

Self-Efficacy and Goal Orientation and their Association with Academic Achievement

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Abstract

Much research has been conducted in order to determine the most significant variables associated with student academic achievement. This study explored the association among student goal orientation, self-efficacy, and academic achievement measured by GPA in a sample of undergraduate students from a large evangelical university. The trichotomous model for goal orientation was utilized including: mastery goals (motivated by a desire to master a task or subject), performance-approach goals (motivated by a desire to perform well in comparison with to others), and performance-avoidant goals (motivated by a fear of failure). Data were analyzed using two-way analysis of variance for the fixed factors of median split self-efficacy and GPA range. The outcome variable was student scores for mastery, performance-approach and performance-avoidant goal orientation respectively. Results indicated no significant interaction between GPA range and self-efficacy for any of the three models. However, GPA range had a significant main effect on performance-approach orientation and self-efficacy had a significant main effect on mastery orientation. Moreover, bivariate correlations demonstrated significant correlations between student self-efficacy scores and each type of goal orientation. Implications were discussed regarding the benefits of promoting both mastery and performance-approach goals through instructional practices as a means to promote learning and student retention in academic institutions.

Keywords: goal orientation, self-efficacy, GPA, college retention

Self-Efficacy and Goal Orientation and their Association with Academic Achievement

In western culture, a college education is associated with a strong potential for career success, future contribution to society, and higher quality of living. Often, mature adults look to their adolescent and young adult children as their future legacy in their world. However, with so many young adults failing to attend college or to remain enrolled in order to complete their degree, parents and members of society may well be concerned about the future of their youth and their world. Additionally, though completing a technical education or pursuing a layman vocation are positive alternative choices, there is a deeper issue than personal choice when students are failing to complete higher education because they cannot persist in the academic environment (Renshaw & Cohen, 2014). For the past several decades, concern over college student attrition rates has caused many researchers to focus on factors affecting academic persistence (Friedman & Mandel, 2011; Jenkins-Guarnieri, Horne, Wallis, Rings, & Vaughan, 2015). Moreover, the number of such studies has grown as increasingly more research demonstrates a strong association between higher education and successful career establishment, as well as life satisfaction (Hsieh, Sullivan, & Guerra, 2007; Renshaw & Cohen, 2014).

Background to the Current Study

Researchers have identified a multitude of factors which are associated with academic achievement at all educational levels. Literature on the subject is robust, beginning as early as the 1940s with studies on motivation, and currently at its apex with researchers examining a broad range of variables (Lewin, Dembo, Festinger, & Sears,

1944; Eyermann, & Carpenter, 2013; Becker & Luthar, 2002). These studies have increasingly brought to light the importance of such factors as student motivation, persistence, and achievement. Furthermore, the results demonstrate that variables related to academic achievement are far more numerous, and their relationships far more complicated, than researchers previously anticipated.

Within the spectrum of variables, some studies have honed in on low academic achievement as a major factor in student attrition. Researchers have found that one of the key variables associated with a high college dropout rate is student maladjustment to the college environment—often correlated to low academic achievement (Hsieh, Sullivan, & Guerra, 2007). These results have inspired fresh investigation into effective methods for combating such low achievement in order to promote student success in the college atmosphere.

Factors Associated with Achievement

Researchers have sought to identify possible personal and environmental influences on student levels of academic achievement. New attention to key variables such as achievement motivation, self-regulation, and social influence has sparked interest for recent studies (Becker & Luthar, 2002; Eyermann, & Carpenter, 2013). Much of the literature has explored preliminary factors related to personal motivation, from intrinsic to extrinsic, as well as the influence of student goal orientation. Extensive research provides thorough data regarding the variables the current study sought investigate. Frequently, researchers have studied types of goal orientation and levels of self-efficacy and their respective relation to academic achievement. While these studies have also

examined other factors such as motivation and affect, goal orientation and self-efficacy appear to continually resurface as prominent variables in many studies (Goraya & Hasan, 2012; Høigaard, Kovac, Øverby, & Haugen, 2015; Zajacova & Lynch, 2005). However, in one sense, the literature is only in its adolescence in exploring the complex connection between these two variables of interest and achievement outcomes. Additional research is needed in order to tighten the operational definitions of the goal orientation constructs, as well as to solidify which models (whether dichotomous or trichotomous) are supported by the most research. In order to improve the robustness of the literature, continued research must expound on the connections among the many influential variables on academic achievement, particularly goal orientation, and self-efficacy.

Key Variables

Goal Orientation

Student goal orientation is a prominent factor many researchers have examined in an attempt to determine its influence on achievement outcomes. Studies have explored how student differences in orientation towards goals of mastery, performance, or failure avoidance may affect their academic performance. Researchers have explored various models for goal orientation, with earlier models depicting a dichotomous relationship and later models illustrating a trichotomy.

Implicit theories of intelligence. Based on Dweck and Leggett's (1988) model of implicit theories of intelligence, students view intelligence as either a "fixed entity" (entity theory) or a "malleable quality" (incremental theory) (Blackwell, Trzesniewski, & Dweck, 2007, p. 247). According to the model, entity theory involves a performance goal

orientation, in which students focus on social comparison, seeking to prove their abilities by achieving results superior to (or at least not inferior to) others. In contrast, students holding incremental theory tend to adopt mastery goals, which Dweck and Leggett referred to as “learning goals,” through which they seek to develop rather than prove existing abilities, and to master the task at hand (p. 257). These types of goals differ based on whether learning itself is expressly a student’s goal, or if he or she mainly performs to attain the recognition or social reinforcement which may accompany successful learning (Meece, Blumenfeld, & Hoyle, 1988).

A goal orientation dyadic model. As early as 1944, researchers began examining this possible dichotomy of orientation influencing achievement goal selection and outcomes (Lewin, Dembo, Festinger, & Sears, 1944). Lewin and colleagues (1944) posited a theory about aspiration levels, theorizing that individuals evaluate possible levels of achievement before selecting their goals. In determining their goals, as these researchers explained, people first assign subjective value to each possible level of aspiration. Individuals then evaluate the likelihood of success and failure, and the personal impact of either outcome. In these early studies of preliminary achievement-type behavior, Lewin et al. depicted a dyad of motivation towards avoiding failure and attaining successful performance. However, this preliminary research did not consider a mastery orientation, but rather focused on performance. According to Elliot and Harackiewicz (1996), researchers Lewin et al. presented an initial conceptualization of three distinct goal orientations, but the framework was not explored by many other studies.

