Conscientiousness, Goal Orientation, and Motivation to Learn During the Learning Process: A Longitudinal Study

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Conscientiousness and goal orientation were examined as (a) predictors of motivation to learn and (b) moderators of reactions to performance levels during the learning process, using an Expectancy × Valence framework. Learners (N = 103) participated in a 6-week course in which an objective performance goal was assigned. Results indicated that conscientiousness and learning orientation were positively related to motivation to learn both initially and after performance feedback was given, whereas performance orientation was negatively related to motivation to learn at those 2 time periods. In addition, learning and performance orientation moderated the relationships between performance levels during the learning process and subsequent expectancy and valence.

The increasing complexity of the tasks to be performed in the future workplace is likely to place an even greater emphasis on training programs, as evidenced by the fact that no less than six chapters in Howard’s (1995) The Changing Nature of Work noted the need for improved training approaches. The increased emphasis on training will necessitate a commitment on the part of selection programs to provide motivated trainees. Such a commitment could create internal fit and synergy among human resources practices, potentially improving firm performance (Becker & Gerhart, 1996; Delery & Doty, 1996). One stream of literature that can inform practitioners in this area is the research on motivation to learn, defined here as a desire on the part of trainees to learn the content of the training program (Noe, 1986).

Research has consistently shown a positive relationship between motivation to learn and learning across a variety of settings, but several important gaps remain. For example, research linking dispositional personality variables to motivation to learn has been limited and often atheoretical. In addition, researchers have not adequately explored what types of learners continue to show high motivation levels throughout the learning process, particularly in the wake of early difficulty (Fedor, 1991; Phillips & Gully, 1997). This issue is critical because many learners struggle during the early phases of the training program and often fall short of the objective performance goals that are typically used (Farr, Hofmann, & Ringenbach, 1993).

Our study addressed both of these gaps by integrating two personality variables, conscientiousness and goal orientation, with motivation to learn, to assess their role in learning. We examined these issues in the context of a 6-week academic course, which provided an opportunity to study the learning process using a more comprehensive, longitudinal approach than many past investigations (e.g., Baldwin, Magjuka, & Loher, 1991; Martocchio & Webster, 1992; Phillips & Gully, 1997; Quinones, 1995). We gave a difficult but achievable performance goal to each learner as part of the course, matching the type of goal normally assigned to employees in training programs and organizational settings (Farr et al., 1993; Locke & La-tham, 1990). We then examined personality relationships at two time periods during the learning process: the beginning of the course and directly after learners were given feedback relating their current performance levels with their assigned goal (approximately halfway through the course). Gagne and Medsker (1996) noted that these two time periods are critical junctures in the learning process.

We cast conscientiousness and goal orientation as distal variables that influenced learning through the more proximal mechanism of motivation to learn. Kanfer (1991) advocated using this distal-proximal framework for examining personality effects because it places those effects in a more theoretical context (see also Judge & Martocchio, 1995). We predicted that feedback regarding one's performance levels vis-à-vis the assigned goal would alter subsequent motivation levels. In addition, we examined...
the degree to which learners’ conscientiousness and goal orientation levels moderated these effects, which are summarized in our conceptual model presented in Figure 1. The Relationship Between Conscientiousness, Goal Orientation, and Motivation to Learn

Noe (1986) presented a conceptual model detailing antecedents and outcomes associated with trainee motivation to learn. The primary antecedents in Noe’s model were job attitudes, reactions to feedback, contextual factors, and individual perceptions of self-efficacy or expectancy (i.e., effort–performance contingencies).¹ In the decade since then, other researchers have argued that motivation to learn should be examined from both an expectancy and a valence perspective, consistent with Vroom’s (1964) expectancy theory (Baldwin & Karl, 1987; Mathieu, Tannenbaum, & Salas, 1992). This perspective asserted that trainees can desire to learn the training content (i.e., have high levels of motivation to learn) for two reasons: (a) They see a relationship between their effort and actual learning progress (i.e., expectancy), and (b) the outcomes that can be attained from such progress are valued (i.e., valence).

Unfortunately, motivation to learn research has largely ignored this approach, particularly in terms of valence (e.g., Noe & Schmitt, 1986). Furthermore, even when Expectancy × Valence approaches have been used, only correlations with an overall summed index have been reported (Baldwin & Karl, 1987; Mathieu et al., 1992). As a result, studies that yielded correlations between motivation to learn and attitudinal predictors (i.e., job involvement or organizational commitment) or situational predictors (e.g., the provision of choice, the framing of the training assignment, or the presence of situational constraints) were less able to empirically show why the correlation was there (Baldwin et al., 1991; Hicks & Klimeski, 1987; Martocchio & Webster, 1992; Mathieu et al., 1992; Noe & Schmitt, 1986; Quinones, 1995; Ryman & Biersner, 1975; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). An explicit treatment of relevant mediators, lacking in the extant literature, can help answer the “why” questions that are a central component of good theory (Whetten, 1989).

