

Structural model of employee involvement in skill development activity: The role of individual differences

Todd J. Maurer^{a,*}, Michael Lippstreu^b, Timothy A. Judge^c

^a Department of Managerial Sciences, Georgia State University, P.O. Box 4014, Atlanta, GA, 30303-4014, USA

^b School of Psychology, Georgia Institute of Technology, Atlanta, GA 30332-0170, USA

^c Department of Management, University of Florida, Gainesville, Florida 32611, USA

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Abstract

We extend prior research on involvement in employee development activity by including prominent individual difference constructs that have been previously ignored in this area of research. These include two important personality characteristics (conscientiousness and openness to experience), mental ability and goal orientation constructs. We tested both mediated and direct effects of the variables. The sequence of relationships observed in the model was: *general personality traits* → *development domain individual and situational variables* → *development domain motivational variables* → *involvement in development*. Personality had indirect (mediated) effects on motivational and involvement constructs while goal orientation, as a development domain individual variable, had direct effects on motivational constructs. Mental ability had no effects. The study also replicated core relationships from prior research, but did so using an Internet sample and response medium. The model presented provides the most complete picture of behavior in this area to date. Important implications for advancement of theory, research and practice in the area of employee development behavior are discussed. © 2007 Elsevier Inc. All rights reserved.

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1. Introduction

Employee involvement in learning and development activity has become of increasing interest in vocational behavior for a great variety of important reasons ranging from employee effectiveness and career progression (Davenport & Prusak, 1997; Hall & Mirvis, 1995) to employee organizational commitment and job satisfaction (Mikkelsen, Saksvik, Eriksen, & Ursin, 1999). Maurer, Weiss, and Barbeite (2003) proposed and tested a new model of employee involvement in learning and development activity that constitutes the most detailed treatment of this area of behavior to date. While being a potentially valuable way to summarize and organize predictors of this behavior, the comprehensive model was tested in only one sample/setting and the model did

* Corresponding author. Fax: +1 404 651 2896.

E-mail address: tmaurer@gsu.edu (T.J. Maurer).

not include some of the more prominent, general individual difference constructs in the literature that are theoretically-relevant to employee development behavior. In the present study, we conducted a constructive replication in which we replicated and significantly extended that prior study through directly addressing its limitations.

1.1. Background on constructive replication and extension

As Eden (2002) asserted, “there have been many, many calls for replication research as an indispensable ingredient in the scientific process (cf. Amir & Sharon, 1990). Constructive replication involves testing the same types of relationships among constructs, but in a different way than the original study (Eden, 2002; Lykken, 1968). Good science, it is argued, is built in this way and not by conducting “one shot” studies and then moving on to something else. When important, influential and theoretically-relevant constructs have been omitted from prior research, it would seem that constructive replication might particularly be called for to not only test the impact of the omitted variables but also to determine if the established relationships hold when the previously missing variables are present. The current study follows in line with these suggestions in the literature: Some important core relationships are replicated in a new type of sample and setting in a model that has been updated to include new and important, theoretically-relevant variables that were previously neglected. This study therefore not only replicated the prior findings but also added new and important information to this literature about effects by key constructs. We first explain both the replication aspect of the current study (i.e. testing core variables) and the extension aspect (i.e. inclusion of critical missing constructs in prior research).

1.2. Replication of core relationships

In both the prior and the current study, individual differences of the employees and differences in employees' perceived situations were posited to influence motivational variables relevant to employee development, and differences in these motivational variables were then hypothesized to influence employees' involvement in development. Consistent with Maurer et al. (2003), involvement in development in the present study includes possessing favorable attitudes toward participating in development activity and having high interest in it as well as having specific intentions to participate in various types of development activity. The general sequence of relationships posited in the model tested by Maurer et al. (2003) and in the present study is: *employee individual and situational variables* → *Motivational variables for development* → *Involvement in development* (see Fig. 1 for hypothesized paths and structural model and Fig. 2 for observed effects for comparison with hypothesized effects).

Although a number of variables in the study by Maurer et al. (2003) had significant relationships in the model, many of the effects were rather small (i.e., less than .20) and given the large sample size in that study the probability of significance of even small effects was high. In order to focus on the most important, core constructs as identified in that research, variables were chosen for inclusion in the present study if they had significant indirect or direct effects on the outcome variables of interest (i.e., involvement in development) in the prior study and had significant direct effects that were consistently above at least .20, and/or had effects on some variables in the model that were at least .30.

In the model depicted in Fig. 1, the individual difference variables that predict development motivation constructs are learning preparedness and career constructs that help enable or orient employees to pursue development of work-related skills (Maurer et al., 2003). The variables included in the present study as predictors of motivation for development based on the criteria outlined above were: (1) previous participation experiences in development, (2) possession of a development-oriented self-concept or perception that one possesses the characteristics needed for learning and development, (3) perception of a need for development, or the belief that one's skills are in need of improvement, and (4) perception that one's work situation supports development. The latter includes perceiving support for learning and development by supervisors, coworkers, and subordinates, along with the availability of development and learning resources and policies that support/encourage development. These individual and situational constructs were the major predictors of the development motivation and involvement constructs in prior research by Maurer et al. (2003) and they were also included here. Each construct has been shown to predict self-efficacy for development (confidence that one

