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Propensity for Self-Development of Leadership Attributes:

Understanding, Predicting, and Supporting Performance of Leader Self-Development

Lisa A. Boyce

George Mason University

Lisa A. Boyce, Department of Psychology, George Mason University, Fairfax, VA

Lisa A. Boyce is now at Department of Behavioral Sciences and Leadership, U.S. Air Force Academy, Colorado.

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Corresponded concerning this article should be addressed to Lisa A. Boyce, 214 E. Del Norte St, Colorado Springs, CO 80907. E-mail: lisa.boyce@usafa.af.mil. Phone: 703-623-1941.

Abstract

Systematic research was performed to better understand and support individual professional self-development. Over 400 junior-military leaders participated in a detailed longitudinal study to test a structural model of leader self-development. Results provide a unifying framework for understanding the effects of individual characteristics on propensity for self-development. The model depicts a person with a mastery, work, and career-growth orientation as more motivated to perform leader self-development and skilled at performing instructional and self-regulatory processes and therefore more likely to perform leader self-development. Further, the model illustrates that an organizational support tool moderates actual performance of leader self-development activities. The variables as well as the framework of the model should receive attention when attempting to understand or enhance leader self-directed learning.

Propensity for Self-Development of Leadership Attributes:

Understanding, Predicting, and Supporting Performance of Leader Self-Development

Over the last decade, organizations and their leaders have experienced sweeping changes in the workplace, such as rapid technological advancements, increased globalization, shifting organizational structures, and dynamic career patterns (Kraut & Korman, 1999). As the world of work continues to change at a rapid pace, organizations and their leaders must investigate alternative means of developing the knowledge, skills, and abilities needed by leaders to succeed in a dynamic environment. One response of organizations is to place greater responsibility on their leaders to develop themselves.

Organizations are recognizing that to be competitive they must promote and rely on their leaders to engage in self-directed learning (Ellinger, Ellinger, Yang, & Howton, 2002). Formal training programs are not only too expensive and time-consuming, but also too disconnected from the current complex and dynamic environment (Hall, 1996). Further, leaders are appreciating the personal benefits associated with their self-directed professional development performance. Employees who participate in self-development activities are viewed as more productive (Gould & Penley, 1984) and effective (Temporal, 1982). In addition, because today's leaders are more likely to work in multiple organizations during their careers, maintaining professional proficiency becomes a personal responsibility (Kraut & Korman, 1999).

Despite this need for professional self-development, little systematic research has been reported to advance the understanding of the characteristics associated with individuals who perform self-development or the effect of organizational support in promoting self-development performance. Prior to 2003 (v. Maurer, Weiss, & Barbeite, 2003) relevant employee development research, while pioneering, primarily included limited variables focused on demographic predictors, relied on quasi-experimental, cross-sectional designs, self-report data, or non-managerial samples (e.g., London, Larsen, & Thisted, 1999, Maurer & Tarulli, 1994).

As a result, researchers and practitioners are unable to predict which employees are likely to engage in self-learning activities or how organizations can increase and direct employees to perform professional or job-related self-development. Research is needed to identify personal attributes or characteristics that predict leader performance of self-development activities, understand why these attributes effect performance, and examine the effect of organizational support on leaders' performance of self-development activities.

Modeling Performance of Leader Self-Development Activities

Fourteen individual characteristics, structured within five factors, were hypothesized as predictors of an individual's propensity for engaging in activities to grow leadership competencies. The characteristics were hypothesized to indirectly influence performance propensity through an individual's motivation and skills to engage in leader self-development performance. In addition to a direct relationship between propensity and performance, the model (Figure 1) also emphasizes the moderating role of leader self-development support provided by an organization.

Insert Figure 1 about here

Propensity for Self-Development of Leadership Attributes: Mediated Relationships

A theory of performance determinants proposes that performance in any setting, whether in training, education, or on the job, is considered a basic function of an individual’s motivation and abilities (Campbell, 1990). This performance determinant framework is used to understand propensity for self-development in which motivation and skills provide a structure for understanding why certain individuals have a greater tendency to perform self-development. These two concepts, motivation and skills, form the basis of propensity to perform self-development and are considered proximal indicators. As proximal indicators, these variables partially mediate the relationship between stable dispositional attributes and the propensity to self-develop.

An extensive list of individual characteristics that were either empirically or theoretically

linked to training participation or performance was pared down conceptually to include only those dispositions most relevant to the performance determinant framework employed to understand self-development performance propensity. A confirmatory factor analysis completed on these variables supported the proposed factor structure (Boyce, 2004). For the sake of brevity, only the higher-order factors are discussed below with the details regarding the individual characteristics, including support for the hypothesized relationship, summarized in Table 1.

Insert Table 1 about here

Motivation

Cognitive choice theories have remained a popular approach for studying motivation. One cognitive theory, Expectancy Theory (Vroom, 1964), is particularly applicable to understanding future behaviors. The key elements of this theory are labeled valence, instrumentality, and expectancy. Valence refers to the affective orientations individuals hold with respect to second-level outcomes. Instrumentality is the belief linking levels of performance to second-level outcomes; that is, achieving one outcome will result in achieving the second outcome (post-1964 Vroom). Expectancy refers to the strength of an individual's belief about whether or not a performance level is attainable.

Therefore, with respect to leader self-development, individuals will more likely engage in leader self-development if the following conditions hold true: (1) they value being a more effective leader, (2) they believe that successfully self-developing their leadership skills will lead to becoming a more effective leader, and (3) they deem that they can, in fact, successfully develop and conduct a personal leadership self-development program.

Work orientation. Three individual dispositions (career motivation, job involvement, organizational commitment) are particularly linked to propensity through motivation as they provide an indication of whether an individual values being professionally effective. The literature suggests

individual career variables may enhance motivation to be involved in learning and development activities (e.g., Colquitt, LePine, & Noe, 2000; Noe & Schmitt, 1986). Therefore, individuals with a work orientation as demonstrated by higher career motivation, job involvement, and organizational commitment should have a greater desire to be involved in professional learning and development.

Hypothesis 1. Motivation to perform leader self-development activities mediates the influences of career motivation, job involvement, and organizational commitment on propensity for self-development of leadership attributes.

Achievement-striving orientation. Need for achievement and locus of control are linked to propensity through motivation as they provide evidence that individuals will engage and persist in training activities because they believe their efforts influence expected outcomes. The literature indicates that variables with an achievement-striving orientation may enhance motivation to initiate and sustain learning and development activities (e.g., Noe & Schmitt, 1986; Phillips & Gully, 1997). Therefore, individuals with higher achievement-striving orientation as demonstrated by higher need for achievement and an internal locus of control should have a greater impetus to perform self-development.

Hypothesis 2. Motivation to perform leader self-development activities mediates the influences of need for achievement and locus of control on propensity for self-development of leadership attributes.

Mastery orientation I. General self-efficacy, conscientiousness, openness to experiences, and learning goal orientation are linked to propensity through motivation as they are enablers for novel learning and development programs, supporting an individual's belief that they can successfully develop and conduct their own leadership development program. The literature supports the assertion that individual qualities that act as personal enablers are linked to motivation to learn (e.g. Colquitt & Simmering, 1998; Noe & Wilk, 1993). Therefore, individuals who are more self-efficacious, conscientious, open, and demonstrate a greater learning goal orientation should have a greater

attraction to performing self-directed learning.

Hypothesis 3. Motivation to perform leader self-development activities mediates the influences of self-efficacy, conscientiousness, openness to experiences, and learning goal orientation on propensity for self-development of leadership attributes.

