding to achievement situations. The most common distinction made in the literature on achievement goals is between mastery and performance goals, which have alternatively been named learning and performance goals (Elliott & Dweck, 1988), and task-involved and ego-involved goals (Nicholls, 1984). Many researchers acknowledge sufficient conceptual overlap to warrant analogous interpretation of these pairs of terms (Pintrich & Schunk, 2002).

Mastery and Performance Goals

Mastery goals and performance goals reflect different purposes for achievement, definitions of competence, and references for evaluating performance.

A *mastery goal orientation* represents a desire to improve competence, develop new skills, or accomplish challenging tasks. A student who holds a mastery goal strives for proficiency and adopts self-referenced standards to judge her performance and progress. Learning is a process that requires purposeful engagement and has intrinsic value (Ames, 1992).

A *performance goal orientation* represents a focus on demonstrating competence and receiving favorable evaluation. A student operating under a performance goal uses normative standards to judge her ability; she may strive to outperform others and gain recognition, or seek to avoid low appraisals of ability (Pintrich & Schunk, 2002). Learning is treated as an instrumental process—a means to an end—in which success is ultimately defined in terms of social comparison (Ames, 1992). (Further distinctions within achievement goals are discussed in the Note on Approach and Avoidance at the end of this chapter.)

The expansive body of research on achievement goals has helped to legitimate perceptions of the "relative superiority of mastery goals in comparison to performance goals" (Harackiewicz & Linnenbrink, 2005, p. 76). Mastery goals, commonly associated with an intrinsic motivation to learn, are related to the use of deeper cognitive processing and self-regulatory strategies, an increased willingness to seek adaptive help, and selection of challenging tasks. Performance goals are linked to shallow cognitive processing (e.g., memorization), lower likelihood of adaptive help-seeking, and choice of easier tasks (Pintrich & Schunk, 2002).

Given their seeming incongruity, it is not too surprising that Dweck (1986) once conceived of mastery and performance goals as opposite ends of a single spectrum, such that

a student with a strong performance orientation would implicitly hold weaker mastery goals. Further investigations into the measurement of goals amended this early view, and mastery and performance goals are now recognized as distinct and independent, allowing for both goals to be adopted simultaneously in varying degrees. In correlational studies that have employed measures with separate mastery and performance scales, scores on the two scales have been essentially uncorrelated, and sometimes positively correlated (Harackiewicz, Barron, & Elliot, 1998).

Interestingly, the conceptualization of mastery and performance goals as discrete poses a challenge for all who assert that performance goals necessarily inhibit optimal learning (i.e., the learning believed to result from a mastery orientation). In order to better understand how these discrete goals can interact to produce educationally desirable outcomes, and to afford some credit to the adaptive role of performance goals, many achievement goal researchers are encouraging further inquiry in the area of multiple goals (Barron & Harackiewicz, 2001; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Harackiewicz et al., 1998; Harackiewicz & Linnenbrink, 2005; Horowitz, 2010; Roebken, 2007).

College Grades

The impetus for a multiple-goals perspective appears to have emerged from studies that have examined college students' academic achievement as indexed by grades. For example, Harackiewicz et al. (1997) found that in an introductory psychology course, mastery goals predicted students' interest, and performance goals uniquely predicted grades. Roebken (2007) found the best outcomes of graded performance among students who held high mastery *and* high performance goals.

In addition to their role in evaluating learning outcomes, grades serve as a powerful source of college students' achievement motivation. A qualitative study by Van Etten, Pressley, Freebern and Echevarria (1998, in Horowitz, 2010) reported that "without a doubt, the most salient academic student goal was getting good grades—and conversely avoiding bad grades" (p. 234). In her qualitative study of pre-med students, Horowitz (2010) found a performance goal baseline: 94 percent of students discussed the importance of earning good grades. The pre-med students also reported a tension between learning and grades, and they "overwhelmingly viewed mastery and extrinsic goals as being contradictory" (p. 239); some described the need to "compromise" on learning in order to achieve good grades.

That any higher education institution with a mission to foster student learning might actually discourage it through grading is an obvious irony and grave disappointment, and research on this topic is mounting. By analyzing questionnaires completed by college freshmen, Kowalski (2007) concluded that students' motivation to learn begins to decline within the first year of college. She also noted an increased focus on grades and completing the minimum amount of work required. Similarly, Lieberman and Remedios (2007) found that students' desire to master their subjects declined significantly after their first year of college and did not improve over the next three years. The decline was accompanied by lower expectations of course enjoyment and an increased desire to obtain good grades.

Despite their widespread use and emphasis, college grades are replete with problems. Hu (2005) has organized the major problems in college grading into four groups: grade increase, grade inflation, grade compression, and grade disparity. Though each is deserving of attention, grade disparity—when grading practices vary by course, department, or discipline—is especially relevant to the discussion of achievement goals. A fairly open

college curriculum enables students to select courses or programs of study that complement their goals. For instance, a mastery-oriented student may enroll in challenging electives that she finds interesting. On the other hand, performance goals may guide students toward courses, instructors, or majors that assign high grades more frequently.

Of course, grade disparity varies from institution to institution, but researchers have identified some trends. Fields with the most rigorous grading practices are typically found in the natural sciences and mathematics, while arts and humanities departments are home to the most lenient grading (Hu, 2005). Other fields noted for their patterns of grading leniency are sociology and education.

Measuring Goal Orientations

Difficulties arise in attempts to experimentally manipulate goal orientations. Goal induction procedures can be unsuccessful (e.g., Linnenbrink, Ryan, & Pintrich, 1999), and even manipulations deemed successful are unable to rule out the simultaneous operation of a different goal. Furthermore, empirical studies that assign participants to either a mastery or a performance condition imply that mastery and performance are opposing dimensions of a single continuum (Button, Mathieu, & Zajac, 1996).

Much of the goal orientation research has utilized self-report measures with Likert or Likert-type rating scales. These measures differ in their levels of goal specificity (i.e., global, domain-, or course-specific achievement). Examples of goal orientation measures are the Achievement Goal Questionnaire-Revised (Elliot & Murayama, 2008; course-specific), Goals Inventory (Roedel, Schraw, & Plake, 1994; domain-specific), Learning Goal and Performance Goal Orientation Scales (Button et al., 1996; global), LOGO II (Eison, Pollio, &

Milton, 1986; domain-specific), and Modified Achievement Goal Questionnaire (Finney, Pieper, & Barron, 2004; domain-specific).

Existing goal orientation measures typically use response scales that indicate strength of agreement (e.g., 1 – *strongly disagree* to 5 – *strongly agree*) or statement applicability (e.g., 1 – *very untrue of me* to 5 – *very true of me*) for items targeting attitudes, feelings, or beliefs. Of the instruments listed above, the only one whose items do not exclusively or predominantly target attitudes, feelings, or beliefs is LOGO II. LOGO II (Eison et al., 1986) includes 16 behavioral items with a frequency response scale ranging from 1 – *never* to 5 – *always*. While the concept of goal orientation focuses on the beliefs, attributions, and affect leading to goal-directed patterns of behavior, modern measures have largely neglected the possibility that the behaviors themselves may be valid indicators of underlying goals. Incorporating behavioral items into achievement goal instruments would shed more light on what mastery- and performance-oriented students *actually do* as opposed to speculating about the behavioral propensities of each orientation.

Regarding the technical aspects of achievement goal measures, reliability and validity analyses are often conducted to demonstrate internal consistency and structural validity. Despite the fact that Likert and Likert-type scales yield ordinal-level data, the common practice in this area of research is to treat the data as interval-level, thus enabling the use of parametric techniques such as factor analysis.

Professional Commitment

Literature on college students' professional commitment is scarce. Though the construct has not been well defined when referencing the undergraduate population, Rusbult and Farrell (1983, in Koslowsky, 1987) state that career commitment in an educational

setting, such as college, "refers to an individual's feelings of connection to a path of study and intentions to continue studies in that specific area" (p. 437). In a study of psychology students enrolled in bachelor's, master's, and doctoral degree programs, Koslowsky (1987) used a career commitment scale that asked students about (1) their commitment to psychology as a career, (2) the likelihood that they would quit studying psychology, (3) how long they wanted to continue studying psychology, (4) their attachment to psychology, and (5) the number of hours they studied psychology per week. Commitment scores were able to significantly predict students' number of meetings with instructors and hours spent on written assignments. The author concluded that "career commitment can be an effective predictor of outcome variables when the latter are measured as behaviors" (Koslowsky, 1987, p. 440).

Relationship to Achievement Goals

Much of the extant research has related achievement goals to important cognitive, affective, and behavioral outcomes, including depth of information processing (Barker, McInerney, & Dowson, 2002), test anxiety (Elliot & McGregor, 1999), and help-seeking (Karabenick, 2004). With regard to professional commitment, however, no known literature directly seeks to illuminate the relationship with mastery and performance goals.

In a departure from modern achievement goal theory, Farmer's (1985; Farmer & Chung, 1995) work is somewhat relevant to the issue of goals and professional commitment in that her conceptualization of career and achievement motivation is comprised of the following three dimensions: aspiration (the level of education and occupation to which one aspires), mastery (tendency to choose and persist in challenging tasks), and career (the extent to which career is considered central to adult life role). The purpose of Farmer's (1985) study was to identify the contributions of a variety of background, personal, and

environmental variables to each of the three motivation dimensions. Though the correlation between mastery and career was significant (r =.43; p < .001), the mastery scale used in this study was not consonant with the current view of mastery goals. The sample consisted of high school students, and performance goals were not examined. A study intended to extend the earlier model to college students yielded far fewer significant predictor variables than the original (Farmer, 1985) study (Farmer & Chung, 1995).

Commitment of Education Majors

Teacher education is a professional postsecondary program, and program graduates quite often proceed directly from college to careers in their own classrooms. Some studies have explored the professional commitment of practicing teachers (e.g., Day, Elliot, & Kington, 2005; Ware & Kitsantas, 2007), but that of preservice teachers has not been thoroughly addressed. Furthermore, it is not clear that the models of professional commitment that have arisen from studies of practicing teachers (e.g., Ware & Kitsantas, 2007) are equally applicable for undergraduate students in teacher education programs.

