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Goal Orientation and Goal Setting: Predicting Performance by Integrating Four-Factor Goal Orientation Theory with Goal Setting Processes

David J. Radosevich*

*Montclair State University
New Jersey, U.S.A.*

Mark R. Allyn**

*Montclair State University
New Jersey, U.S.A.*

Seokhwa Yun***

*Seoul National University
Seoul, Korea*

Abstract

This study integrated four-factor goal orientation theory with goal setting theory, two related but separate research streams. 335 undergraduate business students participated by indicating their goal orientations, self-efficacy, and self-set goal for the semester. At the end of the semester, their final class grade was recorded. Results from the LISREL mediational model indicated that after controlling for ability, the four goal orientation variables differentially influenced self-efficacy, self-

* Main author, Assistant Professor, School of Business, Montclair State University (radosevichd@mail.montclair.edu).

** Coauthor, Assistant Professor, School of Business, Montclair State University (allynm@mail.montclair.edu).

*** Coauthor, Assistant Professor, College of Business Administration, Seoul National University (syun@snu.ac.kr).

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set goals, and performance. Further, self-efficacy positively influenced goals and goals positively influenced performance. The integration of a four-factor model with goal setting processes served as a useful model to predict academic performance.

Keywords: goal setting, goal orientation, self-efficacy

INTRODUCTION

One of the most widely supported theories from the field of organizational behavior is goal setting theory. Hundreds of studies have supported the basic premise that individuals committed to specific, difficult goals and who are provided feedback will have higher performance than those with easy or vague goals (Kanfer 1991; Locke and Latham 1990, 2002). The focus in goal setting theory is on motivational processes toward the attainment of performance outcomes, and the extant literature has consistently found that performance is a function of both ability and motivation (Locke and Latham 1990). Recently, researchers have explored the determinants that cause individuals to set higher goals (e.g., Diefendorf 2004; Phillips and Gully 1997). In particular, efforts have been made to integrate individual difference variables with motivation constructs.

Goal orientation theory, which has its origins in educational psychology, has received attention by organizational behavior researchers who examine self-regulatory processes (e.g., Phillips and Gully 1997; Radosevich, Vaidyanathan, Yeo, and Radosevich et al. 2004; Seijts, Latham, Tasa, and Latham 2004). Goal orientation refers to the goals individuals implicitly pursue while attaining performance outcomes (Dweck and Leggett 1988). Theorists over the past few decades have proposed a two- (Dweck 1986; Dweck and Leggett 1988), three- (e.g., Elliot and Harackiewicz 1996; Middleton and Midgley 1997; VandeWalle 1997), and most recently four-factor model (Elliot and McGregor 2001) of goal orientation. Although goal orientation theory and goal setting theory seem to be related, there has not been enough effort to integrate these two research streams. Thus, the primary purpose of this study is to examine the effects of the four goal orientation constructs on self-efficacy, self-set goals, and

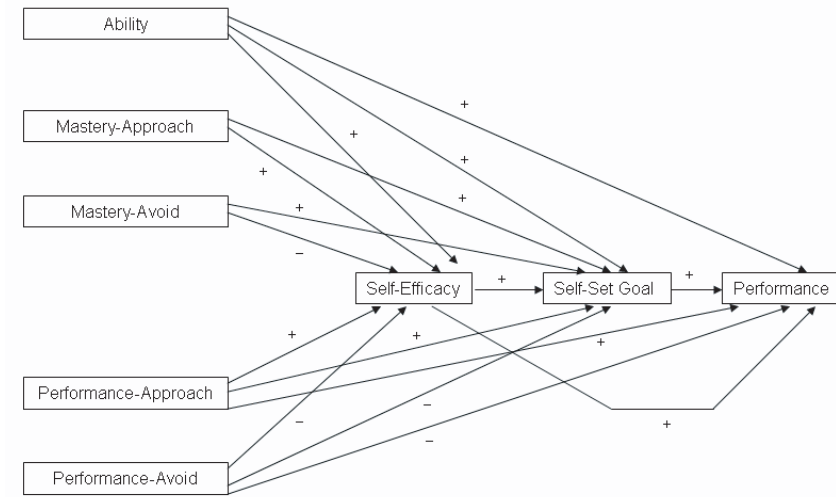


Figure 1. Hypothesized Integrated Model of Goal Orientation Theory and Goal Setting Processes.

performance.

THEORETICAL MODEL

The hypothesized links in the theoretical model are presented in figure 1. The theoretical background and relationships among the constructs are presented below.

Goal Setting Processes

Self-regulation theories (e.g., Bandura 1986; Carver and Scheier 1981; Klein 1989; Locke and Latham 1990) stress the importance of cognitive and behavioral factors in determining motivation. At their core is the personal goal construct, which influences individuals' motivational processes (Austin and Vancouver 1996; Locke and Latham 1990). Based on Kurt Lewin's seminal work on levels of aspiration (Lewin et al. Sears 1944), researchers have examined the idea that motivation is linked to self-regulation. Goal setting theory (Locke and Latham 1990) highlights the importance of goals by suggesting that they affect behavior in several ways: (1) directing attention to a task,

(2) mobilizing on-task effort, (3) developing task strategies, (4) encouraging task persistence, and (5) setting levels of task proficiency.