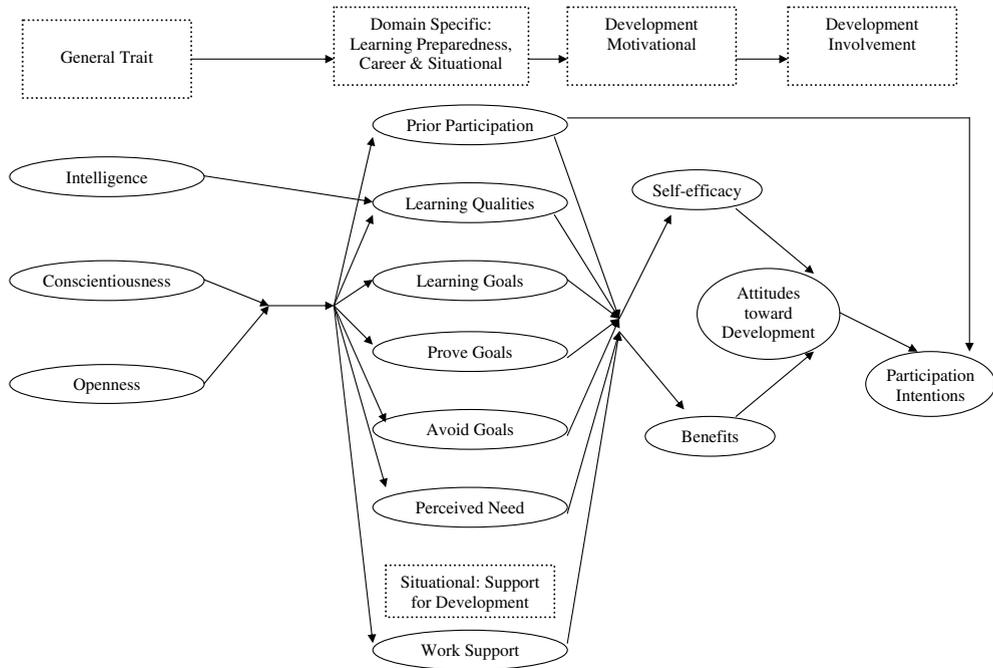


Fig. 1. Hypothesized effects and path model (all are expected to be positive effects except those to and from avoid goals and also those from prove goals all of which are negative; also, there was not a directional prediction for the relation between conscientiousness and perceived need).

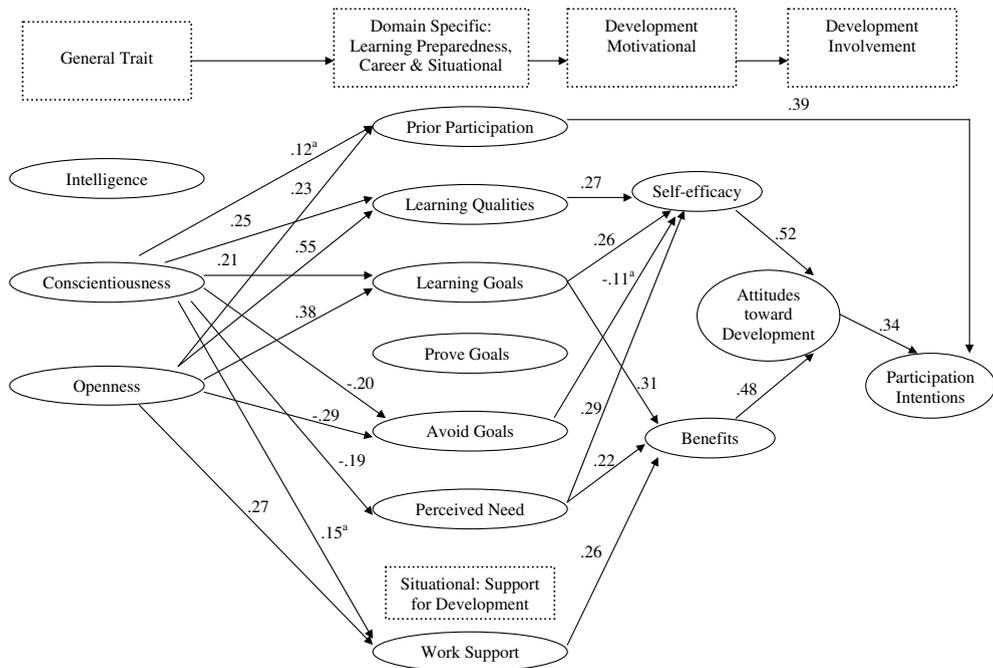


Fig. 2. Observed path model. Only significant paths and their standardized coefficients are shown. Path coefficients with a superscript are significant at $p < .05$. All others are significant at $p < .01$.

can develop and improve skills) and/or perceived benefits of development activity (perception that favorable outcomes will result from involvement in development). They also had indirect effects on involvement in development (attitudes, intentions, participation).

1.3. Extension by including other influential and theoretically-relevant constructs

The Maurer et al. (2003) study included age differences as a focus, and therefore the selection of variables for the model was influenced by the likelihood of age differences on the constructs. (Ironically, age effects in that study turned out to be rather small.) As a result, there were several individual difference constructs that are very important and theoretically-relevant to learning/development behavior, but not being particularly related to age, were also excluded from that study. Therefore, we do not have data to reflect effects of these theoretically-relevant but missing constructs and we do not know whether the individual variables studied in the prior model were the direct causal determinants of development behavior or whether those variables were spuriously related to behavior because the missing constructs were unmeasured in the prior research. The present study extends prior research by explicitly including very important constructs that were neglected in prior research. We test both mediated and direct effect models involving trait variables as will be explained below.

1.4. Prediction of development motivation by goal orientation

One construct that has considerable promise as a predictor of motivation for development but which has not received attention in this research is goal orientation. Given the central features of this construct to learning and development motivation, this represents a major gap in this past research on development activity. Within the goal orientation heading, several dimensions have been identified and treated as distinctly important. Those who possess a ‘learning goal orientation’ tend to strive to understand new things and to increase their competence and skills through pursuing challenging, developmental activities. They are attracted to learning opportunities and maintain a positive, confident composure during challenging experiences. Individuals who possess a ‘performance goal orientation’ strive to demonstrate their competence via task performance (i.e. performance prove goal) or to avoid negative judgments of their performance (i.e. performance avoid goal; Dweck & Leggett, 1988; Elliot & Harackiewicz, 1996). Those people who are learning-oriented will perceive greater benefit from participation in development activity and will be more self-confident about their success in them and those who are performance oriented (i.e. possess prove or avoid goals) will be less confident and will perceive less benefit (Colquitt & Simmering, 1998). Therefore, these constructs should be included along with the other individual learning preparedness variables, and we expect them to influence both self-efficacy for development and perceived benefits of development.