With professional commitment as their outcome variable of interest, Serow, Baker, and Ciechalski (1992) surveyed teacher education students about the influences on their decision to teach, their perceptions of teaching, and their values. Conclusions about the prospective teachers in this study are limited, though, owing to the fact that professional commitment was measured by a single item. (Inspection of Serow et al.'s (1992) questionnaire and results revealed two items that could potentially reflect mastery and performance goals. Fifty-one percent of students identified interest in the subject (mastery) as an influence on their decision to teach. Students' responses to the item, "Teaching isn't as

hard to enter as some fields" (performance), on a scale of 1 – *strongly agree* to 5 – *strongly disagree*, had a mean of 2.16 and standard deviation of 1.10.)

Measuring Professional Commitment

There appears to be no existing professional commitment scale that would be appropriate for college students enrolled in professional programs (e.g., education, nursing, social work). Scales from the field of education have focused on practicing teachers rather than preservice teachers, with items geared toward commitment in *being* a teacher rather than commitment to *becoming* a teacher, which has more relevance for the undergraduate population. It is not so surprising that no measure for students' professional commitment could be located, as the focus on career exploration via interest inventories may have more utility among the general college student population.

A Note on Approach and Avoidance

While the most important distinction in achievement goal research remains that between mastery and performance goals (Pintrich & Schunk, 2002), more complex understandings of these goals—particularly performance goals—are surfacing. Research in the 1990s supported the bifurcation of the performance goal into performance-approach goals and performance-avoidance goals (Elliot & Church, 1997; Middleton & Midgley, 1997; Midgley, Kaplan, Middleton, & Maehr, 1998). Whereas a *performance-approach* goal focuses on demonstrating competence and outperforming others, a *performance-avoidance* goal is concentrated on avoiding failure, inferiority, and judgments of incompetence (Pintrich & Schunk, 2002).

Following the development of the trichotomous model described above, Elliot and McGregor (2001) proposed a 2 x 2 model of achievement motivation with the introduction of mastery-approach and mastery-avoidance goals. Prior to this, all mastery goals had been viewed as mastery-approach. Similar to the distinctions made for performance goals, a *mastery-approach* goal is focused on mastering a task, whereas a *mastery-avoidance* goal focuses on avoiding misunderstanding. The mastery-avoidance goal is not fully understood, though some have described it as an attribute of perfectionistic students (Pintrich & Schunk, 2002).

The separation of performance-approach and performance-avoidance goals has resulted in some important differences in research results. For example, Elliot and Church (1997) found that the tendency to use shallow cognitive processing was more characteristic of performance-avoidance. Also, some studies have found the relationship with grades to be positive for performance-approach goals but negative for performance-avoidance goals (Elliot & Church, 1997; Elliot & McGregor, 2001; Elliot, McGregor, & Gable, 1999; Harackiewicz et al., 1998). However, as Harackiewicz and Linnenbrink (2005) acknowledge, "performance-approach goals may be associated with higher achievement, but this does not necessarily mean that individuals with performance-approach goals engage in the type of in depth learning and understanding that is advocated by educators today" (p. 79). Such findings have supported propositions that success in college may result from the combined pursuit of mastery and performance-approach goals (Harackiewicz et al., 1998).

A review of the achievement goal literature would be incomplete without discussing the approach and avoidance dimensions. However, the present study did not investigate distinctions between approach and avoidance for either mastery or performance goals.

Chapter 3

METHOD

Participants

Participants were recruited from an undergraduate educational psychology course at a large public research university in the Northeast. They received extra credit in the course for their participation. One hundred five students completed the research study; however, one case was excluded based on data indicating inadequate completion time. Therefore, the final data set contained the responses of 104 participants.

The sample was 84 percent female (n = 87) and 91 percent White (n = 95). Participants were predominantly freshmen (75%, n = 78) and sophomores (17%, n = 18), and all were between the ages of 18 and 21 (M = 18.9). The average self-reported cumulative university GPA of the sample was 3.42.

Seventy-eight percent of participants were declared Education majors (n = 81). The most common Education major was Elementary Education (n = 34), followed by Secondary Education: Math/Science (n = 10). Of participants majoring in Education, 86 percent (n = 70) intended to complete their degree with a major in Education (unsure, n = 7; missing, n = 4). Twenty-six percent (n = 21) of those majoring in Education reported transferring into their major from a different, non-Education major (did not transfer, n = 56; missing, n = 4).

Procedure

Recruitment and data collection were conducted via the Internet. Web-based delivery of measures was intended to increase participation rate while minimizing missing data, errors from manual scoring and data entry, and the cost of printing materials. Additionally, the

online system recorded participants' completion times for separate measures, which helped to identify cases where participants sped through items—cases that could potentially reduce estimates of instrument reliability. Prior to the study, the web-based delivery of measures was piloted with a class of graduate students to identify any problems in the system.

A recruitment statement and directions for accessing the online research study were e-mailed to all students enrolled in the educational psychology course. Participants were allowed two weeks to sign up for and complete the study.

Before providing any information, participants gave implied informed consent. They were advised to complete the study in its entirety in one sitting. Records of completion times indicated that 102 of the participants completed the study in a single sitting as directed. It was anticipated that participants would need approximately 7 minutes to complete the study; most took between 5 and 8 minutes to finish (n = 60). The median completion time was 6 minutes, 53 seconds. One case was excluded based on a recorded completion time of 2 minutes, 24 seconds.

The presentation sequence of the online materials was as follows: implied informed consent, achievement goal scale, professional commitment scale, background information, and university identification (for assigning extra credit).

Measures

Prior to the study, a pool of 52 items was reviewed by a class of graduate students to assess correspondence with the defined constructs of mastery goal, performance goal, and professional commitment. Results of the item review are shown in Appendix A. Other than negatively phrased items (i.e., those for which the values of the response scale would be reversed), the majority of graduate students identified each item as representing its intended

construct. From this review, 25 items were kept unchanged, 17 were edited, 10 were discarded, and 4 new items were written. Two measures were constructed for this study: the achievement goal scale (with mastery and performance scales) and the professional commitment scale.

All factor analyses used principal axis factoring as the extraction method with promax rotation. For exploratory factor analyses, decisions about the number of factors to retain were made through examination of eigenvalues greater than 1 and the scree plot, but mainly relied on parallel analysis using the RanEigen program (Enzmann, 1997). All reliabilities are reported using the Cronbach's alpha coefficient.

Achievement Goal Scale

The achievement goal scale was designed to be a domain-specific measure of mastery and performance goals. The scale that was administered to participants contained 31 items. Participants responded to each item using a Likert-type rating scale with the following options: 1 – *never*, 2 – *rarely*, 3 – *sometimes*, 4 – *often*, 5 – *always.*

Factor Analysis

Exploratory factor analysis (EFA) of the 31 achievement goal items indicated 11 factors with eigenvalues greater than 1. Data from EFA of the achievement goal scale are shown in Appendix B. Parallel analysis suggested the maximum number of factors to retain was three, but because only two factors were expected to emerge on this measure, EFA was run separately on the mastery and performance scales.

Factor analysis: Mastery items. EFA of the 16 mastery scale items found five factors with eigenvalues greater than 1. With the exception of one item, all items had factor loadings

of .41 to .63 on Factor 1. The problematic item was "After an instructor hands back an assignment, I look at my grade before reading his/her comments" (loading = −.08). This item was on the mastery scale, where it was intended to function negatively, and the performance scale, where it would function positively. It was removed from the mastery scale, leaving 15 mastery items. In accordance with parallel analysis, one factor was retained, which according to confirmatory factor analysis (CFA) accounted for 30 percent of the mastery scale variance. Data from EFA of the mastery scale are shown in Appendix C.

Factor analysis: Performance items. EFA of the 16 performance scale items found six factors with eigenvalues greater than 1. Loadings on Factor 1 ranged from .03 to .60. Parallel analysis suggested the maximum number of factors to retain on this scale was two. CFA specifying two factors identified 6 items that failed to reach Factor 1 loadings of .35 or greater; 2 of these were the most skewed of all achievement goal items: "I strive to get good grades" (M = 4.86, skew = −3.11) and "I monitor my grades throughout the semester" (M = 4.76, skew = −1.78). CFA helped to verify that the failure of these 2 items to load on Factor 1 in EFA was likely due to their high means and low variability, and that as a result, EFA's Factor 2 represented, to some extent, the mastery construct. However, these items—strongly believed to represent grade-focused performance goals—were kept on the final performance scale. Three items were cut from the performance scale: "I try to memorize large amounts of material when studying for exams," "I try to show my instructors how much I know," and "I offer my classmates advice or share information when it might benefit them," which was intended to function negatively on the performance scale. Another performance scale item that was intended to function negatively—"I ask questions and seek clarification from others even if doing so might make me seem unintelligent"—was moved to the mastery scale. After

all factor analyses, 12 performance items remained, and the mastery scale inherited 1 for a total of 16 mastery items. One performance factor was retained, which according to CFA accounted for 25 percent of the performance scale variance. Data from EFA of the performance scale are shown in Appendix D.

Loadings from CFA of the achievement goal scale are presented in Table 1.