The finding that the adoption of higher goals leads to higher performance has been demonstrated in over 500 empirical studies (e.g., Latham, Locke, and Fassinna 2002) as well as meta-analyses in the goal setting literature (Tubbs 1986; Wood, Mento, and Locke 1987); individuals assigned challenging goals outperform those assigned easy or vague goals by 0.82 standard deviations, on average (Tubbs 1986). It is important to note that most studies have treated individual difference variables as moderators in the goal setting process as opposed to predictors of self-set goals (Phillips and Gully 1997). An additional concern involves the type of goal used in research. Specifically, most research has examined assigned goals as opposed to self-set goals. Thus, although a few studies (e.g., Diefendorff 2004; Phillips and Gully 1997) have examined individual difference variables (e.g., need for achievement, locus of control, two-factor goal orientation theory) as predictors of self-set goals, there is a need to examine a variety of individual difference variables that influence the level of self-set goals in the goal setting process.

The primary constructs of task specific motivation include individuals' level of self-efficacy and their goal, as these two variables are the most proximal predictors of task performance (Locke 1991). The construct of self-efficacy pertains to an individual's belief that he or she has the ability to successfully complete a task or attain a goal. Self-efficacy has received much attention in goal-setting research and has been shown to be positively related to higher self-set goals (e.g., Bandura 1986; Lee and Bobko 1994; Locke and Latham 1990). In fact, Locke and Latham (1990) reported an average correlation of 0.38 between efficacy and self-set goals. Additionally, several studies (e.g., Chen et al. 2000; Phillips and Gully 1997) have reported direct links from self-efficacy to performance as well as indirect links from self-efficacy through goals to performance. Stajkovic and Luthans (1998) reported a meta-analytic correlation of 0.38 between self-efficacy and work-related performance across 114 studies. Consistent with previous research, the following hypotheses are formed:

H1: Self-efficacy will be positively related to self-set goals.

H2a: Self-efficacy will be positively related to performance.

H2b: Self-efficacy will also be indirectly related to performance through self-set goals.

H3: Self-set goals will be positively related to performance.

Phillips and Gully (1997) suggest that a prevalent shortcoming of research examining self-efficacy involves the fact that although it is distinct from ability, many studies fail to control for ability in analyses assessing the effects of self-efficacy as a predictor (e.g., Gist, Stevens, and Bavetta 1991; Mitchell et al. 1994). Failing to control for ability limits our understanding of the unique role of self-efficacy on self-set goals and performance. Adding to the complexity of the issue, Austin and Klein (1996) note that ability does not always exhibit correlations with self-efficacy because ability is objective in nature and self-efficacy is a subjective perception. However, a well-known finding is that ability is the best single predictor of performance (Hunter and Hunter 1984). Further, ability has been shown to predict both self-efficacy and performance in other studies (e.g., Phillips and Gully 1997; Thomas and Mathieu 1994). Ability will be included in this study to assess the effects of self-efficacy and self-set goals after controlling for ability. Thus, the following hypotheses are formed:

H4: Ability will be positively related to self-efficacy.

H5: Ability will be positively related to self-set goals.

H6: Ability will be positively related to performance.

Although research on the goal setting process has been well-detailed in the literature, more research is needed to extend our understanding of how individual difference variables could potentially have direct effects on self-efficacy and goals. In particular, research is needed that incorporates hypotheses involving the recently developed four-factor model of goal orientation to determine if it has implications for motivational processes and performance.

Goal Orientation

Over the past two decades, a large body of research on

achievement motivation has focused on identifying how different types of goal orientations influence various self-regulatory processes. While goal orientation research began with studies using school children (Dweck 1986), it has more recently spread from education to other contexts such as sports and organizational settings as researchers have realized the usefulness of the constructs in predicting performance and achievement (Button, Mathieu, and Zajac 1996; Elliot et al. 1999; VandeWalle et al. 1999). Initially, goal orientation was viewed as a dichotomy between mastery (also called learning goals) and performance goals (Dweck and Leggett 1988). Mastery goals focus on the extent to which individuals emphasize learning and developing mastery as they approach tasks. Performance goals describe the extent to which individuals approach tasks with a focus on performance relative to others.

Accordingly, research has supported the central principle of achievement goal theory that individuals adopting various goal orientations utilize different affective, cognitive, and behavioral patterns during task engagement and performance (Ames and Archer 1987, 1988; Butler, 1992; Day, Radosevich, and Chasteen 2003; Duda and Nicholls 1992; Dweck and Leggett 1988). Learning goal orientation has been associated with higher self-efficacy, effort, and goals compared to performance goal orientation (Phillips and Gully 1997; VandeWalle et al. 1999). Recently, Steele-Johnson et al. (2000) found that mastery goals were associated with motivation and affect on complex tasks while performance orientation was linked to both motivation and affect on simple tasks.

