

## Can Personal Values Predict Performance? Evidence in an Academic Setting

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In this paper we briefly review the construct of personal values, and we examine whether achievement values may be incrementally related to performance beyond personality. We also consider the motivational processes that may mediate the relationships between characteristics of the individual (personality and values) and performance. In an academic setting, achievement values were related to course performance even after controlling for the relevant personality factors of Conscientiousness, Emotional Stability, and Extraversion. Further, motivational processes of goal content and goal striving mediated the relationships between individual characteristics (personality and values) and performance.

### INTRODUCTION

References to values are pervasive in the popular business press. Best-selling books on leadership and self-management tout the benefits of identifying and effectively communicating core values, and suggest that values are powerful determinants of behavior and motivation (see, for example, Blanchard & O'Connor, 1997; Devero, 2007; Smith, 2000; Townsend, 2009). Yet academic research has produced mixed results in relating values to performance, leading many researchers to abandon the values construct (except in the context of fit; Hitlin & Piliavin, 2004). However, much of the research that produced conflicting results was conducted in the 1960s and 1970s. Since then, our understanding of how to measure personal values has improved substantially, suggesting that it is time to reconsider the question of whether values relate to performance. In this manuscript we review the theoretical rationale for a link between values and performance, and examine whether achievement values relate to performance in an academic setting. We also

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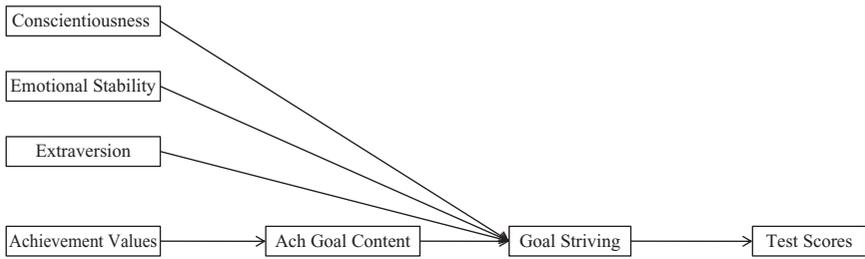


FIGURE 1. Hypothesised path model.

*Note:* Ach = Achievement.

explore whether values may have incremental validity over personality in predicting performance, and test a proposed model (Parks & Guay, 2009) that suggests that personality and values both influence behavior, but via different motivational mediators—personality via goal striving and values via goal content. Figure 1 depicts our hypothesised model.

## Values

Shalom Schwartz and colleagues have been the dominant researchers in the values domain for much of the last two decades. Schwartz defines values based on five features around which there is widespread agreement:

A value is a (1) belief (2) pertaining to desirable end states or modes of conduct, that (3) transcends specific situations, (4) guides selection or evaluation of behavior, people, and events, and (5) is ordered by importance relative to other values to form a system of value priorities. (Schwartz, 1994, p. 20)

Although “values” can also refer to work values, we focus exclusively on personal values, which help us determine how we ought to behave. While work values are an important component of fit and predict vocational choice and job satisfaction (Dawis, 1991), they are more narrow in focus than personal values and thus relate to a narrower range of outcomes. Personal values, however, should theoretically be predictive of a broad range of behaviors across various life domains (Locke, 1997; Rokeach, 1973; Schwartz, 1992). Because they relate to how individuals feel they ought to behave, they should have a motivational impact on behavior in general.

Values are mostly acquired socially, learned through communications with parents, teachers, friends, and other role models (Rokeach, 1973). Research demonstrates that there are cultural differences in values, such that values are

more similar for individuals within a culturally similar region or country (see, for example, Oishi, Schimmack, Diener, & Suh, 1998). Initially, values are learned individually and as absolutes (e.g. “you should always tell the truth”) (Rokeach, 1973). Over time, however, when two values are placed in conflict we are required to select one value as more important than the other (Rokeach, 1972). This facilitates development of a within-person ordering of values. For example, one may face a situation in which telling the truth will hurt another person. The choice that one makes, and its outcome, will have an impact on which value one comes to view as more important (honesty vs. avoiding harm to others). Although generally stable in adulthood (Rokeach, 1972), values can and do sometimes change in response to outside influences (Rokeach, 1972). For example, Rokeach and Ball-Rokeach (1989) demonstrated that a TV program about the importance of certain American values created stable changes in values among those who watched it. Thus the within-person importance of particular values is influenced by both experience and by cultural pressures that draw attention to some values, or reward certain values-based choices (Roccas, Sagiv, Schwartz, & Knafo, 2002).

Schwartz and colleagues developed a theoretically based taxonomy of values using a circumplex structure, and found consistent results in over 40 countries (Schwartz, 1992, 1994; Schwartz & Bilsky, 1987, 1990). Schwartz groups values into 10 domains: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, conformity, tradition, and security. We focus on the *achievement* domain, which includes such values as ambition, competence, accomplishment, and success. Individuals who score high on this value type seek social recognition or reward for their accomplishments (Schwartz, 1992). Thus the achievement domain relates to performance achievement goals (rather than mastery achievement goals, which are better represented by the self-direction domain). Of all the values domains, achievement seems to hold the most promise for predicting performance—hence our interest.

While no empirical research has yet examined a potential link between achievement values and academic performance, at least two studies have shown a link between achievement values and workplace performance. Adkins and Naumann (2002) found that achievement values were positively related to (self-reported) performance in sales and service positions in the transportation industry. Likewise, Dubinsky and colleagues (Dubinsky, Kotabe, Lim, & Wagner, 1997) found that achievement values were related to (self-reported) sales performance among electronics salespeople in the US and Japan. While these studies showed that achievement values relate to performance, neither controlled for personality—even though personality and values are related constructs (Roccas et al., 2002), and personality is

known to influence performance (Barrick, Mount, & Judge, 2001) and motivation (Judge & Ilies, 2002).