In contrast to more general and immutable traits such as personality and mental ability, Elliot and Church (1997) considered goal orientation to be a proximal, “mid-level construct,” hierarchically situated between more distal dispositions and specific behaviors or outcomes. More general and immutable trait variables such as mental ability and personality should predict the more domain-specific and mutable variables that are directly relevant to motivation for employee development (Locke & Latham, 2004). Along these lines, goal orientation was included with other individual variables to be predicted by the general and immutable traits, ability and personality.

1.5. Prediction of development domain individual and situational variables by personality

Conscientiousness and openness to experience are constructs that are highly relevant to learning and development behavior and are theoretically and empirically most promising as predictors of motivation and involvement in development. Barrick, Mount, and Strauss (1993) suggest that conscientiousness may be the most important trait-motivation construct in the work domain. Conscientiousness has been linked to a variety of positive work outcomes (e.g., Barrick & Mount, 1991), including self-efficacy in training (Martocchio & Judge, 1997) and motivation to learn (Colquitt & Simmering, 1998). Those who are more conscientious should perceive themselves as possessing the qualities needed for learning due to their knowledge of themselves as being diligent and hardworking (Colquitt & Simmering, 1998; McCrae & Costa, 1987), their constant striving for success, and their tendency to set challenging goals and do what it takes to succeed (Barrick et al., 1993; Colquitt & Simmering, 1998). Because of these qualities, they are more likely to have taken time to invest in training and learning efforts and to perceive the need for and value of expanding one’s capability which can allow them to be even more effective in future work endeavors. They are likely also to be attracted to and to

choose situations that will provide to them the resources and support they need to be effective over situations that do not provide those resources. Therefore, conscientiousness should be positively related to learning self-concept, past participation in development and perceived support for development in the existing work environment. What is less clear is the expected relationship with perceived need for development. In prior research, employees high in conscientiousness deceived themselves into believing their achievements were greater than they actually were, which had a negative effect on learning (Martocchio & Judge, 1997). Therefore, there is reason to believe that conscientiousness could be negatively related to perceived need for learning, which is the opposite prediction from the literature cited above which suggests a positive effect by conscientiousness. We therefore did not make a directional prediction about the link between conscientiousness and perceived need for development.

Conscientiousness also predicts goal orientation as shown in a study by Zweig and Webster (2004) involving students performing academic-related activities such as studying and handing in papers. Those authors suggested that the achievement-oriented nature of conscientiousness maps well onto those characteristics of individuals who are learning-oriented, being motivated to achieve, succeed and persevere on difficult tasks. Also, in a meta-analysis of the goal orientation literature, Beaubien and Payne (1999) found that conscientiousness correlated positively with learning orientation. In addition to these relationships involving conscientiousness and the learning goal dimension, people who are high on the “performance prove” dimension or the “performance avoid” dimension are also achievement-oriented in their motive to demonstrate their ability to perform (Elliot & Harackiewicz, 1996) and this should cause linkages with conscientiousness. People with a performance prove or performance avoid orientation are determined to demonstrate competence on relevant performance domains either by showing their ability in a positive light (prove) or avoiding situations that will reflect negatively on their ability (avoid). This keen interest in performing well and in attaining relevant performance standards implies a strong theoretical reason to expect a relationship between these “prove” and “avoid” goal orientation constructs and conscientiousness: Conscientiousness should have a positive relationship with performance prove and a negative relationship with performance avoid (Zweig & Webster, 2004). We expected conscientiousness to be positively related to learning orientation and performance prove and negatively related to performance avoid.

Similarly, the construct of openness to experience has been linked to work-related behavior, including success in training/learning settings and favorable attitudes toward learning (Barrick & Mount, 1991). Barrick and Mount (1991) note that openness includes characteristics such as being curious, broad-minded and intelligent which are attributes predictive of attitudes toward learning experiences. Individuals with a high level of openness to experience appreciate variety and intellectual stimulation and are better at grasping new ideas (Costa & McCrae, 1988). By definition, those who are high in openness to experience are attracted to new experiences and opportunities. They will be more likely to recognize the value or need for developing their skills and will perceive themselves as being the type of person who possesses the qualities needed for learning. They should, by definition, be more likely to have been involved in past training and learning efforts and should be attracted to and to choose situations that will provide to them the opportunity to be involved in novel learning and development experiences. Therefore, openness to experience should be positively related to learning self-concept, past participation in development, perceived need for development of one's skills and perceived support for development in the existing work environment. In addition, given the desire of people high in openness to experience to pursue new and challenging activities, there should also be a positive relationship between openness to experience and possessing a learning goal orientation (Zweig & Webster, 2004). Zweig and Webster (2004) also found a negative relationship between openness and performance avoid orientation. They pointed out that people who are low in openness tend to be “unadventurous, behaviorally rigid, socially conforming and conventional in their reasoning (McCrae & Costa, 1987). These characteristics are similar to those of a performance avoidance goal orientation. . .” (pp. 1697–1698). Although those authors did not posit a relationship with performance prove goals, it stands to reason that those who are very open to experience and seek out novel and challenging activities may very well enjoy trying out situations in which they can prove their competence on various tasks. Costa and McCrae (1988) suggest that people with a high level of openness to experience like variety and intellectual stimulation and are better at grasping new concepts or ideas. It seems quite reasonable to expect them to be more likely to be attracted to situations in which they can prove their ability in various domains.

