Linking Achievement Goal Theory to Adaptive Outcomes in an Undergraduate Major

---

A Project

Presented to

The Faculty of the Undergraduate College of

Integrated Science and Technology

James Madison University

In Partial Fulfillment

Of the Requirements for the Degree

Bachelor of Science

---

by

Kara Ann Makara

2007

Table of Contents

Acknowledgements

I would first like to acknowledge my advisor and mentor, Dr. Kenn Barron. Dr. Barron has gone above and beyond just teaching me how to conduct a quality honors thesis. He has also taught me how to think, write, and critique at a higher level, which has encouraged me to be an active life-long learner and to form my own opinions. I have been receiving his guidance from the very first semester I worked with him through an independent research study. He has challenged me through a senior seminar that I took with him on Motivation in Education. He advised me through my process of applying to graduate schools. Finally, he taught me about life, patience, and new ways of looking at the world and of dealing with others. With his direction I have become passionate about seeking knowledge for the rest of my life in order to make the world a better place. He helped to make my undergraduate experience unique and intellectually fulfilling.

I then would like to thank my thesis committee. Dr. William Evans is a very generous and caring individual. He is a humble leader and I was blessed to know him both as faculty advisor of Peer Advising and as a reader on my thesis committee. He provided words of wisdom and inspired me to connect my thesis project with my own personal development and future goals. Dr. Kevin Apple, my other committee member, helped me a great deal when I was developing and implementing my surveys. He is a very kind and intelligent individual who challenged me to understand the statistics I was using in my study. I appreciated

getting to know him through the thesis process. My thesis committee helped me to develop a thesis that serves as both a research project and as a program evaluation tool so that I could give back to the JMU Psychology Department. I would also like to sincerely thank Dr. Monica Reis-Bergan, another psychology faculty member, for her help in the beginning stages of the product.

Another individual I would like to thank is Ms. Theresa Egan, a psychology undergraduate student. She sat with me for many hours when helping to develop the survey for my honors thesis. She provided support, helped as editor on my final copy of the thesis, and is currently working to evaluate the qualitative data I collected. I would also like to thank the Psychology Learning Community, a dynamic and enthusiastic group of freshmen psychology students, for their participation and feedback on a pilot version of my study.

Last but not least, I would like to thank my family and friends. My friends and roommates have helped to encourage me and congratulate me throughout the process, and were supportive when I had to give up social time to spend on my thesis. Finally and most importantly, I would like to thank my family. My mom and dad spent many hours on the phone listening to my challenges and excitement during the honors thesis process. They have been a continual source of strength, determination, support, and a great inspiration for me to be the best that I can be. They taught me to be myself and to not compare myself to others. It is because of their love and encouragement that I strive each day to become a hard-working individual who can achieve anything that she sets her mind to.

Abstract

Achievement Goal Theory has emerged as one of the prominent frameworks for understanding why students engage in successful achievement behaviors. Proponents of the mastery goal perspective suggest that educators should only promote mastery goals in the classroom, while proponents of the multiple goal perspective suggest that there are possible benefits to both mastery-approach and performance-approach goals. Theorists on both sides of the debate have asked for a broader list of outcomes to be linked to the different goals that students pursue. The primary objective of the current study was to help solve this debate. The secondary objective was to provide program evaluation to the undergraduate psychology department. Thus, a survey was created looking at learning goals and outcomes for the psychology major at developmental levels of learning. This survey was linked to an Achievement Goal Theory questionnaire, revised for our study. Participants were psychology major students in their last year of undergraduate education who were given the surveys through WebSurveyor, an online survey tool. Simple correlations and a series of multiple regressions were run to look for possible additive, interactive, and specialized effects linking the 10 learning goals at each of the four levels of learning to the Achievement Goals. It was found that mastery-approach goals generally had positive correlations and significant main effects, while mastery-avoidance goals had negative correlations. However, findings for performance-approach goals were null. Implications of the study as well as suggestions for future research are discussed.

Introduction

Motivation is an important facet to understanding students' behavior in and out of the classroom (Pintrich & Schunk, 2002). In the annual Phi Delta Kappa Gallup Poll of the Public's Attitudes Toward the Public Schools (2006), students' lack of interest has continuously been cited as one the biggest problems in public education and currently ranks in the top five. Motivation theorists are interested in understanding why students engage in certain behaviors in order to help increase the frequency of adaptive behaviors and decrease maladaptive behaviors. Among the different theories of motivation, Achievement Goal Theory has emerged as one of the prominent frameworks to understanding students' achievement motivation.

Achievement Goal Theory

Achievement Goal Theory is constructed around competence (Elliot, 2005). In the late 1980's, research on Achievement Goal Theory emerged with the recognition of how an individual defines competence shapes the particular goals that the individual pursues in an achievement setting. This leads to a unique pattern of affective, cognitive, and behavioral outcomes (Elliot & Dweck, 1988). According to Elliot and McGregor, (2001, pp. 501), competence "is defined in terms of the referent or standard that is used in performance evaluation." One can strive to feel competent or proficient at a task by meeting the standards of the task itself, by meeting one's standards as set by past experience, or by meeting the standards set by others. Originally, there were two goals in the Achievement Goal Theory framework. Although theorists used several terms to label these two goals,

such as performance and learning goals (Elliot & Dweck, 1988), task and ego involvement goals (Nicholls, 1984), and intrinsic and extrinsic goals (Pintrich & Garcia, 1991), *mastery* and *performance goals* are the typical labels used today (Ames, 1992; Elliot, 2005). Students that orient towards mastery goals are focused on developing their skills, and therefore use a task- or self-based referent to evaluate their competence. For example, a student with a mastery goal strives to achieve well academically because they want to develop their skills and learn the material. On the other hand, students that orient towards performance goals are focused on demonstrating their skills, and therefore use an other-based referent to determine their competence. A student with a performance goal, for example, strives for achievement because they want to get a higher grade than others in the class.

The initial consensus by Achievement Goal theorists was that mastery goals led to adaptive outcomes and performance goals led to maladaptive outcomes (see Ames, 1992 for a review). For example, Nolen (1988) found that having a mastery goal was positively correlated with deep-level processing of the material. Meece, Blumenfeld, and Hoyle (1988) found that mastery goals were positively correlated with active engagement in the material. Active engagement included behaviors such as self-regulated learning, connecting, monitoring, and help-seeking. In contrast, students that were performance oriented were linked to maladaptive behaviors. In the Nolen (1988) study, students who had a performance goal orientation had no correlation with deep-level processing strategies and instead were correlated with surface-level strategies. Surface-level

strategies are not considered to lead to long-term retention of the material. Furthermore, Elliot and Dweck (1988) found a relation between performance goals and numerous other maladaptive outcomes (e.g., learned helplessness, especially among those students with low perceived ability).

However, as theorists continued to test the original two-dimensional model of Achievement Goal Theory in a variety of settings, the pattern of findings for performance goals was often mixed, revealing positive, null, or negative effects on important educational outcomes (Elliot, 2005). While some students with a performance orientation engaged in surface level processing, learned helplessness, or cheating, other students with a performance orientation were succeeding in their classes and getting higher grades than their mastery oriented peers (e.g., Barron & Harackiewicz, 2001; Elliot & McGregor, 2001; Harackiewicz, Barron, & Elliot, 1998).

Moving from a Two-dimensional Model to Three-dimensional Model

To better account for the mixed pattern of findings for performance goals, a third goal was added to Achievement Goal Theory which created a three-dimensional model. Specifically, Elliot and Harackiewicz, (1996) noted an important distinction between approach forms of performance goal motivation and avoidance forms of performance goal motivation. This distinction takes into account valence, or whether individuals are aimed at approaching the positive possibility of competence or avoiding the negative possibility of incompetence (Elliot, 2005). A performance-approach goal is when an individual strives to do well compared to others. A performance-avoidance goal is when an individual

strives to avoid doing poorly compared to others. For example, a performance-approach goal would be to get the best grade compared to others in the class, while a performance-avoidance goal would be to not get the worst grade compared to others in the class.

This distinction has been empirically supported by several studies (e.g., Elliot & McGregor, 2001; Elliot, McGregor, & Gable, 1999). Furthermore, adding this distinction provided a clearer pattern of which achievement goals were consistently linked to particular adaptive and maladaptive outcomes. Specifically, mastery goals continued to be positively correlated with deep processing and performance-approach goal were positively correlated with exam performance. On the other hand, performance-avoidance goals were linked to being negatively correlated with deep processing and exam performance.

Moving from a Three-dimensional Model to a Four-dimensional or 2 x 2 Model

Recently, Achievement Goal Theory was once again revised to extend the avoidance and approach distinction to mastery goals (Elliot, 1999). Theorists suggested that if students can have either an approach or avoidance valence towards performance goals, then they could have this same approach to mastery goals (Pintrich, 2000). Students who adopt mastery-avoidant goals strive to achieve by not showing a lack of competence in the task at hand. For example, while mastery-approach students strive to understand the material to the fullest, students with a mastery-avoidance orientation strive to learn just enough of the material so that they have some level of understanding. In other words, they focus

on just trying to avoid being incompetent on a task or losing their skills on the task.

Therefore, a 2 x 2 (4-dimensional) model of achievement goals was theorized, by crossing one's definition of competence (mastery or performance) and valence toward competence (approach or avoidance). The 2 x 2 model is currently receiving the most research attention today, and once again this distinction has been used to link achievement goals to a clearer pattern of adaptive and maladaptive outcomes. One study highlights this pattern (Elliot & McGregor, 2001). They found that mastery-approach goals were positively correlated with overall need for achievement, self-determined behavior, and perceived class engagement, whereas mastery-avoidance goals were positively correlated with fear of failure and negatively correlated with self-determined behavior. On the other hand, performance-approach were linked to being positively correlated with overall need for achievement, competitiveness, and fear of failure (Elliot & McGregor, 2001), and performance-avoidance goals were linked to being positively correlated with fear of failure and negatively correlated with self-determined behavior.

In summary, the current 2x2 framework of Achievement Goal Theory includes four goals that students can adopt with different outcomes linked to each of these goals (Elliot & McGregor, 2001). Individuals can be performance-approach, performance-avoidance, mastery-approach, mastery-avoidant, or perhaps a combination of the above across different contexts. Students who are performance-approach strive to demonstrate their competence compared to others,

e.g., “I want to get the highest grade in the class”. Students who are performance-avoidance strive to avoid showing their incompetence compared to others, e.g., “I want to avoid doing the poorest in this class compared to others.” Students who are mastery-approach strive to demonstrate their competence in the material, e.g., “I want to learn as much as possible in this class.” Finally, students who are mastery-avoidance strive to avoid showing their incompetence in the material, e.g., “I hope I can learn enough of this material to have some understanding of it.”