Performance-avoidant goals. A few decades after studies by Lewin et al., Dweck and Leggett (1988) introduced a dichotomy model of mastery and performance goals. In their model, the construct of performance goals represented both failure avoidance and performance striving (approach) motivations. Nevertheless, the split between the two discrete types of performance goals quickly resurfaced within the literature. Initially, researchers such as Meece et al. (1988) introduced a third goal orientation in addition to the dyad of “task-mastery” (or mastery) goals and “ego or social goals” (or performance-type goals) (p. 515). They originally labeled this third construct “work-avoidant goals,” which they described as involving “effort-avoidant strategies” (p. 515). They sought to explore the relationship between personal and situational variables with levels of cognitive engagement since the latter variable is an important factor in academic achievement. In particular, they investigated the influence of goal orientation within the learning process, examining whether or not it mediated the effect of intrinsic motivation on active cognitive engagement in a sample of fifth and sixth grade students in a science class (Meece et al., 1988). Their data supported this mediational model, emphasizing the role of goal orientation as a preliminary factor in cognitive engagement and consequently achievement.

The trichotomous goal model. In later studies, Elliot and Harackiewicz (1996) similarly described three types of goal orientation, expanding Dweck’s (1986) dichotomy of learning and performance goals. However, rather than delineating a work-avoidant classification like Meece et al. (1988), they divided performance goals into performance-approach versus performance-avoidant goals.

Mastery goals. Furthermore, Elliot and Harackiewicz (1996) adopted the term “mastery goals,” selected by researchers Ames and Archer (1987) to embody researchers’ corresponding labels for the same construct, terms such as task-involvement, task-mastery, learning, and mastery goals respectively (Elliot & Harackiewicz, 1996; Meece et al., 1988). A mastery orientation is motivated by a desire to understand concepts and master tasks rather than to perform well for others.

Performance goals. In contrast to mastery goals, a performance-avoidant orientation is motivated by fear of failure, whereas a performance-approach orientation is motivated by fear of failure but additionally incorporates a corollary need for achievement (Elliot & Church, 1997). However, other researchers have distinguished performance-approach as an orientation primarily motivated by performance striving. These models separate fear of failure from performance-approach orientation and make it specific to a performance-avoidant orientation (Dupeyrat & Mariné, 2005). In either manner of classifying performance goals, one’s orientation is based on feedback from external sources.

Intrinsic motivation. In their study, Elliot and Harackiewicz (1996) examined the relationship between intrinsic motivation and this trichotomous model of goal orientation. They examined a sample of 84 undergraduate students, assessing goal orientations through self-reports following students’ work with various puzzles. In addition to the findings by Meece et al. (1988) that intrinsic motivation influenced cognitive engagement through the mediator of goal orientation, Elliot and Harackiewicz found that performance-avoidant (but not approach) goals had a negative influence on

student levels of intrinsic motivation. These studies imply a bidirectional relationship between motivation and goal orientation—just one example of the complex interactions among the many factors related to achievement. Interestingly, mastery and performance-approach orientations were linked with similar levels of intrinsic motivation.

Perceived competence. Nonetheless, the researchers did not find any substantial support for their hypothesis that perceived academic competence functioned as a moderator of goal orientation to influence motivation (Elliot & Harackiewicz, 1996). However, the researchers measured perceived competence following student completion of the puzzles; consequently, the self-reports do not necessarily reflect student mindset regarding personal ability to complete the task at hand prior to each puzzle challenge, which potentially may have influenced their effort investment.

Goal orientation expressed by achievement goals. Elliot and Church (1997) define an achievement goal as “the purpose of task engagement...[which] create[s] a framework for how individuals interpret, experience, and act in their achievement pursuits” (p. 218). The type of goal adopted indicates general goal orientation. In their study, they performed a factor analysis on student responses to several items regarding their goals for a personality psychology class. Based on their results, they concluded that student responses indeed separated into three respective categories, consistent with the trichotomous model proposed by some achievement goal theorists (mastery, performance-approach and performance-avoidant goals) (Elliot & Church, 1997; Elliot & Harackiewicz, 1996). As in previous research by Elliot and Harackiewicz, this study examined goal orientation and its connection to intrinsic motivation, though researchers

additionally examined the connection between goal orientation and actual student outcomes.

Global motivational dispositions. According to Elliot and Church (1997), goal orientation and the achievement goals it produces function as intermediate variables between “global motivational dispositions” and behavioral patterns (p. 219). These researchers explain:

the primary effect of achievement motivation [striving for competency] and fear of failure on achievement outcomes is posited to be indirect; their midlevel motivational surrogates—achievement goals [following out of goal orientation]—are presumed to be the direct regulators and proximal determinants of achievement behavior. (Elliot and Church, 1997, p. 219)

They performed several pilot studies associated with their study, as well as a factor analysis in order to develop their own achievement goals scale, which indicates goal orientation. Additionally, the results of their path analyses verified that mastery goals were related to achievement motivation [competency striving] and that performance-avoidant goals were associated with fear of failure, while performance-approach goals were connected to both of these motive dispositions (Elliot & Church, 1997). The researchers explained that literature on goal orientation is inconsistent as to whether mastery goals are correlated with quantifiable achievements such as grades, despite their well-established relationship with the intrinsic motivation which promotes such achievement (Elliot & Church, 1997).

Mastery goals and achievement. In some studies, research has demonstrated that student achievement is positively related to mastery goal orientation. In her study on goal orientation, Mattern (2005) posited that a student may simultaneously hold a combination of both mastery and performance goal orientation, rather than always holding a singular form of either type respectively. Specifically, she hypothesized that those holding a combination of mastery and performance-approach goals would experience stronger academic achievement levels than those with either singular orientation. The data from her sample of undergraduate students indicated that the participants she identified as having this dual goal orientation did not achieve significantly higher academic results measured by end of course grade than those with singular orientations. In contrast to her prediction, students with single mastery goal orientations scored significantly higher academically than those with single performance-approach orientation (but not compared to the dual orientation) (Mattern, 2005). These findings contrast with past studies which have shown that performance goals often lead to higher academic performance than mastery goals (Elliot & Church, 1997).