1.6. Prediction of development domain individual and situational variables by mental ability

Mental ability has been a major predictor of job performance and other behavior in the work place and is sometimes regarded as the most important trait predictor of performance within this domain (Schmidt & Hunter, 1998). Noe and Wilk (1993) point out that mental ability has not received much research attention in employee development, and that mental ability may influence behavior in this area. They suggested that research should examine whether employees with higher levels of cognitive ability are more likely to be involved in development activity than employees with less cognitive ability. Maurer et al. (2003) did not include actual measures of mental ability; rather, they examined perceptions of the extent to which one possesses the characteristics needed for learning and perceptions of one's own intelligence (the latter variable was not particularly predictive). These measures are obviously not the same as actual ability. Therefore, mental ability should be included along with the other individual learning preparedness variables in the present study. Learning is highly dependent on mental ability (Hunter, 1986), and those who possess greater mental ability should have a greater belief in themselves as possessing the qualities needed for learning. Therefore, we expected a positive relationship between mental ability and possessing a learning self-concept.

1.7. Testing indirect and direct effects of trait variables

As described above, the sequence of relationships posited in the present study comes from theory and research which suggests that general and immutable trait variables such as mental ability and personality should predict the more domain-specific and mutable variables that are directly relevant to motivation (Elliot & Church, 1997; Locke & Latham, 2004; Zweig & Webster, 2004). The present study was designed to directly test whether: (a) the individual and situational variables identified in prior research—along with goal orientation included here—are indeed the direct predictors of motivation to develop, and (b) whether the personality and ability constructs are exogenous predictors (whose effects are mediated through the domain-specific individual and situational variables) or whether they also contribute directly to the motivational variables (being only partially mediated by the individual and situational variables). Consistent with these goals, two models were tested. In the first model, the ability and personality variables were exogenous constructs being fully-mediated by the individual and situational development domain variables (see Fig. 1). In the second model, direct paths from the ability and personality variables to the motivational constructs (self-efficacy and perceived benefits) were tested along with the paths from the trait variables to the development domain variables.

2. Methods

2.1. Sample and survey administration

We sought to collect data entirely independently of respondents' employers so concerns by respondents about how the data will be used would be eliminated, thus reducing motives to respond in a favorable manner. Also, as in the study by Maurer et al. (2003), we wanted to collect data from a sample with a wide variety of demographic and occupational background characteristics which would enhance the overall generalizability of results to a diverse working population beyond what would be obtained using a sample of workers from a specific job or single organization. Consistent with our goal of constructive replication, we also sought to test the core effects in the prior research in new type of sample and using a new response medium.

To meet these objectives, participants were recruited through StudyResponse.com. As introduced at the 2003 annual meeting of the *Society for Industrial and Organizational Psychology* (Weiss & Stanton, 2003), StudyResponse is a service that matches researchers with participants willing to receive solicitations to complete surveys (see Piccolo and Colquitt (2006) for an example of published research in which this sampling strategy was used). The participant pool includes over 45,000 members with a diverse demographic composition. Maurer et al. (2003) used random digit dialing (RDD) to identify participants in their survey process; however, research has found that Internet sampling techniques also generate diverse samples. The StudyResponse administrators found that the results from the StudyResponse panelists' responses corresponded with the results obtained in the national poll of opinions within just a few percentage points of error on just about

every question asked (J. M. Stanton, personal communication, January 13, 2006). This Internet panel approach provides a viable approach as a sound sampling strategy. In addition, data collected over the Internet for research purposes is increasingly common, and recent critical examinations of this method of research are positive (Gosling, Vazire, Srivastava, & John, 2004; Kraut et al., 2004). Thus, the literature suggests that we can be reasonably confident about data collected from online samples.

Surveys were administered at two points in time. This multiwave approach may help reduce consistency bias in the responses of participants between waves (Doty & Glick, 1998; Podsakoff & Organ, 1986). At time 1 (T_1), recruitment notices were sent to 5270 registered users of StudyResponse.com with work experience. The email described the general purpose of the study and directed the potential participants to a URL address, which allowed them to read the informed consent page and complete the surveys in their browser windows. Reminders about the study in the form of email were sent after the first week of the initial recruitment notice and also after the second week.

The second wave of recruitment began four weeks after we sent the initial email from T_2 . The recruitment procedure for the second wave was similar to the first wave, except that notices were sent only to the 713 participants who completed the first wave of surveys. Participants were invited to complete the time 2 (T_2) surveys in their browser windows, and reminders were again sent after the first and second week of the T_2 recruitment notice. Four hundred sixty-nine participants agreed to participate in the second wave, yielding a 66% return rate. Demographic data revealed that 135 participants from the sample were unemployed and thus removed from the final dataset. In exchange for their participation, participants were entered into a raffle for a chance to win one of five \$50 gift certificates to a large online retailer. Participants were given one entry for each wave of surveys they completed for a maximum of two entries. This sampling and response rate can be compared to that in Maurer et al. (2003) in which a RDD and mailing strategy was employed. In the Maurer et al. RDD study, 14.7% responded to the telephone call and mail invitation at T_1 while in the present study 13.5% responded to the email solicitation. In the Maurer et al. study 8.5% of those initially contacted completed all the surveys in the study while in the present study 8.9% did so.

The mean age of the final sample in the current study was 39.32 ($SD = 11.14$). Of those who provided demographic data on gender and race, 180 were female and 150 were male, 281 were Caucasian, 14 were African-American, 12 were Hispanic, four were Asian or Pacific Islander, three were Native American, and 15 listed themselves as "other." The participants were employed in diverse occupations (professional and nonprofessional) and worked in their fields for a mean of 11.60 ($SD = 9.72$) years. They had worked for their employer for a mean of 6.27 ($SD = 7.45$) years.

2.2. Scale development

With the exception of the mental ability tests, the scales we relied upon have generally been developed, used and well-documented in previously published journal articles in the literature; however, a careful and detailed scale selection and development process was followed as described below to bolster the validity of the measures and findings. Readers interested in more details on the scales and their development or in copies of the scales used here may contact the first author. Because of the large number of variables and complexity of the model, wherever reasonable and appropriate we combined theoretically/conceptually-related variables that showed moderate to high intercorrelations into composite variables. Many scales were initially developed through factor analyses in a previous pilot sample ($N = 651$). The pilot sample data did not include all measures used in the present study. Unless otherwise noted, response scales ranged from *disagree very strongly* (1) to *agree very strongly* (7).