Table 1
Confirmatory Factor Analysis Loadings for the 28-item Achievement Goal Scale

		Factor	
	Item	M	P
1	I enroll in courses that interest me.	.43	
2	I integrate material from one class with what I have learned or am learning in another class.	.42	
4	I choose challenging tasks that present greater opportunities for learning.	.56	
8	I think about points raised in lectures or discussions after class is over.	.51	
12	I ask questions and seek clarification from others even if doing so might make me seem unintelligent.	.44	
14	When reading for my classes, I check my understanding before moving on to the next section or chapter.	.58	
16	I do optional course readings that instructors recommend in order to learn more.	.58	
18	I search independently for more information on topics that are discussed in my classes.	.46	
21	I look for evidence of development in my work.	.49	
22	I pay attention to guest speakers, student presentations, and/or films shown in my classes that don't count toward my grade.	.49	
24	I ask questions and seek clarification from others when I am confused.	.50	
25	I review my notes before classes.	.56	
26	I study in ways that promote my comprehension.	.47	
27	I identify concepts that I do not fully understand.	.49	
28	I work to correct any misunderstandings I have about the content of my coursework.	.51	
30	When preparing to write a paper, I select a topic that I want to learn more about.	.43	
5	I judge my ability by comparing my performance to other students' performance.		.40
6	I work harder on assignments that are weighted heavily in the overall course grade.		.48
7	I use extra credit opportunities to improve my grade.		.47

(table continues)

Item	Factor	
	M	P
9 When reading for my classes, I focus on areas that are likely to be tested.		.53
10 I put more effort into assignments when they will be seen by other students.		.46
11 When conversing with other students, I try to figure out how smart they are.		.35
13 I try to find out what material will be included on exams.		.41
15 I look for courses and/or instructors that are likely to give me good grades.		.61
17 When possible, I compare my grade to other students' grades or to the class average.		.53
19 I strive to get good grades.		.10
20 I monitor my grades throughout the semester.		.34
31 After an instructor hands back an assignment, I look at my grade before reading his/her comments.		.37

Note. (M) mastery, (P) performance. Subscripted number is item's position on the original 31-item achievement goal scale.

Reliability

The reliability of the 16-item mastery goal scale was α = .84, with corrected item-total correlations ranging from .39 to .54. The reliability of the 12-item performance goal scale was α =.73, with corrected item-total correlations ranging from .04 to .45. The lowest item-total correlation was observed for "I strive to get good grades," a notably skewed performance goal. This was the only item on the performance scale that, if deleted, could have improved scale reliability slightly (from α =.73 to α = .74). All other mastery and performance items contributed positively to their respective scale's overall reliability.

Scoring

The maximum score possible on the mastery scale was 80 (16 items x 5, for *always*). The sum of all performance item responses (12 items x 5, for *always* = 60 maximum) was multiplied by 4/3 to obtain a maximum scaled score of 80. This was done to ease the interpretation of scores across the mastery and performance scales.

Professional Commitment Scale

The professional commitment scale contained 15 items. Items were conceptualized as primarily representing one of three aspects of undergraduate professional commitment: professional knowledge, professional activities, and future plans. The items belonging to each category are listed in Table 2. The instructions at the beginning of this measure told participants that each instance of 'my field' referred to the field of Education. Participants responded to each item using a Likert-type rating scale with the following options: 1 – *very untrue of me,* 2 – *somewhat untrue of me,* 3 – *somewhat true of me,* 4 – *very true of me*.

Table 2
Professional Commitment Subscales and Items

Subscale	Item
Professional knowledge	I am familiar with my field's main accrediting body and standards for the profession.
	I am aware of the most current developments and research occurring in my field.
	I read recent articles from professional journals and/or other publications in my field.
	I understand the historical development of my field.
	I can discuss my field's present role and significance in society.
Professional activities	I participate in extracurricular activities (University-sponsored or non-sponsored) that support me in becoming a professional in my field.
	I attend events not required by any of my courses that feature speakers from my field.
	I have attended/am interested in attending professional conferences in my field.
	I have joined/plan to join at least one professional organization in my field.
	I have established connections with other professionals in my field.
Future plans	I intend to be either employed in my field or pursuing further study in my field 5 years after receiving my bachelor's degree.
	I plan to build a lifelong career in my field.
	I anticipate furthering my education beyond a bachelor's degree in my field.
	I want to make significant contributions in my field.
	I want to become an expert in my field.

Factor Analysis

Exploratory factor analysis of the 15 professional commitment items indicated four factors with eigenvalues greater than 1. Factor 1 had loadings ranging from .45 to .71. Although parallel analysis suggested the retention of two factors, the consistent loadings on Factor 1 and the fact that only 1 item had an EFA loading absolute value of greater than .35 on Factor 2 justified retaining a single factor on this scale. According to confirmatory factor analysis, the factor retained accounted for 34 percent of the professional commitment scale variance. Data from EFA of the professional commitment scale are shown in Appendix E. Loadings from CFA are presented in Table 3.

Table 3
Confirmatory Factor Analysis Loadings for the 15-item Professional Commitment Scale

Item	**Loading**
I am familiar with my field's main accrediting body and standards for the profession.	.59
I intend to be either employed in my field or pursuing further study in my field 5 years after receiving my bachelor's degree.	.54
I participate in extracurricular activities (University-sponsored or non-sponsored) that support me in becoming a professional in my field.	.41
I attend events not required by any of my courses that feature speakers from my field.	.52
I am aware of the most current developments and research occurring in my field.	.68
I plan to build a lifelong career in my field.	.47
I anticipate furthering my education beyond a bachelor's degree in my field.	.52
I read recent articles from professional journals and/or other publications in my field.	.52
I have attended/am interested in attending professional conferences in my field.	.66
I understand the historical development of my field.	.52
I have joined/plan to join at least one professional organization in my field.	.46
I want to make significant contributions in my field.	.54
I want to become an expert in my field.	.46
I have established connections with other professionals in my field.	.59
I can discuss my field's present role and significance in society.	.65

Reliability

The reliability of the 15-item professional commitment scale was α = .86, with corrected item-total correlations ranging from .38 to .64. Each item contributed positively to the scale's overall reliability, as well as to its respective subscale's reliability.

Professional knowledge. The reliability of these 5 items was α = .76. Corrected item-total correlations ranged from .49 to .59.

Professional activities. The reliability of these 5 items was α = .70. Corrected item-total correlations ranged from .36 to .52.

Future plans. The reliability of these 5 items was α = .73. Corrected item-total correlations ranged from .48 to .55.

Scoring

The sum of all professional commitment item responses (15 items x 4, for *very true of me* = 60 maximum) was multiplied by 4/3 to obtain a maximum scaled score of 80. This was done to ease the interpretation of professional commitment scores alongside scores from the mastery and performance goal scales.

Chapter 4

RESULTS

The response frequencies and descriptive statistics for all items are given in Appendix F. Tables 4 and 5 present the means and standard deviations of items from the mastery and performance goal scales in order of descending mean. Items were measured using the following 5-point scale: 1 – *never*, 2 – *rarely*, 3 – *sometimes*, 4 – *often*, 5 – *always*.

Table 4
Means and Standard Deviations for 16 Mastery Items

Item	***M***	***SD***
I work to correct any misunderstandings I have about the content of my coursework.	3.94	.64
I study in ways that promote my comprehension.	3.85	.67
I identify concepts that I do not fully understand.	3.78	.72
I enroll in courses that interest me.	3.76	.55
I ask questions and seek clarification from others when I am confused.	3.73	.73
I integrate material from one class with what I have learned or am learning in another class.	3.62	.61
When preparing to write a paper, I select a topic that I want to learn more about.	3.62	.80
I look for evidence of development in my work.	3.61	.85
I pay attention to guest speakers, student presentations, and/or films shown in my classes that don't count toward my grade.	3.58	.88
I think about points raised in lectures or discussions after class is over.	3.39	.66
I ask questions and seek clarification from others even if doing so might make me seem unintelligent.	3.26	.71
When reading for my classes, I check my understanding before moving on to the next section or chapter.	3.24	.78
I choose challenging tasks that present greater opportunities for learning.	3.13	.65
I do optional course readings that instructors recommend in order to learn more.	2.48	.79
I search independently for more information on topics that are discussed in my classes.	2.44	.68
I review my notes before classes.	2.39	.82

Note. $n = 104$.

Most of the mastery item responses fell in the *sometimes* to *often* range. The item with the highest mean was "I work to correct any misunderstandings I have about the content of my coursework" (M = 3.94), and that with the lowest was "I review my notes before classes" (M = 2.39). Two of the lowest-scoring items pertained to learning opportunities not required for classes: "I do optional course readings that instructors recommend in order to learn more" (M = 2.48) and "I search independently for more information on topics that are discussed in my classes" (M = 2.44).

Table 5
Means and Standard Deviations for 12 Performance Items

Item	***M***	***SD***
I strive to get good grades.	*4.86	.43
I monitor my grades throughout the semester.	*4.76	.47
I use extra credit opportunities to improve my grade.	4.53	.62
After an instructor hands back an assignment, I look at my grade before reading his/her comments.	*4.53	.78
I try to find out what material will be included on exams.	4.42	.66
I work harder on assignments that are weighted heavily in the overall course grade.	4.21	.78
When possible, I compare my grade to other students' grades or to the class average.	4.03	.92
When reading for my classes, I focus on areas that are likely to be tested.	4.01	.73
I judge my ability by comparing my performance to other students' performance.	3.74	.86
I put more effort into assignments when they will be seen by other students.	3.71	.92
I look for courses and/or instructors that are likely to give me good grades.	3.26	.95
When conversing with other students, I try to figure out how smart they are.	2.80	.89

Note. n = 104.
*Skewness statistic < −1.

The means of the performance items were noticeably higher than those for the mastery scale. Responses mostly fell in the *often* to *always* range. Items that mentioned grades generally had higher means than those referring to social comparison. Performance items with the highest means were also the most negatively skewed, indicating that these

statements described the behaviors of many students, much of the time. There was a significant difference between the full sample's mean scores on the achievement goal scales (performance $M = 65.14$, mastery $M = 53.82$; paired $t(103) = 13.01$, $p < .001$).

Bivariate correlations were run between each of the three main scales (mastery, performance, professional commitment) and participants' self-reported cumulative university GPA. Correlations were also run for the group of Education majors. The Pearson coefficients for the four measures are shown in Table 6.