Deep processing strategies. In earlier research, Greene and Miller (1996) found that mastery goals and student achievement co-varied when mediated by deep-processing study strategies (involving increased effort expenditure). This mediation may imply a connection between a student's general inclination towards a goal (not just the type of goal itself) and achievement. Factors influencing a student's decision to invest varying amounts of effort towards a goal may be equally as important as the type of goal pursued predicting achievement outcomes. In their sample of 108 students in an educational

psychology class, Greene and Miller additionally found that performance goals were linked to shallow processing strategies—a variable negatively correlated with achievement. However, they did not differentiate between performance-approach versus avoidant orientation, consequently, their measure combined both constructs. Perhaps this non-differentiation accounts for disparate results found by Harackiewicz et al. (1997), showing that both mastery and performance goals were related to academic achievement, with performance goals resulting in greater achievement. These researchers utilized open-ended questions and coding which separated goal orientations into mastery, performance or work-avoidant orientations, or even combinations of the three variables. Their more specified operationalization of variables may be the reason they found that both mastery and performance goals were related to higher achievement—in contrast to Greene and Miller's results which indicated that mastery goals alone co-varied with achievement, while performance goals (approach and avoidant combined) were associated with factors negatively correlated to achievement (Harackiewicz et al., 1997). However, their measure of performance goals mainly adhered to tenets of approach orientation, since statements were positive and none of them addressed fear of failure. Finally, the work avoidance construct they utilized had low internal consistency ($\alpha = .49$), indicating that perhaps a different construct (such as performance-avoidance) would be more appropriate (Harackiewicz et al., 1997).

Negative effects of work avoidance. Following Greene and Miller's study, Dupeyrat and Mariné (2005) similarly focused on a dichotomy of mastery and performance orientation, studying a sample of 76 French adult students who chose to

return to school. The researchers additionally examined how work avoidance was related to their performance goal variable (which encompassed both approach and avoidant tendencies). Their results supported past research by Meece et al. (1988), showing that a work-avoidant orientation was deleterious to levels of cognitive engagement. However, while their data initially indicated that performance goals were connected with both deep and shallow cognitive processing, further path analyses showed that these goals only predicted shallow processing, as in Greene and Miller's study.

These clarified results indicate that differentiating between types of performance goals indeed may produce clearer results. Dupeyrat and Mariné's research additionally partially supported Dweck's (1986) model of implicit theories of intelligence, in that students who rejected the idea that intelligence is a fixed entity tended to adopt mastery goals, seeing their intellectual abilities as more malleable. Interestingly, their data did not support the same significant connection between mastery goals and student achievement through the mediator of deep-processing study strategies which Greene and Miller found, though they utilized a different measure for study strategies. However, since effort expenditure mediated a connection between mastery goals and achievement, the researchers hypothesized that perhaps their measure for effort more accurately assessed the students' cognitive engagement than the measure for levels of study strategies (Dupeyrat & Mariné, 2005).

Yet, other studies found no significant correlation between mastery goal orientation and student achievement (Meece et al., 1988), and other results demonstrated lower achievement for mastery than for performance goals (Harackiewicz, Barron,

Carter, Letho, & Elliot, 1997). Additionally, though research sometimes demonstrates negative outcomes for performance goals, they are also associated with positive academic results (Harackiewicz, Barron, Carter, Letho, & Elliot, 1997; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). Researchers have found evidence to be inconclusive at best in this area of study. Again, possibly this variance across the literature is a result of inconsistent construct distinctions in goal orientation, specifically regarding performance goals; research terminology varies in whether performance goals are defined as unidimensional, distinguished as approach and avoidant, or kept unitary, but supplemented with a work-avoidant goals construct. However, even studies with similarly-defined variables seem to produce conflicting results. This observation prompted the current study which examined a more complex relationship between achievement and goal orientation, considering a moderation model.

Self-Efficacy

Many of the variables which researchers have explored in relation to goal orientation, such as perceived competence, appear to fall under the construct of self-efficacy. Self-efficacy involves one's beliefs about personal capability in succeeding in one's efforts to master a task or challenge.

Social cognitive theory. According to tenets of Bandura's social cognitive theory (1991), initially called social learning theory (1977), people can learn by observing, imitating, and interacting with others who model certain behaviors and interactions with their environment. The theory's underlying principle is that learning occurs in a social context (Bandura, 1977). Additionally, social cognitive theory posits that people possess

some extent of control over their thoughts, feelings, actions and motivations due to their “self-reactive and self-reflective capabilities” (Bandura, 1991, p. 249). The exercise of such capabilities demonstrates the human potential for self-regulation—a process which proceeds through the mechanisms of various “psychological subfunctions,” such as self-monitoring, which are essential for acting upon intent or desire, as Bandura explained (p. 249).

One’s level of self-efficacy can influence goal setting behavior, perseverance through failure, effort expenditure, cognitive processes, and interest level in various activities (Bandura, 1991). Researchers have examined the association between perceived competence (similar to self-efficacy) and motive dispositions (which are related to goal orientation).

Availability of motives. Elliot and Church (1997) posited an interesting possibility regarding the expression of performance-approach goals; they indicated that while the underlying motive of a person with this orientation can be one of two dispositions (achievement or fear of failure motives), the selected motive for a particular goal is “determined by the relative strength or accessibility...of the two underlying motive dispositions” (p. 228). Scenarios in which a person perceives little threat of failure lend themselves to achievement motives, while situations in which a person recognizes a larger threat of failure and little possibility of success may trigger the fear of failure motive. When potential for success and failure appears equal, a convoluted interaction of both motives may occur (Elliot & Church, 1997). In either situation for a performance-approach orientation, self-evaluation (in evaluating one’s abilities and likelihood of

failure) appears to have an influence on the expression of the orientation, particularly through perceived competence.

Perceived competence. Perceived competence could likewise be involved in the process of maintaining a more consistent or singular orientation due to one's self-perception of ability or lack of ability. This process of self-evaluation may relate to self-efficacy. In addition, the researchers found that mastery and performance-approach goals were linked with such self-perceptions of competence preceding a task or a class, and low self-perceived competence with performance-avoidant goals (Elliot & Church, 1997). Additionally, the study results supported their predictions that those with higher competence expectancy for a class tended to hold performance-approach or mastery goals, and those with a low expectation of competence often held a performance-avoidant orientation (Elliot & Church, 1997).

Social cognitive theory applied. Bandura's (1991) social cognitive theory may help to explain the connection between goal orientation and self-efficacy. In the literature produced about self-regulatory mechanisms, researchers have found that self-efficacy is positively correlated with academic achievement (Hsieh, Sullivan, & Guerra, 2007). Specifically, Al-Harthy and Was (2013) found that higher self-efficacy led to higher end-of-course grades for students enrolled in an undergraduate psychology course. According to social cognitive theory, self-efficacy influences peoples' mindsets in goal setting—how deeply they will challenge themselves, and how committed they will remain to achieving their goals. Those who have confidence in their ability to master a task (showing self-efficacy) will likely pursue a goal with more determination following

a failure; in contrast, those who doubt their own abilities are much quicker to give up in the face of failure (Bandura, 1991).

