

# Linking Proactive Personality and the Big Five to Motivation to Learn and Development Activity

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The authors investigated links between the Big Five, proactive personality, and motivation to learn. Web-based survey data were collected at 2 points in time from 183 employees of a financial services firm. Results showed that proactive personality was, only in part, a composite of Big Five facets, which accounted for 26% of its variance. Structural equation modeling results demonstrated that proactive personality, openness, extraversion, and conscientiousness predicted motivation to learn. In addition, motivation to learn was positively related to objectively assessed development activity. Proactive personality, extraversion, and openness had significant indirect links to development activity. Hierarchical regression results suggested that proactive personality had significant incremental validity in the prediction of motivation to learn over all relevant Big Five facets.

*Keywords:* proactive personality, motivation to learn, five factor model of personality, development activity

Ongoing changes in the nature of employment relationships and improvements in the use of technology for training have led to two emerging trends in today's work organizations, both of which point to an increasing emphasis on individual responsibility for learning and development. First, changes in the nature of the psychological contract along with increasing emphasis on protean careers, boundaryless careers, and career self-management characterize individual employees as free agents who must be proactive in seeking out and participating in training and development opportunities in order to maintain internal and external marketability (Arthur & Rousseau, 1996; DeMeuse, Bergmann, & Lester, 2001; Hall, 1996a, 1996b; Hall & Mirvis, 1995; King, 2004). In this context, individuals' fundamental predispositions are critically important to understanding who will be motivated toward learning and will actively engage in development. Second, the number of training opportunities and delivery channels available is dramatically increasing, with a large number of organizations taking advantage of self-paced, Web-based learning events and courses that can be completed any time and any place. These self-guided types of learning are often voluntary and require a greater amount of initiative and responsibility on the part of employees than more traditional and mandatory training experiences. Research suggests that person variables, or individual characteristics, may be the

strongest predictors of engagement in development activity, especially when that activity is voluntary rather than required (Maurer & Tarulli, 1994).

The trends described above imply that individual career success is increasingly linked to taking responsibility for one's own development (Arthur & Rousseau, 1996; Hall & Mirvis, 1995). Although organizations are making themselves less responsible for employees' careers (Erlich, 1994), they are providing, in many cases, more self-directed development opportunities. Those who are highly motivated to learn are expected to prosper in this environment, contributing to their organizations and advancing their careers. Likewise, organizations benefit by increased overall organizational learning, increased workforce flexibility to take on new roles, and potentially decreased resistance to change. In general, continuous learning is viewed as a significant competitive advantage for organizations (Appelbaum & Gallagher, 2000; Major, 2000).

In this study, we investigated links between individual personality attributes and motivation to learn. Motivation to learn encompasses the desire to engage in training and development activities, to learn training content, and to embrace the training experience (cf. Carlson, Bozeman, Kacmar, Wright, & McMahan, 2000; Noe, 1986). Because one's motivation toward learning is an indication of desire and willingness to exert effort toward training and development, extant research and theory treat it as a state that is influenced by both individual characteristics and contextual factors (e.g., Colquitt, LePine, & Noe, 2000). Personality variables are relatively more enduring, stable, individual characteristics that indicate general tendencies and predispositions. These more traited factors may be especially important in generating motivation to learn in cases where situational factors exert little positive, or even negative, influence on motivation to learn (e.g., lack of social support, poor training climate).

From an applied perspective, this type of research is important for shedding more light on how organizations can best identify and

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leverage those with differing levels of motivation to learn. For instance, the mere existence of training opportunities may be sufficient to ensure that individuals whose personalities predispose them toward learning engage in development activity. However, those predisposed to be less motivated may need more organizational support and encouragement. Learning theories suggest that adult learners benefit most from opportunities that are flexible, self-guided, experiential, and explicitly linked to their perceived learning needs (Knowles, 1978). Adult learners who are more successful are those with sufficient motivation levels to regulate their own learning (Corno, 1993). Investigating motivation to learn is both a timely and practical approach for improving employee development initiatives.

This research contributes to training and development theory (a) by applying the full five factor model of personality to understanding motivation to learn and (b) by integrating the proactive personality construct with the five factor model in order to understand the relative efficacy of predictors of motivation to learn. Models of work-related learning and development generally demonstrate links between individual antecedents, motivational states, and participation in development activities (e.g., Maurer, Weiss, & Barbeite, 2003). One way in which this general theoretical framework has been operationalized is through an examination of the links between personality and motivation to learn. Although individual research studies typically examine the effects of only a few personality variables, there has been sufficient research on the relationship between personality and motivation to learn to prompt a comprehensive meta-analysis (Colquitt et al., 2000). Colquitt and his colleagues found that several personality variables, including locus of control, achievement motivation, anxiety, and conscientiousness, were related to motivation to learn. These findings demonstrate the value of personality variables as predictors of motivation to learn and have fueled calls for additional research on the topic (Colquitt et al., 2000; Ford & Oswald, 2003).