Skills

The skills necessary for individuals to perform leader self-development can be described as a synergy between instructional technology and self-regulatory skills. The instructional technology system provides a context for identifying and framing the instructional skills critical to self-development (Goldstein, 1993). These skills include 1) diagnosing learning needs, 2) designing and setting developmental goals, 3) identifying the developmental process, and 4) evaluating personal learning progress.

Self-regulation theory provides a complimentary approach for discussing leader self-development skills as the focus transitions from the external to an internal instructional training system, in which the self is responsible for performing needs analysis, goal setting, process identification, and progress evaluation. Self-regulation implies a process of establishing performance goals, planning, and monitoring their accomplishment. Self-regulation comprises three major components: self-monitoring, self-evaluation, and self-reaction (Kanfer & Ackerman, 1989).

Mastery orientation II. The individual characteristics of general self-efficacy, conscientiousness, learning goal orientation, metacogntion, and intellectual maturity are linked to propensity through skills, as they are enabling characteristics for performing self-regulatory behaviors. Research has provided evidence that these characteristics are critical prerequisites of the self-regulatory processes and are associated with greater learning proficiency (e.g., Bandura, 1986; Hogan & Ones, 1997; Kanfer, 1992; Pintrich & DeGroot, 1990). Therefore, individuals who are more self-efficacious, conscientious, learning goal oriented, metacognitive and intellectually mature should have greater skills to perform self-development.

Hypothesis 4. Skill to perform leader self-development activities mediates the influences of general self-efficacy, metacognition, conscientiousness, learning goal orientation, and intellectual maturity on propensity for self-development of leadership attributes.

Career-growth orientation. Two individual dispositions (career exploration and feedback seeking) are particularly linked to propensity through skills as they provide an indication of an individual's inclination toward gaining insight on organizational goals and personal performance. The literature suggests that these career-growth oriented variables are associated with skills needed to accurately identify professional strengths and weaknesses (e.g., London & Mone, 1999: Stumpf, Colarelli, & Hartman, 1983). Therefore, individuals with a greater orientation toward career exploration and feedback seeking should be more likely to perform needs analysis, progress evaluation, and self-monitoring behaviors.

Hypothesis 5. Skill to perform leader self-development activities mediates the influences of career exploration and feedback seeking on propensity for self-development of leadership attributes.

Cognitive ability has received considerable attention as a predictor of training performance (Ree & Earles, 1991; Schmidt & Hunter, 1998). Although mental ability as a requirement for self-development has not been specifically studied, research suggests that individuals with higher intelligence are more capable of performing in less structured training programs (Snow, 1986). Therefore, individuals with higher intelligence are expected to have greater capacity to perform self-development.

Hypothesis 6. Skill to perform leader self-development activities mediates the influences of cognitive ability on propensity for self-development of leadership attributes.

Energy. A high energy level promotes managing or coping with the hectic pace, long hours, and unrelenting demands of most managerial jobs (Bass, 1990; Howard & Bray, 1988). Energy level has not been examined within a training context; however, managers with high energy levels appear

more likely to be able to adjust to the additional responsibilities of developing and conducting a successful leadership self-development program so energy was therefore included in the study as an exploratory variable.

Supporting Performance of Leader Self-Development Activities: *Moderated Relationships*

While the goal of leader self-development is for leaders to initiate and direct their own professional developmental, organizational actions may facilitate or reduce leaders' participation in self-development activities. Focusing on an aspect of organizational support that increases employees' motivation and skills directly relates to the propensity to self-develop framework. Therefore, of the characteristics often associated with a learning organization, providing support in terms of information and systems resources is most relevant to this study.

Research in this area is sparse and equivocal. Researchers (e.g, Baldwin, Magjuka, & Loher, 1991; Hicks & Klimoski, 1987; Maurer and Tarulli,1994) demonstrated a link between supportive organization practices and developmental participation and performance. Other research (e.g., Kozlowski & Farr, 1987; Noe & Wilk, 1993) did not find a significant relationship between organizational support with measures of self-development activity. Tharenou (2001) provides support for an interaction effect between organizational support, which she operationalized as organizational policies and resources, and expectancy motivation on participation in training and development programs.

Based on this latter finding, organizational support is hypothesized to moderate the relationship between propensity and performance for individuals with moderate levels of propensity for SDLA. An organizational level support tool, operationalized as a website that provides guidance, information, and resources on leader self-development, encourages individuals to reassess their values and beliefs about leader self-development and provides tools for individuals to acquire the skills necessary to perform self-development. Because individuals with low propensity do not have sufficient motivation and skills to initiate access to such an website, the availability of the

organizational support will not likely influence their performance. At the other end of the continuum, individuals with high propensity already have high motivation and skills to perform leader self-development. The availability of organizational support that focuses on increasing motivation and developing skills is also not as likely to affect their performance level. Therefore, individuals with moderate levels of motivation or skills will more likely perform leader self-development when they have information and access to the website than their colleagues who did not receive similar organizational support.

Hypothesis 7. The relationship between propensity for self-development of leadership attributes and performance of leader self-development is moderated by organizational support, such that individuals with moderate propensity will demonstrate greater performance of leader self-development in conditions in which organizations provide leadership self-development guidance, information, and resources.

Method

Participants

Participants were leaders completing a six-week professional military education (PME) program. Students were initially asked to participate in a study to “aid the understanding of leadership self-development.” Participant responses were confidential and for research purposes only. Of the 561 students enrolled in the program, 498 volunteered to participate in the study.

Participants ranged in age between 22 and 45 with the average age of 29 years. All volunteers were army officers, as such all respondents had a bachelor’s degree with nearly 20% having completed postgraduate work. Eighty-eight percent of the sample was men, and 97% held the rank of Captain. The ethnic composition of the sample was 75% Caucasian, 10% African American, 6% Hispanic, 3% Asian, 2% Pacific Islander, and 4% other. Most participants (95%) had more than four years of supervisory experience, supervising an average of 40 subordinates.

Procedure

The first distributed survey included demographic and individual characteristic items and was administered midway through the PME program. The second survey, which included leader self-development motivation, skills, and propensity measures, was administered two weeks later. Approximately 90% of the volunteers completed both survey packets during their personal time with 471 and 443 respondents completing Survey 1 and 2, respectively. Surveys with no identification, no variance, systematic responses, or missing critical data were disregarded, resulting in 396 respondents providing usable data and an adequate sample size for the mediation analyses. No systematic differences were found with demographic data of the discarded surveys.

All students were randomly assigned to participate in one of two 50-minute presentations on leader self-development. Each group of approximately 280 officers received a 30-minute standardized briefing that defined and described leader self-development and provided an overview of the purpose, benefits, and processes of developing and performing a leadership self-development program. Half of the students received information and access to a U.S. Army-supported website that provided guidance, information, and resources on why, what, and how to perform leader self-development. Students not receiving the organizational support information were shown approximately 15 minutes of humorous job-related cartoons and quotes. Both groups had a 5-minute question-and-answer period.

A third survey, which included the performance assessments, was administered four months after the leaders completed their PME program following Dillman's (2000) multiple contact protocol. Of the 177 leaders completing the third survey, data from 141 respondents were usable and provided an adequate sample size for the moderation analysis. Seventy-three (52%) of the respondents had received information and access to the Army-supported leader self-development website.