Table 6
Correlations Between Mastery, Performance, and Professional Commitment Scales and GPA

	Full sample, *n* = 104			**Education majors, *n* = 81**		
Measure	M	P	PC	M	P	PC
GPA	.14	.03	.04	.16	.04	.01
Mastery scale		-.02	*.42		-.02	*.37
Performance scale			.03			-.08

Note. (M) mastery, (P) performance, (PC) professional commitment.
*$p < .01$.

As hypothesized, there was a significant correlation between scores on the mastery and professional commitment scales (Education majors: $r = .37$, $p < .01$). Consistent with previous research, the mastery and performance scales were essentially uncorrelated ($r = -.02$). Neither professional commitment nor achievement goals were significantly correlated with GPA.

Due to the relationship between mastery goals and professional commitment, additional bivariate correlations were conducted between the mastery scale and each of the professional commitment subscales. Pearson coefficients are given in Table 7.

Table 7
Correlations Between Mastery Scale and Professional Commitment Subscales

		Professional commitment subscale		
Mastery scale	*n*	Professional knowledge	Professional activities	Future plans
Full sample	104	**.38	**.44	*.20
Education majors	81	**.31	**.43	.13

*$p < .05$, **$p < .01$.

One would expect that if a significant correlation were found between mastery and professional commitment, it would also exist between the mastery scale and each of the commitment subscales, which are highly related to one another (professional knowledge x professional activities, $r = .64$; professional knowledge x future plans, $r = .48$; professional activities x future plans, $r = .48$; all significant at $p < .01$ level).

To further explore the relationship between the three main scales—particularly mastery goals and professional commitment—bivariate correlations were run between all 43 items and total scaled scores for mastery, performance, and professional commitment. Table 8 displays the items which had significant correlations with more than one scaled score.

Table 8
Items with Significant Correlations on Multiple Scales

	Scale	
Item	M	PC
Mastery items[a]		
I choose challenging tasks that present greater opportunities for learning.		*.23
I think about points raised in lectures or discussions after class is over.		**.26
I ask questions and seek clarification from others even if doing so might make me seem unintelligent.		**.28
When reading for my classes, I check my understanding before moving on to the next section or chapter.		***.34
I do optional course readings that instructors recommend in order to learn more.		***.35
I look for evidence of development in my work.		**.27
I review my notes before class.		*.22

(table continues)

Item	Scale	
	M	PC
I study in ways that promote my comprehension.		*.20
I identify concepts that I do not fully understand.		*.23
I work to correct any misunderstandings I have about the content of my coursework.		*.23
Performance items[b]		
I strive to get good grades.	**.27	
I monitor my grades throughout the semester.	***.37	
Professional commitment items[c]		
I am familiar with my field's main accrediting body and standards for the profession.	*.19	
I attend events not required by any of my courses that feature speakers from my field.	***.43	
I am aware of the most current developments and research occurring in my field.	***.38	
I anticipate furthering my education beyond a bachelor's degree in my field.	*.24	
I read recent articles from professional journals and/or other publications in my field.	**.29	
I have attended/am interested in attending professional conferences in my field.	***.34	
I understand the historical development of my field.	*.21	
I have joined/plan to join at least one professional organization in my field.	***.35	
I want to make significant contributions in my field.	*.23	
I have established connections with other professionals in my field.	*.22	
I can discuss my field's role and significance in society.	**.25	

Note. (M) mastery, (PC) professional commitment. $n = 104$.
[a]All mastery items correlated significantly ($p < .001$) with mastery scale score. [b]With the exception of "I strive to get good grades," all performance items correlated significantly ($p < .001$) with performance scale score. [c]All professional commitment items correlated significantly ($p < .001$) with professional commitment scale score.
*$p < .05$, **$p < .01$, ***$p < .001$.

Ten of the 16 mastery items correlated significantly ($p < .05$) with professional commitment scores, and 11 of the 15 professional commitment items had significant correlations with total scores on the mastery scale. Graduate students' review of an early item pool signaled an overlap between items addressing these two constructs (see Appendix A); however, they recorded professional commitment items (e.g., "I can discuss my field's

presence in society") as representing mastery more often than mastery items (e.g., "I review my notes before class") representing professional commitment.

"I strive to get good grades" (performance) was the only item that did not have a significant correlation with its respective scale score. This was the same item that reduced the performance scale's reliability. It was also the most negatively skewed item from the achievement goal scale.

Subgroups were analyzed in order to better understand how mastery goals, performance goals, and professional commitment might vary within the Education major. Table 9 displays the subgroups under consideration along with scale statistics.

Table 9
Means and Standard Deviations of Scale Scores for Full Sample and Selected Subgroups

		Mastery		Performance		Professional commitment	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Full sample	104	53.82	6.28	65.14	6.15	60.00	8.90
Sex							
Female	87	54.16	6.37	65.15	6.33	60.51	9.03
Male	17	52.06	5.62	65.10	5.30	57.41	7.92
Education major							
Yes	81	54.41	6.44	64.99	6.61	61.19	7.65
No	23	51.74	5.28	65.68	4.18	55.83	11.58
Intend to complete Educ degree[a]							
Yes	70	54.26	6.69	64.65	6.66	61.41	7.64
Unsure	7	55.71	4.31	67.81	7.52	58.29	8.84
Transferred into Education major[a]							
Yes	21	54.24	6.30	67.17	5.71	61.40	7.45
No	56	54.45	6.63	64.10	6.96	61.02	7.91
Major[b]							
Early Childhood Education	8	53.13	6.18	67.17	6.53	63.00	7.93
Elementary Education	34	55.15	5.99	64.39	5.88	63.18	6.43
Secondary Education: English	9	56.56	7.44	61.19	7.16	62.37	5.61
Secondary Educ: Math/Science	10	51.30	4.19	67.07	6.16	58.80	6.45
Secondary Educ: Social Studies	8	53.13	8.04	68.00	7.27	61.00	8.33

[a]Applies only to Education majors (n = 81); missing data on 4 cases. [b]The largest Education major groups were analyzed.

To check for significant differences, nonparametric Mann-Whitney U tests were run for the mastery, performance, and professional commitment scale scores of each of the subgroups in Table 9. The independent groups defined for analyses were

(1) females / males,

(2) Education majors / non-Education majors,

(3) [Education majors only] students intending to complete their degree in Education / students who were unsure about completing degree in Education

(4) [Education majors only] students who transferred into Education major from a different major / students who did not transfer

(5) Early Childhood Education majors / all other Education majors

(6) Elementary Education majors / all other Education majors

(7) Secondary Education: English majors / all other Education majors

(8) Secondary Education: Math/Science majors / all other Education majors

(9) Secondary Education: Social Studies majors / all other Education majors

Significant differences in scale scores were found in four of the subgroup analyses listed above: (2), (4), (6), and (8). The scales with significant differences were further analyzed using Mann-Whitney U tests to identify item-level differences. Table 10 lists the scales and items for which the Mann-Whitney U tests revealed statistically significant differences. Italicized subgroups had significantly higher scores than their comparison subgroups on the scales and specific items listed. The only exception to this was Secondary Education: Math/Science, where the mastery scale and item scores were significantly *lower* when compared against all other Education majors.

Table 10

Mann-Whitney U Statistics for Significant Differences in Subgroups, Scales, and Items

Subgroup / scale / item	U	Sig[a]
Education major		
Mastery scale	699.5	.03
I choose challenging tasks that present greater opportunities for learning.	651.5	.00
I ask questions and seek clarification from others even if doing so might make me seem unintelligent.	669.0	.01
I ask questions and seek clarification from others when I am confused.	558.0	.00
I review my notes before classes.	725.0	.04
I work to correct any misunderstandings I have about the content of my coursework.	695.5	.03
Professional commitment scale	669.5	.02
I intend to be either employed in my field or pursuing further study in my field 5 years after receiving my bachelor's degree.	704.0	.00
I participate in extracurricular activities (University-sponsored or non-sponsored) that support me in becoming a professional in my field.	613.5	.00
I plan to build a lifelong career in my field.	701.0	.02
I want to make significant contributions in my field.	670.5	.01
I want to become an expert in my field.	989.5	.01
I have established connections with other professionals in my field.	936.0	.01
I can discuss my field's present role and significance in society.	689.5	.02
Transferred into Education major from non-Education major		
Performance scale	423.0	.03
I work harder on assignments that are weighted heavily in the overall course grade.	391.0	.01
I look for courses and/or instructors that are likely to give me good grades.	428.5	.03
Elementary Education		
Professional commitment scale	602.5	.03
I am aware of the most current developments and research occurring in my field.	550.5	.01
I read recent articles from professional journals and/or other publications in my field.	534.0	.00
I want to make significant contributions in my field.	623.5	.02
Secondary Education: Math/Science		
Mastery scale	230.5	.04
I pay attention to guest speakers, student presentations, and/or films shown in my classes that don't count toward my grade.	195.0	.01
I study in ways that promote my comprehension.	206.0	.01

Note. Only scales and items with significance < .05 are listed.

[a]Exact significance (one-tailed).

Scores on the mastery goal and professional commitment scales were significantly higher for Education majors than for non-Education majors. It is not at all surprising that Education majors would have higher professional commitment scores, considering that the scale's instructions told students to select their responses with the field of Education in mind.

Compared to those who began their college careers in an Education major, students who transferred into their Education major from a non-Education major recorded significantly higher scores on the overall performance goal scale and the items "I work harder on assignments that are weighted heavily in the overall course grade," and, more interestingly, "I look for courses and/or instructors that are likely to give me good grades." Elementary Education majors reported significantly higher levels of professional commitment than Education majors outside of Elementary Education. Secondary Education: Math/Science was the only subgroup to show significantly lower scores on the mastery scale.

Chapter 5

DISCUSSION

One of the purposes of this study was to determine whether specific academic behaviors could be classified into categories representing mastery and performance goal orientations. The development of the achievement goal scale produced a good sampling of items that assess the frequency of mastery and performance goal-directed behaviors in the academic domain. The greater frequency of behaviors related to performance goals is an illustration of the importance that college students assign to demonstrations of academic achievement, particularly in the area of grades. Similar to previous research, this study revealed no clear picture of the relationship between achievement goals and college GPA.