Personality variables have also been overlooked in this research, except for locus of control, which has failed to yield significant correlations, particularly when ability is controlled for (Lied & Pritchard, 1976; Noe & Schmitt, 1986). Conspicuous by their absence are conscientiousness, which “may be the most important trait-motivation variable in the work domain” (Barrick, Mount, & Strauss, 1993, p. 721), and goal orientation, a variable that holds untapped promise for training applications (Button, Mathieu, & Zajac, 1996; Farr et al., 1993). An Expectancy × Valence approach would be helpful in linking these personality variables to motivation to learn, as evidenced by similar efforts in the goal commitment literature (Gellaty, 1996; Hollenbeck & Klein, 1987; Hollenbeck, Williams, & Klein, 1989). Goal commitment researchers have

¹ Most researchers distinguish between self-efficacy (e.g., Bandura & Cervone, 1986) and expectancy (Vroom, 1964). Gist and Mitchell (1992) noted that expectancy is a probabilistic judgment regarding effort–performance contingencies that is driven by self-efficacy, a person’s estimate of his or her “capacity to orchestrate performance on a specific task” (p. 183). However, it is difficult to separate the two in terms of relationships to motivation to learn, possibly explaining why they were integrated in Noe’s model (e.g., Noe & Schmitt, 1986). Similarly, our study discusses both expectancy and self-efficacy as examples of a larger expectancy component of motivational theories (e.g., Kanfer, 1991).
used Expectancy × Valence approaches for personality effects, thereby placing those effects in a more theoretical context and responding to past criticisms of personality research (Davis-Blake & Pfeffer, 1989; Judge & Martocchio, 1995; Kanfer, 1991). Thus, in our study, we examine how conscientiousness and goal orientation relate to motivation to learn through the mechanisms of expectancy and valence, as shown in Figure 1.

**Conscientiousness**

Conscientiousness, a trait reflecting qualities such as being reliable, hardworking, self-disciplined, and persevering (McCrae & Costa, 1987), has been linked to a variety of positive work outcomes (Barrick & Mount, 1991). Meta-analytic evidence found conscientiousness to be a predictor of job performance across many occupational groups, and other research has linked it to goal commitment and self-set goal setting (Barrick & Mount, 1991; Barrick et al., 1993; Gellatly, 1996). It is surprising that no published research has used conscientiousness as a predictor of motivation to learn. However, recent research suggests a link between conscientiousness and expectancy. Martocchio and Judge (1997) demonstrated a significant relationship between conscientiousness and self-efficacy in a computer software training setting. In a similar manner, Gellatly linked conscientiousness and expectancy using an arithmetic task.

These results can be explained theoretically by examining the antecedents of self-efficacy reviewed by Gist and Mitchell (1992). For example, the authors suggested that self-efficacy is driven in part by one’s assessment of personal resources and constraints. In reflecting on their personal resources, conscientious individuals are likely to perceive that they are diligent and hardworking (McCrae & Costa, 1987) and should consider that a favorable resource. Another antecedent of self-efficacy is an individual’s analysis of task requirements. Conscientious individuals are more likely to accurately assess task requirements because of their tendency to be organized and systematic (McCrae & Costa, 1987) and should have more confidence in their ability to meet those requirements given their traditionally high performance levels (Barrick & Mount, 1991).

There are also reasons to expect a positive relationship between conscientiousness and valence given that conscientiousness subsumes the more specific dimension of need for achievement. Hollenbeck and Klein (1987) predicted a link between need for achievement and goal commitment because individuals with high levels of need for achievement are more likely to value high performance. Similarly, conscientious individuals are more likely to set challenging goals for themselves and stay committed to those goals (Barrick et al., 1993). However, although a conscientiousness—valence linkage would be consistent with this research, Gellatly (1996) failed to demonstrate such a relationship. Thus, although existing research is equivocal, we propose the following:

**Hypothesis 1.** Conscientiousness will be positively related to motivation to learn, both initially and after performance feedback is given, an effect that will be mediated by expectancy and valence.

**Goal Orientation**

Goal orientation is a relatively stable dispositional variable that assumes two forms: (a) a learning orientation in which increasing competence by developing new skills is the focus and (b) a performance orientation in which demonstrating competence by meeting normative-based standards is deemed critical. The construct was originally derived from Dweck’s work with children in the education domain (e.g., Dweck, 1986, 1989). Her research detailed adaptive and maladaptive behavioral patterns that arose on the basis of children’s beliefs about ability (Dweck, Hong, & Chiu, 1993). Entity theorists believed that ability levels were fixed, whereas incremental theorists believed that ability levels were malleable and could be increased. These implicit theories affect the kinds of goals individuals choose to pursue, with entity theorists holding strong performance goals and weak learning goals and incremental theorists showing the opposite tendency.

Much of the goal orientation research in the education literature has used child samples (e.g., Elliott & Dweck, 1988; Seifert, 1995; Stipek & Gralinski, 1996). The extent to which the findings of these studies generalize to adults is still at issue, but, in general, adult samples have shown convergent results (e.g., Archer, 1994; Bouffard, Boisvert, Vezeau, & Larouche, 1995; Duda & Nicholls, 1992; Elliott & Harackiewicz, 1994; Greene & Miller, 1996; Harackiewicz & Elliot, 1993; Schraw, Horn, Thorndike-Christ, & Bruning, 1995). Only recently has goal orientation become a focus of organizational researchers, but most results have supported previous research (e.g., Button et al., 1996; Fisher & Ford, in press; Hofmann, 1993; Phillips & Gully, 1997).