As research in this area grew, the vast majority of empirical studies have documented individuals' adoption of mastery goals to be positively related to various performance outcomes, including academic achievement (e.g., Button et al. 1996) and laboratory task performance (Ford et al. 1998). However, some studies investigating the relationships between performance goal orientations and task performance obtained less conclusive results; performance goal orientation was unrelated (e.g., Button et al. 1996), negatively related (e.g., Fisher and Ford 1998), or positively related (e.g., Pintrich and Garcia 1991) to various task performance outcomes. Given the ambiguities in generalizing the effects of goal orientation on task performance, researchers have

argued that performance goal orientation, as a unitary construct, may be confounded as it encompasses theoretically distinct components. As a result, recent theoretical and empirical research has conceptually bifurcated performance goals into approach/avoidance forms (e.g., Elliot and Church 1997; Middleton and Midgley 1997; VandeWalle 1997). The approach/avoid distinction has been prevalent in several motivational theories throughout psychology's history that suggest individuals adopt approach or avoid tendencies across situations, especially those that are related to competence (e.g., Atkinson 1957; Bandura 1986; Carver and Scheier 1981; Higgins 1996; Murray 1938). Empirical research on this three-factor model has yielded relatively strong support and the goals have been linked to differential motivational patterns (Elliot and Church 1997; Middleton and Midgley 1997; Skaalvik, 1997; VandeWalle, 1997). For example, Radosevich et al. (2004) found that high mastery goals and performance-avoid goals differentially influenced how students allocated their resources, revised their goals in the face of feedback, and engaged in cognitive processing as they prepared for multiple exams over a ten week period.

Although research has examined the usefulness of the two- and three-factor models in predicting performance and achievement (e.g., Button et al. 1996; Elliot et al. 1999), Elliot and McGregor (2001) have recently proposed a four-factor model of goal orientation. Given the sparse number of studies to date, there is a need for empirical investigation of the role that the four-factor model has on the goal setting process and performance.

Elliot and McGregor (2001) posit that competence is at the foundation of achievement goals in their four-factor model of goal orientation. The four factors are formed along two primary dimensions: (a) definition of competence (mastery/performance) and (b) valence of competence (approach/avoid). Both dimensions are integral components of individuals' self-regulatory behavior directed toward the attainment of achievement goals. In terms of the definition of competence, mastery goals focus on an absolute, intrapersonal standard whereas performance goals focus on a normative standard. Elliot and McGregor (2001) argue that this distinction (i.e.,

mastery/performance) has been implicitly theorized in the classic definition of need for achievement, where individuals want to do well relative to others as well as relative to the task requirements (McClelland et al. 1953; Murray, 1938). Thus, by combining the mastery/performance distinction with the approach/avoid distinction, Elliot and McGregor's (2001) 2×2 goal framework yields four goal orientations: mastery-approach, mastery-avoid, performance-approach, and performance-avoid. Although three of these constructs have begun to accumulate empirical evidence over the last few years (e.g., Day et al. 2003; Elliot and McGregor 2001; Radosevich et al. 2004), research focused on establishing theoretically meaningful relationships between mastery-avoid goals and important motivational variables is still in its infancy.

A central principle of achievement goal theory is that each of the different goal orientations influences the motivational patterns of individuals in achievement situations (Butler 1992; Duda and Nicholls 1992; Dweck and Leggett 1988). The first goal orientation, mastery-approach, is characterized with an absolute competence standard with a predilection to approach success. It involves a focus on enhancing one's task competence by developing new skills and is associated with deeper processing of task-related information and persistence. Individuals with mastery-approach goals value the process of learning and are self-referential as they seek to develop task skills and knowledge relative to the task and one's own past performance. In the face of negative performance feedback, individuals with a mastery-approach orientation tend to adopt adaptive response patterns by persisting, increasing effort, revising task strategies, and reporting that they find a task to be challenging (Elliot and Dweck 1988; Dweck and Leggett 1988). For individuals with mastery-approach goals, learning is viewed as an end in itself, dependent upon effort utilization and cognitive self-regulation. In other words, mastery-approach oriented individuals view exerting effort on challenging tasks as instrumental to the development of personal competence. Past research has compellingly demonstrated that mastery-approach goals lead to particular response patterns, such as higher self-efficacy and personal goals (Phillips and Gully 1997). Furthermore, individuals with mastery-approach goals have been found to set higher performance goals and expend more effort to reach these

goals (Radosevich et al. 2004; VandeWalle et al. 1999). Given their focus on development of personal mastery, the following hypotheses are formed:

H7: Mastery-approach goal orientation will be positively related to self-efficacy.

H8: Mastery-approach goal orientation will be positively related to self-set goals.

The second goal orientation, mastery-avoid, involves a mastery standard with a tendency to avoid failure or making any mistakes. Thus, absolute competence is necessary for success and any level of incompetence is the focal point of self-regulation. Elliot and McGregor (2001) argue that mastery-avoid goals may seem counterintuitive since mastery goals are thought to only have an approach form of regulation. Examples of an individual high in mastery-avoid goals include a business person who strives not to make an error in a transaction, an athlete who does not want to make a mistake in a game, or a student who strives to avoid any type of misunderstanding that would prevent her from learning (Elliot and McGregor 2001; Flett et al. 1998). Further, Elliot and McGregor (2001) state that this perfectionist style may describe individuals who focus on not losing their skills or not stagnating in their performance.