Another finding that is consistent with earlier studies is the near-zero correlation between mastery and performance goals. That such a finding is somewhat counterintuitive—particularly given the inverse relationship suggested by some qualitative studies—underscores the complexity of the achievement goal construct, and clearly further research is needed in the areas of goal conceptualization and measurement.

Although an acceptable definition of what constitutes professional commitment among college students has not been established in the literature, this study proposes that professional knowledge, activities, and future plans are appropriate components. The professional commitment scale developed for the present study demonstrated strong internal consistency and structural validity, and it is generic enough to be used with students in Education and other professional programs of study.

A central task of this research was to assess the hypothesized relationship between mastery goals and professional commitment, and the result was a significant positive correlation (Education majors: $r = .37$, $p < .01$).

Limitations

The achievement goal scale used in the present study emphasized behaviors that are representative of mastery and performance goal orientations. However, affect, beliefs, and attributions, which are all believed to influence the adoption of particular goals, were not measured.

This study did not aim to make any judgments about the level of students' professional commitment. Still, one limitation to the interpretation of Education majors' professional commitment scores is the fact that most participants were freshmen and sophomores who probably had not yet taken many courses within their majors. The length of time these students had spent on their professional development and their exposure to commitment-enhancing activities is expected to be less than that for upper-level Education majors.

Additionally, this study did not explore students' reasons for selecting a major in Education. The findings for students who transferred into Education—a subgroup with higher performance goals—might have been more informative if students in this subgroup had been asked to report from which disciplines they had transferred and their reasons for doing so.

It is important to note that correlational research does not allow for causal explanations, and determining directionality can be problematic. Thus, regarding the results of this study, it remains unknown whether students with a mastery orientation are more likely

to develop greater professional commitment, or if high professional commitment stimulates mastery goals.

The generalizability of results is limited. Participants were predominantly Education majors at an early stage in their collegiate careers at a large research university. It is unknown whether similar findings would result from studies of Education majors at other institutions, or from students in different disciplines. Furthermore, it is difficult to assess the extent to which the sample was biased toward a performance orientation from the start, considering that participation in the study was compensated with extra credit. This could be viewed as a potential limitation of all achievement motivation research conducted with pools of university students whose participation is enticed or rewarded by course credit.

Suggestions for Future Research

The domain-specific achievement goal scale developed in this study should be administered in conjunction with an existing measure (e.g., Roedel et al.'s (1994) Goals Inventory, Eison et al.'s (1986) LOGO II) to establish convergent validity. Thereafter, the achievement goal scale could be incorporated into batteries of achievement motivation measures where items related to beliefs and attitudes are also present. The scale could also be adapted into a course- or discipline-specific scale. The relationship between discipline-specific achievement motivation and professional commitment represents an area ripe for research.

Further research into college students' achievement goals within and across academic disciplines is needed. Horowitz (2010) acknowledged and responded to the lack of disciplinary achievement motivation research through her study of pre-med students' goal orientations. Very few studies have explicitly contrasted the achievement goals of students

from more than one discipline (e.g., Lieberman & Remedios, 2007; Roebken, 2007). Future studies might explore the motivational profiles of students in different academic majors.

As an alternative to the traditional methods of measuring achievement goals (i.e., surveys and questionnaires), qualitative investigations into college students' mastery and performance goals could be particularly insightful. Other researchers have employed or promoted the use of qualitative inquiry in this area (Blumenfeld, 1992; Horowitz, 2010; Van Etten, Pressley, McInerney, & Liem, 2008). Van Etten et al. (2008) noted that "quantitative investigations may misrepresent the complexity and dynamism of students' academic motivation" (p. 812). More qualitative and mixed-methods studies should be conducted in order to expand our understanding of achievement goals.

The complexity of achievement motivation may not be sufficiently captured by mastery and performance goals alone, and some researchers have incorporated a work avoidance scale into their studies (e.g., Archer, 1994; Roebken, 2007). A work avoidant goal is exhibited when students attempt to complete their schoolwork with reduced effort and feel successful when tasks are easy (Pintrich & Schunk, 2002). Archer (1994) discovered a correlation between work avoidance and performance goals. Though not part of the fundamental goal orientation construct, work avoidance is an area that needs to be further explored alongside mastery and performance goals.

Conclusion

Achievement goal orientation is a complex construct. Its two primary elements—mastery and performance goals—function in ways that influence how students learn in addition to how they approach their studies. For college students in professional fields who are expected to apply their specialized knowledge very soon after graduation, it is

particularly vital that their approach to academics is supportive of the deep, meaningful learning that will enable them to be most effective in their careers. Two important findings emerged from this study: (1) Students reported greater frequencies of performance behaviors than mastery behaviors, and (2) Mastery goals and professional commitment are highly related to one another. Efforts must be made to further examine these ideas and find ways to enhance students' approaches to learning—whether by highlighting mastery, or mastery along with performance—so that educational institutions can produce enduring learning outcomes among future professionals in all fields of study.

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Appendix A

CONSTRUCT VALIDITY ITEM REVIEW

Instructions

ACHIEVEMENT GOALS AND PROFESSIONAL COMMITMENT

Psychologists and educational researchers often refer to goal-orientation theories to explain students' achievement behaviors in academic settings. For instance, a student who studies diligently for his classes may do so with a goal of thoroughly mastering the material, or his goal may be to outperform his classmates on an exam. The most common distinction made in achievement goal research is between mastery goals and performance goals.

Students who hold **mastery goals** persist at effortful activities in order to develop or improve their understanding and competence. With proficiency as their objective, these students adopt self-referenced standards to gauge their own progress. Mastery goals are commonly associated with students' intrinsic motivation to learn. Research has found that students with mastery goals are more likely to seek adaptive help, use deeper cognitive processing and self-regulatory strategies, and attempt more challenging tasks.

Students with **performance goals** focus on demonstrating their competence or hiding their incompetence from others. A primary concern of these students is how their ability will be judged, and they use normative standards to determine where they rank in comparison to other students. Evaluation—both formal and informal—is central to students' motivation. Research shows that performance goals are linked to a lower likelihood of help-seeking, shallow cognitive processing, and choice of easier tasks that are more likely to result in positive appraisal.

Higher education institutions must verify that their graduates have successfully acquired the knowledge and qualifications over the course of their studies to act effectively in their future careers. Thus, postsecondary educators work to instill a sense of **professional commitment** in their students. A simple indicator of professional commitment is maintaining a strong interest in the field (as may be inferred by a student's choice of academic major), while a more advanced indicator is seeking experiences that foster professional development.

The following page contains several items which reflect mastery goals, performance goals, and professional commitment. For each item you should

- make recommendations, if necessary, for how the item might be improved (changes to wording, phrasing, etc.), and
- identify whether the item refers to a mastery goal, performance goal, or professional commitment based on the descriptions given above. You may determine that an item fits more than one category or none of these three categories. On the blank line next to the item number, write the letter—M, P, or C—of any relevant construct(s), or write 'none' if the item does not reflect any of these.

Results

	Item	M	P	C	None
	Mastery items				
2	I enroll in courses that interest me.	11	1	6	1
3	I do optional course readings that instructors recommend.	16		5	
11	I complete extra credit work in order to learn more.	16	2	1	
12	I search independently for more information on topics that are discussed in class.	17	1	3	
16	If I do poorly on an assignment or exam, I ask the instructor to explain my areas of weakness.	16	6	1	
17	I seek clarification from instructors when I am confused.	17	3		
21	I think about points raised in lectures or discussions after class is over.	15	2	1	
25	I integrate material from one class with what I have learned or am learning in another class.	17		1	
27	I identify concepts that I do not fully understand.	16	3	1	
29	I look for evidence of development in my work.	15	1	2	
31	When reading for class, I check my understanding before moving on to the next section or chapter.	14	2		
35	I compare my current performance to my earlier performance to see my progress.	12	7	1	
36	I review my notes before class.	13	3		
38	I pay attention to guest speakers, student presentations, or videos shown in class that won't be assessed.	13	1	5	
41	I study in ways that promote my comprehension.	15			
45	When writing a term paper, I select a topic that I want to learn more about.	15	1	3	
46	I choose challenging tasks that present greater opportunities for learning.	15	1		
49	Given a choice of assignment formats (e.g., a paper, presentation, or group project), I choose the one that helps me learn best.	14	2		
	Performance items				
1	I monitor my grades throughout the semester.	7	13	1	
4	I work harder on assignments that are weighted heavily in the overall course grade.		16		1
5	I memorize material when studying for exams.	5	15		
7	I look for courses and/or instructors that are likely to give me good grades.		16	1	
8	I study with other students who are more knowledgeable than I am.	15	4[a]		1

(table continues)

Item	M	P	C	None
13 Given a choice of assignment formats (e.g., a paper, presentation, or group project), I choose the one on which I am likely to do best.		17		
14 When possible, I compare my grade to the class average.		17		
19 I contribute to class discussions to show my instructors and classmates how much I know.	2	17	1	
20 I judge my ability relative to other students.		17		
22 If I do poorly on an assignment or exam, I ask the instructor how I can raise my grade.	6	14		
23 I offer my classmates advice or share information when it might benefit them.	8	4[a]	4	1
24 I use extra credit opportunities to improve my grade.	3	17		
28 I ask instructors what material will be included on exams.	2	16		
32 I ask other students about their grades.		14		1
33 I put more effort into assignments when they will be seen by other students.		15		
39 I work hard in order to get good grades.	5	13		
40 When reading for class, I focus on areas that are likely to be tested.	2	13		
42 I avoid asking questions that might make me look unintelligent.		15		
47 When conversing with other students, I try to figure out how smart they are.		14		1
51 When an instructor asks a question in class, I answer only when certain that I'm correct.	1	14		1
52 After an instructor hands back an assignment, I look at my grade before reading his/her comments.		15		
Professional commitment items				
6 I anticipate furthering my education beyond a bachelor's degree in my field.	4		16	
9 I am interested in attending professional conferences and seminars in my field.	3	1	16	
10 I am familiar with my field's main accrediting body and standards.	3	1	17	
15 I am aware of the most current developments and research occurring in my field	5		16	
18 I belong to one or more professional organizations in my field.	1	1	16	
26 I have established connections with several professionals in my field.	1	1	15	
30 I know the names of many top researchers in my field.	1	1	15	
34 I read recent articles from professional journals in my field.	5		13	

(table continues)

Item	M	P	C	None
[37] I want to become a leading expert in my field.	4	1	13	
[43] I participate in activities that support me in becoming a professional in my field.	3		13	
[44] I want to make significant contributions to my field.	2	1	14	
[48] I intend to be employed or pursuing further study in my field 5 years after obtaining my bachelor's degree.	2		13	1
[50] I can discuss my field's presence in society.	5	1	13	

Note. (M) mastery, (P) performance, (C) professional commitment. Subscripted number is item's position on the measure. Seventeen graduate students participated in the item review. Because they were permitted to select more than one option, the sum of responses to each item may be greater than 17. Also, two students reviewed only the first page of items; therefore, some items (numbers 29-52) can have response sums of 15 or 16.