Button et al. noted that goal orientation holds great importance, as it influences individual performance and organizational outcomes. With the increased competitiveness in the workplace, goal orientation has become a critical factor in determining success. Therefore, understanding the antecedents and consequences of goal orientation is essential for both individual and organizational performance.
promise for organizational applications and provided several recommendations for future research. First, they provided factor analytic evidence suggesting that goal orientation is best conceptualized as two independent dimensions (learning and performance orientation) rather than a unidimensional continuum. That is, individuals can be simultaneously high or low on both learning and performance orientations, contrary to the conceptualization of Dweck and her colleagues (e.g., Dweck, 1986, 1989). The extent to which past findings in this area can be generalized to the two-dimensional case is as yet unknown, although early research is consistent with Dweck’s predictions (Button et al., 1996; Phillips & Gully, 1997). Finally, Button et al. further argued that individuals have dispositional goal orientations that predispose them to react to situations in specific ways but that situational cues can impact those predispositions. Thus, the construct has both trait and state qualities, suggesting that test–retest reliabilities may be lower than those of other trait measures such as conscientiousness (Button et al., 1996; DeShon & Fisher, 1996).

Because of the implicit theories from which they are derived, there are reasons to expect relationships between both goal orientations and expectancy. The higher one’s performance orientation, the more one should react to difficult tasks with doubts about ability levels (e.g., Elliott & Dweck, 1988). This relationship would explain the finding that highly performance-oriented individuals often avoid difficult tasks in favor of more achievable ones (Dweck & Leggett, 1988). In contrast, the stronger one’s learning orientation, the more one should continue to believe that ability and skill can be increased to achieve success (e.g., Dweck, 1986, 1989). This connection suggests a positive relationship between learning orientation and expectancy and a negative relationship between performance orientation and expectancy. Indeed, Phillips and Gully (1997) recently demonstrated both of these predicted relationships in the context of an undergraduate course.

There are also reasons to expect relationships between both goal orientations and valence. Highly learning-oriented individuals are more likely to seek challenges and view high performance as indicative of increased mastery (Dweck & Leggett, 1988). One would therefore expect that the more learning oriented a person is, the more he or she would place value on high performance levels. In contrast, Elliott and Dweck (1988) noted that, when performance orientations are highlighted, individuals avoid difficult tasks in favor of moderate ones (when perceived ability is high) or easy ones (when perceived ability is low). This finding suggests that, because the learners in our sample were given difficult goals, performance orientation should be negatively related to valence. Performance-oriented individuals also respond to difficult tasks with negative affect (Dweck & Leggett, 1988; Elliott & Dweck, 1988), which would also suggest a negative relationship with valence given that valence is based on anticipated satisfaction. Therefore,

Hypothesis 2. Learning orientation will be positively related to motivation to learn, both initially and after performance feedback is given, an effect that will be mediated by expectancy and valence.

Hypothesis 3. Performance orientation will be negatively related to motivation to learn, both initially and after performance feedback is given, an effect that will be mediated by expectancy and valence.

Trait Variables as Moderators of Reactions to Performance Levels

Not all learners succeed in every facet of the learning process—many experience some difficulty in learning the material (Farr et al., 1993). Whether learners internally perceive this difficulty or receive feedback regarding it, reactions to performance levels are likely to have important motivational consequences (Ilgen, Fisher, & Taylor, 1979; Kluger & DeNisi, 1996; Phillips, Hollenbeck, & Ilgen, 1996; Podsakoff & Farh, 1989; Taylor, Fisher, & Ilgen, 1984). It is important to understand these consequences to maximize the effectiveness of goal-directed learning settings. In general, researchers have shown that low performance levels decrease expectancy and self-efficacy levels (e.g., Bandura & Cervone, 1986; Gist & Mitchell, 1992). Relationships with valence may also be negative, but they depend on complex cognitive and self-reactive influences such as self-satisfaction, attribution, and referent comparison (Bandura, 1991).

In our study, we gave learners feedback halfway through the course that related their current performance to their assigned goal. Gagne and Medsker (1996) emphasized the importance of giving feedback during the learning process, identifying it as an instructional event that facilitates learning. We were interested in learners’ motivation in the wake of this feedback, in particular how those effects differed according to learners’ levels of conscientiousness and goal orientation. Fedor (1991) noted that empirical research addressing the role played by personality in responding to performance feedback is needed.

Conscientiousness

Martocchio and Judge (1997) noted that conscientious individuals have a tendency to engage in self-deception, a notion also supported by Barrick and Mount (1996). That is, conscientious individuals are more likely to believe that they are doing better than they truly are. This self-deception should prevent large decreases in expectancy perceptions because such individuals may refuse to accept the fact that poor performance levels are indicative of true ability. Indeed, self-deceivers often reach high
achieved levels for this reason (Martocchio & Judge, 1997). Also, conscientious individuals, who are by definition persevering and disciplined (McCrae & Costa, 1987), should refuse to give up in the face of difficulty. Indeed, they should continue to hold high perceptions of valence given their tendency to commit to assigned goals (Barrick et al., 1993). Thus, we predict the pattern shown in Figure 2 and posit the following:

**Hypothesis 4.** The relationship between performance levels at the time feedback is given and subsequent (a) expectancy and (b) valence will be moderated by conscientiousness, such that lower performance will be less associated with lower expectancy or valence for highly conscientious learners.