2.3. General trait construct: Intelligence

There were two common types of mental ability tests, vocabulary and deductive reasoning.

2.3.1. Vocabulary

Vocabulary is known to be one of the best correlates of overall intelligence. Accordingly, we utilized a vocabulary test that consisted of 60 words, including nouns, verbs and adjectives (Haygood & Golson,

1995a). For each word, the participant was given five alternative words and asked to choose which of the five choices had the closest meaning to the original word. The SRA Verbal test correlates .62 with this test and the Shipley Language test correlates .66 (both $p < .01$). In employee samples, scores increase from entry level to executive position incumbents. The vocabulary test was administered at *T1* and had a reliability of .92.

2.3.2. Deductive reasoning

Deductive reasoning was assessed with a measure developed by Haygood and Golson (1995b), and was administered at *T1*. Participants were given a set of assumptions in the form of a syllogism. After the assumptions, they were provided 2–5 conclusions and asked to indicate whether each conclusion follows logically from the assumptions (“Follows from these assumptions” or “Does not follow”). There were 10 different sets of assumptions. Item set scores were created by summing the scores within each set of assumptions. The reliability was .71 across these set scores. This test correlates with the SRA Total score .45 and also with the Shipley Total score .41 (both $p < .01$). In employee samples, scores increase from entry level to executive position incumbents.

Given the large number of dichotomous items, we created five parcels for each test in a 2-factor CFA. This resulted in good fit (CFI = 1.0, RMSEA = .03, SRMR = .04). The correlation between the deductive reasoning and vocabulary factors was $r = .48$. To derive an overall measure of mental ability and for the sake of simplicity/parsimony, we created a composite of the two measures by calculating a mean of the two test scores. We also tested the structural model keeping the two test scores separate but the fit was no better and the only significant path was .13 from Deductive to Learning Qualities (below our initial criterion for inclusion from the prior study of .20). Thus, we combined the two scores in the model.

2.4. General trait constructs: Conscientiousness and openness to experience

At *T1*, participants’ conscientiousness and openness to experience were assessed using the conscientiousness and intellect/openness to experience scales from the International Personality Item Pool (2001). These personality scales are construct valid and widely applied in research (see Lim & Ployhart, 2006, for a review). Participants were asked to indicate the extent to which a given statement described them, using a response scale ranging from *very inaccurate* (1) to *very accurate* (5). Each of the scales consisted of 10 items.

Recent research suggests that the IPIP scales are not single dimensions (Lim & Ployhart, 2006). Subscales were identified in a pilot study using confirmatory factor analysis. There are two subscales for conscientiousness (disorderliness [$\alpha = .76$] and reliability [$\alpha = .78$]) and four subscales for intellect/openness (vocabulary [$\alpha = .69$], imagination [$\alpha = .72$], abstract/conceptual [$\alpha = .63$], and thinking [$\alpha = .71$]). After identifying an acceptable model in the pilot sample, another confirmatory factor analysis in the current study also resulted in acceptable fit for the two factor conscientiousness model (CFI = .90, RMSEA = .09, SRMR = .06) and the four factor intellect/openness model (CFI = .93, RMSEA = .08, SRMR = .05).

2.5. Domain-specific constructs: Learning preparedness and career variables

2.5.1. Beliefs about possessing learning qualities

This five-item scale was taken from Maurer et al. (2003) and given at *T1* to measure the degree to which participants believed they possess the characteristics or qualities needed to learn, improve, and grow within their careers. The reliability was .89.

2.5.2. Goal orientation

The Vandewalle (1997) goal orientation measure was given at *T1*. This is a work-specific measure of goal orientation that includes a learning orientation scale (five items, $\alpha = .93$) and two performance orientation scales (four items for performance prove ($\alpha = .80$) and four items for performance avoid, $\alpha = .88$).

2.5.3. Self-perceived need for skill improvement

We measured participants’ perceptions of the need to improve their work-related skills (Maurer & Tarulli, 1994; Maurer et al., 2003). This three-item scale was given at *T1* and had a reliability of .73.

A confirmatory factor analysis was done to test the five-factor model of the learning preparedness and career variables (learning qualities, learning orientation, performance prove, performance avoid and perceived need). The results showed support for the five-factor model (CFI = .94, RMSEA = .07, SRMR = .06).

2.6. Domain-specific constructs: Situational support for development

2.6.1. Development-oriented policies and resources

Eight items assessed the extent to which company policies facilitate employee learning and development activities and the extent to which learning and development resources are available to workers to facilitate the development of career-relevant skills (Maurer, Mitchell, & Barbeite, 2002; Maurer & Tarulli, 1994; Maurer et al., 2003). These items were given at *T1* (reliability .87).

2.6.2. Coworker support for development

We measured perceptions of coworker support for learning and development activities at *T1* (Maurer & Tarulli, 1994; Maurer et al., 2002; Maurer et al., 2003). This scale consisted of six items (reliability = .91).

2.6.3. Supervisor support for development

Seven items were given at *T1* to assess perceptions of supervisor support for learning and development activities (Maurer & Tarulli, 1994; Maurer et al., 2002; Maurer et al., 2003). Reliability in the present study was .94.

A confirmatory factor analysis was done on these items. The policies/resources, the supervisor and coworker items each comprised their own factors. The three-factor solution (Coworker Support, Supervisor Support and Policies-Resources) showed acceptable model fit, CFI = .93, RMSEA = .08, SRMR = .06.