### The Big Five

The five factor model of personality is one of the most widely accepted comprehensive models of personality. The Big Five factors include Neuroticism (i.e., tendency to experience negative affects, such as fear, sadness, embarrassment, anger, guilt, and disgust), Extraversion (i.e., tendency to like people, prefer being in large groups, and desire excitement and stimulation; likely to be assertive, active, talkative), Openness (i.e., tendency to have an active imagination, esthetic sensitivity, intellectual curiosity, and be attentive to feelings), Agreeableness (i.e., tendency to be altruistic, cooperative, and trusting), and Conscientiousness (i.e., tendency to be purposeful, organized, reliable, determined, and ambitious). Each of the five factors is composed of several facets.

Reviews and meta-analyses support the consistency and breadth of the five factor model as well as its influence on several work-related constructs (Barrick & Mount, 1991; Goodstein & Lanyon, 1999; Judge & Ilies, 2002; Mount & Barrick, 1998; Salgado, 1997; Vinchur, Schippmann, Switzer, & Roth, 1998). One of the most widely cited works in this area is Barrick and Mount's (1991) meta-analysis, which demonstrated significant effects of the Big Five on job performance and training proficiency. Extraversion, conscientiousness, and openness were all positively related to training proficiency, which was defined as training performance

ratings, productivity data, and time to complete training results. In Salgado's (1997) meta-analysis, each of the five factors, with the exception of extraversion, was significantly correlated with a training criterion.

Conscientiousness is the only factor of the Big Five that prior research has expressly linked to motivation to learn (e.g., Colquitt & Simmering, 1998; Colquitt et al., 2000). Colquitt and Simmering (1998) found that conscientiousness positively predicted motivation to learn, which in turn was related to learning outcomes. In their meta-analysis, Colquitt et al. likewise found a positive link between conscientiousness and motivation to learn. In the same meta-analysis, anxiety, a component of the Big Five's Neuroticism factor, was negatively related to motivation to learn. Given the demonstrated relationships between the Big Five and assorted learning and training outcomes, we expected the five factor model to be relevant in the prediction of motivation to learn.

We hypothesized that conscientiousness, openness, and extraversion would be positively related to motivation to learn. Individuals high in conscientiousness are more achievement oriented and set very clear goals for themselves. They may engage in development to prepare for the future or to take on more responsibility. Individuals high in openness may be interested in learning for the sake of learning. These individuals are generally more likely to try something new. Extraverted individuals are more likely to be assertive and sociable than less extraverted individuals, and these qualities seem related to a desire to learn.

We hypothesized that neuroticism would be negatively related to motivation to learn. Individuals with high levels of anxiety and few coping skills are not expected to actively seek out new learning opportunities. Finally, we did not expect agreeableness to predict motivation to learn. When agreeableness is high, individuals are accommodating toward others. When it is low, they are challenging toward others. One's level of cooperation seems unlikely to influence motivation to learn. Nonetheless, we included agreeableness in the model in order to provide a comprehensive assessment of the relationships between the Big Five and motivation to learn (see Figure 1).

### Proactive Personality

Despite the widespread acceptance of the five factor model, theorists have argued that when attempting to link personality to a specific criterion of interest, the criterion-related validity of basic personality traits is likely to be exceeded by compound or emergent personality variables that are more specifically tailored to the outcome (Hough & Schneider, 1996). According to Hough and Schneider, "Compound personality traits are comprised of basic personality traits that do not all covary" (p. 57). Proactive personality is thought to be one example of such a compound variable (Hough, 2003), and it has proven to be predictive of a number of career development outcomes.

Bateman and Crant (1993) developed the proactive personality concept, defining it as a relatively stable tendency to effect environmental change that differentiates people based on the extent to which they take action to influence their environments. Individuals with a prototypical proactive personality "identify opportunities and act on them, show initiative, take action, and persevere until meaningful change occurs" (Crant, 2000, p. 439). People with a proactive personality are relatively unconstrained by situational