Mastery vs. Multiple Goal Perspectives of Optimal Motivation

Despite the current findings showing that mastery-approach and performance-approach goals are linked to adaptive outcomes, a number of theorists still call for a sole focus on mastery goals, known as the mastery goal perspective (Midgley, Kaplan, & Middleton, 2001). These theorists recognize that students can be performance goal oriented or mastery goal oriented with their academics, but recommend that striving to encourage and promote only mastery goals will lead to the most adaptive student learning outcomes. For example, Midgley et al. (2001) argued that even though performance-approach goals are sometimes more facilitative for certain students, they also bring about negative costs that mastery-approach goals do not. For example, they cite “avoidance strategies, cheating, and reluctance to cooperate with peers” and therefore think that mastery-approach should be the goal to focus upon in education (Midgley et al., 2001, p. 81). Likewise, Midgley et al. (2001) suggested that performance approach students may engage in just basic level or more superficial processes for learning. Although the authors do not see a need to endorse performance goals,

they did recognize that results are inconsistent in past literature and that more research on a greater range of adaptive and maladaptive outcomes is needed to explain the inconsistencies of the effects of performance-approach goals.

In general, proponents of the mastery goal perspective of Achievement Goal Theory state that only adopting mastery goals is adaptive, while adopting both mastery and performance goals is a maladaptive practice because of the possible negative effects of performance goals. The main argument from this perspective is that while performance goals can sometimes be positive, they are only adaptive for select individuals in select contexts, and result in negative consequences for others. These theorists also rely strongly upon the philosophy that educational opportunities should be equal for all students and that performance goals will hinder this equality.

In response to Midgely et al. (2001), Harackiewicz, Barron, Pintrich, Elliot, and Thrash (2002) discussed the benefits of adopting a multiple goal perspective in which mastery-approach and performance-approach goals are pursued. These theorists have noted several benefits of students who take a multiple goal perspective and suggest that Achievement Goal Theory should be revised to recognize the benefits of being both high on mastery-approach and performance-approach (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000).

This debate is so important because it has great implications for educational practice. As Harackiewicz et al. (2002, p. 643) pointed out, “there are different ways to achieve (educational) valued outcomes, and researchers should help schools understand the options and the potential rewards and risks of

adopting different strategies based on scientific theory and evidence." If students have the most adaptive outcomes because they are mastery-approach only, than educators should take only one approach to providing interventions that will change assessments or alter teaching methods to encourage all students to adopt mastery-approach goals. However, if students have more adaptive outcomes because they are pursuing both mastery-approach and performance-approach goals (i.e., the multiple goal perspective), then schools may have multiple options to choose from when improving education.

Interestingly, one of the most important findings of Harackiewicz et al. (2002) is that researchers are consistently finding that students adopt multiple goals. Therefore, these authors call for more research on how goals combine to promote achievement. They also suggest that evaluating a multiple goal perspective requires a methodology that tests both independent and interactive effects on each outcome.

The current debate between whether mastery vs. multiple goal perspective leads to optimal motivation in education is one of the most debated topics in the field. Theorists on both sides have made a call for a broad range of achievement-related behaviors to be linked with these different goal pursuits in order to resolve this debate. Both Midgley et al. (2001), proponents of the mastery goal perspective and Harackiewicz et al. (2002), proponents of the multiple goal perspective, have called for more qualitative and quantitative measures of educational outcomes that go beyond traditional measures.

The Current Study

The current study offers one answer to this call for broadening the types of outcomes traditionally evaluated in achievement goal studies and then linking these outcomes to students' goal pursuits. Specifically, a new questionnaire was developed to study levels of learning across students' academic career as a psychology major. Researchers have traditionally only used measures that have looked at motivation in a particular situation by looking at learning outcomes in a specific class (e.g., Elliot & McGregor, 2001).

Undergraduate Psychology Major Learning Goals and Outcomes

To develop a new measure assessing students' undergraduate major outcomes, I looked at what students can achieve more broadly during the course of their psychology major. In particular, I referred to the *Undergraduate Psychology Major Learning Goals and Outcomes* (Halonen, Appleby, Brewer, Buskist, Gillem, & Halpern, 2002) and to the more recent *Teaching, Learning, and Assessing in a Developmentally Coherent Curriculum* (Appleby, Bosack, Mayo, Poe, Puccio, & Rudmann, 2006), both created by the Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Sciences, appointed by the American Psychological Association (APA).

Several years ago, the Task Force on Undergraduate Psychology Major Competencies (Halonen et al., 2002) developed a set of learning goals and outcomes for a psychology undergraduate major. Appointed by the APA's Board of Educational Affairs, this group of professionals from educational programs across the nation worked together to create a document consisting of 10 learning goals and outcomes for an undergraduate psychology program. This document

divides the goals into two categories. The first five goals are designed to represent the "knowledge, skills, and values consistent with the science and application of psychology (p. 8)" and the second five goals are designed to represent the "knowledge, skills, and values consistent with liberal arts education that are further developed in psychology (p. 8)". The goals were designed to be reasonable expectations for any size psychology program or student population. The goals are: Goal 1, Knowledge Base of Psychology; Goal 2, Research Methods in Psychology; Goal 3, Critical Thinking Skills in Psychology; Goal 4, Application of Psychology; Goal 5, Values in Psychology; Goal 6, Information and Technological Literacy; Goal 7, Communication Skills; Goal 8, Sociocultural and International Awareness; Goal 9, Personal Development; and Goal 10, Career Planning and Development.

At James Madison University, an initial assessment tool (Stoloff, Apple, Barron, Reis-Bergan, & Sundre, 2004) was created for measuring how students exiting the undergraduate program met the 10 APA goals as suggested in the Halonen et al. (2002) document. This assessment, titled "Self-Reflection Exercise on American Psychology Association's (APA) Learning Goals for the Psychology Major", asked for two ratings on whether the goal was met and asked for open-ended feedback reflecting on those ratings. However, for the purpose of the current study, a new questionnaire needed to be developed to meet our aims.

In 2006, the American Psychological Association's Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Sciences developed a new document titled *Teaching, Learning, and Assessing in*

a Developmentally Coherent Curriculum (Appleby et al., 2006). This document included a developmental aspect to the previous document and provided a theoretical model of how to meet the first 5 APA goals at different developmental levels.

The APA Task Force stressed the importance of reaching the Undergraduate Goals at developmentally appropriate levels across the years from when a student enters their undergraduate psychology major until the point when they graduate with a bachelor's degree. Appleby et al. (2006) discussed five levels of proficiency, ranging from 1) *prior exposure* to the material, 2) a *basic* level which is learned in an introductory psychology course, 3) a *developing* level which should represent the move from lower level to upper level courses during the major, 4) an *advanced* level which should be reached near the end of the major, and 5) at the highest development, a *professional* level.

The basic, developing, and advanced levels are described using knowledge levels obtained from Bloom's Taxonomy (Bloom, Engelhart, Furst, & Krathwohl, 1956). At the basic level, students should have retention and comprehension of the goal. At a developing level, students should have analysis and application of the goal. Finally, at the advanced level, students should engage in evaluation and creation of the goal.

The document also provides a table which includes sub-goals of how to meet each of the first five goals on a basic, developing, and advanced level (Appleby et al., 2006). For example, Goal 2 is *Research Methods in Psychology*. One "outcome area" of this goal is to gain knowledge or skills in the scientific

method. At a basic level (see Table 2, Goal 2, p. 18), students should be able to "describe characteristics of the scientific method in psychology." At the developing level, students should be able to "analyze how primary behavioral research adheres to scientific principles". Finally, at the advanced level, students should be able to "design research that adheres to the principles of scientific method." In this way, the authors suggest that the goals should be appropriately assessed on different levels depending on the movement of undergraduates through the psychology major. The authors also suggest that feedback regarding a developmentally coherent curriculum and assessment will be essential.

There are several aims that I had when creating a new questionnaire. Based on the Undergraduate Learning Goals and Outcomes (Appleby et al., 2006; Halonen et al., 2002), I wanted to first assess outcomes that moved beyond traditional measures of specific learning and achievement outcomes of a particular classroom to looking at overarching achievement outcomes across an academic major. Second, I wanted to create a questionnaire with specific developmental levels of knowledge or skills for each of the goals. There are a wide range of levels at which one can reach a goal. One of Midgley et al. (2001) hypotheses was that performance goals are associated with low levels of learning, such as rote memorization and recall, instead of long term retention. For this reason, I would be creating a more comprehensive and useful assessment tool by assessing each of the ten goals at different levels of knowledge.

Bloom's Taxonomy

Bloom's taxonomy (Bloom et al., 1956) states that there are six developmental domains at which an individual can cognitively develop knowledge. At the most basic level is knowledge, starting with knowledge of terminology, specific facts, ways and means of dealing with specifics, and advancing to knowledge of universals and abstractions in a field. Second, there is comprehension, which includes the translation, interpretation, and extrapolation. The next level is application. The fourth level is analysis, which includes the ability to analyze elements, relationships, and organizational principles. The fifth level is synthesis, which includes production of unique communications, plans, and derivations of a set of abstract relations. Finally, the most advanced level included evaluation in terms of internal evidence and judgments in terms of external criteria. Bloom's original taxonomy (Bloom et al., 1956) has become a prominent fixture in education when developing questionnaires and ways of assessing students on their knowledge. In that way, Bloom's taxonomy will also be useful when assessing undergraduate psychology outcomes.

Recently, a revision of Bloom's Taxonomy (Krathwohl, 2002) was suggested to update Bloom's previous language. This revision appeared more appropriate for use in this study. The revision has a similar hierarchy and the framework is still developmental. The six new dimensions are remember, understand, apply, analyze, evaluate, and create. Krathwohl (2002) provided basic definitions for each of the levels. At the first level, students can *remember* by retrieving relevant knowledge from long-term memory. At the second level, students can *understand* or determine the meaning of instructional messages,

including oral, written, and graphic communication. At the third level, students can *apply* by carrying out or using a procedure in a given situation. At the fourth level, students can *analyze* by breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose. At the fifth level, students can *evaluate* by making judgments based on criteria and standards. Finally, at the last level students can *create* by putting elements together to form a novel, coherent whole or make an original product.