2.7. Development motivational variables: Self-efficacy for development of skills

Two types of self-efficacy for development were measured at *T2*. The first was relative self-efficacy for development compared to other people, which was assessed by a three-item scale (reliability = .88) from Maurer and Tarulli (1994) and also by an eight-item Learning Self-Efficacy scale (reliability = .90) developed by Fletcher, Hansson, and Bailey (1992). The second type of self-efficacy we assessed was absolute self-efficacy (Maurer et al., 2002; Maurer et al., 2003). This measured self-efficacy to improve specific skills in an absolute sense and not in comparison to other people. The absolute self-efficacy scale consisted of four items (reliability = .94).

2.8. Development motivational variables: Perceived benefits of development activities

We measured perceptions of extrinsic benefits, intrinsic benefits and organizational benefits of participating in learning and development activities (Maurer & Tarulli, 1994; Maurer et al., 2003). Extrinsic benefits (three items, reliability = .86) reflect traditional tangible outcomes such as better pay or job promotion, whereas intrinsic benefits (five items, reliability = .82) result in interest or stimulation on the part of the participant or help the participant reach his or her full potential as a person. Organizational benefits (three items, reliability = .87) deal with outcomes that benefit the organization, subordinates, peers, and supervisors. All three scales were given at *T2*.

The self-efficacy and benefits items were entered together in a confirmatory factor analysis. The expected six factors included Extrinsic Benefits, Intrinsic Benefits, Organizational Benefits, Absolute Self-efficacy, and two Relative Self-efficacy factors (from the two separate scales). The six-factor model resulted in acceptable model fit (CFI = .94, RMSEA = .06, SRMR = .06).

2.9. Development involvement variables: Attitudes toward and interest in learning and development

Five items at *T2* measured attitudes toward and interest in participating in learning and development activities (Maurer & Tarulli, 1994; Maurer et al., 2002; Maurer et al., 2003). The reliability of this scale was .89. A

confirmatory factor analysis showed that these items comprise a single factor (CFI = .95, RMSEA = .20, SRMR = .04).

2.10. Development involvement variables: Learning and development activities prior participation and intentions

Respondents were asked to indicate the frequency with which they participated in and also intended to participate in various learning and development activities (Maurer & Tarulli, 1994; Maurer et al., 2002, 2003; Noe and Wilk (1993). At *T1*, participants indicated the extent to which they engaged in these activities during the past 12 months. At *T2*, participants rated how frequently they intended to engage in these activities in the next 12 months. Respondents used a seven-point response scale ranging from *never* (0) to *about six times or more* (6). The participation subscales reported in Maurer et al. (2003) were created.

For both prior participation and intentions, a confirmatory factor analysis on the scales supported a two-factor model consisting of on-the-job and off-the-job prior participation factors (CFI = .93, RMSEA = .12, SRMR = .06). The two-factor model for intentions also resulted in acceptable fit (CFI = .93, RMSEA = .14, SRMR = .05). The on-the-job factor consisted of activities related to traditional on-the-job development (e.g., participated in special project, either required or optional), skill acquisition (e.g., worked on a specific skill on the job), and feedback (e.g., asked feedback from supervisor). The off-the-job factor reflected traditional off-the-job activities (e.g., taken a correspondence course) and career planning (e.g., worked on a career/professional development plan) that an employee could perform either during work or nonwork hours.

The prior study by Maurer et al. (2003) examined the relationship between intentions to engage in development activities and subsequent participation in them. Not surprisingly, as in other areas of behavioral research, the authors found that intentions to engage in the behavior were the best predictor of engaging in the behavior. In the present study, we did not seek to re-establish that well-known and widely established relationship between intentions and behavior.

2.11. Creating composite measures of closely related variables

As stated earlier, wherever reasonable and appropriate we combined theoretically/conceptually-related variables that showed moderate to high intercorrelation into composite variables in the interest of parsimony and to reduce collinearity in the path model. Thus, composites were created for both conscientiousness and intellect/openness by combining the subscales. A support composite was created by combining the coworker, supervisor, and policies-resources scales. A self-efficacy composite was created by combining the relative self-efficacy with the absolute self-efficacy scales. Intrinsic, extrinsic, and organizational benefits scales were combined for a perceived benefits composite. Finally, we created a prior participation composite by combining the two participation scales of on-the-job and off-the-job participation (the same was done for intentions).

Using Nunnally's reliability formula for composite variables, the reliabilities were .85 for conscientiousness, .85 for intellect/openness to experience, .96 for support, .96 for self-efficacy, .93 for benefits, .95 for prior participation and .97 for intentions. A confirmatory factor analysis was done on the 17 scale scores to test a six-factor model for the composites (conscientiousness, intellect/openness, support, self-efficacy, benefits and participation). Two separate models were analyzed. The first model used the prior participation scales for the participation factor, whereas the second model used the intentions scales for the participation factor. Both models resulted in acceptable fit to the data (CFI = .91, RMSEA = .07, SRMR = .06 for both models).

3. Results

The means, standard deviations and intercorrelations among the study variables are provided in Table 1. A path model was tested using LISREL 8.50, with each scale in Table 1 loading as the single indicator for its construct. The error variance for each indicator was estimated by taking 1 minus the reliability of the scale and multiplying this value by the scale's variance. See Fig. 1 for the paths tested in the model. In addition to these hypothesized paths, several other non-directional bivariate relationships were predicted based on prior research and theory (i.e. self-efficacy for development and perceived benefits for development (Ajzen, 1991; Maurer et al., 2003; Vroom, 1964), possessing a learning self-concept and emphasizing learning goals,