## Personality

Personality traits are relatively innate, enduring dispositions that lead to consistent patterns of behavior with others and the environment (Olver & Mooradian, 2003). Personality traits are categorised most often using the Five Factor Model (FFM), which organises individual traits into five broad groups. The five factors are Conscientiousness (responsible, dependable), Emotional Stability (calm under pressure, not neurotic), Extraversion (outgoing, assertive), Agreeableness (cooperative, loyal), and Openness to Experience (curious, imaginative).

Multiple meta-analyses have shown consistent relationships between personality and performance (see, for example, Barrick & Mount, 1991; Barrick et al., 2001; Hurtz & Donovan, 2000). Conscientiousness demonstrates the most robust relationships with performance across all jobs. Emotional Stability relates to performance across most jobs, though at a smaller magnitude. A meta-analysis (Judge & Ilies, 2002) of relationships between personality and motivation (using three dominant motivational theories—goal-setting, expectancy, and self-efficacy) concluded that Conscientiousness and Emotional Stability are the strongest and most consistent correlates of performance motivation regardless of the theory. Additionally, Extraversion is a consistent “non-zero correlate of performance motivation” (p. 803). Furthermore, personality has also been shown to be a predictor of academic performance (Duckworth & Seligman, 2005; Wagerman & Funder, 2007). In a recent study, Nofhle and Robins (2007) found that Conscientiousness was the strongest predictor of both high school and college GPA across four independent samples and four different personality inventories. They concluded that “personality traits have independent and incremental effects on academic outcomes even after controlling for traditional predictors of these outcomes” (p. 116).

## Personality and Values

Values and personality both describe components within each individual, and both are believed to impact behavior, decision-making, motivation, attitudes, and interpersonal relations. In fact, Locke (1997) includes them both in his integrated model of work motivation, implying that they serve the same function. Yet, there are also differences. Roccas and colleagues (Roccas et al., 2002) refer to personality as enduring dispositions, and to values as enduring goals. Thus while personality generally represents the behaviors that come most naturally, values reflect effort—a choice—to behave a certain

way. We do not generally think about or choose to be extraverted or introverted. However, there is an element of personal choice involved when we behave consistently with our values. So in a given situation we may choose to be, for example, more extraverted than usual in order to obtain an outcome consistent with our values.

In spite of theoretical distinctions, parsing out behavior that is caused by personality vs. values is difficult in practice. However, personality and values do exhibit different patterns of relationships with different constructs (Roccas et al., 2002), and a recent meta-analysis (Parks, 2007, as reported by Parks & Guay, 2009) demonstrates that personality and values are indeed separate constructs. Of 50 correlations (10 values by five personality traits), only six were moderately to strongly correlated (.30 or higher). Of particular relevance here, achievement values had generalisable relationships with Conscientiousness ( $\rho = .26$ ) and Extraversion ( $\rho = .23$ ). The relatively modest correlations suggest that achievement values could add incrementally to the prediction of performance.

The current study examines the impact of achievement values and personality on performance. It also uses an objective measure of (academic) performance, which was lacking in prior studies examining the achievement values–performance relationship. We also seek to better understand *how* and *why* personality and values relate to performance, by examining motivational processes as mediators. Parks and Guay (2009) proposed that values and personality have different influences on different motivational processes, such that values primarily impact the goals that individuals choose to pursue (*goal content*), while personality traits—especially Conscientiousness and Emotional Stability—primarily impact the amount of effort and persistence that individuals exhibit in pursuit of those goals (*goal striving*). So, values are expected to influence which goals one chooses to pursue, which is then expected to lead to effort and persistence in goal pursuit (goal striving). Goal striving is, in turn, expected to lead to goal accomplishment. Goal striving is proposed to also be impacted by the individual's personality traits, such that individuals who are more conscientious and more emotionally stable engage more effort and persistence. While the Parks and Guay (2009) model provides a rationale for achievement values contributing incrementally to performance (beyond personality), we made one change by adding Extraversion, which might also be related to goal striving (this also allowed us to be more conservative in examining whether values could add incrementally, beyond personality, to the prediction of performance). Because individuals who are more extraverted tend to be more reward-seeking (Lucas, Diener, Grob, Suh, & Shao, 2000), it seems reasonable to expect that greater extraversion could be associated with greater effort to accomplish one's goals and thereby obtain desired rewards.

## Hypotheses

Our main purpose is to determine whether achievement values relate to objective performance, and whether that relationship remains significant when considering values and personality simultaneously. Values are expected to be determinants of behavior (Rokeach, 1973; Locke, 1997), suggesting that they should relate to performance. They have also been shown empirically to influence attitudes (Rokeach, 1973), motivation (Feather, 1995), and habitual behaviors (Bardi & Schwartz, 2003). Substantial evidence demonstrates that values also relate to decision-making, such that individuals tend to make decisions consistent with their values (Ravlin & Meglino, 1987; Rokeach, 1973; Schwartz, 1994). Parks and Guay (2009) proposed that values relate to goal content because of this link between values and decision-making; they note that goal content reflects a decision to pursue a particular goal. If individuals make decisions that are consistent with their values, then they are likely to also make decisions to pursue goals consistent with their values. Further, if individuals choose to pursue goals related to performance based on their values, then values should also relate to performance.