Given the lack of empirical research examining mastery-avoid goal orientation and the fact that there is both an optimal and non-optimal component, it is difficult to form hypotheses not knowing exactly how the two components (i.e., absolute standard/avoid failure) combine to exert influence on various self-regulatory behavior. In their original study that examined mastery-avoid goals, Elliot and McGregor (2001) hypothesized that the relationship mastery-avoid has with various motivational variables would be more negative than mastery-approach goals, but more positive than performance-avoid goals. They found that mastery-avoid goals were operating among students in the classroom and positively predicted disorganized studying, levels of worry, and emotionality. The current study expands on these early findings by testing specific hypotheses concerning how mastery-avoid goals are related to self-efficacy and self-set goals after controlling for ability. Individuals with

high mastery-avoid goals should have lower self-efficacy given that they focus on failure relative to absolute mastery standards. Entering a task episode with the belief that any mistake is less than desirable should make individuals more likely to question their performance capabilities. Further, mastery-avoid goals should increase the level of individuals' self-set performance goals given their emphasis on perfectionism. Despite the uncertainty over the combined effects of the optimal and non-optimal components, this study contributes to the literature by being one of the first to form hypotheses involving mastery-avoid goals and goal setting processes.

H9: Mastery-avoid goal orientation will be negatively related to self-efficacy.

H10: Mastery-avoid goal orientation will be positively related to self-set goals.

The third goal orientation, performance-approach, involves a normative success standard with a predilection to approach success. Thus, it has both an appetitive component (i.e., approach success) and an aversive component (i.e., normative performance) (McGregor and Elliot 2002). It serves to focus the individual's attention on the positive outcome of attaining favorable competency judgments relative to others. Due to the approach component, individuals with high performance-approach goals are expected to self-regulate in ways similar to individuals with mastery-approach goals, albeit to a lesser extent as performance-approach individuals are inherently interested in attaining positive judgments of ability. A basic difference is that mastery-approach goals are associated with an incremental view of ability (i.e., belief that individual characteristics are malleable) while performance-approach goals are associated with an entity theory of ability (i.e., belief that individual characteristics are fixed). VandeWalle et al. (2001) suggest that since individuals adopting a performance-approach orientation believe that ability is difficult to develop, they will focus more effort on impression management rather than competency development. Another difference involves the theoretical relationships with performance. McGregor and Elliot (2002) suggest that mastery goals should be theoretically unrelated to actual performance

given that individuals with mastery goal orientations focus on absolute task-based standards without the normative evaluation. If mastery goals are related to performance, it would be a result of any indirect effects they have through cognitive processes (e.g., self-efficacy and self-set goals). Similarly, performance goals should also be indirectly related to performance through self-efficacy and self-set goals; however, they should also be directly related to performance due to their focus on normative standards of evaluation.

In terms of the cognitive processes individuals engage in prior to task performance, performance-approach goals should be positively related to self-efficacy because it should enhance the probability that individuals will actually attain their goal and subsequently look favorable relative to others. Similarly, performance-approach goals should be positively associated with higher self-set goals because they are more instrumental in helping individuals attain higher performance outcomes relative to others. Finally, performance-approach goals should have a direct, positive effect on performance. Thus, individuals with performance-approach goals should self-regulate in ways similar to individuals with mastery-approach goals, albeit to a lesser extent as performance-approach oriented individuals are inherently interested in attaining positive judgments of ability relative to others rather than gaining task mastery. Thus, the following hypotheses are formed:

H11: Performance-approach goal orientation will be positively related to self-efficacy.

H12: Performance-approach goal orientation will be positively related to self-set goals.

H13: Performance-approach goal orientation will be positively related to performance.

The final goal orientation, performance-avoid, involves a normative competence standard with a preference to avoid failure. Individuals engage in tasks with the strategy of avoiding demonstrations of incompetence and negative judgments, relative to others (Elliot 1997; Elliot and McGregor 1999; Elliot and Thrash 2001). Consequently, a performance-avoid goal is considered to be an avoidance form of motivation as it orients

one towards the negative outcomes of avoiding negative judgments and demonstrating lack of ability (Elliot 1997; Elliot et al. 1999). Avoidance forms of regulation are likely to elicit self-protective processes, such as enhanced sensitivity to failure information or anxiety during task engagement (Elliot 1997; Elliot et al. 1999). It is expected that cognitive processes and resource allocation strategies should be negatively related to performance-avoid goals since these individuals adopt maladaptive strategies stemming from their focus on avoiding negative judgments relative to others. Radosevich et al. (2004) found that performance-avoid goals were negatively related to the cognitive self-regulation strategies (i.e., deep processing) in students over a ten week period. Similarly, Elliot and McGregor (2001) found that performance-avoid goals exhibited positive relationships with surface strategies, disorganization, test anxiety, and worry. Additionally, high performance-avoid goal orientation should have negative effects on self-set goals and actual performance (Elliot and McGregor 2001). Thus, the following hypotheses are formed:

H14: Performance-avoid goal orientation will be negatively related to self-efficacy.