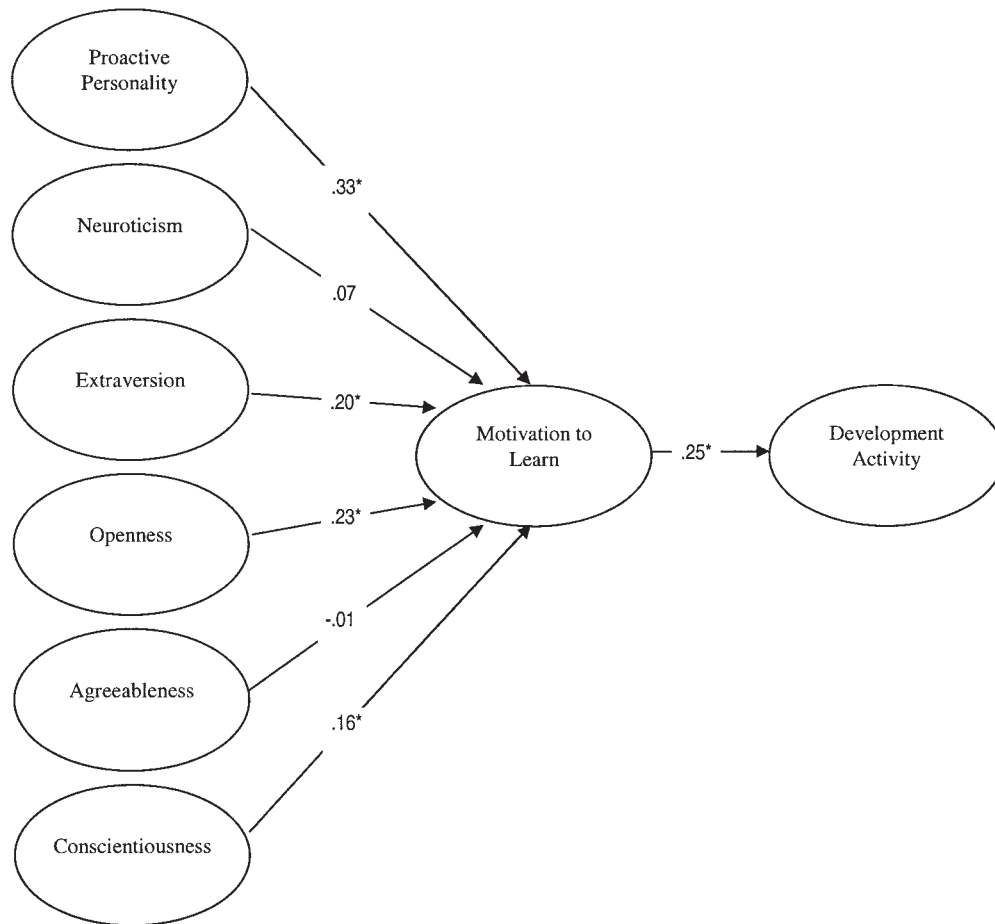


Figure 1. Structural model depicting personality predictors of motivation to learn. Values shown are completely standardized parameter estimates. \* $p < .05$ .

forces (Bateman & Crant, 1993), tend to set high standards, and harness all available resources into achieving those standards (Crant, 1996). Proactive personality captures the willingness and determination to pursue a course of action, characteristics that are central to models of self-development (Antonacopoulou, 2000).

Proactive personality has been linked to objective and subjective indicators of career success, after accounting for other predictors, such as demographics, human capital, motivation, type of organization, and type of industry (Seibert, Crant, & Kraimer, 1999). In a longitudinal study, proactive personality was positively related to innovation, political knowledge, and career initiative, all of which, in turn, had positive relationships with career progression and career satisfaction (Seibert, Kraimer, & Crant, 2001). Longitudinal socialization research showed that proactive personality predicted newcomers' reports of task mastery (Kammeyer-Mueller & Wanberg, 2003).

Research has shown consistent positive relationships between proactive personality and two Big Five factors: Conscientiousness and Extraversion (Bateman & Crant, 1993; Crant, 1995; Crant & Bateman, 2000). In one study, proactive personality was also positively correlated with openness and negatively correlated with neuroticism (Crant & Bateman, 2000). To the best of our knowl-

edge, potential links between proactive personality and facets of the Big Five have not been examined in previous research.

Crant (1995) demonstrated that proactive personality accounted for incremental variance in the job performance of real estate agents after controlling for both extraversion and conscientiousness. Crant (1995) concluded that specific measures of personality, such as proactive personality, "can have incremental validity over the Big Five factors" (p. 536). In the present study, we further explored the relationship between proactive personality and the Big Five. Our goals were (a) to assess the extent to which proactive personality is a compound personality variable composed of Big Five facets and (b) to assess proactive personality's incremental validity over the Big Five factors in the prediction of motivation to learn.

#### Development Activity

With our proposed model, we also examined personality and motivation to learn as predictors of development activity. There is some evidence that personality factors are related to training outcomes. For instance, Barrick and Mount's (1991) meta-analysis demonstrated that extraversion, conscientiousness, and openness

were positively related to training proficiency. Thus, in addition to assessing the direct effects of personality on motivation to learn, we also examined the direct and indirect effects of personality on development activity.