The purpose of my questionnaire was to apply Bloom's levels to the 10 APA Learning Goals and Outcomes in a way that would make sense to the population taking the survey and to be a useful assessment tool. I decided to use only five levels for a variety of reasons. First, I chose remember, understand, apply, evaluate, and analyze because they were able to encompass the wide range of either a skill or a knowledge set as provided by the 10 goals. However, analyze and evaluate were both higher levels of thinking and I chose to collapse these two levels into one level representing more in-depth learning. Like the APA Developmental Document (Appleby at al., 2006), I tried to collapse levels as best as possible to get a *beginning, developing*, and *advanced* feel. To balance parsimony and depth, four levels worked well for the current study. These four levels are still developmental in range, going from basic to advanced, and use terminology familiar to my sample population. My self-created questionnaire combining the 10 APA goals and the four levels of learning is titled *Developmental APA Goal Questionnaire.*

Primary Objectives of the Current Study

The present research is designed to add data to the current debate in Achievement Goal Theory by addressing two primary objectives. My first objective is to replicate and extend past research by looking at simple correlations between the 2 x 2 achievement goals and the forty items (four levels of learning x the ten APA Learning Goals and Outcomes) on the Developmental APA Goal Questionnaire. I expect to find particular patterns when looking at these correlations. Specifically, based on past literature that has shown a link between mastery-approach goals and deep levels of processing, and performance-approach goals and superficial levels of processing, I hypothesize:

a. Students high in mastery-approach will have positive correlations on all 10 of the APA goals and should be the only goals positively associated with the two higher levels of learning (apply and evaluate). Then more generally, overall, they should be the achievement goal most positively correlated with all 10 APA goals.
b. Students high in mastery-avoidance will have null correlations on the lower levels of learning, and negative correlations on the higher levels of learning.
c. Students high in performance-approach will have positive correlations on all goals, but may be particularly linked to the two lower levels of learning (remember and understand).
d. Students high in performance-avoidance will have negative correlations on all goals at the higher levels of learning, null or

negative correlations on the two lower levels of learning, and thus might overall be the most negatively correlated with all outcomes.

My second objective for the current study is to move beyond simple correlational analyses and to provide a more appropriate and rigorous test for benefits of a mastery goal perspective versus a multiple goal perspective. I believe that a multiple-goal perspective will lead to more adaptive outcomes when assessing the Undergraduate Learning Goals and Outcomes. Students who are mastery-approach have their strength in caring about the material, going beyond basic levels of learning to deep processing and evaluation of the material, and learning from their mistakes (Elliot & McGregor, 2001). Students who are performance-approach have their strength in productivity, giving extra effort because of external pressures such as grades and competition (McGregor & Elliot, 2002). This combination may bring out the most adaptive outcomes by pulling from the advantages of both mastery and performance approaches.

Barron and Harackiewicz (2001) have proposed four hypotheses that could be used to explain how a multiple goal perspective is more adaptive than a mastery goal perspective. One, the *additive multiple goal benefit*, says that mastery-approach and performance-approach goals will each have independent and positive effects. Two, the *interactive multiple goal benefit*, says that students high in both mastery-approach and performance-approach goals will have an interactive effect, greater than independent effects. Three, the *specialized multiple goal benefit*, says that students high in mastery-approach and performance-approach goals are linked to different and independent adaptive outcomes.

Finally, the *selective multiple goal benefit* says that when students have the option of pursuing multiple goals, they choose the goal that is the most adaptive for the particular context. In order to test for these benefits, the authors have called for more sophisticated research designs that assess multiple outcomes, and for statistical techniques that allow for the independent and interactive effects of achievement goals to be tested simultaneously in ways that simple correlational analyses cannot evaluate.

To answer the second objective, a series of multiple regressions will be run on each of the APA learning outcomes. Specifically, all four goals will be entered simultaneously to test for the independent contributions of each goal main effect and the interaction between mastery-approach and performance-approach will be tested to look for a unique interactive effect. I will then be able to formally evaluate the additive, interactive, and specialized goal hypotheses. If an additive multiple goal benefit is supported, I will find independent, positive main effects for both performance-approach goals and mastery-approach goals on the items of the Developmental APA Goal Questionnaire. This would suggest that both goals will contribute to meeting the 10 APA Undergraduate Learning Goals and Outcomes.

However, if an interactive goal hypothesis is supported, I would expect above and beyond any additive effects to find a positive interaction term suggesting that students must adopt *both* mastery-approach and performance-approach goals in order to best meet the 10 APA Undergraduate Learning Goals

and Outcomes at the different levels of learning. This would suggest that adopting only one type of achievement goal will not lead to positive outcomes.

My data could also support the multiple goal perspective through a specialized goal hypothesis. Rather than a consistent pattern of either additive or interactive effects on all outcomes, mastery-approach may be positively linked to certain outcomes while performance-approach may be positively linked to others. For example, mastery-approach goals may be positively correlated with certain APA goals and performance-approach goals with other APA goals. Alternatively, mastery-approach goals may be positively correlated with certain levels of learning and performance-approach goals with the other levels of learning. It may be that students who are mastery-approach tend to be positively correlated with knowledge content, critical thinking skills, values in psychology, and personal development, whereas students who are performance-approach to be positively correlated with communication skills, technology skills, and career development skills. On the other hand, it may be that students who are mastery-approach are positively correlated with the higher levels of learning (apply and evaluate), and students who are performance-approach are positively correlated with the lower levels of learning (remember and understand).

Unfortunately, the current research design does not allow for the evaluation of the selective goal benefit. In order to test for a selective benefit, a more complex design is needed in order to test if students are using one type of goal at certain times and another goal at other times, where a selective focus on

one particular goal at a time (shifting back and forth between the goals) would be linked to the most beneficial overall outcomes.

Secondary Objective of the Current Study

In addition to the two primary objectives, a secondary objective and an added benefit of the current study is to provide program evaluation and feedback. The self-reflective APA Goal and Achievement Goal questionnaires will provide data to the JMU Psychology Department. This data will not only help the local Psychology Department to assess which experiences students are having that lead to higher levels of learning, but will also provide specific experiences and behaviors that could be maladaptive or adaptive in relation to Achievement Goal Theory.

Methods

Participants and Setting

Data were collected on Senior Assessment Day, February 14, 2007, in computer labs on the JMU campus. A select number of participants were randomly assigned to take the two surveys. In addition, any student who was unable to attend Senior Assessment Day completed the goal assessments on-line as part of a make up session. There were a total of 76 participants; the survey did not ask for gender but there was a selection of both males and females. The participants were all psychology majors in their final year of the program. I chose graduating seniors because they have met most or all of the curriculum requirements of the psychology major.

Procedure

First, students filled out the newly devised self-report Developmental APA Goal Questionnaire (see Appendix A). Immediately following, participants filled out a well validated self-report measure of students' achievement goals that I revised for the overall goals of the psychology major (Elliot & Church, 2001; see Appendix B). The surveys were adapted to electronic format through WebSurveyor, a web survey program. WebSurveyor stored and managed the data for easy retrieval. My thesis committee and I were the only ones who had access to the data.

Questionnaires

Developmental APA Goal Questionnaire. I created the self-report questionnaire to assess whether students had developed the 10 APA Learning

Goals and Outcomes at the different levels of learning (See Appendix A). There was an instruction page to introduce students to the purpose of the survey and to prime students to reflect on their experiences across the entire major and to answer honestly and openly. It also described the logic of evaluating four levels of learning from Bloom's Taxonomy. Then, for each of the ten APA learning goals, a brief definition of the goal was provided as well as several examples of how to meet the goal. See Appendix B for examples.

Beneath the description, four questions based on the four levels of learning were asked of participants: 1. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it); 2. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words); 3. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it); and 4. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it). On each level of learning for each goal, students rated whether the statement was true of them using a 1 (not at all true of me) to 5 (very true of me) scale. After rating each goal for the four levels of learning, I asked for open-ended feedback on why students felt they had or had not developed on that goal for additional qualitative data to explain their quantitative ratings. The qualitative data will not be analyzed in the current project, but will be available for future analyses.

Achievement Goal Questionnaire for the Major. For this study, a new version of the 2 x 2 Achievement Goal Questionnaire needed to be developed from Elliot and McGregor's (2001) original Achievement Goal Questionnaire.

Specifically, a new version was adapted to assess students' retrospective achievement goals in the psychology major rather than their specific goals for a particular class. For example, one of the mastery-approach questions was revised to read, "I wanted to learn as much as possible in the psychology major." In this way, I linked achievement goals to outcomes in the major to see which types of goals lead to the most adaptive outcomes. Similar surveys have successfully been created to measure students general goals for the academic semester, or their goals for their general education coursework (Finney, Pieper, & Barron, 2004; Miller & Sundre, 2007).

The questionnaire asked students to respond to each item using a 7 point scale from 1 (Not at All True of Me) to 7 (Very True of Me). Three items were averaged together to represent each of the 4-dimensions of the 2 x 2 model of achievement goals. An example of a mastery-approach item in the questionnaire was, "Completely mastering the material in my psychology coursework at JMU was important to me." An example of a mastery-avoidance statement was, "I'm afraid that I may not have understood the content of my psychology coursework at JMU as thoroughly as I'd like." An example of a performance-approach statement on the questionnaire was, "My goal in the psychology major at JMU was to get better grades than most of the other students." An example of a performance-avoidant statement was, "I just wanted to avoid doing poorly compared to other students in the psychology major at JMU." (See Appendix B)

The revised edition of the Achievement Goal Questionnaire was found to be reliable. The items referring to mastery approach (questions 3, 7, & 10) were

found to be reliable, Cronbach's α = .813. The items referring to mastery avoidance (questions 5, 11, & 14) were found to be reliable, Cronbach's α = .905. The items referring to performance approach (questions 1, 6, & 12) were found to be reliable, Cronback's α = .872. The items referring to performance avoidance (questions 2, 8, & 15) were found to be reliable, Cronbach's α = .744. Although not used in our study, the questionnaire also looks at work avoidance, or a lack of achievement goals. The items referring to work avoidance (questions 4, 9, 13, & 16 reverse scored) were also found to be reliable, Cronacbh's α = .881.

Results

Initial Descriptive Statistics

Before addressing the two primary research objectives linking the Achievement Goal Questionnaire to the Developmental APA Goal Questionnaire, initial descriptive statistics for each questionnaire are reported.

Achievement Goal Questionnaire. Means, standard deviations, and ranges for the four achievement goals are displayed in Table 1. On a 7 point scale, senior psychology majors rated mastery-approach goals the highest ($M = 5.73$, $SD = .93$),followed by performance-approach goals ($M = 4.13$, $SD = 1.64$), mastery-avoidance goals ($M = 3.60$, $SD = 1.71$), and finally performance-avoidance goals ($M = 2.98$, $SD = 1.44$). A one-way, within-subjects ANOVA was run to determine if students' achievement goal ratings were significantly different from each other. The results indicated a significant effect, Wilk's $\Lambda = .298$, $F = 55.50$, $p < .001$. Post-hocs were run in order to observe which goals differed significantly from each other. Using Holm's Sequential Bonferroni to control for Type 1 error, it was determined that all four of the goals differed from each other.