**Goal Orientation**

Goal orientation is often discussed in the context of responses to feedback regarding performance (e.g., Dweck, 1986, 1989; Farr et al., 1993). Research has suggested that learning-oriented individuals should be less likely to respond to poor progress during learning with lowered expectancy. Button et al. (1996) demonstrated that the more learning oriented individuals are, the more they subscribe to the incremental theorists' position that ability levels can be increased to correct poor progress. Such beliefs should buffer these individuals against large decreases in expectancy (Bobko & Colella, 1994). Indeed, individuals with strong learning orientations are more likely to engage in problem solving and altering of strategies when they encounter low performance levels (Dweck & Leggett, 1988; Elliott & Dweck, 1988). In contrast, the more performance oriented people are, the more they believe the entity theorists' position that ability is fixed (Button et al., 1996). Thus, these individuals should meet difficulty with marked decreases in expectancy as they shift their focus to ability inadequacies and off-task thoughts (Bobko & Colella, 1994).

In terms of valence, research has shown that learning-oriented individuals react to challenges with positive affect, pride, and intrinsic motivation (Dweck & Leggett, 1988). The more challenging a task becomes, the more it is perceived as an opportunity to build competence. This relationship suggests that highly learning-oriented individuals should be buffered against the tendency to associate poor performance with lower valence. Indeed, such individuals may find themselves immersed in the task because of increased cognitive engagement (Duda & Nicholls, 1992; Greene & Miller, 1996). Performance-oriented individuals, on the other hand, traditionally do not react to poor progress in a constructive manner. Indeed, Fisher and Ford (in press) showed a link between performance orientation and off-task attention, and Dweck and Leggett (1988) related performance orientation to anxiety and negative affect. Such results suggest that these learners lack self-leadership skills (Manz, 1986) because they focus on unpleasant aspects of the task (e.g., pressure or uncertainty) rather than pleasant ones (e.g., challenge or learning). Thus, the more difficulty one experiences, the more the desire to perform well should decline. We therefore predict the pattern shown in Figure 2 and posit the following:

**Hypothesis 5.** The relationship between performance at the time feedback is given and subsequent (a) expectancy and (b) valence will be moderated by learning orientation, such that lower performance will be less associated with lower expectancy or valence for highly learning-oriented learners.

**Hypothesis 6.** The relationship between performance at the time feedback is given and subsequent (a) expectancy and (b) valence will be moderated by performance orientation, such that lower performance will be less associated with lower expectancy or valence for less performance-oriented learners.

**The Relationship Between Motivation to Learn and Learning**

Linking trait variables to motivation to learn is only valuable to the degree that motivation levels are connected to actual learning differences. Fortunately, the relationship between motivation to learn and learning has been robust, predicting both cognitive and skill-based outcomes (e.g., Baldwin et al., 1991; Martocchio & Webster, 1992; Mathieu et al., 1992; Noe & Schmitt, 1986; Quinnones, 1995; Tannenbaum et al., 1991). On the basis of this research,

**Hypothesis 7.** Initial motivation to learn will be positively related to prefeedback learning; postfeedback motivation to learn will be positively related to postfeedback learning.

**Method**

**Sample**

The participants were 103 undergraduates enrolled in two sections of a management course. The 6-week course was the
learning program, with performance at the midpoint of the course (i.e., when performance feedback was given) and performance during the remainder of the course serving as the learning measures. This paradigm has been used successfully by researchers in the areas of motivation to learn and goal setting (Hollenbeck, Williams, & Klein, 1989; Mathieu et al., 1992; Phillips & Gully, 1997). Hollenbeck et al. (1989) examined goal commitment in an undergraduate management course, Phillips and Gully examined self-set goal setting in a similar setting, and Mathieu et al. examined motivation to learn in an undergraduate bowling course. Participation was voluntary, and we awarded extra credit points (6% of the total points) for involvement. All students participated.

**Procedure**

The authors served as instructors for the classes included in the sample. Each author served as experimenter for the other author's class; thus, no author collected data, had access to data, or even discussed the study with his or her own students. We asked students to participate in a term-long study involving personality variables, and we informed them that they would be asked to provide some academic information and to complete several surveys. We gave the students feedback on the correlates of various personality variables and told them how such information could be used in the workplace during the final week of the course.

Given that reactions to learning levels were to occur as a result of performance feedback, we had to create an objective achievement standard, which we did by assigning each student a goal for course performance. We collected the current cumulative grade point average (GPA) for each participant and used it to create a grade goal on the basis of the method used by Hollenbeck, Williams, & Klein (1989). Specifically, we added .25 points to each participant's GPA, and the resulting GPA was then expressed as a percentage of total points on the basis of the course's grading scale. For example, a student with a cumulative GPA of 3.25 was given a GPA goal of 3.5, which was expressed as a grade goal of 86%. Thus, these goals represented a difficult but achievable goal for student learning (Hollenbeck et al., 1989). We distributed grade goals to the students during the second class period in sealed envelopes marked with identification numbers. Each participant received the following explanation with the grade goal:

Goal setting theory suggests that people perform well when they are assigned difficult and specific goals. Research has found that a difficult goal for a student's performance in a course is approximately .25 points higher than his or her cumulative grade point average. Based on your grade point average, we have given you a difficult and specific goal for this course.