Previous research also has supported a link between motivation to learn and development activity. Noe and Wilk (1993) showed that motivation to learn was positively related to the average number of hours spent in training per year across organizational contexts. In some types of firms, motivation to learn was also positively correlated with number of training courses individuals reported taking, the objectively documented number of external training courses taken, and individuals' plans for enrolling in future training courses. Birdi, Allan, and Warr (1997) found that learning motivation was predictive of five types of developmental activity: required training, on-the-job training, voluntary job-related learning, voluntary non-job-related learning, and career planning. The effect was strongest for the more voluntary types of development activity. More recently, Tharenou (2001) demonstrated that motivation to learn predicted training and development activity in the ensuing 12 months.

## Method

### Participants

We sent invitations to participate in two Web-based surveys to 300 employees of a midsized financial service organization who were randomly selected from a training database of individuals who had voluntarily completed the NEO for personal development purposes. Responses were obtained from 185 employees for the first survey and from 183 participants for the second survey. Thus, the ultimate response rate for those completing both surveys was 61%. The majority of participants were women (59%). The sample was predominantly White (94%), with all other racial/ethnic groups being represented by less than 2% each. In terms of age, 17% were under the age of 35, 70% were between 35 and 55, and 12% were over age 55. The sample's educational attainment breakdown was as follows: 20% high school degree, 14% some college or an associate's degree, 46% 4-year college degree, and 20% advanced degree. Organizational functions were represented as follows: 16% administrative, 17% professional or technical, 30% sales, and 37% management. The average organizational tenure of participants was 10 years ( $SD = 7.9$ ).

### Measures

Proactive personality was measured using a shortened version of Bate-man and Crant's (1993) original scale, which has 10 items (Seibert et al., 1999). A sample item is, "I am constantly on the lookout for new ways to improve my life." The measure uses a 7-point agreement scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The Proactive Personality Scale demonstrated a coefficient alpha of .92 in this study. For the regression models, we averaged the 10 items to create one score for proactive personality. For the structural equation model, we divided the 10 items into three parcels to serve as indicators of proactive personality using an item-to-construct balance approach (i.e., successively assigning highest and lowest loading items across parcels; Little, Cunningham, Shahar, & Widaman, 2002). Parcels were used instead of items (a) to improve reliability of the indicators, (b) to improve overall structural equation model fit, and (c) to reduce the ratio of model indicators to observations.

We measured the Big Five factors of personality with the NEO Personality Inventory—Revised (NEO-PI-R; Costa & McCrae, 1992), which includes 240 items to assess the five major factors and 30 facets of personality. Participants responded on a 5-point agreement scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Item-level data were not

available to us because the NEO-PI-R is copyrighted and was scored by the test publisher for the organization. The test publisher converted raw scores for each personality factor and facet into  $T$  scores. Therefore, we used  $T$  scores for analyses. A single observed score represented each personality factor in the structural equation model. We fixed measurement error by multiplying the observed variance by one minus the published reliability for each scale. The published coefficient alphas ranged from .87 to .92 (Costa & McCrae, 1992).

Motivation to learn was measured using a 17-item scale developed by Noe and Wilk (1993). A sample item includes, "I am willing to exert considerable effort in training programs in order to improve my skills." Participants responded on a 7-point agreement scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). In the current study, motivation to learn had an internal consistency reliability estimate of .86 with three items removed because of low face validity and low factor loadings obtained from a confirmatory factor analysis of the single latent construct. In a manner similar to that used with proactive personality, as described above, we averaged the items to create a single score for motivation to learn to be used in regression analyses, and we created three parcels using an item-to-construct balance approach to serve as indicators of motivation to learn in the structural equation model (Little et al., 2002).

We obtained objective development activity information for a 6-month period from the organization's training database. The number of training courses registered for during the 6-month period and the number of hours spent in training during the 6-month period were each standardized and then summed to form a single indicator of development activity in the structural equation model. We fixed measurement error to zero for the development activity indicator in the structural equation model.

### Procedure

Employees received a message via electronic mail from a company vice president briefly describing the research and inviting them to participate. The data collection procedure included administering two Web-based surveys approximately one month apart and accessing archived personality assessments and training participation records. Internet links for each survey were sent to employees via e-mail. Reminder notices were sent one week later.

At Time 1, we collected proactive personality and demographic information. At Time 2, we assessed motivation to learn. Each survey took less than 15 min to complete, and employees were allowed to participate on company time. The Big Five personality data and development activity information for the 6 months prior to the Time 2 data collection (i.e., number of training courses enrolled for and number of training hours completed) were extracted from archived records in the organization's training database.