Measures

Individual characteristics. Fifteen individual disposition constructs were employed to predict the motivation and skills needed to perform leader self-development. Established scales were used to

measure constructs contained in the first survey. Table 2 summarizes each measure and lists any peculiarities associated with the scale. Unless noted, all scales used a 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

Insert Table 2 about here

Motivation. The ten-item scale from Sanchez, Truxillo, and Bauer (2000) was adapted to measure motivation to self-develop across eight competencies identified as essential for Army officer leadership performance. These eight competencies included communication, decision-making, planning, professional ethics, team development, supervision, teaching/counseling, and technical proficiency (Halpin & Karrash, 2001). A composite variable was created by adding the valence, instrumentality, and expectancy values for each participant (a = .98).

Skills. A 16-item, self-evaluation measure was developed, based on Knowles' (1975) Competencies of Self-Directed Learning: A Self-Rating Instrument, to assess the extent to which individuals perceived that they have the four fundamental skills necessary to perform self-development (a = .96).

Self-regulatory skills were assessed using a measure from Pintrich and DeGroot (1990) self-regulated learning scale. The 12-item measure also using a 7-point Likert scale had an internal reliability of .82. A composite variable was created by adding the self-development skills and self-regulation processes for each participant.

Propensity to leadership self-develop. The Propensity to Leadership Self-Develop measures was adapted from Day, Bedeian, and Conte (1998) and London et al. (1999). Example items from each 5-point Likert scale are "If I had no constraints (e.g., financial, time, etc.), I would perform self-development activities to become a better leader" and "After graduating from [program], I will perform self-directed learning activities to acquire new leadership knowledge" (a = .89).

Criterion Measures. Three measures of leader self-development performance were used in

this study. An overall leader self-development measure was adapted from London et al. (1999) to capture the self-development timeframe. An example of the revised items includes: “During the last three months, I intentionally performed self-directed learning activities to acquire new leadership knowledge.” Participants provided ratings on four items using a 5-point Likert scale reflecting their performance of leader self-development activities (a = .95).

A leadership self-development activity measure was adapted from Tough’s (1971) interview protocol to assess the “patterns and purposes” of self-development learning activities. These items explored the nature of the participants learning project (a = .93). A quantitative measure was also collected by asking participants to write in the total hours they spent performing leadership self-development activities.

Results

Prior to analyses, violations for assumptions associated with the planned analyses were tested. Several variables including Career Motivation, Organizational Commitment, Locus of Control, General Self-Efficacy, Conscientiousness, Learning Goal Orientation, Intellectual Maturity, Career Exploration, Feedback Seeking, Energy Level, Motivation, and Skills deviated significantly from normal. Appropriate transformations provided acceptable improvement in the data distribution. The transformed variables were used in the remaining analyses unless otherwise noted.

Descriptive statistics, correlations, and reliabilities for all the variables are presented in Table 3. Means and standard deviations are based on nontransformed scales, but correlation coefficients reflect transformations. Correlation coefficients > .30 are highlighted.

Insert Table 3 about here

Confirmatory factor analysis addressed the multicollinearity concerns (Condition Indices >30 and two Variance Proportions > .5) among the individual characteristics and reduced the variables for the mediated analysis. Principal factor analysis with varimax rotation extracted five factors (Work

Orientation, Achievement-Striving Orientation, Mastery Orientation, Career-Growth Orientation, and Cognitive Ability). The lowest SMC was .56, indicating the five factors were internally consistent and well defined by the variables. A cut value of .32 (10% of variance) was used for variable inclusion and all 15 variables loaded on at least one factor, as expected.

The overall fit of the data to the proposed model was assessed using structural equations modeling, LISREL 8.53. All analyses were performed on covariance matrices.

Propensity for Self-Development of Leadership Attributes: Mediated Relationships

According to Anderson and Gerbing's (1988) two-step approach, the measurement model is examined first to determine that the model fits the data. Then the hypothesized-mediated relationship is tested in the structural model. Satisfactory model fit is indicted when the ratio of the $?^2$ to the degrees of freedom is < 2, goodness-of-fit index (GFI) and comparative fix index (CFI) values are > .90, root-mean-square error of approximation (RMSEA) values are < .05, and significant changes occur in chi-square tests (Tabachnick & Fidell, 1996).

Analysis of the measurement model indicated that the data fit the model well, GFI = .96, CFI = .96, RMSEA = .017, Standardized RMR = .04. The chi-square examined in respect to the independence model was found to be a significant improvement over the saturated model, $? ?^2$ ((49) = 1502.94, p < .01). In addition, all path coefficients were significant (z > 1.96).

The hypothesized structural model tested the mediated relationship between Mastery Orientation, Work Orientation, and Achievement-Striving Orientation, and Propensity for SDLA mediated by Motivation, as well as the relationship between Mastery Orientation, Career-Growth Orientation, and Cognitive Ability and Propensity for SDLA mediated by Skills. The resulting model was similar in fit to the measurement model with acceptable goodness of fit statistics ($?^2$ ratio = 1.42; GFI = .95, CFI = .95, RMSEA = .023). Standardized path loadings showed consistent positive relationships between Mastery and Work Orientations and Motivation, and Mastery and Career-Growth Orientation and Skills.

No substantial path between the individual disposition factors and mediators were targeted on the hypothesized model's modification indices (Lagrange Multiplier Test). However, two paths were identified as not contributing significantly to the model. The path between Achievement-Striving Orientation and Motivation (standardized coefficient = 0.14) as well as the path between Cognitive Ability and Skills (standardized coefficient = 0.29) were removed with no significant change to model fit ((? ? ^{2} (2) = -2.29, n.s.). However, the recommended modified model was slightly more parsimonious with lower AIC (? = 0.71) and CAIC (? = 10.67) values when compared to the hypothesized model. These results, as illustrated in Figure 2, confirm Hypothesis 1, 3, 4, and 5. Hypotheses 2 and 6 were not supported.

Insert Figure 2 about here

Supporting Performance of Leader Self-Development Activities: Moderated Relationships [1]

The interaction effect was evaluated using Jaccard and Turrisi's (1996) three-step approach. The overall chi-square from the nonconstrained analysis was 8.46 (*df* =8, n.s.) consistent with a good model fit across the groups. The resulting chi-square for the equality constrained model was 13.29 (*df* =9, n.s.). The chi-squared difference of 4.83 ($df = 1$, $p < .05$) was statistically significant indicating an interaction effect is present. For the group receiving no organizational support, the path coefficient from the latent variable of propensity to performance was 0.90, whereas for the group receiving support the corresponding path coefficient was 0.48. The difference between the path coefficients is statistically significant because of the nested fit test. These results indicate that the hypothesized model adequately fit the data (see Figure 2).

Moderated regression was completed to examine the nature of the interaction effect.

[1] The manipulation check was inconclusive. Several problems with the wording and ordering of the items rendered the responses unclear and the response size insufficient. However, since the manipulation was straightforward (e.g., individuals either received the organizational support tool or did not) and a substantial number of participants either used or did not use the support tool, the manipulation appeared to be effective.

Significant interaction effects were found for all three measures of performance: general self-reported performance (? R^2 = .03, ? F = 4.67, p < .05), activities performed (? R^2 = .04, ? F = 6.03, p < .05), and hours spent performing (? R^2 = .04, ? F = 6.28, p < .05), the latter highlighted in Figure 3. Supporting Hypothesis 7, low to moderately low propensity individuals performed self-development to a greater extent when they received organizational support than their counterparts who did not receive organizational support. However, individuals with higher propensity performed more self-development if they did not receive organizational support compared to their colleagues who did receive organizational support.