Table 1
Means, standard deviations and intercorrelations among study variables ($N = 334$)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Prior participation	2.00	1.16	—													
2. Learning qualities	5.92	.95	.32	—												
3. Learning goals	5.55	1.04	.41	.59	—											
4. Prove goals	4.72	1.15	.11	.21	.39	—										
5. Avoid goals	3.18	1.25	-.13	-.35	-.31	.06	—									
6. Conscientiousness	3.69	.67	.12	.28	.21	.02	-.20	—								
7. Openness	3.73	.59	.20	.49	.33	.09	-.25	.13	—							
8. Cognitive ability	30.19	6.00	.05	.25	.13	-.05	-.14	.02	.45	—						
9. Perceived need	4.63	1.20	.04	.06	.12	.27	.04	-.15	.07	.02	—					
10. Work support	4.70	1.08	.36	.34	.39	.23	-.19	.15	.25	.06	.06	—				
11. Self-efficacy	5.14	.85	.21	.47	.48	.24	-.27	.14	.26	.06	.29	.28	—			
12. Benefits	5.02	1.01	.26	.29	.40	.18	-.20	.13	.18	-.03	.22	.38	.70	—		
13. Development attitudes	5.55	.99	.24	.43	.52	.17	-.27	.12	.25	.08	.23	.33	.80	.78	—	
14. Intentions	2.10	1.22	.46	.20	.28	.12	-.07	.10	.16	-.07	.09	.26	.34	.41	.41	—

Notes: $p < .05$ for $r > .10$; $p < .01$ for $r > .14$; $p < .001$ for $r > .18$.

having previously had frequent opportunities to participate in development activities and perceiving support for development in one's work situation (Maurer & Tarulli, 1994; Maurer et al., 2003), and the three goal orientation constructs have varying degrees of correlation with one another (VandeWalle, 1997; Zweig & Webster, 2004)). Therefore, these constructs were also expected to correlate here. All of these relationships were estimated in the model and in fact did have significant relationships (see Table 1 for correlations).

Fig. 2 presents the model and the significant standardized path coefficients. The results showed acceptable fit to the data, $\chi^2(49, N = 334) = 174.82, p < .001$; CFI = .92, RMSEA = .09, SRMR = .08, especially for a model of this complexity (Lance, Butts & Michels, 2006; Marsh, Hau, & Wen, 2004). In the present study, given that the fit indices are generally acceptable, the various parameter estimates are both reasonable and readily interpretable, and that the paths are generally consistent with predictions and theory, we consider the model results in total to be acceptable according to empirical and theoretical criteria.

In addition, we tested a partially mediated model in which direct paths were added from each of the trait variables to self-efficacy and benefits, and compared the fit of this model to model in Fig. 2. The fit of the alternative model was similar to the original model: $\chi^2(43, N = 334) = 168.05, p < .001$; CFI = .92, RMSEA = .10, SRMR = .08. A χ^2 difference test indicated that the two models were not significantly different ($\Delta\chi^2[6, N = 334] = 6.77, ns$). The size of the path coefficients shown in fig. 1 were very similar in the alternative model, and only two additional paths were significant; however, they were below the .20 criterion applied in the introduction for identifying important paths in prior research (openness to perceived need was .14 and ability to perceived benefits was $-.14$). These small paths, in combination with the fit data just reported and the fact that the fully-mediated model is the more parsimonious of the two models and theoretically is consistent with predictions, led us to interpret the fully-mediated model as the more desirable of the two models. As a supplementary analysis, we also tested a model with direct effects added from ability and personality to intentions, but this also did not add anything in substance or fit ($\Delta\chi^2[3, N = 334] = 6.48, ns$). Thus, conscientiousness and openness to experience had their effects on the motivational variables through the domain-specific individual and situational variables.

As shown in Fig. 2, many of the paths in the current model replicate positive relationships reported in Maurer et al. (2003). As in the previous study, prior participation predicted intentions to participate in development activities (small effects of .13 and .07 on self-efficacy and benefits in the study by Maurer et al., 2003 were not observed here possibly due to the small size and inclusion of the new constructs here). Describing oneself as possessing learning qualities predicted self-efficacy for development. Perceived need for development predicted both self-efficacy and perceived benefits of development. Perceived support predicted benefits of development. Self-efficacy for development and perceived benefits both predicted attitudes toward development. Attitudes predicted intentions to participate in development activities. Of the paths that were present in the prior study but which are missing here, only the path from learning qualities to benefits was notable (e.g., $>.20$) in the prior study.

There were also several significant relationships associated with the newly examined variables in this study. For the individual development domain constructs, learning goals had positive relationships with both self-efficacy for development and perceived benefits, and performance avoid goals had a negative relationship with self-efficacy for development. In addition, there were significant relationships between the general trait variables and the development domain individual variables. Conscientiousness had positive relationships with prior participation, learning qualities, learning goals and work support, and negative relationships with performance avoid goals and perceived need. Intellect/openness had a negative relationship with avoid goals and positive relationships with prior participation, learning qualities, learning goals and support for development.

4. Discussion

This study contributed to the literature on employee development in several ways. First, prior research largely ignored personality, ability and goal orientation constructs as predictors of involvement in development and these are all important and theoretically-relevant variables. This is particularly critical because not only are there not tests of the effects of those variables, but also in existing research it is not known whether it was really the variables studied that mattered as predictors or whether those variables were actually carrying effects for the personality, ability, and/or goal orientation variables. The present study extended prior research by explicitly including these constructs and showed the validity of these and other predictors in this context, providing the most complete picture of this area of behavior to date. This helped advance theory by providing a detailed analysis of the individual and situational constructs that contribute to motivation for and involvement in development. Second, this study extended prior research by both elaborating on a model of employee development behavior (Maurer et al., 2003) and also confirming the overall usefulness of it in the present setting which relied upon a different data collection method and different population of respondents. Third, the data contributed to practice in the area by showing the psychological variables that should be the targets of appropriate interventions, as will be discussed below.