H15: Performance-avoid goal orientation will be negatively related to self-set goals.

H16: Performance-avoid goal orientation will be negatively related to performance.

METHODS

Participants

Participants were 335 male and female college undergraduates enrolled in a school of business at a large state university in the Northeast U.S. The sample contained 56 percent women and 44 percent men. The average age of the respondents is 23.1 years. The sample contained 1.2% freshmen, 10.1% sophomores, 20% juniors, and 68.7% seniors.

Procedure

During the first class session of the semester, participants completed an in-class survey assessing their goal orientation. Within the first few weeks of the semester before any assignments or tests occurred, participants were required to indicate their level of self-efficacy and their performance goal for this particular class. At the end of the semester, the professor reported the participants' final semester performance grade in percentage units.

Measures

Goal orientation. Goal orientation was assessed with the 12-item Achievement Goal Questionnaire (Elliot and McGregor 2001) that included three items for each of the four goal orientation constructs: (a) mastery-approach (e.g., "I want to learn as much as possible from this class"), (b) mastery-avoid (e.g., "I worry that I may not learn all that I possibly could in this class"), (c) performance-approach (e.g., "It is important for me to do better than the other students"), and (d) performance-avoid ("I just want to avoid doing poorly in this class"). Elliot and McGregor (2001) reported adequate internal consistency estimates for each scale. Coefficient alpha in this study was .79 for mastery-approach, .84 for mastery-avoid, .89 for performance-approach, and .72 for performance-avoid.

Ability. As a measure of ability, self-reported prior college grade point average (GPA) was indicated for each participant.

Self-efficacy. Self-efficacy was assessed using a 10-item scale developed by Phillips and Gully (1997) who wrote the items to reflect Bandura's (1991) definition of self-efficacy. The items (e.g., "I feel confident in my ability to perform well on the upcoming exam.") were similar in content to other self-efficacy scales used in academic settings (e.g., Mone 1994). Responses were made on a seven-point scale ranging from strongly disagree (1) to strongly agree (7). Coefficient alpha for this scale was .72.

Self-set goals. Participants indicated their performance goal

as the percentage score they were trying to attain for their final grade in the class.

Performance. Performance (i.e., percentage units) in the class was assessed by asking the professors to report each participant's final grade in the class.

RESULTS

Descriptive Statistics

Table 1 provides the means, standard deviations, intercorrelations, and coefficient alphas for the variables used in this study. There were 335 participants, but the data for all analyses are based on a subset of 284 respondents for whom a complete set of data exists. Each of the four goal orientation constructs demonstrated adequate reliability and, consistent with previous literature, exhibited relatively low or nonsignificant correlations. In general, the participants reported high levels of mastery-approach goal orientation ($M = 6.13$) and above average levels of performance-approach goal orientation ($M = 5.14$).

The average prior GPA reported by the respondents was 3.11, with a minimum of 1.9 and a maximum of 4.0. The distribution

Table 1. Means, Standard Deviations, and Intercorrelations of Variables Used in Study

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Ability (prior GPA)	3.11	0.44	–							
2. Mastery-approach	6.13	0.88	.17**	(.79)						
3. Mastery-avoid	3.53	1.47	-.08	.06	(.84)					
4. Performance-approach	5.14	1.40	.16**	.29**	.14*	(.89)				
5. Performance-avoid	4.74	1.69	-.17**	-.07	.15*	.07	(.72)			
6. Self-efficacy	5.33	0.74	.24**	.19**	0.34**	.21**	.18**	(.72)		
7. Self-set goal	93.43	4.24	.24**	.23**	-.11	.25**	.12*	.27**	–	
8. Performance	81.38	8.74	.48**	.11	-.02	.15**	.24**	.15**	.27**	–

Note. $N = 284$ respondents with complete data. Values on the diagonal represent scale reliabilities.

* denotes a correlation that is significant at the .05 level.

** denotes a correlation that is significant at the .01 level.

showed no evidence of skewness. Respondents were optimistic in their goal setting, a phenomenon observed many times in prior research. The average self-set goal for the course was 93.43 (A-), considerably above the prior GPA (B) the group achieved. Moreover, there was considerable positive skewness in the distribution (skew = 2.195; standard error of skew = .135). Not only were respondents optimistic in terms of their historical achievement, they were optimistic in the face of the actual results achieved in the course. Besides the skewness of the self-set goal data, they were also leptokurtotic. The kurtosis measure was 22.52 (standard error = 0.269). A histogram of these data shows that the right tail is truncated (at about 100 percent), but absent the truncation it appears as if it would have the "long tail" to the right indicated by the positive skew value. The average performance (final class grade) achieved was 81.38, (B-), which are in line with overall grade distributions at this institution. Moreover, the actual performance data are also skewed (skew = -1.35; standard error of skew = .14).