Developmental APA Goal Questionnaire. Means and standard deviations for the 10 APA goals at each of the four levels of learning are displayed in Table 2, resulting in 40 separate means and standard deviations. On a 5 point scale, the highest ratings were for Goal 5 at the remember level ($M = 4.51$) and for Goal 7 at the understand level ($M = 4.51$). The lowest rating was for Goal 10 at the evaluate level ($M = 3.58$). The lowest ratings, those that fell below a mean of 4.00, included Goal 1 at the apply and evaluate levels, Goal 2 at the evaluate level,

Goal 3 at the evaluate level, Goal 6 at the evaluate level, and Goal 10 at remember, understand, apply, and evaluate levels.

To test whether students rated the levels of learning for each of the 10 APA goals differently, a series of repeated measures ANOVA were run. This test provided an opportunity to determine if students reported developing lower levels of learning (like remember and understand) more than higher levels (like apply and evaluate). This pattern would be consistent with Bloom's original taxonomy and theorizing about the sequential levels of learning. Indeed, students' ratings on the four levels of learning differed significantly for Goal 1 ($F = 8.65$, $p < .001$, linear relationship), Goal 2 ($F = 21.89$, $p < .001$, linear relationship), Goal 3 ($F = 3.05$, $p = .046$, quadratic relationship), Goal 4 ($F = 5.61$, $p = .003$, mixed linear/cubic relationship), Goal 5 ($F = 3.49$, $p = .03$, linear relationship), Goal 6 ($F = 5.90$, $p = .002$, linear relationship), and Goal 7 ($F = 3.90$, $p = .02$, quadratic relationship). Goal 8 was only marginally significant ($F = 2.71$, $p = .065$), but had a significant quadratic relationship ($p = .009$). Goals 9 and 10 were not rated significantly different across the four levels of learning and there was no significant linear, quadratic, or cubic nature of the relationship. The most common pattern, a linear relationship, was the result of students indicating that the lowest level of learning from Bloom's Taxonomy (i.e., remember) was the most true of students, followed by fewer students indicating that they understood the material, followed by even fewer students remembering that they could apply or evaluate the material at a deeper level.

Correlational Analyses

To address the first primary objective, to replicate and extend past research on Achievement Goal Theory, I next ran correlations to observe patterns of positive, negative, or null relationships between the four types of Achievement Goals and the four levels of learning on each of the 10 APA learning goals and outcomes. To help organize the correlation results, I will restate the predictions made in the introduction before summarizing what was found. In addition, I will present the correlations for each achievement goal by the 10 APA goals separately, because the predictions I made in the introduction also discussed the pattern of correlations in this way.

Mastery-approach and the Developmental APA Goal Questionnaire. I hypothesized that students high in mastery-approach will generally have positive correlations on all goals and especially at the two higher levels of learning (apply and evaluate). Mastery-approach was positively correlated with Goal 1 at the understand level (Pearson's $r = .258$, $p = .024$), at the apply level (Pearson's $r = .304$, $p = .008$), and at the evaluate level (Pearson's $r = .395$, $p < .001$). Mastery-approach was positively correlated with Goal 2 at the remember level (Pearson's $r = .275$, $p = .016$), understand level (Pearson's $r = .334$, $p = .003$), apply level (Pearson's $r = .305$, $p = .007$), and the evaluate level (Pearson's $r = .304$, $p = .008$). Mastery-approach was positively correlated with Goal 3 at the understand level (Pearson's $r = .296$, $p = .009$), apply level (Pearson's $r = .236$, $p = .040$), and evaluate level (Pearson's $r = .306$, $p = .007$). Mastery-approach was positively correlated with Goal 5 at the apply level (Pearson's $r = .238$, $p = .038$). Mastery-approach was positively correlated with Goal 8 at the remember level (Pearson's *r*

= .273, p = .017), understand level (Pearson's r = .350, p = .002), apply level (Pearson's r = .354, p = .002), and at the evaluate level (Pearson's r = .380, p = .001). Mastery-approach was positively correlated with Goal 9 at the apply level (Pearson's r = .276, p = .016) and the evaluate level (Pearson's r = .237, p = .039). Finally, mastery-approach was positively correlated with Goal 10 at the understand level (Pearson's r = .279, p = .016), apply level (Pearson's r = .261, p = .023), and the evaluate level (Pearson's r = .247, p = .032). See Table 3a for a summary.

In other words, students who rated highly on mastery-approach also rated highly on understanding, applying, and evaluating the knowledge base of psychology, critical thinking skills in psychology, and career planning and development. Mastery-approach students also rated highly on all levels of research methods in psychology and on sociocultural and international awareness (remember, understand, apply, evaluate). They rated highly on applying values in psychology and on applying and evaluating personal development.

Mastery-avoidance and the Developmental APA Goal Questionnaire. I hypothesized that students high in mastery-avoidance will have null correlations on the lower levels of learning, and negative correlations on the higher levels of learning. Mastery-avoidance was negatively correlated with Goal 1 at the apply level (Pearson's r = -.229, p = .047) and evaluate level (Pearson's r = -.284, p = .013). Mastery-avoidance was negatively correlated with Goal 7 at the apply level (Pearson's r = -.228, p = .048) and evaluate level (Pearson's r = -.230, p = .045). Mastery-avoidance was negatively correlated with Goal 8 at the apply level

(Pearson's r = -.269, p = .019). Mastery-avoidance was negatively correlated with Goal 10 at the apply level (Pearson's r = -.294, p = .010) and evaluate level (Pearson's r = -.243, p = .035). In other words, students who rated highly on mastery-avoidance rated low on applying and evaluating knowledge base of psychology, communication skills, and career planning and development. They also rated low on applying sociocultural and international awareness. See Table 3b.

Performance-approach and the Developmental APA Goal Questionnaire. I hypothesized that students high in performance-approach would have positive correlations on all goals, but specifically at the two lower levels of learning (remember and understand).

Performance-approach was positively correlated with Goal 2 at the remember level (Pearson's r = .233, p = .043) and understand level (Pearson's r = .248, p = .032). Students who rated high on performance-approach rated high on remembering and understanding research methods in psychology. However, all other findings were null. See Table 3c.

Performance-avoidance and the Developmental APA Goal Questionnaire. I hypothesized that students high in performance-avoidance will have negative correlations on all goals at the higher levels of learning, null or negative correlations on the two lower levels of learning, and thus might overall be the most negatively correlated with all outcomes. Interestingly, only one significant correlation was found. Performance-avoidance was positively correlated with Goal 4 at the remember level (Pearson's r = .289, p = .011). Students who rated

highly in performance-avoidance rated high on remembering the application of psychology. All other findings were null. Table 3d.

Multiple Regression Analyses

To address the second primary objective, providing a more appropriate and rigorous test for benefits of a mastery goal perspective versus a multiple goal perspective, multiple regressions were run on the 10 APA goals at each of the four levels of learning in order to test whether there was support for the additive, interactive, or specialized goal hypotheses. However, the level of significance was set to .10 when observing regressions because of the lack of power due to small sample size and number of additional terms entered in the model. I was liberal in looking for significance because this was an initial exploratory study, and I was interested in observing if there was any possible support for multiple goal benefits on any of the APA goal outcomes. The downside to this approach is that there was a risk of inflating Type 1 error, and this is a noted limitation of the current study.

Specifically, a hierarchical regression made up of achievement goal predictors was run to predict each of the 10 APA goals at each of the four levels of learning. At the first step of the regression (main effect model), I entered the four achievement goals (the 2 x 2 framework) into the regression. At the second step (combined main effect and interactive model), I stepped in the interaction term between mastery-approach and performance-approach in order to test the additional possibility of an interactive effect of a student who is high in both mastery-approach and performance-approach in addition to any goal main effects.

It should be noted again, due to the small sample size and low power, that only this theoretical interaction was tested in the present study, rather than testing all possible interactions among the goals. All variables were standardized to aid in interpretation following the recommendations of Aiken and West (1991) and Frazier, Tixs, and Barron (2004).

Due to the large number of regressions (40 in all), only significant regression relationships will be reported. For a visual representation of the significant regressions, see Table 4. I will report the second step, the interactive model, only if it is significant and the interaction term (mastery-approach * performance-approach) is significant. However, if the interaction term is not significant, then I will report only the first step, the main effect model, and the significant main effect terms. If neither the first or second steps are significant, the regressions will not be reported.

In addition, if an interaction is significant, predicted values will be calculated to interpret the nature of the interaction. This is done by plotting hypothetical scores for someone who is one standard deviation above and one standard deviation below the mean for each continuous variable. In other words, this allows you to create a 2x2 plot of students that are high in mastery-approach and performance approach, high in mastery-approach but low in performance-approach, low in mastery-approach but high in performance-approach, and finally low in both mastery-approach and performance-approach.

Overall, seven out of ten of the goals had at least one significant overall effect. Among these, three of the goals had a significant interactive term for

mastery-approach*performance-approach: Goal 1, Knowledge Base of Psychology, Goal 2, Research Methods in Psychology, and Goal 8, Sociocultural and International Awareness. There were no significant findings for Goal 6, Information and Technological Literacy, Goal 7, Communication Skills, and Goal 9, Personal Development. As you will note when reading the summary of the significant regressions in Table 4, a couple of common patterns are repeatedly found.

On Goal 1b, understanding the knowledge base of psychology, the overall interactive model was marginally significant, $F(5,70) = 2.22$, $p = .062$, ($R^2 = .14$). A main effect was found for mastery-approach goals ($B = .27$, $p = .03$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of understanding the knowledge base of psychology. However, this main effect finding was further qualified by a significant interaction ($B = -.29$, $p = .05$). After calculating predicted values (which are reported in the parentheses), students that are high in mastery-approach and low in performance-approach (Y′ = 4.36) are the most likely to understand the knowledge base of psychology. Students that are high in performance-approach, despite whether they are high (Y′ = 4.10) or low (Y′ = 4.12) in mastery-approach, are also likely to understand the knowledge base of psychology. However, students that are low in both performance-approach and mastery-approach (Y′ = 3.57) are the least likely to understand the knowledge base of psychology.

On Goal 1c, applying the knowledge base of psychology, the overall main effect model was marginally significant, $F(4,71) = 2.49$, $p = .051$, ($R^2 = .12$), and

a main effect was found for mastery-approach goals (B = .25, p = .04). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of applying the knowledge base of psychology.

On Goal 1d, evaluating the knowledge base of psychology, the overall main effect model was significant, $F(4, 71) = 4.68$, p = .002, (R^2 = .21). A main effect was found for mastery-approach goals (B = .31, p = .008) and a negative main effect was found for mastery-avoidance goals (B = -.196, p = .09). Students who adopted higher levels of mastery-approach goals were more likely to report evaluating the knowledge base of psychology. However, students who adopted higher levels of mastery-avoidance goals were less likely to report evaluating the knowledge base of psychology.