4.1. Implications for theory and understanding of individual differences in employee development behavior

The present study found that the personality constructs were exogenous predictors whose effects on motivation are mediated through the domain-specific individual and situational variables. The present results help advance theory by providing a detailed analysis of the individual and situational constructs that contribute to motivation for and involvement in development. The relationships identified in the path model especially provide new information about the predictive value the trait variables have in relation to the development-relevant variables. Workers who are more conscientious are more likely to perceive themselves as possessing the qualities needed for learning, to possess learning goals and not avoid goals, and to have previously participated in learning and development activities. This is consistent with prior research which has linked this personality construct to motivation to learn (Colquitt & Simmering, 1998), and also the notion that more conscientious people are diligent and hardworking (Colquitt & Simmering, 1998; McCrae & Costa, 1987) and tend to set challenging goals (Barrick et al., 1993; Colquitt & Simmering, 1998). However, the present study in the first to link the personality to motivation for and involvement in employee development activities, a distinct and important domain.

It is interesting that higher conscientiousness is negatively associated with perceiving that one's skills have been in need of development. In prior research, Martocchio and Judge (1997) stated: "Conscientious individuals are probably more likely to engage in self-deception in training settings by distorting their attainments toward the positive" (p. 766). In their study, they found that conscientiousness was positively related to self-deception, which was negatively related to learning, and conscientiousness was positively related to self-efficacy, which was positively related to learning. In the present study, we also found that conscientiousness can have both positive and negative effects in the employee development process simultaneously.

Openness to experience also predicted several of the development-relevant variables. Workers with greater openness were more likely to have participated in prior development experiences, which is consistent with the idea that the lives of people with openness tend to be experientially richer and also with the link between this variable and training behavior (Barrick & Mount, 1991). Openness also was positively related to a tendency to

perceive oneself as possessing the qualities needed for learning and to a learning orientation. The data suggest that people who are high in openness are more likely to be oriented toward new experiences, learning and developing, and they are less likely to avoid challenging situations in which one might “look bad.” Finally, workers who were higher in openness to experience (and also higher in conscientiousness) reported greater support in their work situations for learning/development. It is possible that people who are high in openness and conscientiousness are attracted to jobs and organizations that will provide rich experiences and learning, and the resources they need to achieve goals. They may tend to seek out work situations in which those experiences and resources are available. All of these relationships involving conscientiousness and openness provide a detailed new picture of the role that personality may play in predicting the variables from literature on employee development.

It is interesting that despite the fact that mental ability measures typically have significant predictive value for learning performance, they were not found to have predictive value here for constructs relevant to involvement in development activity. This lack of a predicted relationship involving mental ability follows from the finding by Maurer et al. (2003) who found that perceptions of one’s own intelligence had no indirect effects on involvement and findings by Hezlett, Koonce, and Kuncel (1996) who found no relationship of development activity with actual measured intelligence. As Maurer et al. (2003) suggested, perhaps this is because individuals of all levels of mental ability will get involved to varying degrees in self-development in order to improve the skills that they do possess, whether they are currently highly able or not. People with high or low levels of mental capability may both perceive themselves as possessing qualities needed to improve themselves, and they may take on activities of differing cognitive difficulty. Future research might examine this possibility.

Learning goal orientation was found here to positively predict both perceived benefits of development and self-efficacy for development, and performance avoid orientation was found to negatively predict self-efficacy for development. It is interesting to consider the implications of goal orientation as a predictor here because although it is often regarded to be a relatively stable characteristic, it is also a characteristic which prior research has suggested is susceptible to manipulation and change (Ames & Archer, 1987; Kozlowski, Gully, Brown, Salas, & Smith, 2001; Roberson & Alsua, 2002).

4.2. Implications for practice: Change and selection interventions

The fact that prior research has suggested that goal orientation is susceptible to influence is important in considering implications of the results for practice. This means that where employees might benefit from involvement in employee development, not only might selection be an appropriate strategy for helping them be more oriented toward involvement in employee development, but also interventions or policies that target change in the characteristics within current employees could be beneficial. For example, learning or mastery goals have been induced by emphasizing that people should learn, understand, and master the situation, focus on the task as opposed to others’ performance, use errors as learning opportunities, and use their available performance data as diagnostic feedback to guide their learning, practice, and skill development. Performance goals have been induced by emphasizing that people perform at their very best, maximize correct decisions, minimize incorrect decisions, compare their performance to others’ performance and continually monitor their current performance level (cf. Ames & Archer, 1987; Roberson & Alsua, 2002).

Along these lines, many of the other constructs found to have predictive value in the model are also variables that conceivably may be influenced to affect involvement in development. For example, with respect to prior participation, Maurer et al. (2002) suggests how coaxing initial participation in favorable development experiences may help to initiate the process of participation. Perceived need for development can be influenced through developmental skill feedback systems (Maurer et al., 2003; Noe and Wilk (1993), and policies and resources can be provided to create a work environment that supports development and makes participation in development beneficial to employees. Self-efficacy for development can be influenced through mastery experiences, and vicarious modeling, persuasion strategies in the workplace relevant to development behavior (Maurer, 2001), and perceived benefits could be influenced through helping employees better understand the positive outcomes of engaging in development. Each of these predictors can presumably be influenced to some extent through relevant interventions and/or policies.

The data also clearly suggested that selection of employees with the relevant characteristics might also be a sound strategy for enhancing the odds that they will be involved in development. For example, prior participation in development is an individual difference variable that should be measurable using biodata and the other domain-relevant constructs might similarly be measured as part of selection. The results also show that the domain-specific individual and situational variables are influenced by personality variables. Interestingly, the motivation and involvement constructs are also indirectly affected by these variables as well. Examining standardized indirect effects in LISREL we observed that conscientiousness had an effect of .08 while openness has an effect of .18, which was rivaled in the results only by self-efficacy (.18) and benefits (.16). Both the latter are more proximal motivational variables, so the indirect effect by openness is striking in comparison. This suggests that selecting employees who are high in openness to experience and, to a lesser extent conscientiousness, is likely to result in employees who also are predisposed to involvement in employee development. While conscientiousness is widely-recognized in the literature as predictive of job performance, the present results highlight an important implication for openness as a possible selection criterion in jobs (and, indeed, possibly a workforce) that increasingly demands employee development. Perhaps more research can examine the role that this personality construct plays in learning-rich organizations and careers.

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