Structural Equation Modeling

We begin by investigating the measurement model for the goal orientation variables. We used LISREL for this purpose. First we used a single latent variable to all 12 measured goal orientation items. The resulting model yielded a chi-square of 1464.35 with 54 df. The RMSEA for the model was 0.27, the SRMR was 0.22, and the CFI was 0.30. Thus, the single latent variable model fits the data badly. Next, we used two latent variables, one representing the mastery items and the other representing the performance items. The model fit improved significantly (chi-square = 970.36 with 53 df), but the fit measures show that the two-factor model is unacceptable (RMSEA = 0.23, SRMR = 0.20, and CFI=0.51). Continuing in this fashion, we added a third latent variable by dividing the performance measure into two groups of three items, performance-approach and performance-avoid, while using a single mastery construct with six items. The resulting three-factor model fit the data significantly better than the two-factor case, with a chi-square of 684.14 with 51 df. While the fit measures improved (RMSEA = 0.19, SRMR = 0.17, and CFI =0.66), the overall fit of the model remained unacceptable by

conventional criteria. Finally, we fit the goal orientation measures with the full set of four factors. This yielded a chi-square of 128.92 with 48 df, a significant improvement over the three-factor case. Goodness of fit measures indicate that the four-factor case provided acceptable fit (RMSEA = 0.71, SRMR = 0.59, and CFI = 0.96). Thus, the measurement model supports the case that the goal orientation items best fit the four factors.

We investigated the four-factor goal orientation model further by allowing some of the measured variables to load on more than a single latent variable. LISREL identified six significant modification indices that we freed and this improved the fit to chi-square = 73.19 with 42 df. RMSEA for this model was 0.044, SRMR was 0.034 and CFI improved to 0.98. We also found that there was a modest amount of correlation between several of the latent variables. Performance-approach and mastery-approach were correlated ($\phi = 0.18$), performance-avoid and mastery-avoid were correlated ($\phi = 0.10$), and performance-avoid and mastery-approach were slightly negatively correlated ($\phi = -0.05$). These three correlations were significant at $p < 0.05$. These latter findings are consistent with initial factor analyses we ran using the OBLIMIN procedure in SPSS.

Besides the measurement model for the goal orientation variables we also examined the self-efficacy rating data. There is only a single latent variable for these data and it is measured by ten items. Cronbach's alpha for the full set of ten items is 0.725, so the inter-item reliability is fairly high, but a principal factoring of the correlation matrix suggests that the efficacy scale may have as many as three different factors since three eigenvalues greater than unity appeared. We used LISREL to examine efficacy ratings and found that, with the exception of the tenth item, all had significant positive loadings on the efficacy latent variable. Moreover, a number of the estimated error terms (theta-epsilons in LISREL terminology) were correlated in a pattern that is consistent with the loadings on the Varimax rotated analysis. Based on prior research that has used this scale, we treated the efficacy data as if it was represented by a single latent variable, but our analysis indicates that further work should be done on this scale to verify that it represents a single efficacy construct.

We then used LISREL 8.3 to investigate the proposed relationships among the four goal orientation variables, prior

GPA, self-efficacy, self-set goal, and actual performance. In the model, the latter three were allowed to have causal links between them, in line with previous research (e.g., Phillips and Gully 1997). In our modeling we let self-efficacy be a free parameter causing goals to be set higher or lower, and goals, in turn, being a free parameter that causes actual performance. We also investigated a causal link directly between self efficacy and actual performance. The base model with the hypothesized paths we investigated is shown in figure 1.

We analyzed the correlation matrix shown in table 1. The model fit the data very well, with a chi-square of 0.78 and 2 degrees of freedom, the p-level was 0.78. Table 2 provides a summary of the other goodness-of-fit indices for this model. Prior GPA was significantly and positively related to self-efficacy, the aspiration goal for the course, and to actual performance. Students' prior academic performance, therefore, seems to control perceptions of competence, the level at which they set their goals, and is related to their actual performance. Mastery-approach and mastery-avoid goals were not related to performance, but they were related to self-efficacy and, in the case of mastery-approach, to self-set goals. Mastery-approach was positively associated with self-efficacy and with self-set goals. Mastery-avoid goal orientation was negatively related to self-efficacy. However, there was no significant relation found with mastery-avoidance and self-set goals. Both performance-approach and performance-avoid goal orientations were related to self-efficacy and self-set goals in a similar way to the mastery variables. Performance-approach was positively related to self-efficacy and self-set goals, while performance-avoid was negatively related to self-efficacy and nonsignificantly (but numerically negatively) to goal aspirations. Performance-avoid, unlike either of the mastery constructs, had a significant

Table 2. Goodness-of-Fit Statistics

Model	χ^2	<i>df</i>	RMSEA	AGFI	CFI
Base model	0.78	2	0.007	0.99	1.00
Final model	5.41	6	0.020	0.97	1.00

Note. RMSEA = root mean square error of approximation; AGFI = adjusted goodness-of-fit index; CFI = comparative fit index.