Insert Figure 3 about here

Discussion

This study adds significantly to the existing leadership development literature. First, there has been relatively little research on the relationship of individual antecedents and performance of self-directed learning activities, particularly professional or leader self-development. Second, the studies conducted to date had not focused on self-directed development, or developmental activities in which the employee is responsible for identifying the learning objective as well as the learning process, which often occurs during personal nonwork time (cf., Maurer et al., 2003). Third, previous research had not examined the actual effects, versus perceptions, of providing organizational support to increase employee performance of professional self-development (cf., Birdi, Allen, & Warr, 1997; Maurer et al., 2003; Tharenou, 2001). In addition to addressing these three concerns, the integrated model employed a theoretical framework to examine relevant individual characteristics to provide both researchers and practitioners with a greater understanding of how and why multiple variables interplay to predict and promote professional self-development.

Understanding Propensity for Self-Development of Leadership Attributes

These results indicated that certain individual characteristics affect the motivation and skills

that contribute to a person's propensity for SDLA leading to a greater propensity to self-develop. Specifically, as hypothesized, individuals with greater work orientation were more motivated to perform leader self-development, individuals with a greater career-growth orientation were more skilled at performing self-development, and individuals with a mastery orientation were both more motivated and skilled at leader self-development, leading to a greater inclination to self-develop. However, neither an achievement-striving orientation nor cognitive ability influenced motivation or skills to perform leader self-development.

One explanation for lack of a direct relationship between the achievement-striving orientation variables and motivation may be the relatively low reliability of need for achievement (a = .61) and locus of control (a = .63). In addition, the third variable composing achievement-striving orientation, energy, was included as an exploratory variable with little previous evidence to suggest the nature of its relationship to the other individual dispositional constructs or propensity for self-development.

The lack of a cognitive ability relationship may be a reflection of participants' uniformly high level of cognitive ability, with an average Wonderlic Personnel Test (WPT) score of 29.25. The average score for the adult working population on the WPT is 21.75 with scores over 27.0 in the third quartile (WPT, 1992). This restricted range would serve to attenuate the relationships with other variables. To the extent that the army officer population mirrors leaders in commercial businesses, the effect of cognitive ability on self-development activity may be immaterial, as intelligence and leadership has been repeatedly shown to correlate (e.g., Bass, 1990; Lord, DeVader, Allinger, 1986). However, since the leader self-development research is immature, future research should consider using a diverse leadership population (e.g., with respect to industry, experience, and education) and further investigate the applicability of cognitive ability.

Supporting Performance of Leader Self-Development Activities

The relationship between propensity for SDLA and performance of leader self-development was moderated by organizational support, although the moderation effects with high propensity

individuals were unexpected. As hypothesized, individuals with very low propensity did not engage in leader self-development. Specifically, individuals scoring more than two standard deviations below the mean on the pooled propensity measure (i.e., < 1.5) were not included in the moderation analyses as these individuals, regardless of the support condition, did not perform leader self-development.

For leaders with somewhat moderate levels of propensity, the organizational support program positively influenced individuals with lower levels of propensity to engage in self-development. Unexpectedly, for individuals with high levels of propensity, the moderation effect of organizational support for self-development indicated that organizational support actually reduced performance of self-development activities. An examination of the plotted regression lines (see Figures 3) clarifies that regardless of support received, leaders with moderate to high propensity performed self-development. However, high propensity individuals who did not receive information or access to the organizational support website spent more time or performed self-development activities to a greater extent than their peers who did receive the support.

The guidance and information provided on the website may have facilitated the performance of self-development activities for the high propensity individuals, helping those with high levels of motivation and skills perform self-development more efficiently and thus presenting the appearance of reduced performance. For example, individuals with high propensity are capable of performing self-development activities, such as identifying learning resources. However, performing such activities, such as identifying suitable resources to appropriately match a developmental goal, can take large amounts of time. The website provided a variety of support information (e.g., matrix of activities organized by developmental goals and types of resources) essentially reducing the time spent performing self-development activities. In essence, these highly skilled individuals may have learned from the website how to streamline their self-development activities, thereby expending less time and effort in their self-development program than their skilled contemporaries who did not

receive such information.

Further, while self-development is associated with positive performance outcomes, the nature of the relationship is unexplored. The practical implications of the results for high propensity leaders are not clear. For example, the relationship between performing self-development and leader effectiveness may not be linear; perhaps there is a point of diminishing returns. Research is needed to investigate the relationship between leader self-development performance and leader performance outcomes to better understand these results. In the absence of further research, practitioners should be wary of providing a single intervention to leaders with varying levels of self-development motivation and skills.

These results have broad applied implications. The effects suggest that the evaluation of employee dispositions could become a vital part of the selection process, if organizations require or expect their employers to engage in professional self-development. Alternatively, organizations that have or can establish a leader orientation or pre-development program could screen and target employees with low propensity to receive organizational support in both motivating and providing the prerequisite skills needed to perform self-development.

Limitations and Future Research

This study has limitations that should be noted. First, the results based on a military officer sample with similar demographic characteristics completing a PME program may be limited in generalizability. Future research should investigate situations unrelated to formal training programs as well as over a greater length of time.

Further, social desirability and common scale formats may have influenced participants' responses. While participant confidentiality and the importance of honest responses were emphasized, many of the items of these accepted measures were written in such a way away as to reflect socially desirable attitudes. In addition, most of the items were measured using a 7-point Likert scale with the same anchor points, which may result in artificial covariation. Method effects,

however, were hopefully minimized by collecting predictor and criterion measures using different scale formats, at different times, and at different locations. In addition, diaries were used to log activities and time spent performing information to minimize the negative effects of the self-report data, as a self-report strategy was determined as the most logical and practical means for assessing self perceptions and self-performed activities.

The variables included in the current study were primarily selected due to their relationships with training motivation and performance found in previous studies. Variables, such as adaptability, flexibility, creativity, need for autonomy, need for independence, extraversion, hardiness, ambition, and initiative, as well as other attitude and personality variables that have not been examined closely are relevant for future investigation and model validation.

Future research needs to examine the effectiveness of self-development. Research is also needed to investigate the impact of self-development performance on organizational outcomes, such as retention, job satisfaction, and productivity. In order to examine these relationships to outcome performance, a quality assessment of self-development activities should be considered a critical aspect of future research.

Conclusion

The important issue of leader self-development was addressed by developing and testing a longitudinal structural model, resulting in a useful unifying framework for understanding the effects of individual characteristics on the performance of leader self-development activities. The model depicts a person with a mastery, work, and career-growth orientation as motivated to perform leader self-development and skilled at instructional and self-regulatory processes and therefore more likely to participate in leader self-development. Further the model illustrates that an organizational support tool that provides guidance, information, and resources has a moderating effect on performance. The variables within the model should receive attention when attempting to understand or enhance leader self-directed learning. Continued research is need to guide and support self-directed learning efforts.

References

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

Baldwin, T. T., Magjuka, R. J., & Loher, B. T. (1991). The perils of participation: Effects of choice of trainee on trainee motivation and learning. *Personnel Psychology, 44*, 51-66.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.

Bass, B. M. (1990). *Bass & Stogdill's handbook of leadership: A survey of theory, research, and managerial applications*. New York: Free Press.

Birdi, K., Allan, C., & Warr, P. (1997). Correlates and perceived outcomes of four types of employee development activity. *Journal of Applied Psychology, 82*(6), 845-857.

Boyce, L. A. (2004). Propensity for self-development of leadership attributes: Understanding, predicting, and supporting leader self-development performance (Doctoral dissertation, George Mason University, 2004). *Dissertation Abstracts International, 65/01*, 468.

Campbell, J. P. (1990). Modeling the performance prediction problem in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed.; Vol. 1, pp. 687-732). Palo Alto, CA: Consulting Psychologists Press.