Your goal for a grade in this course is: ___%

Please note that this goal will in no way prevent you from attaining a higher grade in this course. It is not an indication of the grade you are capable of receiving, only a guideline that you can use to track your performance. Your instructor has no knowledge of your goal, and achievement of the goal (or lack of achievement) will have no bearing on your grade whatsoever. Good luck this semester!

After receiving the grade goal, each student completed the first of two in-class surveys measuring expectancy, valence, and motivation to learn. We measured goal orientation and goal commitment (used as a control variable) concomitantly, and we also assessed goal orientation at the conclusion of the term. Note that we examined goal orientation as a dispositional trait, one that, like conscientiousness, could be used in selection batteries. However, goal orientation has been shown to have situational variability (Button et al., 1996; Dweck, 1975). Assessing goal orientation three separate times allowed us to account for this variance source. Specifically, we measured dispositional goal orientation by averaging the initial, midpoint, and conclusion scores. This procedure provided us with one dispositional score because it collapsed across the contaminating influence of situational goal orientation variance, which was outside the scope of our study. The average correlation among the three learning orientation scores was .62; the average correlation among the three performance orientation scores was .60. This level is consistent with other uses of Button et al.'s measure (DeShon & Fisher, 1996).

The first course examination was given 2 weeks (four class periods) after students received their grade goals. We recorded performance on this examination in percentage terms, and participants received performance feedback during the class period immediately following the exam. This feedback read as follows: "Your grade goal at the beginning of the semester was a ____%. Your current grade in the course is a ____%. That means you are currently ____% (above/below) your grade goal." During the subsequent class meeting, students completed the second in-class survey, which again assessed expectancy, valence, motivation to learn, goal orientation, and goal commitment.

We gave the final examination for the course 3 weeks (five class periods) after the administration of the grade goal feedback, and we used it to assess learning at the conclusion of the learning process. We gave the final goal orientation measure at the beginning of this class period. We also gave participants a separate out-of-class survey that assessed conscientiousness and asked them to complete the scale on their own time. We collected all scales at least 2 weeks before the end of the course.

**Measures**

*Motivation to learn.* We used three items adapted from Noe and Schmitt (1986) to measure motivation to learn. One example included, "I will exert considerable effort in learning this material" (1 = strongly disagree to 7 = strongly agree; α = .75 initially and .83 postfeedback).

*Expectancy.* We used both expectancy-based and self-efficacy-based measures to tap this construct. The expectancy measure consisted of two items from Lawler and Suttle (1973). We asked participants to indicate how true it was that the first phrase of a pair leads to the second phrase of a pair, for them personally, in the context of the course. Pairs included, (a) "trying hard →
disagree the individual. Thus, we used Hollenbeck, Klein, O’Leary, and depend on the degree to which those standards are accepted by
explained performance and motivation variance due to nonrandom
especially critical because the .25-point increase in grade
Wright’s (1989) four-item goal commitment scale (1 =
motivation, particu-
for goal commitment to statistically ensure that all learners were
seemed more difficult to learners with low GPAs. We also coded
items included, “I prefer to work on tasks that force me to learn
items included, “I do well in activities where I have to remember
lots of information”’ (1 = never to 7 = always; as = .66
initially and .70 postfeedback).
Valence. We used three items adapted from Lawler and Sut-
tle (1973) to assess valence. We asked participants to indicate
“how desirable” (in the context of the course) they considered
(a) “getting a good grade,” (b) “doing well in the course,” and
(c) “achieving success in the class” to be (1 = very unde-
sirable to 7 = very desirable; as = .63 initially and .64
postfeedback).
Conscientiousness. We used the 12-item scale from the NEO Five-Factor Inventory, a shorter version of the NEO Per-
sonality Inventory (Costa & McCrae, 1992), to measure consci-
entiousness (1 = strongly disagree to 7 = strongly agree; α =
.79). Costa and McCrae (1992) reported test–retest reliabilities
of .83 for this scale, suggesting that the variable has a definite
trait quality.
Goal orientation. We used Button et al.’s (1996) eight-item
dispositional goal orientation measures. Learning orientation
items included, “I prefer to work on tasks that force me to learn
new things” and “The opportunity to do challenging work is
important to me.” Performance orientation items included,
“Once I find the right way to do something, I stick to it” and
“The things I enjoy the most are the things I do best.” (1 =
strongly disagree to 7 = strongly agree; as = .83 for learning
orientation and .80 for performance orientation). Button et al.
provided reliability and construct validity evidence for these
scales. We computed coefficient alphas by treating each of the
three learning orientation and performance orientation scores
(i.e., initial, midpoint, and conclusion) as one item in a three-
item scale.
Prefeedback learning. We assessed pefeedback learning through the first course examination. This examination consisted of 60 items (100 points) that assessed declarative knowledge.
Postfeedback learning. We assessed postfeedback learning through the final course examination, which again consisted of 60 items (100 points) that assessed declarative knowledge.
Control variables. Three control variables were used. GPA
served as a control to ensure that performance or motivation variance due to ability could be captured. This control was
especially critical because the .25-point increase in grade
seemed more difficult to learners with low GPAs. We also coded
class membership because it was likely a contaminant that ex-
plained performance and motivation variance due to nonrandom
assignment of students to classes. A score of 0 was given to
students in Jason A. Colquitt’s class; a score of 1 was given to
students in Marcia J. Simmering’s class. Finally, we controlled
good commitment to statistically ensure that all learners were
equally committed to their assigned goals, given that such com-
mmitment should relate to performance and motivation, particu-
larly after feedback is delivered. Indeed, Bobko and Colella
(1994) noted that reactions to performance standards should
depend on the degree to which those standards are accepted by
the individual. Thus, we used Hollenbeck, Klein, O’Leary, and
Wright’s (1989) four-item goal commitment scale (1 = strongly
disagree to 7 = strongly agree; as = .69 initially and .69
postfeedback), and it should be noted that commitment levels
were generally high (M = 5.11 out of 7; SD = 1.02).