On Goal 2a, remembering research methods in psychology, the overall interactive model was significant, $F(5,70) = 3.48$, p = .007, (R^2 = .20). A main effect was found for mastery-approach goals (B = .31, p = .01). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of remembering research methods in psychology. However, this main effect finding was further qualified by a significant interaction (B = - .26, p = .06). Students who are high in mastery-approach, despite whether high (Y' = 4.66) or low in performance-approach (Y' = 4.72), are more likely to rate high on remembering research methods. Students who are low in mastery but high in performance also rate fairly high (Y' = 4.58). However, students low in performance-approach and low in mastery-approach (Y' = 3.78) are the least likely to rate that they remember research methods in psychology.

On Goal 2b, understanding research methods in psychology, the overall main effect model was significant, $F(4,70) = 4.48$, $p = .003$, ($R^2 = .20$). A main effect was found for mastery-approach goals ($B = .38$, $p = .002$) and for performance-avoidance goals ($B = .23$, $p = .08$). Students who adopted higher levels of mastery-approach goals or performance-avoidance goals were more likely to report understanding research methods of psychology.

On Goal 2c, applying research methods in psychology, the overall main effect model was marginally significant, $F(4,71) = 2.26$, $p = .07$, ($R^2 = .11$), and a main effect was found for mastery-approach goals ($B = .24$, $p = .006$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of applying research methods in psychology.

On Goal 2d, evaluating research methods in psychology, the overall main effect model was significant, $F(4,71) = 2.63$, $p = .04$, ($R^2 = .13$), and a main effect was found for mastery-approach goals ($B = .30$, $p = .015$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of evaluating research methods in psychology.

On Goal 3a, remembering critical thinking skills in psychology, the overall main effect model was marginally significant, $F(4,71) = 2.03$, $p = .09$, ($R^2 = .10$). Marginal main effects were found for both mastery-approach goals ($B = .22$, $p = .08$) and performance-approach goals ($B = .25$, $p = .08$). Students who adopted higher levels of either mastery-approach or performance-approach goals were more likely to report higher levels of remembering critical thinking skills in psychology.

On Goal 3b, understanding critical thinking skills in psychology, the overall main effect model was marginally significant, $F(4,71) = 2.16$, $p = .08$, ($R^2 = .11$), and a main effect was found for mastery-approach goals ($B = .29$, $p = .02$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of understanding critical thinking skills in psychology.

On Goal 3d, evaluating critical thinking skills in psychology, the overall main effect model was significant, $F(4,71) = 2.59$, $p = .04$, ($R^2 = .13$), and a main effect was found for mastery-approach goals ($B = .24$, $p = .05$). Students who adopted higher levels of mastery-approach goals were more likely report higher levels of evaluating critical thinking skills in psychology.

On Goal 4a, remembering application of psychology, the overall main effect model was marginally significant, $F(4,71) = 2.50$, $p = .05$, ($R^2 = .12$), and a main effect was found for performance-avoidance goals ($B = .427$, $p = .003$). Students who adopted higher levels of performance-avoidance goals were more likely to report higher levels of remembering application of psychology.

On Goal 5b, understanding application of psychology, the overall main effect model was marginally significant, $F(4,71) = 2.31$, $p = .07$, ($R^2 = .12$). A main effect was found for mastery approach goals ($B = .31$, $p = .01$) and for performance-avoidance goals ($B = .296$, $p = .03$). Students who adopted higher levels of either mastery-approach goals or performance-avoidance goals were more likely to report understanding the application of psychology.

On Goal 8a, remembering sociocultural and international awareness, the overall interactive model was marginally significant, $F(5,70) = 1.97$, $p = .09$, (R^2

= .08). A main effect was found for mastery-approach goals (B = .30, p = .02). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of remembering sociocultural and international awareness. However, this main effect finding was further qualified by a significant interaction (B = - .25, p = .08). Students who are high in mastery-approach, despite whether high (Y' = 4.28) or low in performance-approach (Y' = 4.41), are more likely to rate high on remembering sociocultural and international awareness. Similarly, students low in mastery and high in performance approach (Y' = 4.18) rate fairly high on remembering. However, students low in performance-approach and low in mastery-approach (Y' = 3.21) are the least likely to rate that they remember sociocultural and international awareness.

On Goal 8b, understanding sociocultural and international awareness, the overall main effect model was significant, $F(4,71) = 2.71$, p = .04, (R^2 = .13), and a main effect was found for mastery-approach goals (B = .33, p = .008). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of understanding sociocultural and international awareness.

On Goal 8c, applying sociocultural and international awareness, the overall interactive model was significant, $F(5,70) = 3.29$, p = .01, (R^2 = .19). A main effect was found for mastery-approach goals (B = .33, p = .007). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of applying sociocultural and international awareness. However, this main effect finding was further qualified by a marginally significant interaction (B = - .25, p = .07). Students who are high in mastery-approach, despite whether high

(Y′ = 4.35) or low (Y′ = 4.19) in performance-approach, are more likely to rate high on remembering sociocultural and international awareness. Similarly, students who are low in mastery and high in performance approach also rate high (Y = 4.68). However, students low in performance-approach and low in mastery-approach (Y′ = 3.44) are the least likely to rate that they remember sociocultural and international awareness.

On Goal 8d, evaluating sociocultural and international awareness, the overall main effect model was significant, $F(4,70) = 3.14$, $p = .02$, ($R^2 = .15$), and a main effect was found for mastery-approach goals ($B = .34$, $p = .006$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of evaluating sociocultural and international awareness.

On Goal 10a, remembering career planning and development, the overall main effect model was marginally significant, $F(4,71) = 2.17$, $p = .08$, ($R^2 = .15$) and a main effect was found for mastery-approach goals ($B = .34$, $p = .006$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of remembering career planning and development.

On Goal 10b, understanding career planning and development, the overall main effect model was marginally significant, $F(4, 70) = 2.43$, $p = .06$, ($R^2 = .12$), and a marginal main effect was found for mastery-approach goals ($B = .23$, $p = .07$). Students who adopted higher levels of mastery-approach goals were more likely to report higher levels of understanding career planning and development.

Finally, on Goal 10c, applying career planning and development, the overall main effect model was marginally significant, $F(4, 71) = 2.34$, $p = .06$, (R^2

= .12), and a marginal main effect was found for mastery-avoidance goals (B = -.23, p = .06). Students who adopted higher levels of mastery-avoidance goals were less likely to report higher levels of applying career planning and development.

Overall Summary of Multiple Regressions

Generally, when the main effect model was significant, a main effect for mastery-approach goals was found. When interactions were significant, the typical pattern was a negative relationship with the combined mastery-approach and performance-approach interactive term. In other words, when plotting the predicted values to interpret the nature of the interactions, students who were typically high in performance-approach and mastery-approach, or high in at least one, all ended up rating about the same on each of the APA goal outcomes. However, students who were low in both performance-approach and mastery-approach rated the lowest on APA goal outcomes.

Discussion

The current study aimed to add to the literature on Achievement Goal Theory by exploring a rich set of academic outcomes as they relate to individual achievement goals or combination of goals. Achievement Goal Theory is one of the prominent motivation frameworks used by theorists to understand how students approach their classes or school in general. In the current 2x2 framework, there are four goals that can be used to understand how students are motivated to achieve. The four goals, mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance, have each been linked to different adaptive and maladaptive outcomes. The current study went beyond typical achievement outcomes such as grade point average or interest in an academic subject. This study looked at how college students were motivated across an undergraduate major, and linked this motivation to the 10 APA Learning Goals and Outcomes across four levels of learning based on Bloom's taxonomy of learning.

Primary Objectives

The first primary objective was to replicate past studies that have looked at correlations between different academic outcomes and the four achievement goals. My findings mirrored past findings in several ways. First, I hypothesized that mastery-approach students would have positive correlations on all 10 of the APA goals and should be particularly associated with the two higher levels of learning (apply and evaluate). Twelve out of the nineteen significant correlations with mastery-approach goals were at the two higher levels of learning. This

suggests that students who are mastery-approach are engaging in deeper levels of processing. This is similar to Nolen (1988) who found positive correlations between mastery-goals and deep-level processing when studying for a particular course.

Then more generally, I hypothesized that mastery-approach goals should be the achievement goal most positively correlated with all levels of outcomes on all 10 APA goals (including remember and understand). Mastery-approach had the most positive correlations with the 10 goals at the 4 levels of learning in this study. Thus, when looking at just simple correlations, this suggests that students who are mastery-approach have the best overall outcomes, compared to other achievement goals. Other studies have found similar adaptive patterns between mastery-approach goals and outcomes. For example, Elliot & McGregor (2001) found that mastery-approach goals were positively correlated with overall need for achievement, self-determined behavior, and perceived class engagement.

For mastery-avoidant goals, I hypothesized that students high in mastery-avoidance would have null correlations on the lower levels of learning, and negative correlations on the higher levels of learning. This hypothesis was generally also correct. Out of the seven significant correlations, all of them were negatively correlated with either the apply or evaluate levels of learning. Overall, this goal had no positive adaptive outcomes and in actuality had the worst correlational outcomes for all four of the achievement goals. This mirrors the findings of past research, like Elliot and McGregor (2001) who found a negative correlation between mastery-avoidant goals with self-determined behavior and a

positive correlation with fear of failure. Several years earlier, the negative effects of avoidance goals were shown. Elliot and Sheldon (1997) found a negative correlation between avoidance goals and satisfaction with level of progress, positive emotion, enjoyment of class, and well-being.

For performance-approach goals, I hypothesized that students high in performance-approach will have positive correlations on all goals, but may be particularly linked to the two lower levels of learning (remember and understand). However, only two of the forty correlations were significant. I had expected more correlations with the lower levels of learning. Nolen (1988) and Elliot, McGregor, and Gable (1999) had found that performance goals correlated to surface-level processing. One possibility for not finding this link is that students' self-report on whether they remember or understand may be very different than the actual strategies they used to study. They may have used surface strategies, such as flashcards, and then forgot learning about it or had not realized that in fact they were learning such skills as knowledge base, critical thinking, etc. In addition, I did not test for actual performance outcomes, so I could not account for the many findings that positively link graded performance outcomes with performance-approach goals (e.g, Elliot & McGregor, Harackiewicz et al., 2002).