Colquitt, J. A., & Simmering, M. J. (1998). Conscientiousness, goal orientation, and motivation to learn during the learning process: A longitudinal study. *Journal of Applied Psychology, 83*(4), 654-665.

Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology, 85*(5), 678-707.

Day, D. V., Bedeian, A. G., & Conte, J. M. (1998). Personality as predictor of work-related

outcomes: Test of a mediated latent structural model. *Journal of Applied Social Psychology, 28*(22), 2068-2088.

Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method* (2nd ed.). New York: John Wiley & Sons.

Ellinger, A., Ellinger, A., Yang, B., & Howton, S. (2002). The relationship between the learning organization concept and firms' financial performance, An empirical assessment. *Human Resource Development Quarterly, 13*, 5-21.

Goldstein, I. L. (1993). *Training in organizations* (3rd ed.). Pacific Grove, CA: Brooks/Cole.

Gould, S., & Penley, L. (1984). Career strategies and salary progression: A study of their relationship in a municipal bureaucracy. *Organizational Behavior and Human Performance, 34*, 244-264,

Hall, D. T. (1996). Protean careers of the 21st century. *Academy of Management Executive, 10*, 9-16.

Halpin, S. M., & Karrash, A. (2001). *Leader AZIMUTH Check*. Retrieved October 31, 2001, from http://207.133.209.51/azimuth.html.

Hicks, W. D., & Klimoski, R. J. (1987). Entry into training programs and its effects on training outcomes: A field experiment. *Academy of Management Journal, 30*, 699-720.

Hogan, J., & Ones, D. S. (1997). Conscientiousness and integrity at work. In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 849-870). San Diego, CA: Academic Press.

Howard, A., & Bray, D. W. (1988). *Managerial lives in transition: Advancing age and changing times*. New York: Guilford Press.

Jaccard, J., & Turrisi, R. (1996). *LISREL approaches to interaction effects in multiple regression*. Thousand Oaks, CA: Sage.

Kanfer, R., & Ackerman, P. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology, 74*, 657-690.

Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. New York: Association Press.

Kozlowski, S. W., & Farr, J. L. (1988). An integrative model of updating and performance. *Human Performance, 1*(1), 5-29.

Kraut, A. I., & Korman, A. K. (1999). The "DELTA Forces" causing change in human resource management. In A. I. Kraut & A. K. Korman (Eds.), *Evolving practices in human resource management* (pp. 3-22). San Francisco: Jossey-Bass Publishers.

London, M., Larsen, H. H., & Thisted, L. N. (1999). Relationships between feedback and self-development. *Group & Organization Management, 24*(1), 5-27.

London, M., & Mone, E. M. (1999). Continuous learning. In D. R. Ilgen & E. D. Pulakos (Eds.), *The changing nature of performance* (pp. 119-153). San Francisco, CA: Jossey-Bass.

Lord, R. G., DeVader, C. L., & Alliger, G. M. (1986). A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures. *Journal of Applied Psychology, 71*(3), 402-410.

Maurer, T. J., & Tarulli, B. A. (1994). Investigation of perceived environment, perceived outcome, and person variables in relationship to voluntary development activity by employees. *Journal of Applied Psychology, 79*(1), 3-14.

Maurer, T. J., Weiss, E. M., & Barbeite, F. G. (2003). A model of involvement in work-related learning and development activity: The effects of individual, situational, motivation, and age variables. *Journal of Applied Psychology, 88*(4), 707-724.

Noe, R. A., & Schmitt, N. (1986). The influence of trainee attitudes on training effectiveness: Test of a model. *Personnel Psychology, 39,* 497-523.

Noe, R. A., & Wilk, S. L. (1993). Investigation of the factors that influence employees' participation in development activities. *Journal of Applied Psychology, 78*, 291-302.

Phillips, J. M., & Gully, S. M. (1997). The role of goal orientation, ability, and locus control in the

self-efficacy and goal setting process. *Journal of Applied Psychology, 82(*5), 792-802.

Pintrich, P. R., & DeGroot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33-40.

Ree, M. J. & Earles, J. A. (1991). Predicting training success: Not much more than g. *Personnel Psychology, 44*, 321-332.

Sanchez, R. J., Truxillo, D. M., & Bauer, T. N. (2000). Development and examination of an expectancy-based measure of test-taking motivation. *Journal of Applied Psychology, 85*(5), 739-750.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin, 124*(2), 262-274.

Snow, R. E. (1986). Individual differences and the design of educational programs. *American Psychologist, 41*, 1029-1039.

Stumpf, S. A., Colarelli, S. M., & Hartman, K. (1983). Development of the career exploration survey (CES). *Journal of Vocational Behavior, 22*, 191-226.

Tabachnick, B. G., & Fidell, L. S. (1996). Using multivariate statistics (3rd ed.). New York: HarperCollins.

Temporal, P. (1982). Self-development groups in industry--what actually happens. *Management Education & Development, 13*(1), 3-9.

Tharenou, P. (2001). The relationship of training motivation to participation in training and development. *Journal of Occupational and Organizational Psychology, 74*, 599-621.

Tough, A. (1971). *The adult's learning projects*. Toronto: Ontario Institute for Studies in Education.

Vroom, V. (1964). *Work and motivation*. New York: John Wiley.

Wonderlic Personnel Test. (1992). *Wonderlic Personnel Test user's manual*. Libertyville, IL: Wonderlic Personnel Test, Inc.

Table 1.

Individual Characteristics: Definition and Support for Hypothesized Relationship[1]

Individual Characteristic	Definition	Support for Hypothesized Relationship
Career Motivation	Realistic insight about self and career, and the extent to which one's identity is tied to career goals and accomplishments (London, 1993; Noe, Noe, & Bachhuber, 1990)	Noe & Wilk, 1993; Sugalski & Greenhaus, 1986
Job Involvement	Degree to which an individual identifies psychologically with work and the importance of work to a person's total self-image (Lodahl & Kejner, 1965)	Brown, 1996; Mathieu, Martineau, Tannenbaum, 1993; Noe & Schmitt, 1986; Tracey, Hinkin, Tannenbaum, & Mathieu, 2001
Organizational Commitment	Refers to an individual's involvement in and identification with an organization, including an acceptance of and belief in the organization's goals and values, a willingness to exert effort for the organization, and a desire to maintain membership in the organization (Meyer, Allen, & Smith, 1993; Mowday, Porter & Steers, 1982)	Brief & Motowidlo, 1986; Mathieu, 1988; Quinones, Ford, Sego, & Smith, 1995
Need for Achievement	Characterized by an individual's commitment to the pursuit and accomplishment of goals (McClelland, 1975)	Brunstein, Schultheiss, & Maier, 1999; Phillips & Gully, 1997
Locus of Control	Reflects the degree to which individuals perceive events to be under their control (internal locus) or under the control of others (Deci, Koestner, & Ryan, 1999)	Baron, 1995; Noe, 1986
General Self-Efficacy	Refers to individuals' judgments of their own capabilities to organize and execute courses of action required to attain designated types of performance (Bandura, 1986)	Bouffard-Bouchard, Parent, & Larivee, 1991; Maurer & Tarulli, 1994; Noe & Wilk, 1993; Zimmerman, 2000; Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992;
Openness &	Trait reflecting such qualities as being reliable, hardworking, self-disciplined, and persevering (McCrae & Costa, 1987)	Austin & Klein, 1996; Barrick & Mount, 1991; Hogan & Ones, 1997; Martocchio & Judge, 1997
Conscientiousness	Refers to willingness to make adjustments in notions and activities in accordance with new ideas or situations (McCrae & Costa, 1987)	Barrick & Mount, 1991
Learning Goal Orientation	Characterized as having a desire to increase task competence, view achievement situations as a challenge, adopt more difficult goals, and persevere in the face of adversity (Beaubien & Payne, 1999)	Birdi et al., 1997; Covington, 2000; Fisher & Ford, 1998; Ford, Smith, Weissbein, Gully, & Salas, 1998; Dweck & Leggett, 1988; Pintrich & DeGroot, 1990
Intellectual Maturity	Involves a sophisticated understanding of the nature of knowledge including a comfortable acceptance of the ambiguities, uncertainties, and limitations inherent in achieving knowledge (Dean, 1967)	Johnson, 2000; Perry, 1981
Metacognition	Individual's knowledge of and control over cognitions or the ability to think about thinking (Flavell, 1987)	Garrison, 1997; Kanfer, 1992; Ford et al., 1998; Pintrich & DeGroot, 1990
Career Exploration	Refers to the self-assessment of skill strengths and weaknesses, career values, interests, goals, or plans, as well as the search for job-related information from counselors, friends, and family members (Mihal, Sorce, & Compte, 1984; Stumpf, et al., 1983)	Bass, 1990; Noe & Wilk, 1993
Feedback Seeking	Provides greater insight during self-evaluation, particularly in a leadership context, which requires an understanding of a broad phenomenon of behaviors (Ashford & Tsui, 1991)	Ashford & Tsui, 1991