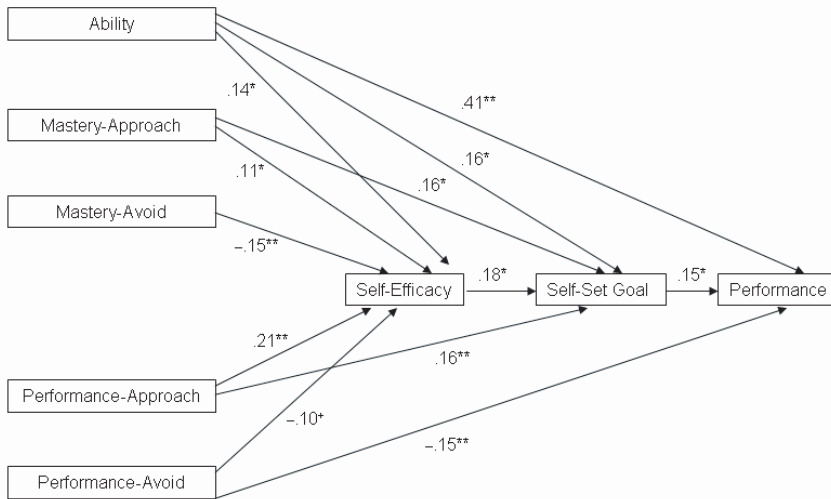


Figure 2. Final Integrated Model of Goal Orientation Theory and Goal Setting Processes with Standardized Path Coefficients. + $p = .053$, * $p < .05$. ** $p < .01$.

negative causal connection with actual performance.

The base model has several nonsignificant parameters and we decided to explore further to see how well a simplified model fit the data when these were excluded. The results indicated that the model remains a good fit with a chi-square of 5.41 and with 6 degrees of freedom $p = 0.49$. Although the chi-square value increased, the increase of 4.63 is not significant. Table 2 summarizes the other fit indices that indicate that the fit of the model remains good. The fitted parameters changed very little from the base model. A diagram of the final simplified model is shown in figure 2.

DISCUSSION

Overall, the results from this field study contribute to the literature by (a) offering insight into the role of individual difference variables in task-specific motivation and performance and (b) demonstrating empirical evidence in support of the construct validity of Elliot and McGregor's (2001) four-factor model of goal orientation. Specifically, there was strong support

for a model linking the four goal orientation constructs, ability, self-efficacy, and self-set goals into a framework that predicts performance in an achievement context. The most interesting findings of this study concern the four goal orientation constructs. In particular, no other study has integrated this particular four-factor goal orientation model with goal setting processes.

Similar to previous research (e.g., Diefendorff 2004; Phillips and Gully 1997; Radosevich et al. 2004; VandeWalle 1997), mastery-approach goal orientation was a positive predictor of motivational processes. Specifically, individuals high in mastery-approach goal orientation had higher levels of self-efficacy and also set their personal performance goal at higher levels. The significant effect on self-set goals is theoretically important when compared to an earlier study using undergraduate students by McGregor and Elliot (2002). They suggest that due to the emphasis on task-based standards, mastery goals are thought to be theoretically unrelated to both goals and performance, unlike performance goals, which focus on normative standards of evaluation (McGregor and Elliot 2002). The current findings did find a positive effect on goals, suggesting that researchers may need to reconsider the nomological network of mastery goals and their respective relationships with self-set goals; especially in environments where achievement goals are salient.

In contrast, mastery-avoid goal orientation exerted a negative influence on self-efficacy. This finding is of particular interest since few researchers have actually included this construct in their research. The mastery-avoid finding is consistent with the theoretical conceptualization of mastery-avoid as having optimal (absolute mastery) and non-optimal (avoid failure) components. Previous studies have shown that students high in mastery-avoid may strive to avoid any type of misunderstanding that would prevent them from learning (Elliot and McGregor 2001; Flett et al. 1998). Further, Elliot and McGregor (2001) found that mastery-avoid goals positively predicted disorganized studying, levels of worry, and emotionality among students, which lend support to the current finding that students with high mastery-avoid goals had lower self-efficacy. By focusing on failure relative to absolute mastery standards, these individuals may lower their self-efficacy since one mistake may make them question their

perceptions of their capacity to perform at such high standards. Future research should examine how the mixed components of this new construct operate with other motivational variables.

Performance-approach goals were positive predictors of self-efficacy and self-set goals. These findings are similar to mastery-approach goals and add to the extant literature that has demonstrated the adaptive patterns of self-regulatory behavior employed by individuals with high performance-approach goals. That is, they reported higher levels of confidence in their abilities to reach their goal and set higher personal goals as a strategy to motivate themselves for higher performance outcomes. The benefits of a performance-approach goal orientation may be greater in those environments where an emphasis on performance outcomes relative to others is emphasized (Radosevich et al. 2004). Performance-avoid goals exhibited a negative effect on both self-efficacy and performance. The negative impact of performance-avoid goals is consistent with prior research showing that individuals oriented toward avoiding demonstrations of incompetence and negative judgments, relative to others, elicit self-protective processes of setting lower goals when provided negative feedback (Elliot 1997; Elliot et al. 1999; Radosevich et al. 2004; VandeWalle 1997). That is, individuals who are motivated by fear of failure consistently adopt maladaptive self-regulatory strategies aimed at managing evaluative perceptions rather than improving their performance.