Finally, for performance-avoidance goals, I hypothesized that students high in performance-avoidance would have negative correlations on all goals at the higher levels of learning, and null or negative correlations on the two lower levels of learning. Thus, performance-avoidance was hypothesized to be the most negatively correlated with the different APA outcomes. However, there was only

one significant correlation out of 40, so I concluded that generally the results for performance-avoidance were null and students did not rate any higher or lower on any APA learning outcome as a result of adopting a performance-avoidance goal.

The second primary objective was to add new data to the literature by using multiple regression to simultaneously test the effects of all four goals at once to look for independent and interactive goal effects, allowing a more rigorous test of mastery vs. multiple goal benefits. However, for the most part, regressions did not provide a lot of support for any multiple goal benefits. For example, there was little support for an additive multiple goal effect. I found that when all goals were put into the regression together, typically only the mastery-approach goal had a strong benefit when meeting the outcomes, and mastery-avoidance had a negative correlation. I think it is interesting that there were strong correlations for both of the mastery goals, but not many for the performance goals. In past research, the typical variables that correlated with performance goals were performance outcomes, such as grades or exam performance (Elliot & McGregor, 2001). Variables that correlated with mastery goals are typically learning outcomes or well-being.

When I ran the interactive step of the regression, I did not find the pattern I expected. Being high in both mastery-approach and performance-approach did not have any greater effect than being high in mastery-approach and low in performance-approach, or of being low in mastery-approach and high in performance-approach. However, I found that being low in mastery-approach and low in performance-approach had the most negative outcomes. This data supports

past findings that show that a lack of any motivation or having an avoidance orientation versus an approach orientation (Elliot, 1999) leads to negative outcomes.

Finally, there was also little support for a specialized multiple goal benefit. While I found benefits for mastery-approach goals in the regression, I did not find benefits for the performance-approach goals. There may exist other outcomes that are important to the success of a psychology major, such as getting into grad school or occupational success, which may be strongly associated with performance-approach goals. I would suggest future research to look at an even wider list of outcomes when looking for a specialized benefit of multiple goals.

Summary

Overall, the data did not support my hypotheses for multiple goal benefits. There was no support for or against performance-approach goals at the simple correlational level. Instead, the correlational data mainly showed mastery-approach goals had positive relationships with the APA outcomes and mastery-avoidance goals had negative relationships with the APA outcomes. When looking at the multiple regressions, I did not find additive, interactive, or specialized patterns to help support the multiple goal perspective. Largely, there was an independent main effect for mastery-approach goals. When interactions did occur, instead of support for individuals who are high in both mastery-approach and performance-approach, there was only support against being low in both mastery-approach and performance-approach. In other words, having an interaction of both mastery-approach and performance-approach did not lead to

more adaptive outcomes than being high in one and low in the other. Compared to past literature, this study did not look at typical performance outcomes, instead, it observed learning outcomes. This may help explain why support was only given for mastery-approach goals.

Secondary Objective

After evaluating the two primary objectives of the current study, I also noted that a secondary objective of the study was to provide program evaluation data to the undergraduate psychology major. The assessment I created looked at academic outcomes on a developmental level. Instead of just finding out if students met a goal, this assessment looked at what level a student met the goal. Did graduating psychology students just remember learning about it, did they actually understand what they learned, can they apply what they learned, and finally, are they able to really evaluate and critically think about the goal at a deeper level? The success of the field of psychology relies on the quality of the academic programs that train future psychologists. Psychology departments should aim for their students to reach the highest levels of learning (i.e., evaluating, analyzing, and creating) and therefore should also be assessing their students at different levels of learning.

The findings for the Developmental APA Goal Questionnaire were as could be expected. First, seniors scored high on all of the APA goals at all levels. All of the means were above 3, the middle possible rating. In the future, it may be interesting to give this survey to all levels of the major, from freshmen to seniors, to see if a developmental pattern truly does exist. Second, seniors did not report

developing equally along all four levels of Bloom's taxonomy. Generally, as the levels increased from remember to evaluate, students' ratings decreased. Interestingly, on a few goals, students rated higher on understand than remembering, and then went down again. For example, they might not have remembered learning about sociocultural and international awareness or of applying the concepts, especially if none of their classes covered this area, although they feel that they have some understanding of the area. There are several interesting patterns that can be reported to the department that could aid in program development and possible changes. For example, there is a new career development class being introduced next year to the department. Students rated the lowest on Goal 10, Career Planning and Development, across all levels of learning. In several years, if this questionnaire is again introduced, it will be interesting to see if the class has made an improvement upon students' rating of this APA Learning Goal.

Strengths and Limitations of the Current Study

The current study has several strengths, especially in that it looks at a rich set of outcomes. First, there has not been any research linking achievement goals to different levels of Bloom's Taxonomy, except to study strategies that may suggest levels of deep vs. surface-level learning. This study made an innovative attempt to use Bloom's taxonomy of knowledge, widely used in the field of education to create lessons and as a framework for how students can be taught and assessed. The APA had specifically suggested that psychology departments across the United States should strive to have their students meet these goals. Thus, if we

know which achievement goals lead to these outcomes, we should be promoting these achievement goals in our undergrad psychology departments. Second, the study was given on senior assessment day and thus used a unique population. All students were psychology majors, in the last year of their study, and were prompted to provide honest answers for the good of the department. Third, this study was reflective in nature and looked at achievement goals over a long-term span. Most of the past research (Elliot, 2005) has looked at goals specific to a particular class. This study was unique in that it asked for a reflection over the past several years and in that it assessed goals for an entire academic major. While these were still situational goals (the overall undergraduate major), it was on a more broad basis than what is usually tested.

On the other hand, there are several potential issues that may limit the conclusions drawn from this study. Specifically, I will discuss issues of construct validity as a result of self-report data, length of survey, the content validity of questions, and how clear the directions were. I will also discuss issues of statistical validity as a result of the small "n" and power. Finally, I will caution against generalizing to the population at large.

Construct validity is an issue critical to the success of any study. My research may show significant or non-significant results, but that is irrelevant if I did not test what I meant to test. The first limitation is that the data were all based on self-report. Students taking this survey were instructed to try their best and to be open and honest, because it would benefit the future success of the psychology program. Students may have been inclined to rate higher in order to please

authority or in order to give their program more credit. Second, students were instructed to self-report on their experiences over the past 4 years, but may only remember how they felt or behaved over the past year, or even over the past semester.

Second, the survey was quite lengthy. Students may have rushed through because they were allowed to leave once complete. It is unclear if students read every word and prompt within the survey. During a pilot of the study, several of the comments were that the survey was lengthy. However, for a survey this detailed, either a lot of oral instruction is required prior to giving the study, or a lot of prompting and instructions are needed within the survey. I wanted to be clear what I meant by each of the four levels of learning, and I wanted to be clear what the objectives were for each of the 10 APA goals. I collected qualitative data asking students for feedback on the ease and usefulness of completing the Developmental APA Goal Questionnaire that can be analyzed in the future to possibly improve the survey. Interestingly, all students took the Achievement Goal Questionnaire after taking the Developmental APA Questionnaire. It may have been best to have half the students take the Achievement Goal Questionnaire first, because of the length of the APA Questionnaire. However, the data for the Achievement Goal Questionnaire were reliable and in line with other studies when looking at the basic descriptive and correlational results. Thus it appears students were still motivated to read and complete the Achievement Goal Questionnaire after the APA goal survey.

The third issue of construct validity was the questions themselves. In the Achievement Goal Questionnaire, several goal theorists have questioned whether the questions fully measure the content of the goal intended (Elliot, 2005; Miller, 2005). I think that the mastery-avoidant items, such as "I fear I may not have learned all that I could while in the psychology major" may be testing issues of anxiety and not mastery-avoidance. A person who is mastery-avoidant wants to avoid not learning all that they could. A better question may be, "I want to learn as much as I can to have at least some knowledge in the psychology major." Likewise, I think that performance-approach and performance-avoidance questions test only if a student is concerned with how they compare to other students in their class. I think some students are motivated to do better than their classmates, to get a good job so they look successful in the world, or to get a good GPA to please their parents. These are different types of performance goals, not mastery goals, however these other social factors are not touched upon in the Achievement Goal Questionnaire.

In the Developmental APA Questionnaire, I want to note caution regarding the construct validity. I do not know if students really understood or read my definitions of the different levels, or if they made up their own definitions. I was unable to ask students if they understood what it means to remember versus to understand. Also, some of the APA goals might not have been as clear as others. For example, I found the strongest pattern of correlations on Goals 1, 2, 3, 8 and 10. This may have been a direct result of students having a better understanding of what these goals were versus more abstract goals such

as APA Goals 4, 5, 6, and 7. Qualitative data was collected for each APA goal and I recommend any type of subsequent or follow up study should continue collecting this type of qualitative information in order to probe students' understanding of the different levels of learning or of the goals themselves.

The fourth issue is the directions given prior to taking the survey. Instead of having an oral prompt, all directions were on the first page. It may have been best to provide an example of the different levels of learning instead of just a definition to make sure that students understood these differences. Originally, I had hoped to have a formal script read by an experimenter to give participants an opportunity to ask any clarification questions. I would recommend either oral instructions or more in-depth instructions on a future version of this questionnaire to explain the differences between the levels of learning.

Another issue of validity relies on the statistics and level of significance set. The sample size for this study was limited. Although it provided some power to look at simple correlations, the sample size was not ideal for running multiple regressions. I wanted to run multiple regressions in order to test for the more complex combined effects of achievement goals. Furthermore, my small sample size increased the risk of a Type 2 error, that is, not finding significant results when they are really there. Therefore, I increased my risk of Type 1 error and set my level of significance for the regressions to .10 instead of the typical .05. I had a strong reason for doing this, so I could explore if there were any potential multiple goal benefits revealed, particularly for higher order interactions.

Finally, I want to caution against generalizing to the population at large. I studied college students at the end of their bachelor's degree, in a university climate, and looked at overall undergraduate major goals instead of classroom goals. I would not attempt to use these results to promote any type of goal pursuit in other academic disciplines, because the outcomes were related to the field of psychology.

Future research and implications

Multiple-goal theory needs additional research. In particular, I would be interested in seeing research on the selective goal hypothesis; that is, students may adopt different goals at different times in order to have the best overall outcome. This limitation of the current study is a result of the research design. For example, a student may be mastery-oriented and deeply process the material until it is the night before a test, when they become performance-approach and are motivated to study and recall information in order to get a good grade. It will take a creative research methodology, perhaps an initial qualitative study, to determine how to best assess and test for a possible selective goal hypothesis benefit.