Effort investment and fear of failure. This principle introduces the possibility that goal orientation—expressed in a desire for mastery, strong performance, or in a fear of failure—is connected in a complex manner with self-efficacy and achievement. According to Bandura’s theory, one’s level of self-efficacy can negatively or positively impact one’s mindset and personal commitment to a goal. Consequently, self-efficacy likely influences a student’s investment of energy and cognitive engagement in striving for a goal. Consistent with this idea, Meece et al. (1988) found that work-avoidant goals are “effort-avoidant” (p. 515). Moreover, Greene and Miller (1996) found that mastery goals and student achievement were indirectly related through the mediator of student deep-processing study strategies. Such deep-processing involves effort expenditure, in contrast to effort-avoidant tendencies. Since aspects of self-efficacy like commitment and mindset are effort-related, and mastery orientation relates to achievement through effort expenditure, self-efficacy likely has a significant impact on mastery goal orientation and achievement.

Recently, research by Goraya and Hasan (2012) indicated that students with high academic standing scored higher on mastery and performance-approach goals, as well as perceived competence. In their study of undergraduate students in a psychology class, Pekrun, Elliot, and Maier (2009) found that achievement-related affect mediated the positive relationship between both mastery and performance-approach goal orientation and academic performance. When they controlled for scholastic ability, this correlation

was still evident, though the association was stronger between academic achievement and performance-approach orientation in comparison to mastery orientation.

Self-efficacy. In addition, studies frequently demonstrate that higher academic self-efficacy is associated with positive academic performance (Carroll et al., 2009; Jiang, Song, Lee, & Bong, 2014). Gore (2006) found that academic self-efficacy was a significant predictor of college outcomes, though the association between the two variables dependent on the specific type of efficacy beliefs measured, as well as the time period of higher education during which self-efficacy was measured. Other researchers found that self-efficacy was linked with student GPA through a relationship partially mediated by effort regulation (Komarraju & Nadler, 2013).

GPA range. Furthermore, a specific area which has not been investigated regarding academic achievement is the association of goal orientation and self-efficacy level with the range of GPA a student falls into. Research demonstrates that GPA is an important factor in predicting the probability of retention and timing of graduation for college students (Gershenfeld, Hood, & Zhan, 2016; Rohr, 2012). In addition, in order to gain admission into various educational institutions or training schools, students typically must place within a certain academic range. Consequently, understanding whether or not student goal orientation, self-efficacy levels and range of GPA are associated is valuable. Evaluating the correlation among these three variables may help in determining the crucial factors influencing a student's likelihood of meeting a certain qualifying GPA range. As a result, knowing the factors associated with GPA range may help to inform students in their attempts to enter one of these institutions, allowing them to target

specific areas of growth which will aid them in successfully completing their higher education. However, research on the subject of GPA range is limited, and literature evaluating factors influencing it is sparse. In one study investigating student records from a university in Indonesia, Setiawan and Margono (2015) sought to classify students based on GPA by their placement above or below the 2.5 mark. They categorized students into four quadrants based on semester GPA attainment above or below a 2.5 GPA, as well as by whether or not students demonstrated progress in their degree program. Based on their quadrant model, they were more accurately able to predict the probability of student graduation. Since student academic achievement measured by GPA is linked with goal orientation and self-efficacy, the current study sought to examine the association of these two variables with GPA range.

The Current Study

Despite the inconsistencies in the literature regarding the association between goal orientation and achievement, these two variables certainly appeared to be related. However, student orientation towards mastery, performance-approach, or performance-avoidant goals may mainly be linked to academic achievement through an implicit connection with self-efficacy levels. For instance, a student may maintain a mastery goal orientation—focusing primarily on developing competency in a task rather than defining competence through self-comparison to others; nonetheless, one should not presume that the student intrinsically believes he or she has the ability to attain such a mastery goal, which is an issue of self-efficacy. Similarly, in regard to a performance goal orientation, a student may still lack confidence in his or her ability to perform, as already evidenced by

the later model division of performance-approach and performance-avoidant goals.

Consequently, such an underlying belief or mindset regarding personal ability may be a critical factor in determining whether a student ultimately realizes his or her initial goal academically. According to Bandura's theory (1991), lack of self-efficacy in the learning environment would involve a deficiency in self-motivation, self-monitoring, self-regulation, and in one's ability to set progressive, small goals towards reaching one's final goal. Such deficiencies could weaken a student's ability to master a subject in the manner he or she desires, leading to an incomplete understanding of the content, and lowering academic achievement as a result. Moreover, insufficiencies in these areas would likely reduce one's ability to perform well or to avoid failure, due to one's inability to remain deeply engaged in the subject matter in order to learn it well. Based on this rationale, the current study sought to examine the impact of self-efficacy and GPA range on student goal orientation.

Research Questions

Based on the trends in studies on goal orientation, self-efficacy, and academic achievement, the research question for the current study was as follows:

Do the factors of student self-efficacy and range of GPA have significant main effects on goal orientation? Additionally, does the interaction between these two factors predict student goal orientation?

Hypotheses

Based on the literature, it was hypothesized that self-efficacy and GPA range would have significant main effects on student goal orientation. It was also predicted that

the interaction between self-efficacy and GPA range would significantly predict student goal orientation:

H₁: Student GPA range will have a significant effect on goal orientation.

H₂: Student self-efficacy levels will have a significant effect on goal orientation.

H₃: The interaction of student GPA range and self-efficacy will have a significant effect on goal orientation.

Method

All methods, measures, and components of the survey for the current study were approved by Liberty University's Institutional Review Board. The first page of the survey provided a consent form regarding the risk level of the study—the study involved no more risk than that of daily life activities. Students were only asked to answer general questions about demographics, and their data remained anonymous. By maintaining anonymity, the researcher sought to protect individual confidentiality as well as to encourage honest responses to survey items. The survey was advertised through the university Psychology Activities page, as well as through e-mail and classroom announcement at professor discretion. All participants completed this survey online. After confirming they were 18 years or older and willing to participate in the study, students were asked to answer several demographic questions and 36 questions regarding their approach towards learning in an academic setting.