Individuals with high scores on the achievement values domain tend to believe that they should be ambitious, capable, and successful, suggesting that this value domain would be the one most likely to relate to performance. While there is a gap in the values literature when it comes to academic performance, we are aware of two studies (Adkins & Naumann, 2002; Dubinsky et al., 1997) demonstrating a link between achievement values and sales performance, though performance was self-reported in both cases. In sum, evidence suggests that values influence behavior, and that achievement values in particular may be related to performance.

Conscientiousness consistently relates to performance, as does Emotional Stability in most settings (Barrick et al., 2001). As such, additional predictors of performance should demonstrate incremental validity beyond these two personality traits. The Parks and Guay (2009) model suggests that these two personality factors are most relevant to include in models in which goal striving is included as a mediator between personality and performance. We also include Extraversion, as it has been shown to relate to motivation as well (Judge & Ilies, 2002).

As stated, the Parks (2007) meta-analysis found that achievement values were modestly correlated with Conscientiousness ( $\rho = .26$ ) and Extraversion ( $\rho = .23$ ), but had no generalisable relationships with the remaining personality factors. Given the relatively low intercorrelations, the evidence of a link between achievement values and performance in the workplace (Adkins & Naumann, 2002; Dubinsky et al., 1997), and the theoretical expectation that personality and values influence motivation in different ways (Parks & Guay,

2009), we anticipate that achievement values will contribute incrementally to academic performance even after controlling for relevant personality traits.

*Hypothesis 1:* Achievement values will be positively related to academic performance, and will contribute incrementally to academic performance above and beyond the effects of relevant personality traits.

We also examine the motivational constructs of goal content and goal striving as potential mediating mechanisms of the relationships between personality and values and performance. Parks and Guay (2009) proposed that values should relate primarily to goal content. Values are believed to be arranged hierarchically, such that they influence long-term goals (Locke, 2000). Further, goals are arranged hierarchically, such that broader, longer-term goals influence the selection of specific, shorter-term goals (Austin & Vancouver, 1996). Fulfillment of short-term goals should lead to attainment of long-term goals, and the fulfillment of those long-term goals should then lead to the belief that values are being met (Austin & Vancouver, 1996; Locke, 2000). Thus, values should be related to the long-term goals (goal content) that individuals rate as important to them.

Achievement goals are those that relate to developing and demonstrating competence (Elliott & Thrash, 2001). Examples of achievement goals include “impressing others by doing a good job” or “being recognised by others for my achievements”. Goal orientation theory focuses on two types of achievement goals: mastery (learning) achievement goals relate to the desire to *develop* competence, and performance achievement goals relate to the desire to *demonstrate* competence to others and outperform others (Dweck & Leggett, 1988). George and Jones (1997) argue that one’s values determine the actions and events that are desirable and undesirable. As a result, “the attractiveness of attaining a goal is judged in part by one’s values” (Klein, Austin, & Cooper, 2008, p. 115). We propose that achievement values are most closely related to performance achievement goals because achievement values relate to demonstrating success, while performance achievement goals relate to demonstrating competence. Thus, individuals who value achievement are likely to pursue performance achievement goals.

We also expect that values will have a stronger relationship with goal content than will personality because goal content reflects a decision to pursue a particular goal, and past research has shown that values relate to decision-making (Feather, 1995; Ravlin & Meglino, 1987; Rokeach, 1973; Schwartz, 1994). Both theory and research suggest that individuals have an affective reaction in response to their behavior, such that they are more satisfied when they act consistently with their values (Bardi & Schwartz, 2003; Locke, 1997; Rokeach, 1973; Sheldon & Elliott, 1999), again suggesting that people will choose goals that are consistent with their values.

While past research has demonstrated that personality (mostly Conscientiousness) is related to the tendency to set goals, relationships between personality and goal content have not been examined. In contrast, at least two studies (Dubinsky et al., 1997; Feather, 1995) have shown that values relate to valence, which influences goal choice (Van Eerde & Thierry, 1996). We therefore expect that values will have a positive relationship with goal content even after partialling out the relevant personality traits (Conscientiousness, Emotional Stability, and Extraversion).

*Hypothesis 2:* Achievement values will be positively related to performance achievement goal content, and that relationship will remain significant even after controlling for relevant personality traits.

Choosing a goal is not the same as committing to a goal (Locke & Latham, 1990). People do not fulfill their goals simply by selecting them; they must also commit to and execute a plan to meet their goals, which is likely to require a level of effort and persistence. As such, values will certainly not be the only factors that determine goal accomplishment. Many other factors have been shown to relate to successful goal accomplishment, including goal dimensions, goal attributes, and goal frames (Klein et al., 2008). In this study, we focus on goal striving—effort and persistence in goal pursuit—as a predictor of goal accomplishment. We expect Conscientiousness, Emotional Stability, and Extraversion to relate to goal striving, which involves “performing behaviors in the service of goal attainment, such as initiating action, putting forth effort, trying different task strategies, and persisting in the face of obstacles or setbacks” (Diefendorff & Lord, 2008, p. 158). Conscientiousness describes the extent to which individuals tend to be organized, responsible, and dependable. Individuals with these traits tend to develop good strategies for goal pursuit and to persevere and carry out their plans, suggesting a link with goal striving. Barrick, Stewart, and Pietrowski (2002) found that Conscientiousness is associated with setting accomplishment striving goals. Likewise, Emotional Stability describes the extent to which individuals tend to be self-confident, resilient, and well adjusted. Emotionally stable individuals will not be distracted by emotional fears when there are challenges (Kanfer & Heggstad, 1999). Extraversion describes the tendency of individuals to be outgoing and socially ascendant; however, it is fundamentally related to a desire for rewards (Lucas et al., 2000). We expect that this reward-seeking nature of extraverts could lead them to exert more effort in the pursuit of desired rewards. Additionally, Extraversion exhibits a moderately strong correlation with self-efficacy motivation ( $\rho = .33$ ; Judge & Ilies, 2002). Self-efficacy, in turn, has been shown to relate to persistence, a component of goal striving.