As expected, ability had a positive effect on self-efficacy, self-set goals, and performance. Controlling for ability in our analyses is important to note because it enabled us to be more confident in our conclusions of the unique predictive influence of the four goal orientations relative to objective and subjective ability constructs (Austin and Klein 1996; Kukla 1972). The well-examined goal setting effect of self-efficacy positively influencing goals, which in turn positively effects performance, was also supported. The finding that all four goal orientation constructs independently influenced self-efficacy, after controlling for ability, adds to our understanding of the origins of self-efficacy.

In developing his social cognitive theory, Bandura (1977) posited that past performance, vicarious experiences, psychological states, and verbal persuasion are the four determinants of self-efficacy. Phillips and Gully (1997) argued

that our understanding of the effects of individual differences on self-efficacy is limited. The current study is a step toward answering this question; mastery-approach and performance-approach goal orientations exerted positive effects on self-efficacy while mastery-avoid and performance-avoid had a negative influence on self-efficacy. Thus, increasing an approach tendency may prove to be a useful intervention to for optimizing individuals' level of self-efficacy.

The finding that self-efficacy only influenced performance indirectly through self-set goals is consistent with similar studies (e.g., Diefendorff 2004; Phillips and Gully 1997), however, unlike those studies, we did not find a direct effect self-efficacy to performance after controlling for ability and goal level. It is important for future researchers to examine other mechanisms such as effort and persistence that might be related to self-efficacy and enhance performance (Gist and Mitchell 1992). The current model differs from the previous studies in that they used a two-factor model of goal orientation, which has subsequently been called into question for the confounded nature of the mastery and performance orientations (e.g., Day et al. 2003; Elliot and McGregor 2001).

Taken as a whole, the current findings from the four-factor goal orientation framework are consistent with the approach/avoidance distinction that has been prevalent in several motivational theories throughout psychology's history (e.g., Bandura 1986; Carver and Scheier 1981; Higgins 1996; Nicholls 1984). In particular, this study lends support to the approach/avoidance distinction in terms of its important implications for goal pursuits. In short, mastery-approach and performance-approach goals led to adaptive self-regulatory behavior in terms of self-efficacy and self-set goals. In contrast, mastery-avoid led to maladaptive self-efficacy responses and performance-avoid resulted in lower self-efficacy and performance. Given that the four-factor goal orientation model demonstrated different, meaningful relationships with well-established goal setting processes, not only is the approach/avoid distinction meaningful, but its combination with the mastery/performance distinction is useful for predicting how individuals will engage in self-regulatory behavior aimed at the performance of an achievement outcome.

Although this study makes important contributions to the literature, there are some limitations that should be mentioned. Future research needs to examine the robustness of these findings using additional operationalizations of self-regulation. It is also important to note that the generalizability of our results may be limited to a student population and achievement tasks. Another concern involves the range restriction and small variance on some of the variables (i.e., mastery-approach, self-set goals). It may be the case that the level of goals set was too high for even more substantial effects to be identified. The strength of the findings reported in this study, therefore, may actually be underestimates of the true relationship. Examining these issues in a setting with a more normally distributed range of variables may produce stronger effects. Finally, longitudinal designs with multiple performance episodes may allow for the better prediction of individual difference variables on goal setting processes.

Several theoretical implications result from this study. First, researchers should examine how goal orientation can be best integrated into a theoretical model of self-regulation. Second, other individual difference variables (e.g., Big Five, attributions for performance, action-state orientation) that may explain self-regulatory behavior should be examined since they may have incremental explanatory power over goal orientation. Third, given the prevalence of two- and three-factor scales, researchers should be mindful in their scale selection knowing that these results are consistent with the extant literature that has begun to find more support for the four-factor model of goal orientation (e.g., Elliot and McGregor 2001).

There are several applied implications from this study. In particular, managers, coaches, and teachers may use these results to help individuals develop more adaptive goal orientations to the extent that goal orientation is malleable as a state individual difference variable. For example, future research needs to examine whether it may be beneficial for individuals to adopt different goal orientations at different phases of their performance. A high mastery-approach orientation may be beneficial at the onset of learning a new task, but a performance-approach orientation may be beneficial when task behaviors and cognitions are more automatic. It may also be the case that

individuals have different goal orientation profiles, such as striving to improve their skills (mastery-approach) while also trying to perform well relative to others (performance-approach) or avoiding looking incompetent (performance-avoid) (Button et al. 1996; Heyman and Dweck 1992; Pintrich and Garcia 1991). Modeling principles from Bandura's (1986) social cognitive theory may be used as well. An educator could model a mastery-approach goal orientation in hopes of teaching others. As recommended by Dweck (1999) and VandeWalle et al. (2001), educators can also utilize interventions aimed at developing an incremental theory of ability.

In sum, our research study found that a four-factor goal orientation model played an important role in the self-regulation strategies of self-efficacy and self-set goals as well as performance. Although goal orientation appears to have a promising future for better understanding the motivational mechanisms individuals use in achievement settings, more research is needed to integrate it into more comprehensive motivational theories.

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