## Results

Descriptive statistics for motivation to learn, development activity, proactive personality, and the five factors are presented in Table 1. Proactive personality was significantly correlated with four of the Big Five factors, including the Neuroticism factor ( $r = -.15$ ), the Extraversion factor ( $r = .20$ ), the Openness factor ( $r = .37$ ), and the Conscientiousness factor ( $r = .15$ ). To assess how proactive personality relates to the facets of the Big Five, we conducted five separate regression analyses for the six facets comprising each factor of the Big Five. Proactive personality was regressed on to the facets of each factor in separate equations because with a sample size of 183 it was unrealistic to test all 30 facets at once. Standardized results are presented in Table 2. Because the goal was to determine the extent of overlap between proactive personality and the Big Five facets, we used liberal



Table 1  
Means, Standard Deviations, and Correlations

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. MTL1	4.27	0.45	—												
2. MTL2	4.28	0.43	.63	—											
3. MTL3	4.08	0.45	.63	.71	—										
4. Motivation to learn	4.22	0.39	.87	.89	.87	—									
5. DevAct	0.00	1.82	.16	.24	.22	.23	—								
6. PP1	5.61	0.96	.34	.32	.35	.38	.05	—							
7. PP2	5.35	1.05	.33	.30	.37	.38	.05	.77	—						
8. PP3	5.05	1.02	.34	.36	.41	.42	.07	.78	.75	—					
9. Proactive personality	5.36	0.93	.37	.36	.40	.43	.06	.93	.91	.91	—				
10. Neuroticism	47.49	10.42	-.09	.02	-.03	-.04	.05	-.08	-.19	-.18	-.15	—			
11. Extraversion	56.52	10.52	.18	.23	.18	.22	-.04	.17	.17	.20	.20	-.13	—		
12. Openness	53.38	10.17	.32	.26	.33	.34	.05	.29	.37	.38	.37	-.07	.01	—	
13. Agreeableness	50.39	8.67	-.10	-.01	-.06	-.06	.03	-.05	-.16	-.15	-.12	-.04	.03	.01	—
14. Conscientiousness	54.98	9.84	.19	.21	.14	.21	.14	.14	.14	.14	.15	.02	-.07	.14	-.04

Note.  $N = 183$ . The Big Five personality variables are measured in  $T$  scores. Developmental activity (DevAct) is the sum of two standardized variables (number of training courses and number of hours spent in training). Values above  $|.15|$  are significant ( $p < .05$ ). MTL = motivation to learn parcels; PP = proactive personality parcels.

criteria in identifying relevant facet predictors of proactive personality (i.e., significant facet betas were interpreted even when the  $R^2$  for the equation was not significant). Although as a collective set the six facets of neuroticism were not significantly related to proactive personality ( $p = .06$ ), the single neuroticism facet vulnerability was a significant negative predictor. From the significant overall analysis for extraversion, both the assertiveness and activity facets were significant positive predictors of proactive personality. The  $R^2$  for the openness analysis was significant, with three facets positively related to proactive personality: actions, ideas, and values. Although the agreeableness model was not significant ( $p = .07$ ), the altruism facet was significantly and positively related to proactive personality. Finally, from the significant regression analysis for conscientiousness, dutifulness was negatively related and achievement striving was positively related to proactive personality. Definitions for each of these facets are provided in Table 3. We regressed proactive personality on these nine facets to obtain an estimate of how much variance was shared among these personality facets and proactive personality ( $R^2 = .26$ ,  $p = .00$ ). Only 26% of the variance in proactive personality could be accounted for by the set of nine facets significantly related to proactive personality.

Having demonstrated that despite being related to some facets, proactive personality is distinguishable from the Big Five, we proceeded with testing the hypothesized model (see Figure 1). We expected proactive personality and the Big Five factors Neuroticism, Extraversion, Openness, and Conscientiousness to predict motivation to learn directly and to indirectly predict development activity. We used structural equation modeling with LISREL 8.54 to test the hypothesized model (see Figure 1). Overall, the model was a good fit to the data,  $\chi^2(38, N = 183) = 43.90$ ,  $p = .24$ ; root mean square error of approximation = .018; nonnormed fit index = .99; comparative fit index = .99. Squared multiple correlations for the structural equations were .33 for motivation to learn and .06 for development activity. We also assessed a model allowing for the estimation of direct effects of the personality variables on development activity,  $\chi^2(32, N = 183) = 38.77$ ,  $p = .19$ . Allowing for the direct effects was not a significant improve-

Table 2  
Proactive Personality Regressed on the Facets of Each of the Five Factors of Personality