We also expect personality traits to be more relevant to goal striving than values. Little and colleagues (Little, Lecci, & Watkinson, 1992) proposed that once a goal is set, personality determines if and how the goal will be attained. Likewise, we expect that effort and persistence require a certain amount of discipline and enthusiasm which one gets from being conscientious, extraverted, and emotionally stable—regardless of the goal being pursued.

*Hypothesis 3:* Conscientiousness, Emotional Stability, and Extraversion will be positively related to goal striving, and those relationships will remain significant even after controlling for values.

Klein and colleagues (Klein et al., 2008) state that goal choice directly impacts goal striving and goal attainment. Goal-setting should lead to goal pursuit, such that goal content will be related to goal striving (effort and persistence). This is consistent with common models of the goal process (Locke, 1997; Sheldon & Elliott, 1999). In this study, we expect students who are performance achievement-oriented to engage in goal striving for good grades. Performance achievement goals relate to comparing favorably to others, and grades are a visible measure of performance relative to their peers. We therefore expect that performance achievement goal content will lead to performance achievement goal striving, defined in this sample as striving for good grades.

*Hypothesis 4:* Performance achievement goal content will relate to goal striving for good grades, and will mediate the relationship between values and goal striving.

Greater goal striving (effort and persistence) should lead to better performance. Past research findings support this premise, as higher levels of effort and persistence are shown to lead to higher levels of performance (Austin & Vancouver, 1996; Latham & Pinder, 2005). Parker and Ohly (2008) argue that “the more complex a job, the greater the relative importance of goal-striving processes for overall performance” (p. 263). We therefore expect goal striving (for good grades) to be related to academic performance (earning good grades).

*Hypothesis 5:* Goal striving for good grades will relate to academic performance, and will mediate the relationships between personality and academic performance and goal content and academic performance.

## METHOD

Because we expect values to influence behavior via the mediating mechanism of goal content, we selected an academic setting in which to first test these hypotheses. In college, individuals typically have considerable discretion

regarding how they behave, and are therefore able to choose to pursue goals consistent with their values. Participants were undergraduate students at a large, public, Midwestern university in the US who received extra credit in a required management course for participating. Surveys were staggered such that respondents completed surveys every other week, for a total of five data collection points across 10 weeks. At time 1, participants completed measures of values, personality, and demographics. At time 2, they were asked about goal content related to their long-term performance achievement goals. At times 3, 4, and 5, participants were asked to report on their goal striving in pursuit of grade goals. At the end of the semester, exam grades were obtained from the instructor. Three hundred and sixty-nine students participated in the study at time 1, representing 67 per cent of the class (363 completed survey 2; 325 completed survey 3; 332 completed survey 4; 316 completed survey 5; and 287 gave permission to access their exam grades). A total of 214 participants completed data across all measures, including completing the goal striving measure all three times (266 participants completed it at least twice; for the correlation matrix the goal striving results were averaged together provided they responded at least twice). A post-hoc power analysis using G\*Power (Erdfeiler, Faul, & Buchner, 1996; Faul, Erdfeiler, Buchner, & Lang, 2009) showed that with a sample size of 266, we had sufficient power (.95) to detect correlational effects somewhere between small ( $r = .10$  by convention) to medium ( $r = .30$  by convention) effect sizes. We likewise had sufficient power to detect a change in  $R^2$  of .05 or larger, which is considered to be between a small and medium effect.

A comparison of groups with complete data vs. incomplete data showed that participants who completed the study differed significantly ( $p < .05$ ) from those who dropped out in terms of Conscientiousness, sex, and race, such that those who stayed in were, on average, higher in Conscientiousness, more likely to be female, and more likely to be white. Academic performance was not significantly different across the two groups; however, both groups differed significantly ( $p < .05$ ) from those students who did not participate in the study at all, such that test grades in the class were 4 points higher on average for study participants (mean = 75;  $N = 369$ ) compared to non-participants (mean = 71;  $N = 169$ ). Of the participants completing all measures, 72 per cent were business majors, 54 per cent were male (66% at start of study), 56 per cent were second-year students, and 95 per cent were white/Caucasian (89% at start of study).

## Measures

*Personality.* FFM personality was measured using the 100-item International Personality Item Pool (IPIP; Goldberg, 1999). Sample items include (I . . .) “Am always prepared” (Conscientiousness); “Get stressed out easily”

(Emotional Stability); and “Don’t mind being the center of attention” (Extraversion). Responses were made on a 7-point scale (1 = very inaccurate, 7 = very accurate). All coefficient alpha reliability values in this sample were above .90 (see Table 1 for specific details).

*Values.* Values were measured using a revised version of the Schwartz Value Survey (SVS; Schwartz, 1992). Although the SVS is widely used, the average (internal consistency) reliabilities of the subscales are relatively low (Parks, 2007). In an effort to increase the reliability of the measure, items were added that were expected to fit conceptually with the values domains measured by the SVS. The reliability of the achievement values scale in this study was .87. Respondents were asked to rate each item as a “guiding principle in life” on a scale from -1 (opposed to my principles) to 7 (of extreme importance). Sample achievement value items include “ambitious” and “successful” (scale items and details on scale development are available upon request from the first author).