[1] as cited in Boyce, 2004

Table 2.

Measures: Individual Characteristics

Individual Characteristic	Source	Items	Alpha	Notes
Career Motivation	London, 1993	17	.88	Career motivation defined in terms of insight, identity, and resilience
Job Involvement	Lodahl & Kejner, 1964	6	.76	Example item includes, "The major satisfaction in my life comes from my job"
Organizational Commitment	Mowday, Steers, & Porter, 1979	9	.89	Participants responded in reference to organization they worked (i.e., U.S. Army)
Need for Achievement	Fineman, 1976	18	.61	The Self-Description Questionnaire adapted from Ghiselli (1954) consists of forced-choice adjectives pairs with respondents selecting the most or least self-descriptive adjective in each pair. Reported internal reliability ranged from .70 to .79
Locus of Control	Rotter, 1966	14	.63	The 14-item version of Rotter's scale used in previous investigations (e.g., Greenberger, Strasser, Cummings, & Dunham, 1989; Howell & Avolio, 1993) has reported reliability of .72
General Self-Efficacy	Chen, Gully, & Eden, 2001	8	.95	The more general, trait-like aspects of self-efficacy are more useful when trying to understand performance over time and captures individual differences in people's tendency to view themselves as capable of meeting task demands in a wide a variety of situations (Chen, Gully, Whiteman, & Kilcullen, 2000)
Openness & Conscientiousness	Saucier, 1994	8 8	.85 .79	Individuals used a 9-point scale to rate the accuracy of both characteristics in describing themselves (1 = Extremely Inaccurate to 9 = Extremely Accurate).
Learning Goal Orientation	Button, Mathieu, & Zajac, 1996	8	.92	Only the eight-item learning subscale of this two-subscale measure (learning and performance) was included in the study
Intellectual Maturity	Dean, 1967	22	.84	Used two subscales, judgment and intellectual maturity, of the multidimensional measure
Metacognition	Pintrich, Smith, Garcia, & McKeachie, 1991	12	.80	The Metacognitive Self-Regulation Scale items were adapted to generalize the college-orientation of the measure to a larger learning environment.
Career Exploration	Stumpf, Colarelli, & Harman, 1983	14	.80	Used self-exploration, environment exploration, and intended-systemic exploration subscales of the Career Exploration Survey
Feedback Seeking	Ashford, 1986	7	.83	Measure examines two strategies: monitoring and inquiry
Cognitive Ability	Wonderlic Personality Test, 1992	50	.88	Participants were given 12 minutes to complete the 50-item instrument, with items increasing in difficulty
Energy Level	Jackson, 1994	20	.73	The Jackson Personality Inventory-Revised subscale consist of 20 true-false statements

Table 3.

Means, Standard Deviations, Correlations, and Reliabilities Among Key Variables

	Variables	M	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.	Career Motivation (T)	5.72	0.70	2.2	7.0	(.88)																				
2.	Job Involvement	3.99	1.10	1.0	6.8	**.47**	(.76)																			
3.	Organizational Commitment (T)	5.45	1.04	2.0	7.0	**.60**	**.48**	(.89)																		
4.	Need for Achievement	9.08	2.54	2.0	14.0	.28	.19	.17	(.61)																	
5.	Locus of Control (T)	9.98	2.66	1.0	15.0	.14	.16	.14	.21	(.63)																
6.	General Self Efficacy (T)	6.11	0.78	1.9	7.0	**.72**	.17	**.40**	.26	.21	(.95)															
7.	Conscientiousness (T)	6.92	1.19	2.8	9.0	**.42**	.14	.23	.19	.19	**.49**	(.85)														
8.	Openness to Experience	6.56	1.06	3.1	9.0	**.32**	.05	.13	.20	.09	**.42**	**.40**	(.79)													
9.	Learning Goal Orientation (T)	6.03	0.81	1.0	7.0	**.69**	**.30**	**.41**	.23	.24	**.69**	**.45**	**.37**	(.92)												
10.	Intellectual Maturity (T)	5.41	0.62	3.6	7.0	**.48**	.08	.26	.20	.24	**.59**	**.58**	**.43**	**.58**	(.84)											
11.	Metacognition	4.77	0.79	2.5	7.0	**.51**	.25	**.40**	.17	.10	**.46**	**.34**	**.36**	**.52**	**.46**	(.80)										
12.	Career Exploration (T)	3.62	0.57	1.0	5.0	**.42**	.14	.25	.26	.04	**.35**	.22	**.32**	**.36**	.25	**.39**	(.80)									
13.	Feedback Seeking (T)	3.53	0.66	1.1	5.0	**.34**	.16	.26	.13	.06	.22	.12	.14	.22	.09	.29	**.56**	(.83)								
14.	Energy Level (T)	14.42	3.73	0.0	20.0	**.32**	.18	.26	**.33**	.29	.29	**.32**	.23	**.33**	**.33**	**.30**	.23	.15	(.73)							
15.	Cognitive Ability	29.25	5.57	12.0	44.0	-.13	.02	-.06	.10	.11	-.05	.04	.16	-.05	.04	-.14	-.07	-.07	-.05	-						
16.	Motivation (T)	16.12	2.80	5.7	21.0	.25	.08	.18	.02	.03	.19	.14	.15	.22	.15	.28	.17	.17	.04	-.02	(.98)					
17.	Skills (T)	26.20	4.01	8.1	34.8	**.35**	.13	.24	.13	.06	**.35**	.29	.22	**.36**	**.33**	**.37**	.24	.18	.18	-.02	**.50**	(.93)				
18.	Propensity	3.58	1.09	1.0	5.7	.23	.14	.25	.09	.06	.21	.11	.16	.28	.12	**.31**	.20	.18	.11	.01	**.53**	**.37**	(.89)			
19.	Total Performance	3.00	1.13	1.0	5.0	.26	.18	.25	.15	.06	.19	.29	.08	.25	.22	**.31**	.21	.05	.20	-.03	.13	.12	**.34**	(.95)		
20.	Total Activity - Quality	2.83	1.04	1.0	5.0	.23	.16	.32	.12	-.03	.14	.23	.04	.20	.14	.19	.13	.10	.11	-.02	.23	.12	**.39**	**.80**	(.93)	
21.	Total Hours - Quantity	55.57	89.90	0.0	450.0	.19	.05	.15	.14	-.06	.16	.13	.00	.16	.17	.24	.17	.03	-.03	-.04	.07	.13	.28	**.46**	**.48**	-

Notes. Correlations were estimated using pairwise deletion; individual disposition, motivation, skills, and propensity variables (variables 1 - 18) sample size ranging from 327 to 396; performance variables sample sizes were 133. Correlations greater than .13 are significant at $p < .01$ for variables 1 thru 18. Correlations with variables 19 thru 21 greater than .17 are significant at $p < .05$; correlations greater than .22 are significant at $p < .01$. Coefficients greater than .30 are bolded. Reflected correlation coefficients resulting from transformations (T) have been corrected for interpretation. Numbers in parentheses along the diagonal are reliabilities.