Big Five factor and facet	$\beta$	<i>SE</i>	<i>t</i>	$\rho$	Model $R^2$
Neuroticism					.07
Anxiety	-.04	.11	-0.33	.74	
Angry hostility	-.01	.10	-0.09	.93	
Depression	-.06	.11	-0.56	.58	
Self-consciousness	.03	.11	0.29	.77	
Impulsiveness	.06	.08	0.66	.51	
Vulnerability	-.23*	.10	-2.38	.02	
Extraversion					.16*
Warmth	.00	.10	-0.03	.98	
Gregariousness	-.12	.10	-1.23	.22	
Assertiveness	.20*	.08	2.39	.02	
Activity	.19*	.08	2.27	.02	
Excitement seeking	.13	.08	1.53	.13	
Positive emotions	.10	.09	1.11	.27	
Openness					.18*
Fantasy	.09	.08	1.17	.25	
Aesthetics	-.03	.08	-0.36	.72	
Feelings	.06	.08	0.82	.41	
Actions	.15*	.08	2.03	.04	
Ideas	.22*	.08	2.64	.01	
Values	.15*	.07	2.06	.04	
Agreeableness					.06
Trust	.10	.08	1.15	.25	
Straightforwardness	-.09	.08	-1.07	.29	
Altruism	.16*	.08	1.95	.05	
Compliance	-.05	.09	-0.61	.55	
Modesty	-.13	.08	-1.62	.11	
Tender-mindedness	-.05	.08	-0.59	.55	
Conscientiousness					.17*
Competence	.17	.10	1.75	.08	
Order	-.04	.08	-0.50	.62	
Dutifulness	-.24*	.10	-2.42	.02	
Achievement striving	.42*	.09	4.62	.00	
Self-discipline	-.04	.10	-0.38	.70	
Deliberation	-.01	.08	-0.14	.89	

Note.  $N = 183$ . Proactive personality was regressed on each set of six facets, one factor at a time.

\*  $p < .05$ .

Table 3  
*Definitions of Big Five Facets Significantly Related to Proactive Personality*

Big Five factor and facet	Definition	Relationship sign
Neuroticism		
Vulnerability	Inability to cope with stress; dependent, hopeless, or panicked in difficult situations	–
Extraversion		
Assertiveness	Dominant, forceful; tendency to speak up; often leaders	+
Activity	Sense of urgency; need to keep busy, maintains a rapid tempo	+
Openness		
Actions	Willingness to try different activities; preference for novelty over the familiar or routine	+
Ideas	Intellectual curiosity; willingness to consider unconventional ideas	+
Values	Readiness to reexamine values (social, political, or religious)	+
Agreeableness		
Altruism	Concern for the welfare of others; tendency to show generosity and consideration and to provide help	+
Conscientiousness		
Dutifulness	Strict adherence to one's ethical principles; fulfills moral obligations; dependable and reliable	–
Achievement striving	Hard working; high aspirations; diligent and purposeful; sense of direction in life	+

*Note.* Definitions adapted from Costa & MacCrae (1992).

ment in model fit,  $\Delta\chi^2(6, N = 183) = 5.13, p = .53$ . In addition, none of the direct paths from any of the personality variables to development activity were significant ( $p < .05$ ). Therefore, the more parsimonious model, without direct effects, is described.

Table 4 includes observed parameter estimates, their standard errors, and standardized parameter estimates as well as the 95% confidence intervals for the standardized estimates and the individual effect size,  $f^2$  (Cohen, 1988). The standardized parameter estimates demonstrate the relative magnitude of the relationships between personality variables and motivation to learn and between motivation to learn and development activity. The confidence intervals provide two pieces of information: (a) whether the interval contains zero and is therefore not statistically significant and (b) the relative magnitude of each estimate. As illustrated in

Figure 1, the hypothesized relationships between personality and motivation to learn were significant, with the exception of the link between neuroticism and motivation to learn ( $p > .05$ ). The relationship between agreeableness and motivation to learn was also nonsignificant ( $p > .05$ ), providing some evidence of discriminant validity. Cohen's effect size indicator,  $f^2$  (see Table 4), indicates that proactive personality has nearly twice the effect on motivation to learn when holding the other personality traits constant, as do the other personality traits. Finally, motivation to learn was significantly related to development activity. As shown in Table 5, proactive personality, extraversion, and openness had significant indirect effects on development activity.

We followed up the structural equation analysis described above with a set of hierarchical regression analyses designed (a) to

Table 4  
*Direct Effects on Motivation to Learn and Development Activity*

Variable	Observed parameter	SE	Standardized parameter	LCL for standardized parameter	UCL for standardized parameter	$f^2$
Effect on motivation to learn						
Proactive personality	0.1304*	.0368	.33	.14	.51	.07
Neuroticism	0.0024	.0025	.07	–.07	.22	.01
Extraversion	0.0067*	.0026	.20	.05	.35	.04
Openness	0.0083*	.0031	.23	.06	.40	.04
Agreeableness	–0.0004	.0032	–.01	–.15	.13	.00
Conscientiousness	0.0057*	.0027	.16	.01	.31	.03
Effect on development activity						
Motivation to learn	1.3667*	.4251	.26	.10	.41	.06

*Note.* Parameter estimates and their standard errors are reported to four decimal places because of metric differences among the scales used. LCL and UCL are the lower and upper confidence limits for a 95% confidence interval about the standardized parameter;  $f^2$  is Cohen's (1988) effect size for each parameter estimate.