All values were measured in order to calculate the mean value score, which was used as a covariate to control for social desirability (for an example of this method, see Olver & Mooradian, 2003). Since all values are socially desirable, normative scales tend to produce high scores with little variance (Meglino & Ravlin, 1998), so researchers typically control for social desirability. Because both regression and structural equation modeling rely on unique variance to generate coefficient values, including the mean value score as a covariate has the effect of partialling out the variance that can be attributed to socially desirable responding.

*Demographics.* Demographic information included age, gender, race, academic major, and year in school, some of which may impact goal striving and performance. For example, older students and those further along in school may have learned better goal striving techniques.

*Achievement Goals.* Theorists in the values and goals research domains have proposed that values lead to long-term goals, and that long-term goals relate to short-term goals (Austin & Vancouver, 1996; Rokeach, 1973). Thus, we decided to examine goal content in terms of long-term performance achievement goals (related to having a successful career). Goal content was measured using a combination of performance achievement items from two different goal orientation scales; those of Button, Mathieu, and Zajac (1996) and of VandeWalle and colleagues (VandeWalle, Brown, Cron, & Slocum, 1999). Although the Button et al. (1996) scale is frequently used in goal orientation research to capture individual dispositions, it measures *attitudes* toward the two goal orientations, rather than goal importance itself. Adaptation of items was therefore necessary. For example, the item “It is impor-

tant to impress others by doing a good job” was changed to “Impressing others by doing a good job”. The scale by VandeWalle and colleagues (1999) was designed to measure the goal orientations of salespeople. These items were adapted to relate to general work performance. For example, the item “I feel good when I know I have outperformed other salespeople in my company” was changed to “Outperforming others at work”. Items from each scale that could not readily be adapted were not included. This yielded a total of eight items; half from Button et al. (1996) and half from VandeWalle et al. (1999) (items are available on request from the first author). Respondents were asked, “To what extent do you plan to pursue these goals in the future?” Responses were made on a 7-point scale, from 1 = “not at all” to 4 = “I may or may not pursue this goal” to 7 = “I will definitely pursue this goal”. The scale was validated on a separate sample of undergraduate business students ( $N = 484$ ) prior to use in this study; the coefficient alpha reliability of the scale was .89 in the validation sample and .85 in this study.

*Goal Striving.* The goal striving scale was designed to measure effort and persistence in pursuit of short-term goals to get good grades. It consists of 20 questions that cross five grade goals with four questions related to each goal. Of the questions, two were taken from Darnold, Kristof-Brown, and Judge (2005) and are most directly related to effort (“I am putting my best effort into achieving this goal” and “I am working very hard in pursuing this goal”). The remaining two questions, created to measure persistence, were developed based on a review of the literature on self-regulatory and self-concordance motivation (“When I have difficulties, I find other ways to work toward this goal” and “I keep trying to achieve this goal, even when faced with challenges”) (Barrick et al., 2002; Kanfer & Heggstad, 1999; Sheldon & Elliott, 1999; Turban, Tan, Brown, & Sheldon, 2007; VandeWalle et al., 1999). The grade goals were all variations on getting good grades for the semester. Because goal striving is expected to occur across time, study participants completed the goal striving measure three times over a 5-week period. For correlation and regression analyses, these were averaged together provided they responded at least twice (266 participants completed the survey twice; 214 completed the survey all three times). Responses were made on a 7-point scale, with anchors from 1 (strongly disagree) to 7 (strongly agree). The scale was validated on a separate sample of undergraduate business students ( $N = 484$ ) prior to its use in this study; the coefficient alpha reliability of the scale was .97 in both the validation sample and this study (scale items and details regarding scale development are available upon request from the first author).

*Academic Performance.* Study participants were asked for permission to access their exam grades from the required management course. Because

overall grades in the course were a combination of individual and group work, the three course exam grades were chosen as an objective measure of the individual's academic performance.

## RESULTS

Means, standard deviations, and correlations are provided in Table 1. Hierarchical regression (using SPSS 16.0) was used to test Hypothesis 1. Structural equation modeling, using LISREL 8.8 (Jöreskog & Sörbom, 1993), was used to test the remaining hypotheses.

Hypothesis 1 stated that achievement values would relate to academic performance, and that they would contribute incrementally to performance after controlling for relevant personality traits. The partial correlation between achievement values and academic performance, controlling for the mean value score, was .12 ( $p < .05$ ), showing preliminary evidence of a relationship between achievement values and academic performance in support of Hypothesis 1.

To determine whether achievement values contribute *incrementally* to academic performance, we used hierarchical regression (listwise  $N = 276$ ; because goal content and goal striving were not included in the regression equation the sample size is slightly larger for these analyses). Average test score was entered as the dependent variable; demographic variables were included in step one as control variables. Personality traits and the mean value score were added in step two. In step three we added achievement values, which led to an increase in the overall model  $R^2$  of .012 ( $p < .10$ ). Standardised beta coefficients were .19 for achievement values, .13 for Conscientiousness, .01 (*ns*) for Emotional Stability, and  $-.15$  for Extraversion (see Table 2 for additional details). Achievement values had a larger coefficient than the included personality traits, thus providing partial support for Hypothesis 1, yet the standard error was also larger for achievement values, yielding a significance level of .06 (suggesting that the result should be interpreted with caution). Post-hoc power analysis using G\*Power showed that our power was only .42 to detect a change in  $R^2$  of this size.