Results

Descriptive Statistics

The means, standard deviations, and zero-order inter-
correlations of all variables are reported in Table 1. Coef-
ficient alphas are shown in the diagonal of the correlation
matrix. Several correlations of variables never included
together in a single study are notable. For example, conscien-
tiousness was positively associated with learning orienta-
tion levels and negatively associated with performance
orientation levels. Goal commitment was positively relat-
ed to motivation to learn, as well as valence and expect-
fancy. Finally, conscientiousness had a significant positive
 correlation with goal commitment and learning, whereas
performance orientation was negatively correlated with
learning (postfeedback).

Tests of Hypotheses

Hypotheses 1–3 predicted that the relationships be-	ween the personality variables and motivation to learn
would be mediated by valence and expectancy. The results
are shown in Table 2. All three personality variables ex-
plained significant incremental variance in motivation to learn beyond the effects of the control variables. Consis-
tent with our predictions, the personality variables ex-
plained less variance in motivation to learn when the Ex-
pectancy × Valence variables were statistically controlled.
However, conscientiousness and learning orientation still
explained significant incremental variance, suggesting that their relationships with motivation to learn were only
partially mediated. The directions of these relationships
were all as predicted (see Table 1): Conscientiousness
and learning orientation were positively correlated with
expectancy, valence, and motivation to learn, and perfor-
mance orientation was negatively correlated with expec-
tancy and motivation to learn. Contrary to predictions,
performance orientation was unrelated to valence.

To complement the above analyses, we examined the
relationship between the three personality variables (entered simultaneously) and motivation to learn. Personality variables explained an incremental 28% of the variance in prefeedback motivation to learn ($p < .001$), with both conscientiousness ($\beta = .33, p < .001$) and learning orientation ($\beta = .38, p < .001$) having significant independent relationships. Personality variables explained an incremental 27% of the variance in postfeedback motivation to learn ($p < .001$), again with both conscientiousness ($\beta = .28, p < .01$) and learning orientation ($\beta = .40, p < .001$) having significant independent relationships. These results have practical significance in addition to statistical significance. To express this, we classified learners into positive and negative trait patterns, where a positive pattern represented high learning orientation, high conscientiousness, and low performance orientation, and expressed the correlation between this pattern and motivation to learn using a binomial effects size display (Rosenthal & Rosnow, 1991). Compared with learners with a negative pattern, learners with a positive pattern were 38% more likely to be motivated before feedback and 40% more likely to be motivated after feedback. They were also 30% more likely to perform well on the first exam and 28% more likely to perform well on the second.  

Hypotheses 4–6 predicted interactions among the personality variables and prefeedback learning levels for postfeedback expectancy and valence. We assessed these hypotheses using moderated multiple regression; results are presented in Table 3. No interactions were demonstrated for conscientiousness. However, interactions were demonstrated for learning orientation with postfeedback expectancy and performance orientation with postfeedback valence, with the pattern matching that shown in Figure 2. 

Hypothesis 7 predicted that motivation to learn would be positively related to pre- and postfeedback learning. Initial motivation to learn explained an additional 2% of the variance in prefeedback learning ($\beta = .14, p < .05$) beyond the three control variables, which accounted for 45% of the learning variance. Postfeedback motivation to learn added 4% of the variance explained for postfeedback

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Table 1: Means, Standard Deviations, and Zero-Order Correlations