[a]Item intended to function negatively.

Appendix B

EXPLORATORY FACTOR ANALYSIS: ACHIEVEMENT GOAL SCALE

Factor Matrix

	Factor										
Item	1	2	3	4	5	6	7	8	9	10	11
I enroll in courses that interest me.	.42	-.10	.13	.03	-.11	.24	-.09	-.03	.07	.14	-.05
I integrate material from one class with what I have learned or am learning in another class.	.41	-.00	.17	.14	-.13	-.07	-.03	.43	.13	-.00	-.02
I try to memorize large amounts of material when studying for exams.	-.32	.25	.07	.18	.16	-.05	-.08	-.04	-.06	.20	.09
I choose challenging tasks that present greater opportunities for learning.	.53	-.13	.09	.13	.00	-.07	.06	.12	.12	-.14	.02
I judge my ability by comparing my performance to other students' performance.	-.17	.47	.14	.42	.30	.00	.03	.00	-.11	-.13	.12
I work harder on assignments that are weighted heavily in the overall course grade.	-.06	.49	.10	-.24	-.16	.11	-.15	.07	.25	.15	.09
I use extra credit opportunities to improve my grade.	.28	.44	-.19	.02	-.33	-.26	.21	.09	-.06	-.03	-.02
I think about points raised in lectures or discussions after class is over.	.54	-.05	.53	.14	.05	.19	.01	.08	-.08	.29	-.02
When reading for my classes, I focus on areas that are likely to be tested.	.05	.59	.12	.00	-.31	.40	-.17	-.31	.13	-.08	-.08
I put more effort into assignments when they will be seen by other students.	-.09	.52	.28	-.24	-.15	-.13	.28	.17	-.26	-.11	-.03
When conversing with other students, I try to figure out how smart they are.	-.12	.39	.41	-.17	.11	.09	-.08	.11	-.10	-.06	.23

(table continues)

Item	Factor										
	1	2	3	4	5	6	7	8	9	10	11
I ask questions and seek clarification from others even if doing so might make me seem unintelligent.	.46	.02	-.18	.21	-.33	-.22	-.31	-.10	-.11	.13	.27
I try to find out what material will be included on exams.	.19	.43	-.08	.09	-.07	-.08	-.16	.11	.03	.01	-.36
When reading for my classes, I check my understanding before moving on to the next section or chapter.	.60	.11	.06	-.35	-.06	-.08	.06	-.28	.18	-.11	.12
I look for courses and/or instructors that are likely to give me good grades.	-.11	.58	.04	-.09	-.08	-.14	-.02	.00	-.01	.05	.03
I do optional course readings that instructors recommend in order to learn more.	.59	-.09	.07	.02	.20	-.29	-.02	-.08	.26	-.06	.02
When possible, I compare my grade to other students' grades or to the class average.	-.18	.60	.04	.32	.22	-.02	.03	-.08	.23	-.08	.14
I search independently for more information on topics that are discussed in my classes.	.49	-.14	.25	-.14	.28	-.20	-.07	-.12	.09	.08	-.07
I strive to get good grades.	.34	.09	-.32	.07	.18	.31	.21	-.16	-.15	.13	.01
I monitor my grades throughout the semester.	.45	.31	-.33	.08	.06	-.01	.29	-.06	-.03	.20	.06
I look for evidence of development in my work.	.48	.06	.07	.06	.24	-.12	-.05	-.01	.02	.06	.09
I pay attention to guest speakers, student presentations, and/or films shown in my classes that don't count toward my grade.	.49	-.18	.21	.38	-.25	.00	.28	-.01	.19	-.02	-.05
I try to show my instructors and classmates how much I know.	.39	.17	.06	-.18	.18	-.09	.06	-.14	-.17	-.00	-.09
I ask questions and seek clarification from others when I am confused.	.53	.09	-.28	.13	-.13	-.24	-.15	-.12	-.20	-.02	.05
I review my notes before classes.	.59	-.05	.31	-.24	-.05	-.03	.09	-.05	-.20	-.14	.09
I study in ways that promote my comprehension.	.48	-.12	-.03	-.25	.01	.22	.09	-.06	-.02	-.06	-.04

(table continues)

	Factor										
Item	1	2	3	4	5	6	7	8	9	10	11
I identify concepts that I do not fully understand.	.56	.24	-.40	-.09	.25	.21	-.18	.23	.07	-.36	-.01
I work to correct any misunderstandings I have about the content of my coursework.	.53	.07	-.28	-.20	.04	.25	-.03	.32	-.01	.21	.21
I offer my classmates advice or share information when it might benefit them.	.44	.30	.06	.04	.15	-.06	-.27	.00	-.18	.10	-.35
When preparing to write a paper, I select a topic that I want to learn more about.	.44	-.06	.10	.43	-.10	.30	.07	-.03	-.14	-.19	.00
After an instructor hands back an assignment, I look at my grade before reading his/her comments.	-.05	.37	-.14	-.06	.08	-.03	.33	.02	.22	.16	-.14

Note. Principal axis factoring with promax rotation.

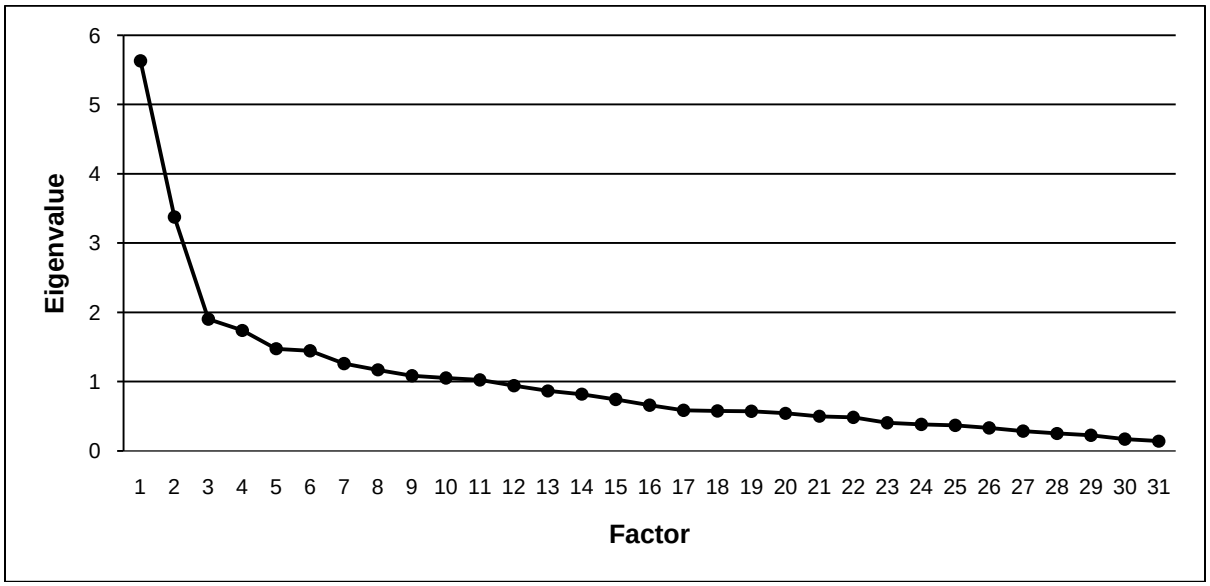
Explained Variance

	Initial eigenvalues		
Factor	Total	Percent of variance	Cumulative percent
1	5.63	18.16	18.16
2	3.38	10.89	29.05
3	1.90	6.13	35.18
4	1.74	5.61	40.79
5	1.47	4.75	45.55
6	1.44	4.65	50.20
7	1.26	4.07	54.27
8	1.17	3.77	58.04
9	1.08	3.50	61.53
10	1.05	3.40	64.93
11	1.03	3.31	68.24
…	…	…	…
31	.14	.45	100.00

Parallel Analysis (31 items, *n* = 104): Random Eigenvalues > 1

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
2.19	2.01	1.88	1.76	1.66	1.58	1.50	1.42	1.34	1.27	1.20	1.14	1.07	1.02

Scree Plot



Appendix C

EXPLORATORY FACTOR ANALYSIS: MASTERY SCALE

Factor Matrix

	Factor				
Item	1	2	3	4	5
I enroll in courses that interest me.	.44	-.13	.15	-.24	-.01
I integrate material from one class with what I have learned or am learning in another class.	.44	-.13	.20	.14	.03
I choose challenging tasks that present greater opportunities for learning.	.57	-.07	.09	.24	-.10
I think about points raised in lectures or discussions after class is over.	.62	-.49	.03	-.27	.27
When reading for my classes, I check my understanding before moving on to the next section or chapter.	.63	.29	-.39	-.18	-.25
I do optional course readings that instructors recommend in order to learn more.	.62	.04	-.34	.30	.15
I search independently for more information on topics that are discussed in my classes.	.51	-.03	-.31	.03	.15
I look for evidence of development in my work.	.50	.07	-.10	.09	.23
I pay attention to guest speakers, student presentations, and/or films shown in my classes that don't count toward my grade.	.51	-.43	.07	.17	-.22
I ask questions and seek clarification from others when I am confused.	.41	.17	.07	.15	-.08
I review my notes before classes.	.59	-.06	-.15	-.15	-.12
I study in ways that promote my comprehension.	.48	.15	.05	-.24	-.18
I identify concepts that I do not fully understand.	.49	.56	.30	.11	.05
I work to correct any misunderstandings I have about the content of my coursework.	.48	.36	.30	-.18	.17
When preparing to write a paper, I select a topic that I want to learn more about.	.44	-.24	.32	.08	-.11
After an instructor hands back an assignment, I look at my grade before reading his/her comments.	-.08	.13	-.02	.04	.03

Note. Principal axis factoring with promax rotation.