Participants

An online survey was used to collect data from undergraduate students regarding student goal orientation, self-efficacy, and academic achievement. The sample initially

included 344 undergraduate college students presently enrolled in a psychology class at a large evangelical university. Due to incomplete scales on the survey, list wise deletion was used to eliminate a large amount of participant data (109 participants). The remaining data ($N = 235$) were analyzed using SPSS software.

Demographics

Though the survey was anonymous, students were asked to respond to various questions about demographics. The gender proportion of the sample was 188 (80%) female students and 47 (20%) male students. The ethnicities represented were as follows: Black or African American 3%, Hispanic or Latino 4%, White 87%, Asian / Pacific Islander 4%, Other ethnicities 2%. In the sample, 208 of the students were from 18 to 22 years of age with 27 over the age of 22. Additionally, the distribution of student class status was as follows: 30% senior, 21% junior, 21% sophomore, 23% freshmen, 5% fifth year senior or other.

GPA Range

The variability across GPA range was as follows: 45 (19%) at 4.0, 100 (43%) between 3.5 and 3.99, 56 (24%) between 3.00 and 3.49, 23 (10%) between 2.5 and 2.99, and 10 (4%) under 2.5. One student indicated no present GPA.

Following demographic questions, students were asked to respond to statements regarding their ability to manage particular academic scenarios.

Measures

Achievement Goal Questionnaire. For the current study, student goal orientation was measured utilizing Elliot and Church's (1997) Achievement Goal Questionnaire

(AGQ). The scale measured the trichotomy of achievement goal orientations—mastery, performance-approach, and performance-avoidant—assessed by six items respectively, employing a Likert scale from 1 (“not at all true of me”) to 7 (“very true of me”) (Elliot & Church, 1997, p. 222). Internal consistency for the question indices of performance-approach, performance-avoidant and mastery orientation was $\alpha = .91$, $.89$, and $.77$, respectively, demonstrating moderate to high reliability (Cronbach, 1970).

When administered to participants within the current study, the Goal Orientation Questionnaire scale showed moderate to high internal consistency for the subscales, $\alpha = .939$, $\alpha = .898$ and $\alpha = .767$ for performance-approach, performance-avoidant and mastery orientation, respectively.

For the AGQ, as part of the anonymous online survey, students responded to 18 statements which assessed each type of goal orientation. They were asked to rate each of the statements to the extent it was true of them regarding their current classes. (e.g., “It is important to me to do well compared to others in my classes,” and “In classes like these, I prefer course material that really challenges me so I can learn new things,” and “My fear of performing poorly in this class is often what motivates me”). The possible range for each of the three respective scales was 6-42, with a total score range of 18-126. Indices for each type of goal orientation were calculated based on three subscales of six items to determine each student’s dominant orientation, determined by the highest score out of the three subscale totals.

It should be noted that the phrasing of the questions was altered from a singular “this class” to a general “my classes” or “these classes,” in order to assess academic

perspectives more comprehensively across the learning settings of various classes.

Additionally, with academic generalization in mind, one statement which referenced gaining knowledge of “psychology” (as a specific class subject) was altered to indicate knowledge of “the subjects of my classes” instead.

Self-Efficacy for Learning Form. Additionally, the author assessed academic self-efficacy through the Self-Efficacy for Learning Form Abbreviated (SELF-A) scale developed by Zimmerman and Kitsantas (2005). This scale was used to assess ability to accommodate various practical academic challenges encountered in classroom settings. Students were asked to rate their ability to perform these tasks with a slider instrument utilizing a range of 1-100.

For the SELF-A section of the online survey, students responded to 19 statements addressing self-efficacy beliefs regarding their ability to complete academic tasks involving studying, test preparation, and notetaking (e.g., “When you miss a class, can you find another student who can explain the lecture notes as clearly as your teacher did?” and “When your teacher’s lecture is very complex, can you write an effective summary of your original notes before the next class?”). The mean score for each student was calculated based on their total response score in order to determine their self-efficacy score. The possible range of scores was 0-100. Zimmerman and Kitsantas found that their original 57-item scale ($\alpha = .98$) and the abbreviated 19-item scale had a unitary factor structure. The factor analysis of the SELF-A scale produced a Cronbach’s alpha reliability coefficient of $\alpha = .97$, demonstrating very high internal consistency. Factor loadings for the SELF-A established convergent validity with the SELF since all factors

loaded above .76, with most above .8. Overall, the analysis demonstrated that the model was a good fit ($\chi^2(152) = 13.61, p = 1.00, CFI = 1.00, NFI = .94, RFI = .93$). Consistent with the reliability demonstrated for scale, within the current study, the data collected for the SELF-A had an internal consistency of $\alpha = .914$.

It should be noted that the original scale utilized a ten-unit instrument for student responses in a 1-100 range (0, 10, 20, 30, etc.). The survey for the current study also utilized a 1-100 point scale, but a slider instrument was utilized, including the full 1-100 range of points as opposed to only 10. This instrument was used in order to capture further minute variances of student responses. Zimmerman and Kitsantas sought to attain this level of sensitivity with their original 10-point scale; they followed Bandura's suggestion as well as further research which indicates that self-reported self-efficacy is best captured using scales with a higher number of data points (as cited in Zimmerman & Kitsantas, 2005).

Academic Achievement

The third variable of academic achievement was measured by student self-reported college grade point average (GPA) based on the following categories of GPA: 4.0, 3.5-3.99, 3.00-3.49, 2.00-2.49, 2.5 or under, or no current GPA.

Results

Process and Software

In order to evaluate the association among the variables of self-efficacy, goal orientation, and ranges of student college GPA, the researcher performed two-way ANOVA, univariate analyses using SPSS software version 23.0 to examine a possible

interaction model. GPA range was a fixed factor as well as student learning self-efficacy which was separated into two categories by a median split. Three respective analyses were performed examining the main effect of GPA range and self-efficacy on each type of goal orientation, and evaluating a possible interaction effect on each goal orientation. In addition, bivariate correlations were performed to examine the association between learning self-efficacy and each respective type of goal orientation, and the associations among the goal orientations themselves.

Correlations between self-efficacy and goal orientation. Bivariate correlations revealed that student self-efficacy scores (not median split) were significantly associated with mastery, performance-approach, and performance-avoidant goal orientation, respectively. Self-efficacy was correlated with mastery goal orientation at $p < .001$ with $r = .487$, performance-approach $r = .211$, $p = .001$, and performance-avoidant, $r = -.216$, $p = .001$ (see Table 1). In addition, the data indicated positive correlations between mastery and performance-approach orientation, $r = .178$, $p = .006$, as well as between performance-approach and performance-avoidant orientation, $r = .137$, $p = .036$.