<table>
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<th>SD</th>
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<td>6.29</td>
<td>0.88</td>
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<td>0.86</td>
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<td>2.47</td>
<td>0.84</td>
<td>2.44</td>
<td>0.77</td>
<td>2.47</td>
<td>0.77</td>
<td>2.44</td>
<td>0.77</td>
<td>2.47</td>
<td>0.77</td>
<td>2.44</td>
<td>0.77</td>
</tr>
<tr>
<td>Learning orientation</td>
<td>5.22</td>
<td>0.85</td>
<td>5.26</td>
<td>0.77</td>
<td>5.28</td>
<td>0.79</td>
<td>5.28</td>
<td>0.79</td>
<td>5.28</td>
<td>0.79</td>
<td>5.28</td>
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<td>5.28</td>
<td>0.79</td>
<td>5.28</td>
<td>0.79</td>
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<tr>
<td>Expectancy</td>
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<td>1.52</td>
<td>6.21</td>
<td>1.52</td>
<td>6.21</td>
<td>1.52</td>
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<tr>
<td>Performance orientation</td>
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<td>1.52</td>
<td>6.21</td>
<td>1.52</td>
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<td>1.52</td>
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<td>6.21</td>
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<td>6.21</td>
<td>1.52</td>
<td>6.21</td>
<td>1.52</td>
</tr>
<tr>
<td>Goal commitment</td>
<td>6.21</td>
<td>1.52</td>
<td>6.21</td>
<td>1.52</td>
<td>6.21</td>
<td>1.52</td>
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<td>1.52</td>
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<td>1.52</td>
</tr>
<tr>
<td>GPA</td>
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<td>0.37</td>
<td>3.82</td>
<td>0.37</td>
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<td>0.37</td>
<td>3.82</td>
<td>0.37</td>
<td>3.82</td>
<td>0.37</td>
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<td>3.82</td>
<td>0.37</td>
<td>3.82</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Note. N = 103. Coefficient alphas are listed parenthetically on the diagonal. List = initial responses; post = postfeedback responses; GPA = cumulative grade point average. *Control variables. **p < .05.

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6 Rosenthal and Rosnow (1991) expressed practical significance by putting a criterion into dichotomous terms such as "perform well" or "perform poorly" and "motivated" or "unmotivated" using median splits. This convention is applied here because it is congruent with the context of many training programs in which some cutoff must be achieved to fulfill a requirement or move on to a subsequent course. Relationships with this dichotomous criterion are then expressed in percentage terms, where the percentages are calculated by 50% + r/2. Thus, the correlation between our positive trait pattern and prefeedback learning of r = .30 translates into 65% (50 + 15) and 35% (50 - 15), or a 30% difference (65 - 35) in the likelihood of performing well based on trait patterns.
Table 2

Variance Explained in Motivation to Learn by Personality Variables

<table>
<thead>
<tr>
<th>Personality variable</th>
<th>Initial motivation to learn (DV)</th>
<th>Postfeedback motivation to learn (DV)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conscientious Learning oriented</td>
<td>Performance oriented</td>
</tr>
<tr>
<td></td>
<td>Conscientious Learning oriented</td>
<td>Performance oriented</td>
</tr>
<tr>
<td>1. Class</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>2. GPA</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>3. Goal commitment</td>
<td>.15***</td>
<td>.15***</td>
</tr>
<tr>
<td>4. Personality</td>
<td>.28***</td>
<td>.35***</td>
</tr>
<tr>
<td>Controlling for E x V</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>1. Class</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>2. GPA</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>3. Goal commitment</td>
<td>.15***</td>
<td>.15***</td>
</tr>
<tr>
<td>4. Expectancy</td>
<td>.05**</td>
<td>.05**</td>
</tr>
<tr>
<td>5. Valence</td>
<td>.10***</td>
<td>.10***</td>
</tr>
<tr>
<td>6. Personality</td>
<td>.08**</td>
<td>.13***</td>
</tr>
</tbody>
</table>

Note. Values represent \(R^2\)'s. \(N = 103\). All equations had an overall F-statistic significance of \(p < .001\). GPA = cumulative grade point average; E x V = Expectancy x Valence; DV = dependent variable.

learning (\(\beta = .13, p < .05\)) beyond the three control variables, which accounted for 54% of the learning variance. Thus Hypothesis 7 was supported. The fact that the hypothesis was supported despite the marginal significance of the motivation-to-learn correlations in Table 1 illustrates the importance of the control variables.

Table 3

Regression Results for Moderation Hypotheses

<table>
<thead>
<tr>
<th>Personality variable</th>
<th>Conscientious Learning oriented Performance oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>DV = Postfeedback expectancy*</td>
<td>.00 .00 .00</td>
</tr>
<tr>
<td>1. Class</td>
<td>.00 .00 .00</td>
</tr>
<tr>
<td>2. GPA</td>
<td>.04* .04* .04*</td>
</tr>
<tr>
<td>3. Goal commitment</td>
<td>.04* .04* .04*</td>
</tr>
<tr>
<td>4. Initial expectancy</td>
<td>.30*** .30*** .30***</td>
</tr>
<tr>
<td>5. Personality</td>
<td>.01 .02 .00</td>
</tr>
<tr>
<td>6. Learning</td>
<td>.04* .03* .03*</td>
</tr>
<tr>
<td>7. Personality x Learning</td>
<td>.01 .04* .00</td>
</tr>
</tbody>
</table>

Note. Values represent \(R^2\)'s. \(N = 103\). All equations had an overall F-statistic significance of \(p < .001\). GPA = cumulative grade point average; DV = dependent variable.