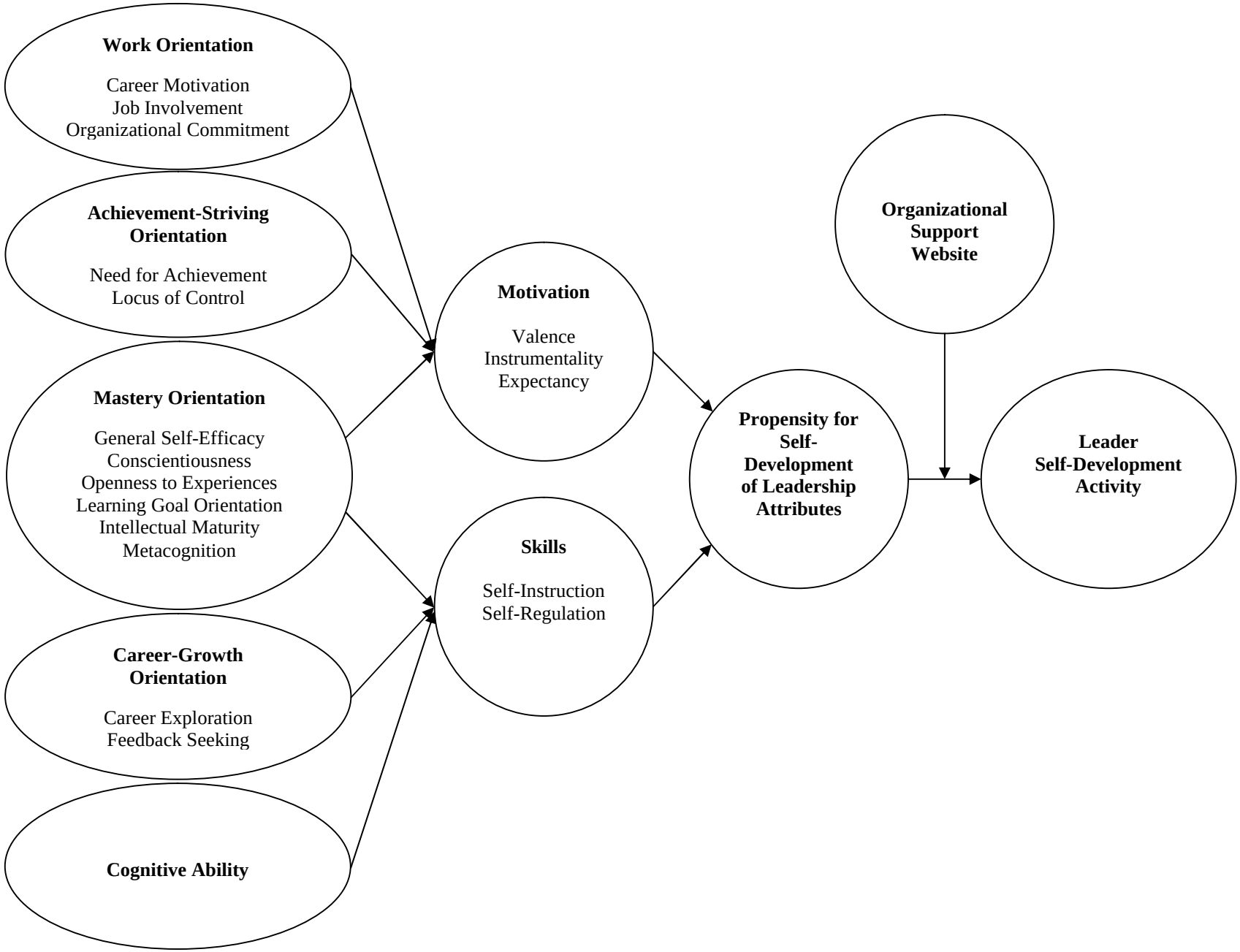
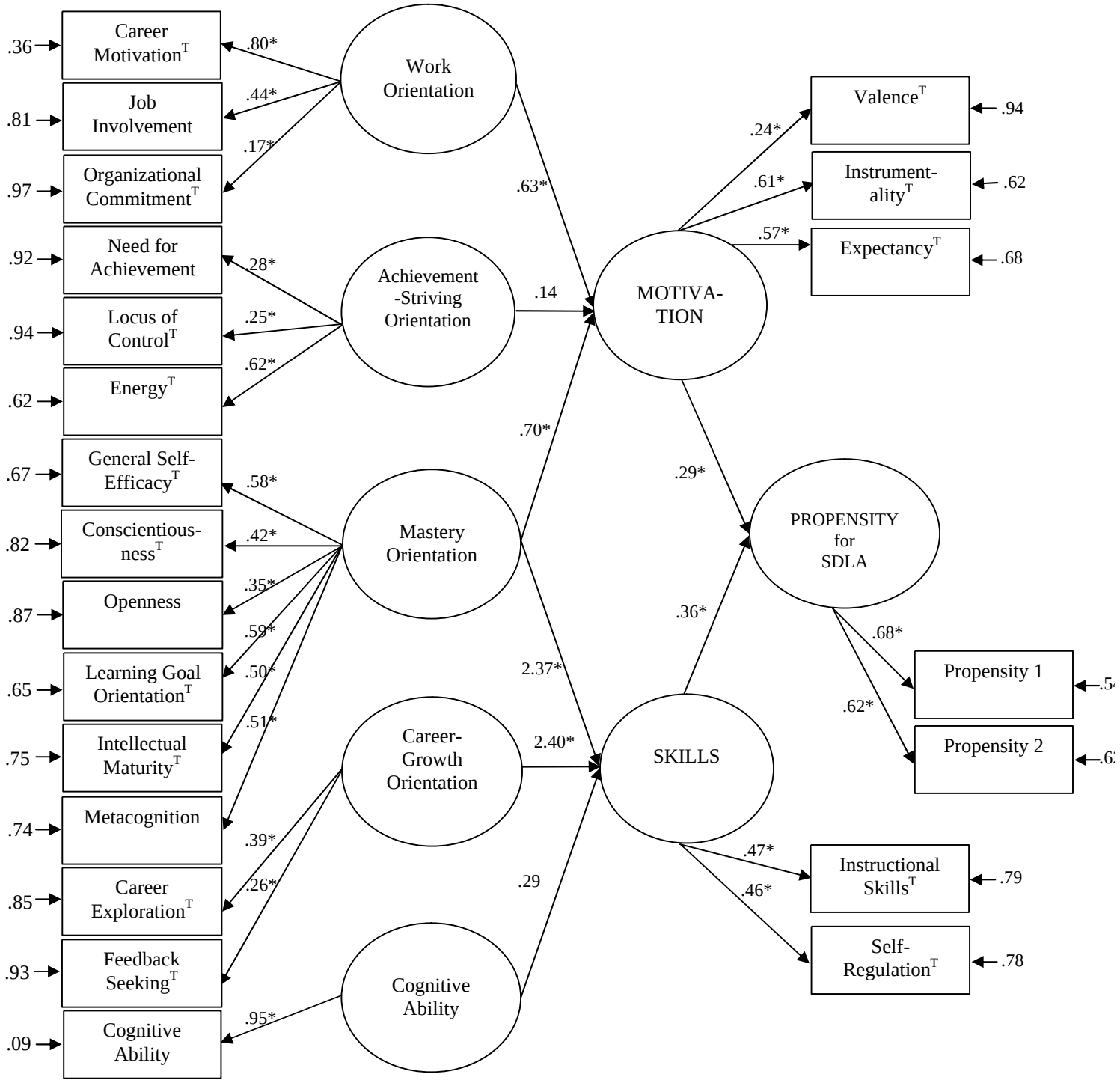
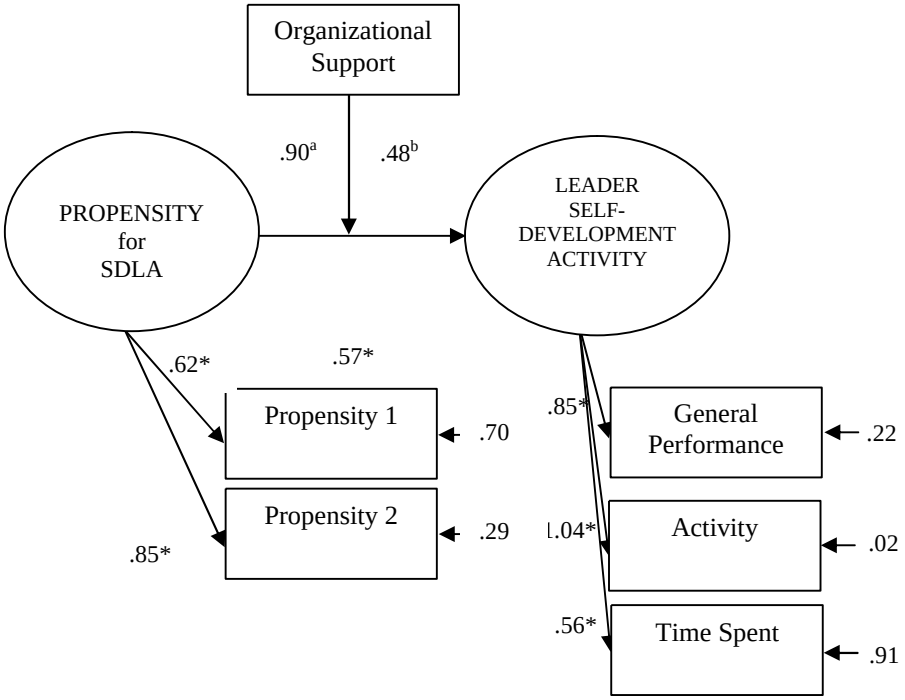