Although the relationship between achievement values and average test score was only marginally significant after controlling for personality, we were still interested in testing the remaining hypotheses. Given the multiple mediators anticipated by our model, we did not expect the direct relationships to be strong. The remaining hypotheses were tested using structural equation modeling; refer to Figure 1 for the hypothesised model. The covariance matrix was entered as input into LISREL 8.8 (Jöreskog & Sörbom, 1993) and maximum likelihood estimation was used to generate path estimates and fit statistics. A measurement model was tested prior to testing path models. Individual items were combined into parcels such that each scale

TABLE 1  
Means, Standard Deviations, Alpha Reliabilities, and Partial Correlations (Controlling for Average Value Score)

Scale	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Sex (M = 0, F = 1)			.05										
2. Race (White = 0, non-White = 1)			.00	.15									
3. Age	20.44	2.01		.05	.50								
4. Year in School (1-4)	2.50	.73		.04	.09	.04	.91						
5. Conscientiousness	5.15	.85	.13		.04	.06	.10	.93					
6. Emotional Stability	4.55	1.03	-.33	-.04				.27	.93				
7. Extraversion	4.91	.98	.05	-.04	-.10	-.07	.12	.04	.15	.87			
8. Achievement Values	4.87	.99	-.11	.00	-.04	-.06	.14	.10	.00	.26	.85		
9. Achievement Goal Content	5.55	.84	-.08	.01	-.03	-.01	.10	-.05	.00	.18	.30	.97	
10. Achievement Goal Striving	5.73	1.24	.00	.00	-.10	-.20	.28	.01	-.01	.12	.14	.38	.81
11. Average Test Score	79.24	8.30	.03	-.04	-.07	-.11	.12	-.04	-.10	.12	.14	.38	.81

Note: Listwise  $N = 266$ . Coefficient alpha reliability estimates are provided along the diagonal. Correlations greater than or equal to  $|\cdot 12|$  have a 95% confidence interval that does not include 0.

TABLE 2  
Hierarchical Regression Results for Academic Performance

<i>Variables</i>	<i>B</i>	<i>Std. Error</i>	$\beta$	<i>Model R<sup>2</sup></i>	<i>R<sup>2</sup> change</i>	<i>Significance (p-value)</i>
<i>Step 1</i>						
Age (control)	-.04	.279	-.01			.887
Year in school (control)	-1.13	.783	-.10			.152
Sex (control)	.60	.996	.04			.545
Race (control)	-1.39	2.221	-.04			.529
MODEL				.015		.404
<i>Step 2</i>						
Age (control)	-.14	.276	-.04			.612
Year in school (control)	-1.21	.771	-.11			.117
Sex (control)	.35	1.063	.02			.739
Race (control)	-1.02	2.200	-.03			.643
Conscientiousness	1.46	.609	.15			.017
Emotional Stability	.01	.533	.00			.979
Extraversion	-1.08	.554	-.13			.053
Mean value score	-1.51	.738	-.13			.041
MODEL				.063		.024
					.049	.009
<i>Step 3</i>						
Age (control)	-.13	.275	-.03			.635
Year in school (control)	-1.15	.768	-.10			.136
Sex (control)	.61	1.067	.04			.566
Race (control)	-1.01	2.190	-.03			.645
Conscientiousness	1.26	.616	.13			.041
Emotional Stability	.06	.531	.01			.906
Extraversion	-1.23	.558	-.15			.029
Mean value score	-3.11	1.127	-.27			.006
Achievement values	1.55	.834	.19			.064
MODEL				.075		.012
					.012	.064

*N* = 276

consisted of three parcels. To maintain power, with structural equation modeling we only included those demographic variables that we felt might reasonably be expected to relate to goal striving or performance. Older students and students with more college experience might have learned better study skills that would benefit their effort (goal striving) and their grades, so these were included. Several fit indices were examined to evaluate model fit, including the comparative fit index (CFI), the non-normed fit index (NNFI), the root-mean square error of approximation (RMSEA), and the standardised root mean square residual (SRMR). Values above .90 indicate acceptable fit for the CFI and the NNFI (Bagozzi & Yi, 1988; Bollen, 1989), while

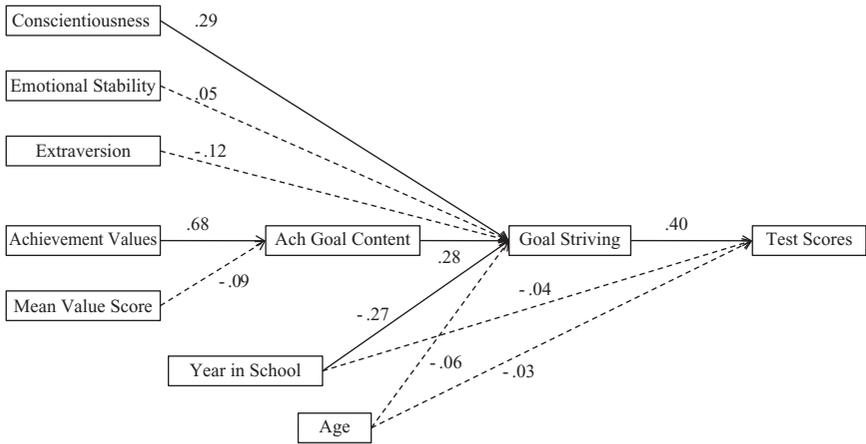


FIGURE 2. Actual path model.

*Note:* The mean value score was included as a covariate, and year in school and age were included as control variables. Dotted lines indicate relationships that were not significant. Ach = Achievement.

values below .08 indicate good fit for the RMSEA and the SRMR (Kline, 2005). The fit statistics for the measurement model were as follows: CFI = .990, NNFI = .987, RMSEA = .030, SRMR = .045,  $\chi^2 = 199.99$  (df = 168,  $p < .05$ ,  $N = 214$ ), suggesting acceptable fit.