\*  $p < .05$ .

Table 5  
*Indirect Effects of Personality Variables on Development Activity*

Variable	Observed parameter	SE	Standardized parameter	LCL for standardized parameter	UCL for standardized parameter	$f^2$
Proactive personality	.1783*	.0725	.08	.02	.15	.03
Neuroticism	.0033	.0035	.02	-.02	.06	.01
Extraversion	.0092*	.0045	.05	.00	.10	.02
Openness	.0113*	.0053	.06	.00	.11	.03
Agreeableness	-.0005	.0043	.00	-.04	.04	.00
Conscientiousness	.0078	.0044	.04	.00	.09	.02

*Note.* Parameter estimates and their standard errors are reported to four decimal places because of metric differences among the scales used. LCL and UCL are the lower and upper confidence limits for a 95% confidence interval about the standardized parameter;  $f^2$  is Cohen's (1988) effect size for each parameter estimate.

\*  $p < .05$ .

explore the specific facets driving the significant relationships between the Big Five and motivation to learn and (b) to better understand the relative contribution of proactive personality in the predication of motivation to learn. Because the structural equation modeling results showed that extraversion, openness, and conscientiousness were all related to motivation to learn, we devoted a separate hierarchical regression to the facets of each. In each of the three equations, motivation to learn was regressed on the six facets of the relevant Big Five factor (Step 1) and then proactive personality (Step 2). The results of these regressions are shown in Table 6. Across each of these models, proactive personality contributed

approximately 10% of the explanatory variance above any of the sets of facets alone. Prior to entry of proactive personality, two facets of the Extraversion factor (activity and positive emotions), two facets of the Openness factor (ideas and values), and three facets of the Conscientiousness factor (competence, dutifulness, and achievement striving) were related to motivation to learn ( $p < .05$ ). After entry of proactive personality, only positive emotions (i.e., tendency to be cheerful and optimistic) and competence (i.e., capable, sensible, prudent, effective) remained significant predictors of motivation to learn ( $p < .05$ ). When we regressed motivation to learn on the full set of significant facet-level predictors

Table 6  
*Hierarchical Regression of Motivation to Learn on Proactive Personality and the Facets of Extraversion, Openness, and Conscientiousness*

Big Five factor and facet	Step 1				Step 2			
	$\beta$	SE	$p$	$R^2$	$\beta$	SE	$p$	$R^2$
Extraversion				.15*				.25*
Warmth	-.06	.10	.55		-.06	.10	.53	
Gregariousness	-.06	.10	.56		-.02	.09	.87	
Assertiveness	.01	.08	.87		-.06	.08	.49	
Activity	.16*	.08	.05		.10	.08	.20	
Excitement seeking	.08	.08	.31		.04	.08	.61	
Positive emotions	.30*	.09	.00		.27*	.09	.00	
Proactive personality					.35*	.07	.00	
Openness				.17*				.26*
Fantasy	.05	.08	.57		.01	.08	.85	
Aesthetics	.12	.08	.16		.13	.08	.11	
Feelings	.10	.08	.18		.08	.07	.26	
Actions	-.04	.08	.59		-.09	.07	.21	
Ideas	.21*	.08	.01		.14	.08	.08	
Values	.17*	.07	.02		.12	.07	.10	
Proactive personality					.34*	.07	.00	
Conscientiousness				.17*				.26*
Competence	.33*	.10	.00		.28*	.09	.00	
Order	.09	.08	.22		.11	.07	.14	
Dutifulness	-.22*	.10	.03		-.14	.10	.16	
Achievement striving	.26*	.09	.00		.12	.09	.19	
Self-discipline	-.08	.10	.39		-.07	.09	.43	
Deliberation	-.06	.08	.44		-.06	.08	.44	
Proactive personality					.33*	.07	.00	

*Note.*  $N = 183$ . Motivation to learn was regressed on each set of six facets, one factor at a time. Proactive personality was entered at Step 2.

\*  $p < .05$ .

(i.e., activity, positive emotions, ideas, values, competence, dutifulness, and achievement striving) and then added proactive personality hierarchically, we obtained a change in  $R^2 = .05$  ( $p = .00$ ). Proactive personality demonstrated incremental validity beyond the best set of Big Five facets related to motivation to learn.