In the end, why should we care about which goals students adopt? Multiple-goal benefits versus mastery-goal benefits directly relate to the types of goals our schools and school environments create. A school's methods of assessment, level of competition, social environment, physical environment, and philosophy all affect the types of goals students adopt. Even more complicated, students come with their own goals from their home and community environments. However, the school has a big influence on these individual's

goals, especially context specific goals. Next, the goals that students adopt affect what thoughts, anxieties, and priorities that students have. Then, these thoughts and emotions affect the behaviors that students engage in. Finally, these different behaviors result in different outcomes and levels of achievement. These outcomes and levels of achievement can be theoretically debated. Once we determine the specific outcomes and levels of achievement we want for our students, we can go back and change our school environments and philosophies in order to encourage students to adopt the goals that promote the outcomes we desire.

Our national government requires standards for students to meet in order to progress through the grades and leave school with a certain level of knowledge that they will need to become a productive, working citizen. Across the United States, the National Governor's Association has begun to make suggestions for accountability at post-secondary education as well (National Governor's Association, 2007). In the field of Psychology, the APA developed Learning Goals and Outcomes (Halonen et al., 2002) as a recommendation for a standard of outcomes that all programs should promote. Policy makers will need to take professional recommendations and then decide what outcomes to assess in order to evaluate the educational institutions across the United States.

The current study aimed to solve one aspect of student learning by showing the link between students' motivation and their achievement outcomes on a level that reached beyond grades and looked at learning goals recommended by the APA on a developmental level. With the growing concerns of

accountability and the recognition of motivation as a key factor in student success, I recommend ongoing research in the area of motivation.

Table 1. Means and Standard Deviations for the Achievement Goals

	Mastery-Approach	Mastery-Avoidance	Performance-Approach	Performance-Avoidance
N	76	76	76	76
Mean	5.73	3.60	4.13	2.98
Standard Deviation	.93	1.71	1.64	1.44
Minimum	2.67	1.00	1.00	1.00
Maximum	7.00	7.00	7.00	6.33

a. Means and standard deviations are based on a 7-point scale

Table 2. Means and Standard Deviations for the 10 APA goals at the 4 Levels of Learning

Goal	Mean[a]	SD[a]	Goal	Mean[a]	SD[a]
1a	4.21	.75	**6a**	4.20	.98
1b	4.03	.71	**6b**	4.09	.92
1c	3.99	.74	**6c**	4.07	.97
1d	3.78	.87	**6d**	3.88	1.05
2a	4.43	.82	**7a**	4.37	.73
2b	4.21	.86	**7b**	4.51	.65
2c	4.01	.89	**7c**	4.45	.76
2d	3.80	.94	**7d**	4.32	.80
3a	4.07	1.08	**8a**	4.01	1.08
3b	4.16	.90	**8b**	4.17	.99
3c	4.14	.84	**8c**	4.16	1.06
3d	3.95	.99	**8d**	4.05	1.11
4a	4.17	.93	**9a**	4.41	.74
4b	4.24	.85	**9b**	4.42	.70
4c	4.08	.92	**9c**	4.47	.74
4d	4.01	.93	**9d**	4.42	.72
5a	4.51	.72	**10a**	3.68	1.20
5b	4.43	.75	**10b**	3.72	1.21
5c	4.42	.75	**10c**	3.62	1.20
5d	4.33	.81	**10d**	3.58	1.20

a. Means and standard deviations are based on a 5-point scale
Goals: 1 – Knowledge Base of Psychology; 2 – Research Methods in Psychology; 3 – Critical Thinking Skills in Psychology; 4 – Application of Psychology; 5 – Values in Psychology; 6 – Information and Technological Literacy; 7 – Communication Skills; 8 - Sociocultural and International Awareness; 9 – Personal Development; 10 – Career Planning and Development
Levels: a – remembering; b – understanding; c – applying; d - evaluating

Table 3a. Intercorrelations of Mastery-Approach and the 10 APA goals at the 4 Levels of Learning

	1	2	3	4	5	6	7	8	9	10
Remember	.125	.275*	.222	.012	.167	.039	.036	.273*	.126	.173
Understand	.258*	.334**	.296**	.067	.218	.092	.066	.350**	.209	.279*
Apply	.304**	.305**	.236*	.020	.238*	.103	.033	.354**	.276*	.261*
Evaluate	.395**	.304**	.306**	.076	.183	.131	.019	.380**	.237*	.247*

* Significant at the .05 level (2-tailed)
** Significant at the .01 level (2-tailed)

Table 3b. Intercorrelations of Mastery-Avoidance and the 10 APA goals at the 4 Levels of Learning

	1	2	3	4	5	6	7	8	9	10
Remember	-.089	-.137	.031	-.046	.060	.010	-.205	-.077	-.047	-.218
Understand	-.188	-.057	-.048	-.148	.016	.023	-.213	-.207	-.084	-.195
Apply	-.229*	-.035	-.184	-.115	-.044	-.032	-.228*	-.269*	-.168	-.294**
Evaluate	-.284*	-.136	-.183	-.175	.006	.033	-.230*	-.195	-.108	-.243*

* Significant at the .05 level (2-tailed)
** Significant at the .01 level (2-tailed)

Table 3c. Intercorrelations of Performance-Approach and the 10 APA goals at the 4 Levels of Learning

	1	2	3	4	5	6	7	8	9	10
Remember	.068	.233*	.187	.021	.057	.203	.173	.090	-.042	.186
Understand	.047	.248*	.111	-.030	.048	.132	.018	-.027	-.102	.170
Apply	.097	.103	.038	-.033	-.069	.109	.000	-.014	-.098	-.036
Evaluate	.145	.156	.114	-.095	.025	.144	-.041	-.013	-.145	.048

* Significant at the .05 level (2-tailed)
** Significant at the .01 level (2-tailed)

Table 3d. Intercorrelations of Performance-Avoidance and the 10 APA goals at the 4 Levels of Learning

	1	2	3	4	5	6	7	8	9	10
Remember	.095	.193	-.034	.289*	.187	.152	.106	-.040	.012	.122
Understand	.027	.221	-.073	.185	.181	.147	-.039	-.110	-.053	.053
Apply	.000	.067	-.137	.059	-.004	.065	-.056	-.100	-.141	-.059
Evaluate	-.036	.109	-.091	.073	.091	.049	-.125	-.131	-.203	.010

* Significant at the .05 level (2-tailed)
** Significant at the .01 level (2-tailed)

Table 4. Significant Hierarchical Multiple Regressions

	Step 1*	**Step 1 terms**	**Step 2****	**Step 2 terms**
1a				
1b			✔	Mapp[a], MappPapp[e]
1c	✔	Mapp[a]	✔	Mapp[a]
1d	✔	Mapp[a], Mav[b]	✔	Mapp[a], Mav[b]
2a	✔	Mapp[a]	✔	Mapp[a], MappPapp[e]
2b	✔	Mapp[a], Pav[d]	✔	Mapp[a]
2c	✔	Mapp[a]		
2d	✔	Mapp[a]	✔	Mapp[a]
3a	✔	Mapp[a], Papp[c]		
3b	✔	Mapp[a]	✔	Mapp[a]
3c				
3d	✔	Mapp[a]	✔	Mapp[a]
4a	✔	Pav[d]	✔	Pav[d]
4b				
4c				
4d				
5a				
5b	✔	Mapp[a], Pav[d]	✔	Mapp[a], Pav[d]
5c				
5d				
6a				
6b				
6c				
6d				
7a				
7b				
7c				
7d				
8a			✔	Mapp[a], MappPapp[e]
8b	✔	Mapp[a]	✔	Mapp[a]
8c	✔	Mapp[a]	✔	Mapp[a], MappPapp[e]
8d	✔	Mapp[a]	✔	Mapp[a]
9a				
9b				
9c				
9d				
10a	✔	Mav[b]		
10b	✔	Mapp[a]	✔	Mapp[a]
10c	✔	Mav[b]		
10d				

* Includes Mapp, Mav, Papp, Pav; ** Includes Mapp, Mav, Papp, Pav, MappPapp

✔ Significant ($p < .1$) overall for the term

a. mastery-approach; b. mastery-avoidance; c. performance-approach;

d. performance-avoidance; e. mastery-approach*performance-approach

Appendix A

Developmental APA Goal Questionnaire

DIRECTIONS:

In this assessment, the Undergraduate Psychology Program asks you to reflect on your experiences in the psychology major at James Madison University for two purposes:

- To give you the opportunity to reflect on your learning experiences before you graduate
- To provide honest feedback to help us improve the program for future students

Specifically, we want you to make judgments on each of the ten learning goals for undergraduate psychology recently identified by the American Psychological Association (APA). For each goal you will see a short definition followed by a list of ways that students can develop meeting this goal.

Then you will be asked to make ratings for each goal based on four different levels of learning. You could be well developed on one level but not on the others. For example:

- You just **remember** or recall learning about it
- You actually **understand** it and can put it in your own words
- You can **apply** and use it or are able to demonstrate it
- You can more deeply **evaluate**, analyze, or critique it

Then you will be asked to provide open-ended feedback about your ratings.

Please answer these questions from the vantage point of your accumulated experiences. We appreciate both your honesty and time to fully explain your responses.

GOAL 1: Knowledge Base of Psychology

The first APA goal states that students should develop a knowledge base of psychology. As a student, you should be able to demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.

For example, students meeting this goal should learn:

- The concepts, language, and major theories of the discipline
- The major perspectives of psychology (e.g., behavioral, biological, cognitive, evolutionary, humanistic, psychodynamic, and sociocultural)
- The history of psychology as a discipline and why different perspectives developed

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
1a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
1b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
1c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
1d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

1e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 2: Research Methods in Psychology

The second APA goal states that students should develop skills/knowledge in research methods. As a student, you should be able to understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.

For example, students meeting this goal should learn:

- The different research methods and statistical analyses used by psychologists
- How to draw appropriate conclusions from psychological research
- How to design and conduct studies to address psychological questions using appropriate research methods

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
2a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
2b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
2c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
2d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

2e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 3: Critical Thinking Skills in Psychology

The third APA goal states that students should develop skills/knowledge in critical thinking. As a student, you should respect and use critical and creative thinking, skeptical inquiry, and when possible, the scientific approach to solve problems related to behavior and mental processes.

For example, students meeting this goal should learn:

- Effective critical thinking skills
- How to engage in creative thinking
- How to use reasoning to recognize, develop, defend, and criticize arguments or persuasive appeals

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
3a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
3b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
3c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
3d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

3e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 4: Application of Psychology

The fourth APA goal states that students should develop skills/knowledge in the application of psychology. As a student, you should be able to understand and apply psychological principles to personal, social, and organizational issues.

For example, students meeting this goal should learn:

- The major applied areas of psychology (e.g., clinical, counseling, industrial/organizational, school, health)
- How to apply psychological concepts, theories, and research findings as these relate to everyday life

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
4a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
4b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
4c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
4d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

4e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 5: Values in Psychology

The fifth APA goal states that students should develop skills/knowledge in the values of psychology. As a student, you should be able to weigh evidence, tolerate ambiguity, act ethically, and appreciate the values of approaching psychology as a science.