Associations also existed among the three goal orientations. Mastery and performance-approach orientation were significantly correlated, $r = .178$, $p = .006$, as well as performance-approach and performance-avoidant orientation, $r = .137$, $p = .036$.

Table 1

Descriptive Statistics for Student Self-Efficacy Scores

	N	Minimum	Maximum	Mean	Std. Deviation
Self-Efficacy	235	13.00	42.00	34.7447	6.00380
Performance-Approach	235	6.00	42.00	26.3404	8.43699
Performance-Avoidant	235	8.00	42.00	28.3702	7.44346
Mastery	235	20.47	96.37	73.0020	12.81713

Table 2

Pearson Correlation Coefficients for Self-Efficacy and Goal Orientation

Self-Efficacy	Performance-Approach	Performance-Avoidant	Mastery
1	.211**	-.216**	.487**
.211**	1	.137*	.178**
-.216**	.137*	1	-.016
.487**	.178**	-.016	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Main effects for performance-avoidant orientation. Contrary to the hypothesis, the two-way ANOVA indicated that there were no significant main effects from GPA range, $F(5, 224) = 15.16, p = .276$, or self-efficacy, $F(1, 224) = 2.96, p = .09$, on performance-avoidant goal orientation.

Main effects for mastery goal orientation. However, median split self-efficacy had a significant main effect on student mastery goal orientation, $F(1, 224) = 11.75, p = .001$, partial $\eta^2 = .05$, accounting for 5% of the variance in the model (see Table 2 and Figure 1). GPA range did not show a significant main effect on mastery orientation, $F(5, 224) = .57, p = ns$. In the model for mastery goal orientation, GPA range, median split self-efficacy, and the interaction between the two main effects was $R^2 = .164$. This

coefficient indicates that the combination of main effects and interaction effect explained 16.4% of the variance within the model for the dependent variable of mastery goal orientation.

Table 3

Between-Subject Effects for GPA Range, Self-Efficacy, and Mastery Orientation

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1384.110 ^a	10	138.411	4.397	.000	.164
Intercept	37729.807	1	37729.807	1198.694	.000	.843
GPA Range	89.614	5	17.923	.569	.723	.013
Self-Efficacy	369.956	1	369.956	11.754	.001	.050
GPA Range * Self-Efficacy	83.031	4	20.758	.659	.621	.012
Error	7050.570	224	31.476			
Total	292125.000	235				
Corrected Total	8434.681	234				

a. R Squared = .164 (Adjusted R Squared = .127)

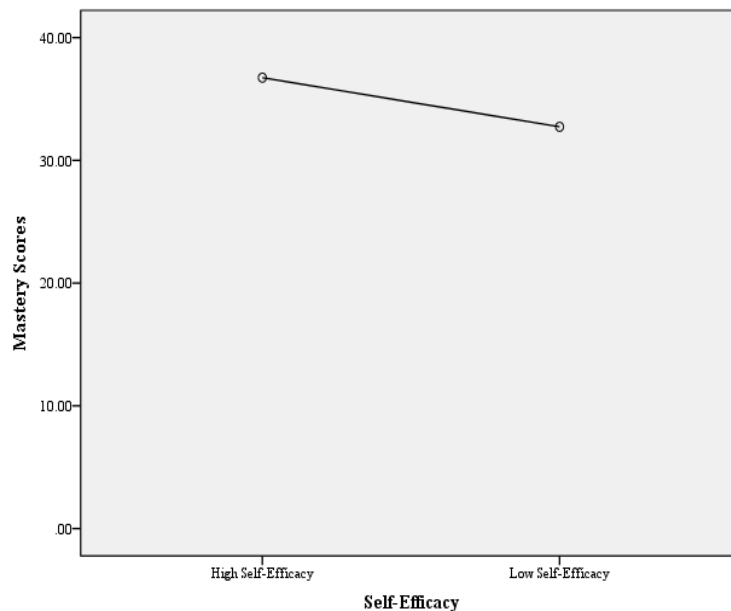


Figure 1. Main effect of self-efficacy on student mastery goal orientation.

Main effects for performance-approach orientation. Additionally, though self-efficacy did not have a significant main effect within the performance-approach interaction model, $F(4, 224) = 2.20, p = .14$, GPA range did have a significant main effect on performance-approach orientation, $F(5, 224) = 4.62, p < .000, \eta^2 = .093$ (see Table 3 and Figure 2). Together with the interaction effect, the main effects accounted 13.8% of the variance within the model for performance-approach orientation.

Table 4

Between-Subject Effects for GPA Range, Self-Efficacy, and Performance-Approach Orientation

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2292.647 ^a	10	229.265	3.575	.000	.138
Intercept	24551.048	1	24551.048	382.859	.000	.631
GPA Range	1480.518	5	296.104	4.618	.000	.093
Self-Efficacy	141.361	1	141.361	2.204	.139	.010
GPA Range * Self-Efficacy	248.601	4	62.150	.969	.425	.017
Error	14364.119	224	64.126			
Total	179704.000	235				
Corrected Total	16656.766	234				

a. R Squared = .138 (Adjusted R Squared = .099)

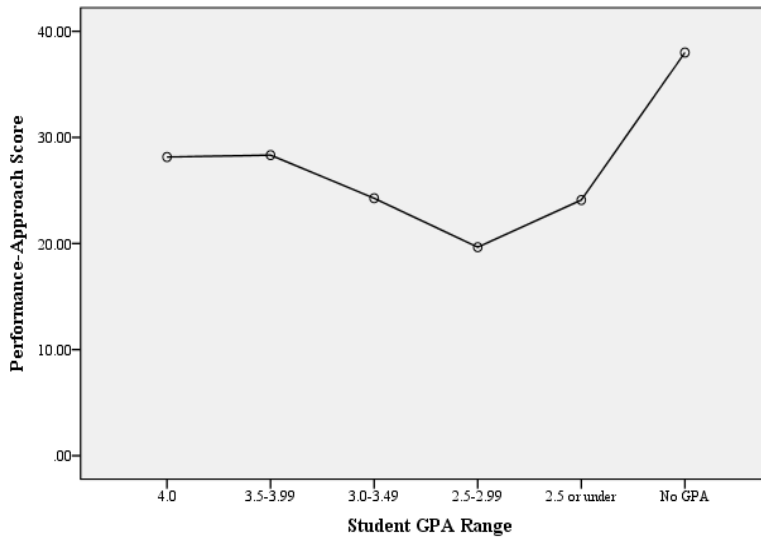


Figure 2. Main effect of GPA range on student performance-approach orientation.