Figure 1. Leader self-development conceptual model



T indicates transformed variable, a indicates No Organizational Support, b indicates Organizational Support

Figure 2. Leader self-development performance: Mediation and moderation models


Organizational Support
.90a
.48b
PROPENSITY for SDLA
LEADER SELF-DEVELOPMENT ACTIVITY
.62*
.57*
Propensity 1
.70
Propensity 2
.29
.85*
.85*
General Performance
.22
Activity
.02
.56*
Time Spent
.91

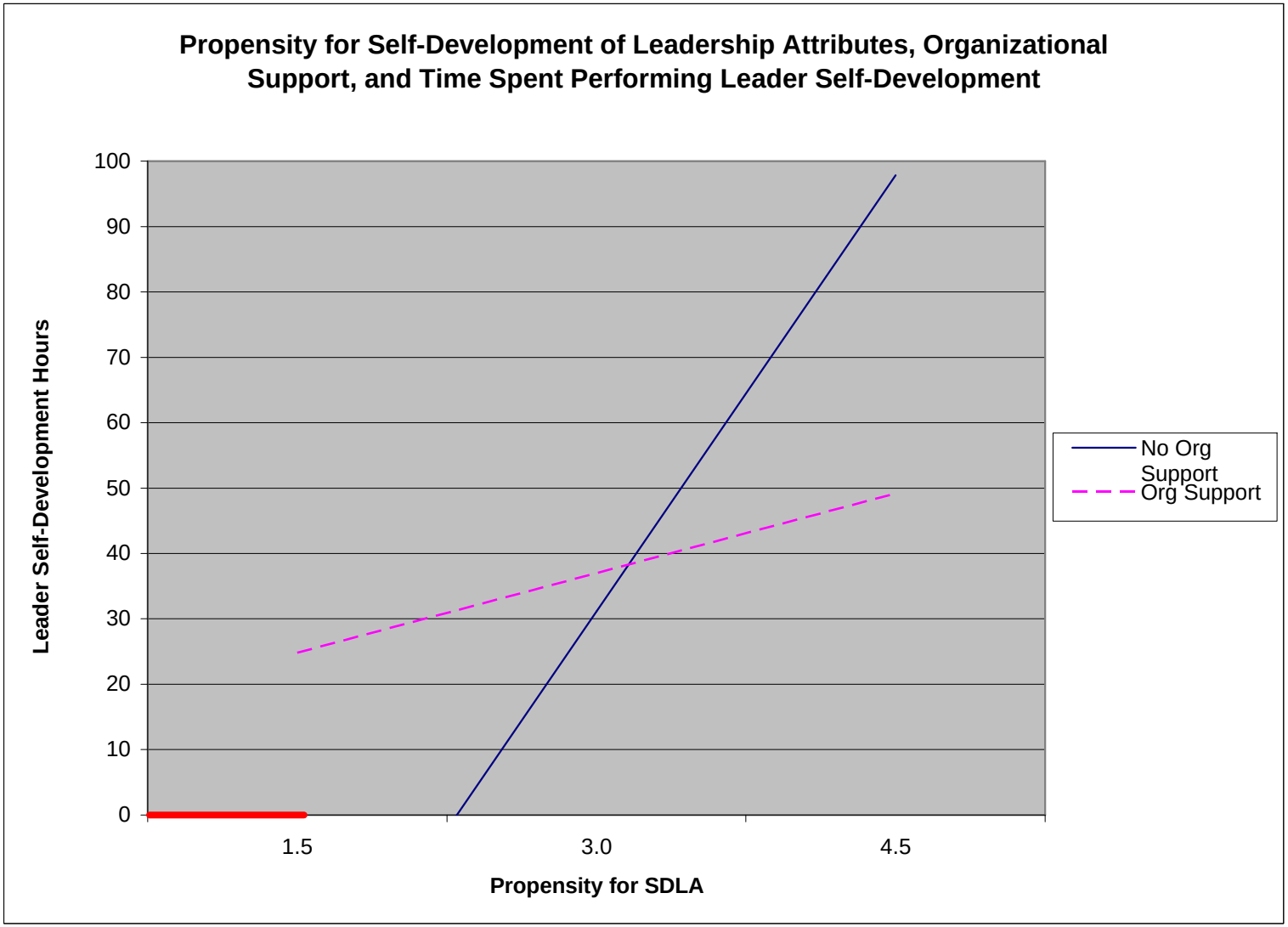


Figure 3. Interaction effect of propensity for self-development of leadership attributes (SDLA) and organizational support on time spent performing leader self-development.