Discussion

The positive relationships of learning orientation and conscientiousness with motivation to learn stand out as the most important contributions of this study. Learners who had high levels of these personality variables exhibited higher motivation levels, both initially and in the wake of feedback during the learning process. Furthermore, we elucidated the underlying mechanisms for these effects using an Expectancy x Valence framework, placing these relationships in a more established theoretical context. Specifically, the relationships of conscientiousness and motivation to learn were partially mediated by expectancy and valence. In other words, individuals who were reliable, self-disciplined, and persevering were more likely to perceive a link between effort and performance and were more likely to value high performance levels. These results therefore complement past research by identifying mechanisms for positive manifestations of this personality variable (Barrick & Mount, 1991; Barrick et al., 1993).

Learning orientation was also related to motivation-to-learn levels, with highly learning-oriented individuals exhibiting higher expectancy and valence levels. In contrast, performance orientation was negatively related to motivation to learn by means of expectancy. Thus, this study is among the first to demonstrate a significant link between goal orientation and two of the most visible motivational constructs, expectancy and valence. Our work therefore places goal orientation (and conscientiousness) in a larger, metatheoretical framework of Expectancy x Valence theories, allowing their relationships to be compared and contrasted with those of other trait and motivation variables (Kanfer, 1991).
Besides predicting motivation levels, the personality variables we examined also moderated individuals' responses to performance levels during the learning process. Although the role of personality in reacting to performance levels and feedback has been much discussed, empirical work is lacking (Fedor, 1991). Our work begins to fill this gap by showing that the tendency for low performance levels to be associated with lower expectancy levels was less prevalent for highly learning-oriented individuals. This finding is consistent with past goal orientation research suggesting that learning orientations buffer learners against the negative effects of early difficulty (Button et al., 1996; Dweck & Leggett, 1988; Elliott & Dweck, 1988). Furthermore, the tendency for low performance to be associated with lower valence was not as prevalent for less performance-oriented individuals, an effect that has not been demonstrated in past research. Thus, in situations in which difficulty in mastering training content is expected, our results suggest that highly learning-oriented individuals (and less performance-oriented individuals) should remain motivated. We observed no interactions for conscientiousness; rather, its effects were uniformly positive across performance levels.

Taken together, these results have many practical implications. As noted above, learners with a trait pattern that was highly conscientious, highly learning oriented, and less performance oriented were 30% more likely to perform well on the first exam and 28% more likely to perform well on the second using Rosenthal and Rosnow's (1991) convention. Because conscientiousness is used in many selection batteries and has shown considerable stability (test-retest r = .83; Costa & McCrae, 1992), information about the conscientiousness of learners could be a valuable component of the person analysis phase of needs assessment (Goldstein, 1991). Goal orientation measures could be used in a similar fashion, or the training context could be manipulated to enhance one orientation or the other. Dweck (1975) and Kraiger, Ford, and Salas (1993) noted that situational cues can affect a learner's orientation at a given point in time, giving a state component to the construct (Button et al., 1996; DeShon & Fisher, 1996). Thus, in situations in which training materials are particularly complex and learning difficulty is expected, conscientious and learning-oriented individuals could be selected for training, or a learning-oriented emphasis could be created by illustrating task experimentation and exploration of multiple learning strategies. In situations in which conscientious individuals are lacking or a learning-oriented emphasis is impossible, training may need to be lengthened and learning rate slowed so students can avoid early difficulty. Also, given the lower valence levels among such individuals, external incentives may be necessary to improve their motivation to learn.

A potential limitation of this study is that the learning occurred in a classroom setting rather than in an actual organizational training environment. However, because we were interested in the effects of personality variables in an achievement-oriented setting, the classroom did afford a high degree of fidelity. Specifically, Farr et al. (1993) noted that most of the goals advanced in organizations are normative performance goals. Such goals are also most frequently used in training programs, which often culminate in objectively scored achievement tests. Nonetheless, future research is needed to replicate these findings in other types of learning environments, including those in which explicit rewards are tied to goal achievement. Although many goals in organizational settings are only loosely tied to objective rewards, the presence of such rewards could increase the motivational ramifications of outcome valence. In the current study, learners received no specific awards for goal achievement. However, to the extent that awards increase goal commitment (e.g., Hollenbeck & Klein, 1987), controlling for goal commitment in all our analyses suggests that our results may be generalizable to such contexts.

In addition, researchers should replicate these findings with other types of goals (e.g., mastery goals) and with other forms of feedback. Fedor (1991) notes that feedback is multidimensional, including facets such as sign, accuracy, timing, quantity, and specificity. To this we would add that feedback can be subjective or objective, process or outcome oriented, task or person generated, interactationally fair or unfair (Bies & Moag, 1986), written or oral, individual or group level, or surprising or expected. Fedor notes that individual differences affect preferences for certain dimensions of feedback. It may be that personality variables moderate reactions to feedback differently according to these dimensions. For example, learning orientation may be a more significant moderator when process feedback is given or when feedback is task generated. Conscientiousness may be more necessary when subjective, interactationally unfair feedback is given. Performance orientation may be more deleterious to individuals who receive negative feedback when it is surprising to them. Moreover, our results may become less significant when feedback is general, brief, delayed, or inaccurate because the information needed to alter behavior is not provided. These types of feedback occur across a variety of training settings, depending on whether procedural or declarative knowledge is emphasized (Kraiger et al., 1993), whether tasks amenable to objective feedback are used, and whether trainers are experienced in feedback delivery. Future research on personality effects in these domains is warranted.

References


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