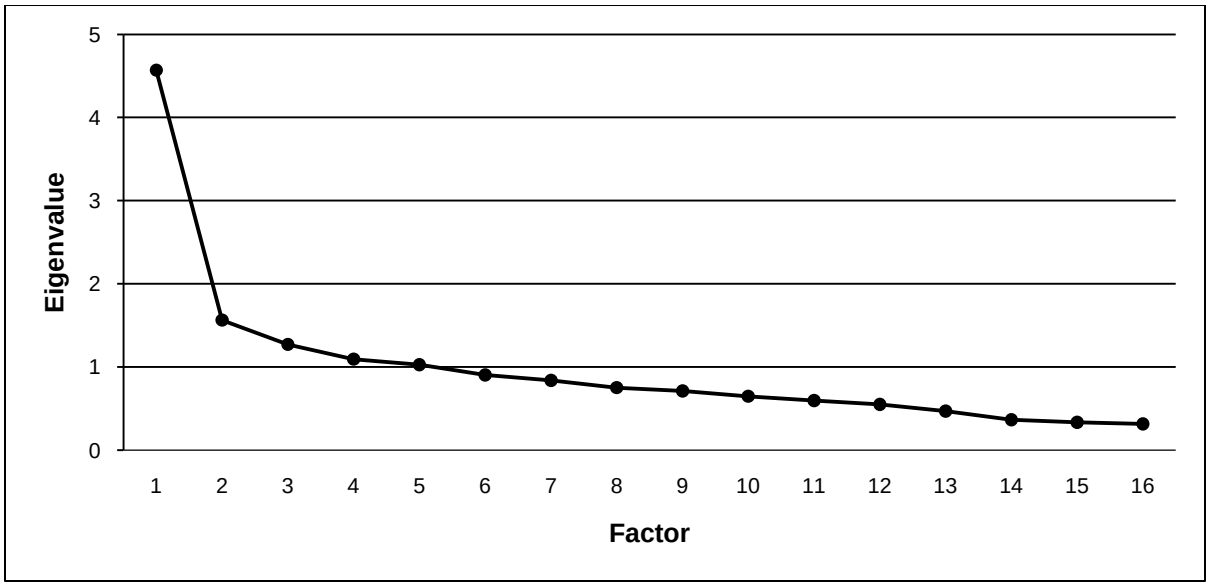
Explained Variance

	Initial eigenvalues		
Factor	Total	Percent of variance	Cumulative percent
1	4.57	28.56	28.56
2	1.56	9.77	38.33
3	1.27	7.94	46.28
4	1.09	6.84	53.12
5	1.03	6.41	59.53
…	…	…	…
16	.31	1.96	100.00

Parallel Analysis (16 items, *n* = 104): Random Eigenvalues > 1

1	**2**	**3**	**4**	**5**	**6**	**7**
1.75	1.57	1.44	1.34	1.24	1.15	1.07

Scree Plot



Appendix D

EXPLORATORY FACTOR ANALYSIS: PERFORMANCE SCALE

Factor Matrix

	Factor					
Item	1	2	3	4	5	6
I try to memorize large amounts of material when studying for exams.	.22	-.29	.27	-.05	.05	-.11
I judge my ability by comparing my performance to other students' performance.	.45	-.24	.35	-.13	.16	-.10
I work harder on assignments that are weighted heavily in the overall course grade.	.51	-.16	-.18	.41	-.26	.23
I use extra credit opportunities to improve my grade.	.50	.42	-.24	-.14	-.27	-.38
I put more effort into assignments when they will be seen by other students.	.53	-.02	.00	.33	-.02	.10
When conversing with other students, I try to figure out how smart they are.	.59	-.20	-.53	-.40	.18	.09
I ask questions and seek clarification from others even if doing so might make me seem unintelligent.	.37	-.34	-.10	.06	.12	.13
I try to find out what material will be included on exams.	.03	.39	-.01	.20	.01	-.18
When reading for my classes, I focus on areas that are likely to be tested.	.42	.26	-.01	.18	.16	-.11
I look for courses and/or instructors that are likely to give me good grades.	.57	-.10	-.07	.05	-.10	-.11
When possible, I compare my grade to other students' grades or to the class average.	.60	-.30	.46	-.07	-.06	-.12
I strive to get good grades.	.08	.44	.27	-.07	.01	.29
I monitor my grades throughout the semester.	.33	.60	.20	-.19	-.13	.14
I try to show my instructors and classmates how much I know.	.19	.26	-.05	-.09	.21	.17
I offer my classmates advice or share information when it might benefit them.	.32	.35	.01	.19	.46	-.05
After an instructor hands back an assignment, I look at my grade before reading his/her comments.	.36	.06	.09	-.20	-.21	.23

Note. Principal axis factoring with promax rotation.

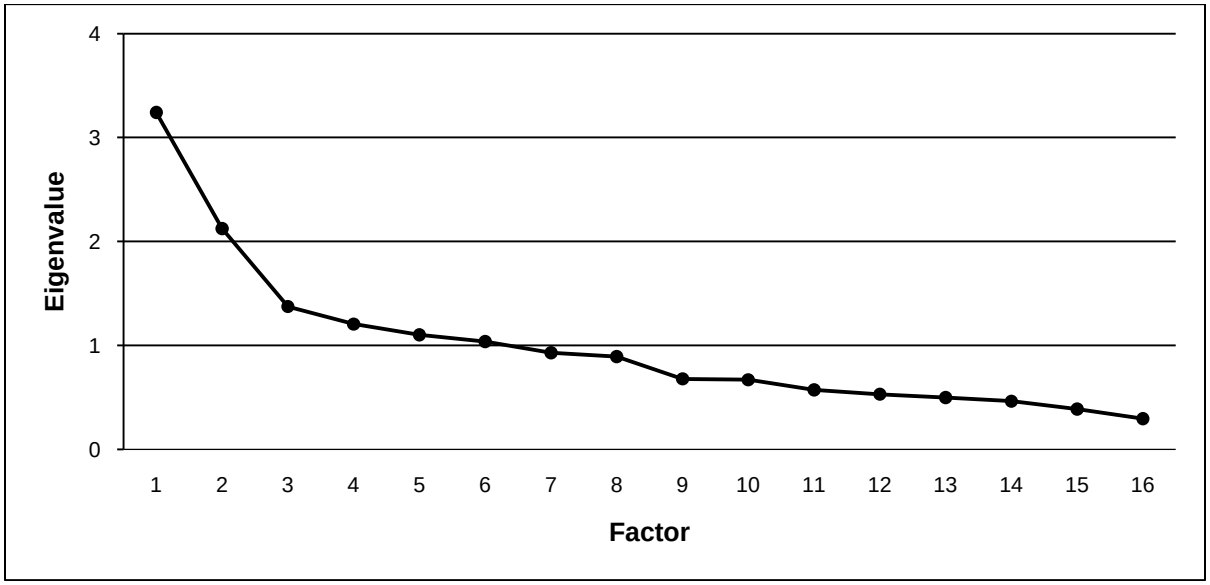
Explained Variance

	Initial eigenvalues		
Factor	Total	Percent of variance	Cumulative percent
1	3.24	20.25	20.25
2	2.12	13.27	33.53
3	1.37	8.59	42.12
4	1.21	7.53	49.65
5	1.10	6.88	56.53
6	1.04	6.48	63.01
…	…	…	…
16	.30	1.84	100.00

Parallel Analysis (16 items, *n* = 104): Random Eigenvalues > 1

1	**2**	**3**	**4**	**5**	**6**	**7**
1.75	1.57	1.44	1.34	1.24	1.15	1.07

Scree Plot



Appendix E

EXPLORATORY FACTOR ANALYSIS: PROFESSIONAL COMMITMENT SCALE

Factor Matrix

	Factor			
Item	1	2	3	4
I am familiar with my field's main accrediting body and standards for the profession.	.59	-.21	-.12	-.18
I intend to be either employed in my field or pursuing further study in my field 5 years after receiving my bachelor's degree.	.54	.29	.14	-.09
I participate in extracurricular activities (University-sponsored or non-sponsored) that support me in becoming a professional in my field.	.46	-.18	.68	.07
I attend events not required by any of my courses that feature speakers from my field.	.53	-.35	.15	-.05
I am aware of the most current developments and research occurring in my field.	.71	-.35	-.22	.23
I plan to build a lifelong career in my field.	.50	.33	.05	.50
I anticipate furthering my education beyond a bachelor's degree in my field.	.53	.31	.06	.20
I read recent articles from professional journals and/or other publications in my field.	.52	-.24	-.22	.03
I have attended/am interested in attending professional conferences in my field.	.66	-.16	-.14	.15
I understand the historical development of my field.	.51	-.08	-.14	-.04
I have joined/plan to join at least one professional organization in my field.	.45	-.08	-.02	-.05
I want to make significant contributions in my field.	.54	.28	-.08	-.13
I want to become an expert in my field.	.49	.53	-.11	-.16
I have established connections with other professionals in my field.	.60	-.02	.23	-.27
I can discuss my field's present role and significance in society.	.64	.09	-.08	-.21

Note. Principal axis factoring with promax rotation.