Hypothesis 2, that achievement values will relate to goal content even after controlling for personality, was tested by comparing nested models. Model 1, the hypothesised model, included paths from achievement values to goal content, while Model 2 added paths from relevant personality traits to goal content. Figure 2 depicts the results for the hypothesised model. Fit statistics were not significantly different between Models 1 and 2 (see Table 3). The standardised path coefficient from achievement values to performance achievement goal content was strong and significant (.68) in Model 1, and remained so after adding paths from personality to goal content in Model 2 (.66). Additionally, none of the paths from personality traits to goal content were significant (standardised path coefficients were .12 for Conscientiousness, -.06 for Emotional Stability, and -.08 for Extraversion). Hypothesis 2 was therefore supported.

Hypothesis 3 stated that Conscientiousness, Emotional Stability, and Extraversion would relate to goal striving, even after controlling for values. This was tested by examining the paths from these personality traits to goal striving in Model 1, and by comparing Model 1 with Model 3, in which we added a direct path from achievement values to goal striving. Of the paths

from personality to goal striving, only that from Conscientiousness was significant in Model 1 (standardised path coefficients were .29 for Conscientiousness, .05 for Emotional Stability, and  $-.12$  for Extraversion). The standardised path coefficient from Conscientiousness to goal striving did remain significant in Model 3, when controlling for achievement values (.29). Furthermore, the standardised path coefficient from achievement values to goal striving was not significant ( $-.04$ ). Hypothesis 3 was therefore supported for Conscientiousness only.

Hypothesis 4, that goal content would relate to goal striving, was supported; the standardised path coefficient (in Model 1) was .28. We also hypothesised that goal content would mediate the relationship between achievement values and goal striving. Tests for mediation must first demonstrate a relationship between the independent and the dependent variable (Wood, Goodman, Beckmann, & Cook, 2008); this condition was met, as the correlation between achievement values and goal striving ( $r = .23$ ) was significant. Additionally, there was a significant relationship between the independent variable and the proposed mediator ( $r = .49$ ). Mediation was tested by comparing Models 1 (full mediation), 3 (partial mediation; added direct paths from achievement values and mean value score to goal striving), and 4 (no mediation; added direct paths from achievement values and mean value score to goal striving, and removed paths from values to goal content and goal content to goal striving). Fit statistics were significantly worse for Model 4 (see Table 3), and were not significantly different between Models 1 and 3, leading us to retain the more parsimonious model of full mediation (Model 1). We note, however, that the standardised path coefficient from achievement values to goal striving was .52 in Model 4 (no mediation) and that it was only reduced to .37 in Model 3 (partial mediation), suggesting that goal content was only partially mediating the relationship between achievement values and goal striving in this study. Fit statistics for Model 1 were: CFI = .984, NNFI = .980, RMSEA = .036, SRMR = .056,  $\chi^2 = 283.91$  (df = 223,  $p < .01$ ,  $N = 214$ ), suggesting a good fit with the data.

Hypothesis 5 stated that goal striving would relate to performance, and that it would mediate the relationships between personality and academic performance and between goal content and academic performance. Goal striving was related to performance, as the standardised path coefficient was .40. We did not test for mediation, however, as the first condition for mediation—that the independent variables be related to the dependent variable—was not met for any of the independent variables except Extraversion ( $r = -.12$ ), which had the opposite relationship from what we had hypothesised. While researchers have suggested that the first condition of mediation need not be met if effect sizes are expected to be small or if a suppressor may be in effect (Wood et al., 2008), we did not have a priori

TABLE 3  
Measurement and Structural Models

<i>Model</i>	$\chi^2$	<i>df</i>	$\Delta \chi^2$	<i>CFI</i>	$\Delta CFI$	<i>NNFI</i>	<i>RMSEA</i>	<i>SRMR</i>
— <i>differences from Structural Model 1</i>								
Measurement Model	199.99	168		.990		.987	.030	.045
Structural Model 1	283.91	223		.984		.980	.036	.056
Structural Model 2	278.56	220	5.35 ( <i>ns</i> )	.984	.00 ( <i>ns</i> )	.980	.035	.054
— added paths from personality traits to goal content								
Structural Model 3	283.70	222	0.21 ( <i>ns</i> )	.984	.00 ( <i>ns</i> )	.980	.036	.056
— added paths from achievement values to goal striving								
Structural Model 4	338.91	224	-55.00	.966	.018	.959	.049	.115
— added path from achievement values (and mean value score) to goal striving								
— removed paths from achievement values (and mean value score) to goal content and from goal content to goal striving								

*Note:* Listwise  $N = 214$  for all models.

theoretical expectations for either of these conditions. We simply note, therefore, that we were unable to test for mediation, but that our hypothesised model provided a good fit with the data. Future research will be needed to better understand these relationships.