### Discussion

This research (a) applied the full five factor model of personality to understanding motivation to learn and (b) integrated the proactive personality construct with the five factor model in order to understand the relative efficacy of predictors of motivation to learn. Similar to the findings of Crant and Bateman (2000), proactive personality was positively related to extraversion, conscientiousness, and openness and negatively related to neuroticism in the present study. Further assessment at the facet level using lenient criteria showed that proactive personality is, in part, a composite of nine facets, at least one from each of the Big Five factors. Of the Big Five factors, the Openness factor had the most facets related to proactive personality, including actions, ideas, and values. Proactive personality was related to two facets of the Extraversion factor (assertiveness and activity), two facets of the Conscientiousness factor (dutifulness and achievement striving), and only one facet from both the Neuroticism (vulnerability) and Agreeableness (altruism) factors. Across analyses, the single facet most strongly related to proactive personality was achievement striving from the Conscientiousness factor ( $\beta = .42$ ,  $p < .00$ ). However, the Big Five facets accounted for only 26% of the variance in proactive personality, suggesting that the proactive personality construct is something more than a combination of Big Five facets. With an adequately large sample, future research could further evaluate the relationship between proactive personality and the Big Five facets using factor analytic techniques.

Structural equation modeling results demonstrated that proactive personality, extraversion, openness, and conscientiousness were all significant positive predictors of motivation to learn. The personality variables assessed here accounted for 33% of the variance in motivation to learn. Along with extraversion and openness, proactive personality also had a significant indirect effect on development activity. Motivation to learn was positively related to development activity, although the overlap in timing between the motivation to learn and development activity assessments is a barrier to inferring causality in this study. However, previous research has demonstrated that motivation to learn is antecedent to development activity (Birdi et al., 1997; Noe & Wilk, 1993; Tharenou, 2001).

An examination of facet-level predictors of motivation to learn showed that extraversion facets activity and positive emotions, openness facets ideas and values, and conscientiousness facets competence, dutifulness, and achievement striving were significantly related to motivation to learn. However, even when accounting for the influence of these seven facets, proactive personality still contributed to the prediction of motivation to learn. Considered along with the structural equation modeling results, these findings suggest that proactive personality may be a better predictor of motivation to learn than any of the Big Five factors or facets. This is consistent with Hough and Schneider's (1996) argument that compound personality variables that are more tailored to the outcome are likely to be better predictors than basic personality traits. Proactive personality, which is the tendency to show initiative and take action in one's environment

in order to effect meaningful change, seems more specifically tailored to predicting motivation in learning contexts than the more general Big Five factors and facets. The proactive personality construct fits well conceptually with the current emphasis on career self-management and self-directed learning opportunities and has been linked empirically to a number of career outcomes (Seibert et al., 1999; Seibert et al., 2001).

Previous research has demonstrated that motivation to learn can be influenced by both person and situation variables (Colquitt et al., 2000). One avenue for future research is to investigate the circumstances under which personality variables have the greatest effect on motivation to learn. When organizational supports for training and development are strong, personality variables may be less important than when organizational supports are weak. For instance, when employers offer incentives for training, provide company time for learning activities, have a climate that supports learning, and link development to outcomes such as pay and promotion, personality factors may be less relevant in the prediction of motivation to learn. In contrast, when training activities must be completed on one's own time and an employer generally treats development as the individual's responsibility by offering few supports, then personality is likely to be much more important to the prediction of motivation to learn.

From an applied perspective, personality predictors of motivation to learn may have selection and training applications. When hiring for positions that require continuous learning and frequent updating of skills, organizations may wish to target individuals whose personality traits are predictive of motivation to learn. The utility of training programs might also be improved by assessing the extent to which individuals are likely to be self-motivated. Special situational supports (e.g., supervisor and coworker encouragement) could be arranged for those lacking personality characteristics that heighten motivation to learn. Results of the present study suggest that when resources (i.e., time and money) for comprehensive personality assessments are limited, measuring proactive personality could be a quick and cost-effective method for identifying those most likely to be self-motivated toward learning.

Future research is needed to replicate and extend the current findings. In addition, these personality variables should be incorporated into broader models of training motivation and self-development. Here, proactive personality, extraversion, and openness had significant indirect links to the development activity index (i.e., number of training courses enrolled for and number of training hours completed). Previous research suggests that personality characteristics may be important predictors of other training and development variables, in addition to motivation to learn. Barrick and Mount's (1991) meta-analysis demonstrated that personality was linked to training proficiency, productivity data, and time to complete training. Similarly, Colquitt et al.'s (2000) meta-analysis linked personality to declarative knowledge, skill acquisition, posttraining self-efficacy, and transfer. A recent study found that highly conscientious individuals were more likely to participate in development when there was a lack of person-environment fit, defined as a difference in amount of desired and actual autonomy (Simmering, Colquitt, Noe, & Porter, 2003). The researchers concluded that these conscientious individuals viewed development as a means of improving their own fit with the organization. Models of training motivation should consider the situational circumstances under which personality factors may be especially important.



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