For example, students meeting this goal should learn:

- The necessity for ethical behavior in all aspects of the science and practice of psychology
- How to seek and evaluate scientific evidence for psychological claims

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
5a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
5b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
5c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
5d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

5e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 6: Information and Technological Literacy

The sixth APA goal states that students should develop skills/knowledge in information and technological literacy. As a student, you should be able to demonstrate information competence and the ability to use computers and other technology for many purposes.

For example, students meeting this goal should learn:

- How to formulate a researchable topic and read and summarize the literature accurately
- How to locate relevant sources (e.g., PsycInfo database)
- How to use appropriate software (e.g., SPSS) to produce understandable reports of the psychological literature, methods, and statistical and qualitative analyses in APA or other appropriate style

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
6a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
6b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
6c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
6d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

6e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 7: Communication Skills

The seventh APA goal states that students should develop skills/knowledge in communication. As a student, you should be able to communicate effectively in a variety of formats.

For example, students meeting this goal should learn:

- How to demonstrate effective writing skills in various formats (e.g., APA style)
- How to demonstrate effective oral communication skills in various formats (e.g., individual presentation, group presentation, class discussion, debate)
- The ability to collaborate effectively and work in groups

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
7a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
7b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
7c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
7d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

7e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 8: Sociocultural and International Awareness

The eighth APA goal states that students should develop skills/knowledge in sociocultural and international awareness. As a student, you should be able to recognize, understand, and respect the complexity of sociocultural and international diversity.

For example, students meeting this goal should learn:

- How to interact effectively and sensitively with people from diverse backgrounds and cultural perspectives
- The sociocultural and international contexts that influence individual differences
- How individual differences influence beliefs, values, and interactions with others and vice versa

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
8a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
8b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
8c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
8d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

8e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 9: Personal Skill Development

The ninth APA goal states that students should develop skills/knowledge in personal growth. As a student, you should be able to develop insight into your own and others' behavior and mental processes and apply effective strategies for self-management and self-improvement.

For example, students meeting this goal should learn:

- How to apply psychological principles to promote personal development
- How to reflect on one's experiences and find meaning in them
- The self-improvement strategies that maximize healthy outcomes

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
9a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
9b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
9c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
9d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

9e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

GOAL 10: Career Planning and Development

The tenth APA goal states that students should develop skills/knowledge in career planning and development. As a student, you should be able to emerge from the major with realistic ideas about how to implement your psychological knowledge, skills, and values in occupational pursuits in a variety of settings.

For example, students meeting this goal should learn:

- How to apply their training in psychology to formulate career choices
- Their preferred career paths based on accurate self-assessment of abilities, achievement, motivation, and work habits
- The skills and experiences relevant to achieving selected career goals (e.g., resume building, interviewing skills, networking)

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
10a. I remember learning about the skills/knowledge of this goal (i.e., being able to recognize or recall it).					
10b. I understand the skills/knowledge of this goal (i.e., being able to explain or summarize it in my own words).					
10c. I can apply the skills/knowledge of this goal (i.e., being able to use or demonstrate it).					
10d. I can more deeply evaluate the skills/knowledge of this goal (i.e., being able to analyze or critique it).					

10e. Now, explain why you think you have (or have not) developed on this goal. List the particular experiences in or outside the psychology major that have influenced your development, as well as offer recommendations for how the psychology department can help future students to fulfill this goal. **Please feel free to write as much as you would like.**

You are now done rating the ten APA goals.
We have a few follow-up questions about the survey.

	Not at all true of me	Slightly true of me	Moderately true of me	Mostly true of me	Very true of me
11a. I think this survey will be helpful for the department.					
11b. I found this survey to be helpful for me to reflect on my major.					
11c. I thought this survey was easy to read and fill out.					

11d. When looking at the list of the 10 APA Recommended Learning Goals, which goals do you think need the most immediate attention to help improve JMU's Psychology Major? Select up to three responses.

Goal 1. Knowledge Base of Psychology

Goal 2. Research Methods in Psychology

Goal 3. Critical Thinking Skills in Psychology

Goal 4. Application of Psychology

Goal 5. Values in Psychology

Goal 6. Information and Technological Literacy

Goal 7. Communication Skills

Goal 8. Sociocultural and International Awareness

Goal 9. Personal Development

Goal 10. Career Planning and Development

11e. Please list any recommendations you may have for how to improve this survey.

Appendix B

Attitudes Toward Learning and Performance in your Psychology Major Coursework

The following statements concern your general attitudes toward learning and performing in your coursework for the Psychology Major. We would like you to indicate how true each statement is of you, based on your overall experiences in your Psychology Major coursework at JMU.

If you think the statement is true of you, mark a 7. If a statement is not at all true of you, mark a 1. If the statement is more or less true of you, find the number between 7 and 1 that best describes you. **There are no right or wrong answers. Just answer as accurately as possible.**

1	2	3	4	5	6	7
Not at All True of Me						Very True of Me

	1	2	3	4	5	6	7
1. My goal in the psychology major at JMU was to get better grades than most of the other students.							
2. I just wanted to avoid doing poorly compared to other students in the psychology major at JMU.							
3. Completely mastering the material in my psychology coursework at JMU was important to me.							
4. I really didn't want to work hard in my classes in the psychology major at JMU.							
5. I'm afraid that I may not have understood the content of my psychology coursework at JMU as thoroughly as I'd like.							

6. It was important for me to do well compared to other JMU students in the psychology major.							
7. I wanted to learn as much as possible while in the psychology major at JMU.							
8. The fear of performing poorly compared to other JMU students in the psychology major motivated me.							
9. To be honest, I wanted to do as little work as possible in the psychology major at JMU.							
10. The most important thing for me was to understand the content of my psychology coursework as thoroughly as possible.							
11. I worry that I may not have learned all that I possibly could in the psychology major at JMU.							
12. I wanted to do better than other JMU students in the psychology major.							
13. I wanted to get through my psychology courses at JMU by doing the least amount of work possible.							
14. I was definitely concerned that I may not have learned all that I could while in the psychology major at JMU.							
15. My goal in the psychology major at JMU was to avoid performing poorly compared to other students.							
16. I always worked really hard in my psychology major coursework.							

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage Publications, Inc.

Ames, C. (1992). Classrooms: goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261-271.

Anderson, L. W. (Ed.), Krathwohl, D. R. (Ed.), Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives* (Complete edition). New York: Longman.

Appleby, D. C., Bosack, T. N., Mayo, J. A., Poe, R. E., Puccio, P., & Rudmann, J. L. (2006).Teaching, learning, and assessing in a developmentally coherent curriculum. Washington, DC: American Psychological Association. Retrieved [February 28, 2007] from http://www.apa.org/ed/pcue/bea_coherent.pdf.

Barron, K. E., & Harackiewicz, J. M. (2003). Revisiting the benefits of performance-approach goals in the college classroom: exploring the role of goals in advanced college courses. *International Journal of Educational Research, 39*, 357-374.

Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: testing multiple goal models. *Journal of Personality and Social Psychology, 80*, 706-722.

Bloom, B. S. (ed.), Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R.

(1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: cognitive domain*. New York: David McKay.

Brophy, J. (2005). Goal theorists should move on from performance goals. *Educational Psychologist, 40*, 167-176.

Dowson, M., & McInerney, D. M. (2003). What do students say about their motivational goals?: Towards a more complex and dynamic perspective on student motivation. *Contemporary Educational Psychology, 28,* 91-113.

Dweck, C. S., & Elliot, E. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54*, 5-12.

Elliot, A. J., & McGregor, H. A. (2001). A 2 X 2 achievement goal framework. *Journal of Personality and Social Psychology, 80,* 501-519.

Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot & C. S. Dweck (Eds.) *Handbook of Competence and Motivation* (pp. 52-72). New York, New York: The Guilford Press.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34,* 149-169.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, *51*, 115–134.

Halonen, J. S., Appleby, D. C., Brewer, C. L., Buskist, W., Gillem, A. R.,

Halpern, D. F., et al. (Eds.). (2002). *Undergraduate psychology major learning goals and outcomes: A report.* Washington, DC: American Psychological Association. Retrieved February 26, 2007 from http://www.apa.org/ed/pcue/taskforcereport.pdf

Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Trash, T. M. (2002). Revision of achievement goal theory: necessary and illuminating. *Journal of Educational Psychology, 94*, 638-645.

Krathwohl, D. R. (2002). A revision of Bloom's Taxonomy: An overview. *Theory Into Practice, 41*, 212-218.

Linnenbrink, E. A. (2005). The dilemma of performance-approach goals: the use of multiple goal contexts to promote students' motivation and learning. *Journal of Educational Psychology, 97*, 197-213.

Meece, J. L., Blumenfeld, P. S., & Hoyle, R. H. (1988). Students' goal orientations and cognitive engagement in classroom activities. *Journal of Educational Psychology, 80*, 514-523.

Midgley, C., Middleton, M., & Kaplan, A. (2001). Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost? *Journal of Educational Psychology, 93,* 77-86.

Miller, B. J. (2005, April). Examining the avoidance subscales of the Achievement Goal Questionnaire. Poster presented at the annual meeting of the American Educational Research Association, Montréal, Canada.

National Governor's Association. (2007). ECW-13. High School Reform to

Lifelong Learning: Aligning Secondary and Postsecondary Education Retrieved [April 2, 2007] from http://www.nga.org/portal/site/nga/menuitem.8358ec82f5b198d18a2.

Pintrich, P. R., & Garcia, T. (1991). Student goal orientation and self-regulation in the college classroom. In M. L. Maehr, & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol 7, pp. 371-402). Greenwich, CT: JAI Press.

Pintrich, P. R., & Schunk, D. (2002). *Motivation in education: Theory, research and applications (2nd Ed.)*. Englewood Cliffs, NJ: Merrill Prentice-Hall.

Rose, L. C., & Gallup, A. M. (2006). 38th Annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools, *Table 10*. Retrieved [February 26, 2007] from http://www.pdkintl.org/kappan/k0609pol.htm.

Shih, S. (2005). Taiwanese sixth graders' achievement goals and their motivation, strategy use, and grades: An examination of the Multiple Goal Perspective. *Elementary School Journal, 106*, 39-58.

Stoloff, M., Apple, K., Barron, K.E., Reis-Bergen, M.J., & Sundre, D.A. (2004). Seven goals for effective program assessment. In D. Dunn, C. Mehrotra, & J. Halonen (Eds.) *Measuring Up: Assessment Challenges and Practices for Psychology* (pp. 29-46). Washington, DC: American Psychological Association.