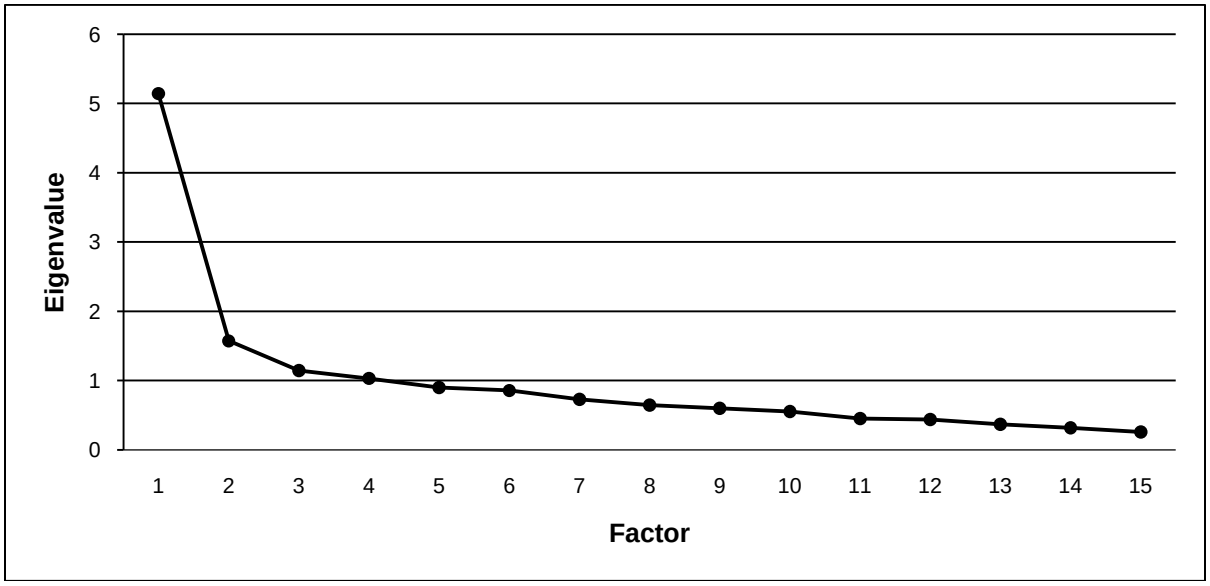
Explained Variance

	Initial eigenvalues		
Factor	Total	Percent of variance	Cumulative percent
1	5.14	34.27	34.27
2	1.57	10.48	44.76
3	1.14	7.62	52.37
4	1.03	6.88	59.25
…	…	…	…
15	.26	1.72	100.00

Parallel Analysis (15 items, *n* = 104): Random Eigenvalues > 1

1	**2**	**3**	**4**	**5**	**6**	**7**
1.71	1.54	1.41	1.30	1.21	1.12	1.04

Scree Plot



Appendix F

ITEM FREQUENCIES AND DESCRIPTIVE STATISTICS

Achievement Goal Items

Item	Frequencies					Mean	*SEM*	*SD*	Skewness[a]	Kurtosis[b]
	1	2	3	4	5					
I enroll in courses that interest me.		2	25	73	4	3.76	.05	.55	-.79	1.14
I integrate material from one class with what I have learned or am learning in another class.			47	50	7	3.62	.06	.61	.45	-.63
I try to memorize large amounts of material when studying for exams.		8	34	51	11	3.63	.08	.78	-.24	-.25
I choose challenging tasks that present greater opportunities for learning.		14	65	23	2	3.13	.06	.65	.31	.43
I judge my ability by comparing my performance to other students' performance.		9	28	48	19	3.74	.08	.86	-.31	-.46
I work harder on assignments that are weighted heavily in the overall course grade.		2	17	42	43	4.21	.08	.78	-.64	-.34
I use extra credit opportunities to improve my grade.			7	35	62	4.53	.06	.62	-.97	-.07
I think about points raised in lectures or discussions after class is over.		5	58	36	5	3.39	.07	.66	.40	.08
When reading for my classes, I focus on areas that are likely to be tested.		2	21	55	26	4.01	.07	.73	-.32	-.22
I put more effort into assignments when they will be seen by other students.	1	9	30	43	21	3.71	.09	.92	-.38	-.27
When conversing with other students, I try to figure out how smart they are.	5	34	46	15	4	2.80	.09	.89	.33	.12

(table continues)

Item	Frequencies					Mean	*SEM*	*SD*	Skewness[a]	Kurtosis[b]
	1	2	3	4	5					
I ask questions and seek clarification from others even if doing so might make me seem unintelligent.		14	51	37	2	3.26	.07	.71	-.09	-.47
I try to find out what material will be included on exams.			10	40	54	4.42	.07	.66	-.73	-.53
When reading for my classes, I check my understanding before moving on to the next section or chapter.		17	50	32	5	3.24	.08	.78	.17	-.37
I look for courses and/or instructors that are likely to give me good grades.	4	16	41	35	8	3.26	.09	.95	-.26	-.14
I do optional course readings that instructors recommend in order to learn more.	7	50	39	6	2	2.48	.08	.79	.61	.96
When possible, I compare my grade to other students' grades or to the class average.	1	7	15	46	35	4.03	.09	.92	-.90	.53
I search independently for more information on topics that are discussed in my classes.	6	51	42	5		2.44	.07	.68	.12	-.14
I strive to get good grades.			3	9	92	4.86	.04	.43	-3.11	9.36
I monitor my grades throughout the semester.			2	21	81	4.76	.05	.47	-1.78	2.37
I look for evidence of development in my work.		8	42	37	17	3.61	.08	.85	.09	-.67
I pay attention to guest speakers, student presentations, and/or films shown in my classes that don't count toward my grade.	1	9	38	41	15	3.58	.09	.88	-.20	-.20
I try to show my instructors and classmates how much I know.		32	56	13	3	2.88	.07	.73	.65	.50
I ask questions and seek clarification from others when I am confused.		4	33	54	13	3.73	.07	.73	-.15	-.17
I review my notes before classes.	12	48	36	7	1	2.39	.08	.82	.35	.23
I study in ways that promote my comprehension.		1	29	59	15	3.85	.07	.67	-.02	-.29

(table continues)

Item	Frequencies					Mean	*SEM*	*SD*	Skewness[a]	Kurtosis[b]
	1	2	3	4	5					
I identify concepts that I do not fully understand.		2	35	51	16	3.78	.07	.72	.05	-.51
I work to correct any misunderstandings I have about the content of my coursework.			24	62	18	3.94	.06	.64	.05	-.48
I offer my classmates advice or share information when it might benefit them.		13	34	42	15	3.57	.09	.89	-.12	-.68
When preparing to write a paper, I select a topic that I want to learn more about.	1	5	39	46	13	3.62	.08	.80	-.25	.27
After an instructor hands back an assignment, I look at my grade before reading his/her comments.	1	2	6	27	68	4.53	.08	.78	-2.01	4.75

Note. (SEM) standard error of the mean, (SD) standard deviation. $n = 104$. Instructions were to select the option that represents how frequently the behavior is performed using the following scale: 1 – *never*, 2 – *rarely*, 3 – *sometimes*, 4 – *often*, 5 – *always*.
[a]Standard error of skewness statistic=.24. [b]Standard error of kurtosis statistic =.47.

Professional Commitment Items

Item	Frequencies				Mean	*SEM*	*SD*	Skewness[a]	Kurtosis[b]
	1	2	3	4					
I am familiar with my field's main accrediting body and standards for the profession.		13	68	23	3.10	.06	.58	-.01	-.06
I intend to be either employed in my field or pursuing further study in my field 5 years after receiving my bachelor's degree.		3	9	92	3.86	.04	.43	-3.11	9.36
I participate in extracurricular activities (University-sponsored or non-sponsored) that support me in becoming a professional in my field.	8	24	44	28	2.88	.09	.90	-.43	-.55
I attend events not required by any of my courses that feature speakers from my field.	28	43	32	1	2.06	.08	.62	.02	-1.08

(table continues)

Item	Frequencies				Mean	*SEM*	*SD*	Skewness[a]	Kurtosis[b]
	1	2	3	4					
I am aware of the most current developments and research occurring in my field.	27	35	39	3	2.17	.08	.73	-.06	-1.09
I plan to build a lifelong career in my field.	2	5	23	74	3.63	.07	.45	-1.94	3.75
I anticipate furthering my education beyond a bachelor's degree in my field.	6	10	30	58	3.35	.09	.77	-1.27	.81
I read recent articles from professional journals and/or other publications in my field.	32	41	27	4	2.03	.08	.73	.33	-.75
I have attended/am interested in attending professional conferences in my field.	16	26	49	13	2.57	.09	.81	-.33	-.65
I understand the historical development of my field.	12	20	57	15	2.72	.08	.73	-.58	-.15
I have joined/plan to join at least one professional organization in my field.	5	8	50	41	3.22	.08	.62	-1.02	1.05
I want to make significant contributions in my field.	1	5	30	68	3.59	.06	.40	-1.51	2.18
I want to become an expert in my field.	1	3	18	82	3.74	.06	.31	-2.42	6.48
I have established connections with other professionals in my field.	9	25	43	27	2.85	.09	.83	-.39	-.62
I can discuss my field's present role and significance in society.	4	12	42	46	3.25	.08	.66	-.94	.42

Note. (SEM) standard error of the mean, (SD) standard deviation. $n = 104$. Participants were instructed to select the option that represents how accurately the statement describes them using the following scale: 1 – *very untrue of me*, 2 – *somewhat untrue of me*, 3 – *somewhat true of me*, 4 – *very true of me*.
[a]Standard error of skewness statistic=.24. [b]Standard error of kurtosis statistic =.47.