Evaluating interaction effects. Contrary to this study's hypothesis, GPA range and self-efficacy (based on a median split) did not interact significantly to account for the variance in students' resulting scores for any of the three goal orientations: Mastery, $F(4, 224) = .659, p = .62$; performance-approach, $F(4, 224) = .232, p = .92$; performance-avoidant, $F(4, 224) = .969, p = .425$.

Discussion

The main purpose of this study was to investigate the association between student GPA range, level of self-efficacy, and goal orientation. Though there were no significant interaction effects within the models investigated, self-efficacy showed a main effect on mastery orientation, and GPA range had a main effect on performance-approach orientation. Moreover, there were significant positive correlations between several pairs of variables—mastery and performance-approach orientation, performance-avoidant and performance-approach orientation, and student scores on self-efficacy and mastery

orientation. These results may have implications for instructor practices in the classroom, regarding an emphasis on task-mastery as well as measurable outcomes such as grades.

Main Effects

GPA range and performance-approach orientation. The two significant main effects demonstrated by two-way ANOVA were the association of self-efficacy with student scores on mastery goal orientation, and the association between GPA range and scores on performance-approach goal orientation. The latter relationship indicates that the higher GPA range a student attains, the higher he or she will likely score on performance-approach orientation. This association is consistent with past research which demonstrated that students with a performance-approach orientation obtained the highest levels of academic achievement out of the three goal orientations (Elliot & Church, 1997; Harackiewicz et al., 1997; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

GPA range and performance-approach orientation. Performance-approach orientation is mainly motivated by a desire to perform well for others and in comparison to others, seeking external reinforcement through positive feedback (Dupeyrat & Mariné, 2005). Seemingly, students with greater motivation and concern over performing well for others will achieve higher measurable outcomes such as assignment grades and GPA. Since a performance-approach orientation is significantly positively associated with GPA range, this relationship implies that promoting a performance-approach orientation in the classroom may encourage student academic achievement as measured by GPA. In addition, students who need to place in higher brackets of GPA in order to gain entrance into various educational institutions may benefit from focusing on formal measures of

achievement such as grades. Instructors may increase a class's focus on measurable academic outcomes to create an environment which encourages performance-approach goals, aiming to cultivate the higher achievement associated with the orientation.

Teachers may develop this focus by emphasizing that attaining grades within a particular range may predict student future performance and achievement (Rohr, 2012). Instructors may also encourage an environment of healthy academic competition within the classroom, since competition is a key motivator within a performance-approach mindset.

Self-efficacy and mastery orientation. The fact that the data for the current study did not indicate a significant main effect of GPA range on the model for mastery orientation is not surprising. Though Mattern (2005) found a stronger correlation between mastery orientation and class grades than for grades and performance-approach orientation, studies more often find no significant association between mastery orientation and formal measures of academic achievement such as GPA (Harackiewicz, Barron, Carter, Letho, & Elliot, 1997; Meece et al., 1988). Mastery orientation is motivated by a desire to master concepts and tasks. In contrast to performance-approach motivation, these goals are motivated by intrinsic reinforcement that comes through satisfaction in self-perceived mastery of tasks rather than external feedback. As a result, students scoring high on the mastery orientation scale may be less likely to score high on formal indicators of academic achievement such as assignment grades and GPA, since they may not be as motivated to obtain high performance scores. This idea is consistent with findings by Dupeyrat and Mariné (2005), supporting Dweck's (1986) hypothesis that students with stronger mastery orientation tend to reject the idea that intelligence is a

fixed entity; as a result, they perceive their intellectual abilities as malleable.

Accordingly, such students who view their knowledge base and strategies for learning as progressive may tend to focus on task-mastery and assimilating learning. Due to a belief that they can improve their intelligence, they will be less likely to restrict themselves to a certain threshold of intelligence; as a result, they may possess higher self-efficacy, believing themselves capable of growing their knowledge through mastering tasks and learning.

Implications of self-efficacy and mastery orientation. The connection between stronger mastery orientation and self-efficacy may be important in predicting academic persistence and student retention in the college environment. If instructors are able to cultivate a mastery-oriented environment and corresponding student orientation, they may be able to benefit students with low self-efficacy due to the association between high mastery and high self-efficacy. Research shows that teachers' use of mastery-oriented practices can increase student motivation, interest in the subject, and mastery goal setting (Pekrun, Elliot, & Maier, 2009; Schiefele & Schaffner, 2015). Students' feelings of failure or incompetency may be based on formal academic performance, measured by a grade, and based on extrinsic consequences. Consequently, once they refocus on mastering individual tasks and concepts within assignments, they may experience intrinsic reinforcement through the learning process. Encouraging a mastery-oriented mindset may benefit students who are low in academic achievement and self-efficacy. This mindset may allow them to break down their assignments in manageable and tangible components which they can strive to master—as opposed to confronting the

more abstract and daunting challenge of attaining a particular assignment grade or GPA; such overarching measures of achievement may be particularly discouraging and intimidating for students who are already low-achieving and may perceive themselves as incompetent.

Indeed, in previous studies, academic helplessness has been associated with lower current and future achievement (Fincham, Hokoda, & Sanders, 1989). Additionally, the data from the current study demonstrated that self-efficacy scores were significantly negatively correlated with performance-avoidant orientation, indicating that as self-efficacy for learning decreases, such avoidant tendencies increase. This relationship is consistent with the association Elliot and Harackiewicz (1996) described between mastery orientation (which is related to high self-efficacy) and performance-avoidant orientation: they are almost antithetical, since a performance-avoidant student's fear of failure may lead to a paralyzing sense of helplessness, while a mastery-oriented student is motivated to strive for mastery of a challenging task. Furthermore, in the current study, mastery orientation was negatively (though not significantly) associated with performance-avoidant orientation.

Performance-avoidant orientation is motivated by a fear of failure—an anxiety-provoking belief. The results from the study indicated that performance-avoidant orientation was significantly associated with performance-approach orientation. This correlation is consistent with Elliot and Church's (1997) conceptualization that performance-approach goals are based simultaneously on a fear of failure and a desire to perform well in comparison to others. However, most researchers attribute the fear of

failure motive to performance-avoidance as a distinct orientation. Interestingly, anxiety, such as that associated with a fear of failure, is not always detrimental to achievement (Fincham, Hokoda, & Sanders, 1989). However, anxiety can result in negative consequences, such as learned helplessness and work avoidance, which have been shown to lower student achievement outcomes in academic settings (Fincham, Hokoda, & Sanders, 1989; Meece et al., 1988).