## DISCUSSION

This paper examines whether achievement values contribute incrementally to performance beyond personality. In an academic setting, achievement values were marginally related to test grades after controlling for relevant personality factors. While two prior studies (Dubinsky et al., 1997; Adkins & Naumann, 2002) found that achievement values predict workplace performance, neither controlled for personality and both used self-reported performance measures. The current study builds on those findings by including both personality and values, and by using an objective performance measure rather than self-reported performance. While the significance of the direct relationship between achievement values and academic performance was not as strong as we had hoped, the path analysis did show that achievement values had a strong indirect, mediated relationship with performance. This suggests that future studies may find that achievement values relate to performance in some situations (especially when individuals are able to set their own goals). The path analysis also clarifies why we may *not* see a relationship between values and performance in some situations—while values certainly appear to relate to performance via motivational processes, the fact that multiple mediators are involved decreases the likelihood of significant effects. If we compare the strength of the relationships in Model 1 by multiplying the path coefficients, the overall strength of the relationship between Conscientiousness and performance ( $.29 \times .40 = .116$ ) is still stronger than the relationship between achievement values and performance ( $.68 \times .28 \times .40 = .076$ ), because the path is more direct. Although we cannot generalise from one study, it does suggest that in a situation where individuals do not get to set their own goals, the relationship between values and performance is likely to be even weaker, or nonexistent. However, it also suggests that motivational gains may be realised when values and goals align. This also provides an additional explanation as to why hiring employees who “fit” can create performance gains—their personal values are more likely to align with the organisation’s goals.

The results of this study also provide support for the notion that values and goals are arranged hierarchically, with values leading to long-term goals (more concrete than values), and long-term goals leading to short-term goals (more specific than long-term goals). Our goal content measure focused on long-term goals, while our goal striving measure focused on short-term goals; in spite of these constructs measuring different things, the relationship between them was

significant. An additional contribution is that we found that the motivational constructs of goal content and goal striving mediated the relationships between individual differences and performance, such that values were primarily related to goal content and Conscientiousness was primarily related to goal striving. Given that the majority of research on goals has not examined goal content, this represents a beneficial contribution to the literature. It specifically addresses a concern of Klein and colleagues (Klein et al., 2008) who stated that goal choice (goal content) is a largely understudied motivational process, studied much less frequently than goal striving.

Counter to our expectations, Emotional Stability was unrelated to academic performance, and although Extraversion was related to academic performance, the relationship was negative rather than positive. Further, neither Emotional Stability nor Extraversion were significantly related to goal striving (for good grades). With regard to Emotional Stability, it is possible that some more anxious students studied more in order to avoid failure, or that the performance measure—three exams—was measuring maximum performance, whereas the effects of Emotional Stability may be more relevant for typical performance across time. With regard to Extraversion, we proposed that the reward-seeking nature of extraverts would lead them to put forth effort for good grades, but it may be that extraverts (particularly college students with freedom regarding how to spend their time) seek their rewards from other, more social outlets.

This study, though preliminary, has important theoretical implications. It suggests that modern theories of motivation should consider the impact of both personality and values. In particular, motivational theories that include the study of goals would do well to include values, as values were significantly related to participants' goals in this study. The results also provide support for two theoretical models: first, that values relate to long-term goals, and long-term goals relate to short-term goals; and second, that values and personality are related to different motivational processes. These findings also present practical implications, as individuals trying to motivate others may benefit from understanding both their personality and their values.

No study is without limitations. Although the use of college students provided a good first test of these hypotheses, this study provides limited insight into the impact of personality and values on motivation in a typical work setting. Values may have less relevance, and personality may be relatively more important, in situations where individuals have little discretion over the goals that they pursue (as is common in many jobs). Additionally, we note that while we explore the question of whether values may be predictive of performance, we cannot say from this one study that achievement values cause higher academic performance, as the alternative (that high performance in the past has created higher levels of achievement values) has

not been ruled out. We also note that our participants may not be representative of students in general, as the incentive to participate (extra credit) appears to have attracted somewhat more successful students (which could have caused some range restriction on achievement values), and those who participated in all aspects of the study were somewhat more conscientious than those who failed to complete all surveys. However, this should have had the effect of reducing the variance, which should have decreased the likelihood of the model being confirmed. Additionally, our sample consisted of students in the Midwestern US, a region that is not particularly diverse. Values are influenced by culture, and as such, these results may not be representative of other regions within the US or internationally. Again, however, we note that this should have restricted the variance in achievement values and goal striving, thus reducing the chance of confirming the model and making our test more conservative. Finally, we note that our sample size was smaller than desired to detect the relatively small effects we would expect for the values–performance relationship, given the mediated model.

This study also had several strengths. It shows that both values and personality have significant, independent effects on motivation. Given their interrelations, this represents a unique contribution to the field. The college student participants had tremendous discretion over their goals and how to pursue them, thus facilitating variability in the study. Because a student's goal striving could vary from one course to the next, focusing on only one course enabled a good examination of the model. Data were collected longitudinally, mitigating concerns about common method bias. In addition, the study had a fairly strong retention rate for a student population bearing in mind that there were several rounds of data collection. Finally, there were many aspects of our study design that should have reduced our ability to confirm the model. Collecting data on values and traits at the same time should have increased the correlations between them (due to common method variance) and thus reduced the chances of finding separate effects for values and traits. Attrition in our study was related to conscientiousness, and study participants' grades were higher than grades of students who did not participate; as noted these should have restricted the variance and reduced the chances of confirming the model. These factors suggest that the model may be even stronger than our results show.<sup>1</sup>

Future researchers should attempt to replicate these findings with other values domains in addition to achievement. Additionally, research is needed in other settings, such as in workplace contexts, to determine whether achievement values relate to performance in other situations, and with a

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<sup>1</sup> We would like to thank an anonymous reviewer for pointing out additional strengths of our study design.

consideration to the amount of autonomy individuals have in setting their own goals. Researchers should also examine whether values also influence self-set workplace goals, as well as commitment to assigned goals. Finally, researchers are encouraged to include both personality and values in models in which individual differences are expected to impact motivated behavior, as this may lead to a more thorough understanding of human behavior.

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