This connection between approach and avoidant orientation may provide insight into why performance-approach is often positively associated with achievement and other times not correlated with it. Anxiety derived from a fear of failure may lead to work avoidance in a student with high levels of both approach and avoidant orientation. As a result, that student may score lower academically. At the same time, if the student does not exhibit performance-avoidant tendencies, or at least is not work-avoidant, his or her performance-approach orientation is more likely to be associated with higher achievement since the individual is unhindered by learned helplessness and work-avoidant patterns.

Integrating Performance-Approach and Mastery Orientation

Based on the main effect of GPA range on performance-approach orientation, and the main effect of self-efficacy on mastery orientation, there appear to be grounds for promoting both in the classroom setting. However, though they may appear mutually exclusive, this does not need to be the case. For instance, instructors may find these two approaches to be more complementary than conflicting in producing positive student outcomes. Importantly, though students typically score higher for one out of the three

goal orientations, they rarely hold to one exclusively (Poortvliet & Darnon, 2014).

Classroom environments which encourage the tendencies of both performance-approach and mastery orientation could be beneficial for students. The complementary nature of these two orientations may exhibit itself in their mutual strengths. First, mastery goals have been linked with increased feelings of enjoyment and reduced levels of anger related to academic challenges, while performance-approach goals have been positively associated with feelings of hope and pride (Pekrun, Elliot, & Maier, 2009). In addition, mastery orientation is more frequently positively correlated with self-efficacy, leading to increased personal confidence, less anxiety, and more realistic goal setting (Bandura, 1991). In contrast, performance-approach goals are associated with more practical achievement outcomes such as placing within a particular GPA range, which has critical implications for many students in where and how they will continue their education and career.

Moreover, the anxiety associated with performance-approach orientation (through its correlation to performance-avoidant orientation) may not be the main issue in negative performance-approach outcomes, as much as the learned helplessness which can result from the anxiety (Fincham, Hokoda, & Sanders, 1989). Instructors may be able to integrate mastery-oriented practices into the classroom which might offset some of the negative results of anxiety, since mastery orientation is closely associated with higher self-efficacy—which is linked with better self-regulation (Bandura, 1991).

Correlations between self-efficacy and goal orientation. Bivariate correlations revealed that student self-efficacy scores were significantly positively associated with

both mastery and performance-approach orientation. This is consistent with results found by Niazi, Adil, and Malik (2013) which indicated that self-efficacy was a significant positive predictor of these two orientations. Moreover, it is noteworthy that the direction of the association between student self-efficacy scores and performance-avoidant orientation was negative, though not significant. The correlation between self-efficacy scores and mastery orientation and was more than twice as strong as that between self-efficacy and performance-approach orientation. The former, more prominent correlation is consistent with research by Al-Harthy and Was (2013), who found that stronger a mastery goal orientation was significantly associated with higher self-efficacy. In addition, based on further research, Poortvliet and Darnon (2014) suggested that self-efficacy and mastery goal orientation are “mutually enhancing mechanisms” (p. 354).

Limitations

Convenience sampling. This study was limited by its sample demographics. This particular sample of undergraduate students represented a mainly evangelical population, since this sample was derived from those enrolled in a private Christian college. Participants were a convenience sample, mainly those seeking psychology activity credit due to their enrollment in an undergraduate psychology class. Though the study initially involved a large sample size of 344 students, the external validity was limited due to a large proportion of primarily white, college-age, Christian, female students. It should be noted, however, that the nearly four to one ratio of females to males is consistent with trends within the university’s psychology department, and many of the students were taking the survey for psychology activity credit. Another limitation in the external

validity of the study was that, due to failure to complete survey items, particularly items on the SELF-A, a large amount of the sample data (109 participants) had to be eliminated from the analysis. This elimination may have affected subsequent results in that the population which failed to complete specific parts of the survey may have covaried in their differences from those who fully complete the survey. However, due to the large sample size analyzed, though the results of this study may not have as much external validity, they may reasonably apply to people in the general public who are more conservative, particularly youth.

Construct validity. The construct validity of the survey may have been affected in introducing a different instrument (the slider scale) in measuring self-efficacy of learning, as opposed to the original 10-point Likert scale. However, since the internal consistency for the SELF-A within the data set was $\alpha = .914$, it appears unlikely that the change in instrument influenced the accuracy of student responses. In addition, for the current study, it was deemed beneficial to alter the Goal Orientation Questionnaire to refer in general to “my classes” in the statements on the scale as opposed to specified statements including the words “this class.” This adaptation was an effort to garner data for each student which would be a more comprehensive indicator of self-efficacy toward generalized academics. As part of this change, the researcher avoided specifying a particular class (the original scale focused on psychology); the rationale for this change was that various students may hold disparate interests, intents, and self-efficacious beliefs about a particular subject in comparison with the entire spectrum of classes they are a

part of; this overall range of classes was thought to have more influence on universal student achievement than a student's view of a one class would.

Limitations in analyses of models. In order to perform univariate analyses on the data, self-efficacy scores were divided into two group by a median split, placing students falling at and above the median in one group and those falling below in another. Median splits are generally not recommended in analyzing data since dichotomizing results reduces variance and consequently can result in a loss of statistical power (Cohen, 1983).

Future Research

Though interaction effects within the models were not significant as the current study hypothesized, the association between self-efficacy, GPA range, and goal orientation is still an important area for future research. As a result of the main effects of GPA range and self-efficacy on performance-approach and mastery orientation respectively, further studies might investigate whether the two orientations can be promoted in a complementary manner in academic settings. Since the promotion of both mastery and performance-approach tendencies may be beneficial in the classroom, additional research is necessary in order to evaluate how malleable student goal orientation is. Moreover, such studies may seek to determine the general threshold of student scores at which the three orientations are most influential. Finally, future studies can examine the longitudinal influence of mastery and performance-approach orientation on students' retention of information and future achievement. Researchers have found that mastery orientation tends to be associated with student deep-processing study strategies—which may lead to more stable learning outcomes—while performance-

approach orientation tends to be related to shallow-processing strategies (Greene & Miller, 1996). Consequently, further research may investigate whether or not current measurable effects of performance-approach orientation (such as GPA) lead to sustainable and long-term achievement outcomes in comparison with mastery orientation.

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