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Self-leadership and performance outcomes: The mediating influence of self-efficacy

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Summary A key foundation of empowering organizations is employee self-leadership. This study examines the effects of self-leadership skills and self-efficacy perceptions on performance. Structural equations modeling determined whether the influence of self-leadership on performance is mediated by self-efficacy perceptions. Results for the sample of 151 respondents indicated self-leadership strategies had a significant effect on self-efficacy evaluations, and self-efficacy directly affected performance. Further, self-efficacy perceptions were found to fully mediate the self-leadership/performance relationship. Theoretical and practical implications are discussed. © 1998 John Wiley & Sons, Ltd.

Introduction

The theme of employee empowerment is common to many organizational restructuring efforts (Alvesson and Willmott, 1992; Conger and Kanungo, 1988; Thomas and Velthouse, 1990). More specifically, empowering employees is a key foundation of self-managed work teams, participative management, and other attempts to extend quality concepts into business firms. As a result of these practices, recognition is growing that managers can rely on employee self-leadership rather than on external leadership as it has been traditionally applied (Manz and Sims, 1996).

Self-leadership is considered pivotal to employees' enthusiasm for, commitment toward, and performance in empowering organizations (Manz, 1986, 1990). Previous empirical research examined the relation between specific self-leadership behaviors and subsequent performance (e.g. Bandura and Schunk, 1981; Cervone, 1989; Gist, 1989), but no research examined how the general combination of self-leadership behaviors translates into performance. It may be that self-leadership behaviors have their initial influence on capability perceptions regarding performance within specific task domains. That is, the utilization of general self-leadership behaviors may influence self-efficacy perceptions which subsequently affect performance. This study examines this relationship and evaluates the extent to which self-efficacy mediates the influence of self-leadership on performance.

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Self-Leadership

Self-leadership involves the influence people exert over themselves to achieve the self-motivation and self-direction needed to behave in desirable ways (Manz, 1992b). Three distinct but complementary categories of self-leadership influence subsequent outcomes: behavior-focused strategies; natural reward strategies; and constructive thought pattern strategies. Behavior-focused strategies refer to specific behaviors that focus on self-assessment, self-reward, and self-discipline. Examples include identifying specific behaviors to enhance or modify, conducting a self-analysis to identify long-term goals, identifying and self-applying motivational rewards, reducing habitual self-punishment patterns, and practising desired behaviors (Manz, 1992b).

Natural reward strategies pertain to positive perceptions and experiences associated with tasks to be accomplished. These include a commitment to, belief in, and enjoyment of the work for its own value (Manz, 1992a,b). Thus, natural reward strategies include seeking work activities which are pleasant and enjoyable. Individuals can facilitate natural reward strategies by modifying perceptions or behaviors associated with task performance thereby increasing perceived competence, self-control, or task responsibility.

Finally, constructive thought pattern strategies focus on establishing and altering thought patterns in desirable ways. Four particular strategies can be used to change thinking patterns: self-analysis and improvement of belief systems; mental imagery of positive performance; positive self-talk to facilitate performance; and using positive scripts in place of ineffective ones. Manz (1986) asserts that these scripts are individual counterparts to organizational rules, policies, and procedures.

In sum, the use of self-leadership strategies facilitates a perception of control and responsibility which positively affects performance outcomes (Manz, 1983, 1992b). For this reason, self-leadership behaviors and perceptions are examined in this study as an important influence on people's behavior.

Self-Efficacy

Self-efficacy is the extent to which an individual believes him or herself capable of successfully performing a specific behavior (Bandura, 1986). These beliefs influence 'what challenges to undertake, how much effort to expend in the endeavor, (and) how long to persevere in the face of difficulties' (Bandura, 1989, p. 29). The higher a person's self-efficacy, the more confident he or she is about success in a particular task domain.

Bandura (1977, 1986) suggests that one of the influential antecedents to the development of self-efficacy is vicarious experience or learning through modeling. Most modeling is based on behavioral observation, but an alternative form of modeling is based on self-instructional learning. This method of modeling, labeled cognitive modeling, utilizes 'self-instructional thoughts (or "statements") to guide performance' (Gist, 1989, p. 788). These thoughts are similar to the constructive thought patterns set forth in self-leadership theory and resemble learning points in training interventions (Decker, 1984). Research supports the effectiveness of this type of modeling (Gist, 1989; Decker, 1984) and highlights the need to consider how self-leadership affects self-efficacy development.

Research results also attest to the positive influence of self-efficacy perceptions on subsequent performance (see below). In sum, self-efficacy is examined in this study in order to (1) determine how self-leadership strategies contribute to the formation of efficacy perceptions and (2) to determine if such perceptions subsequently lead to performance improvements.

Hypothesis Development

The structural model examined in this study is presented in Figure 1. Theoretical and empirical rationale for hypothesized relations between constructs are discussed in the following sections.

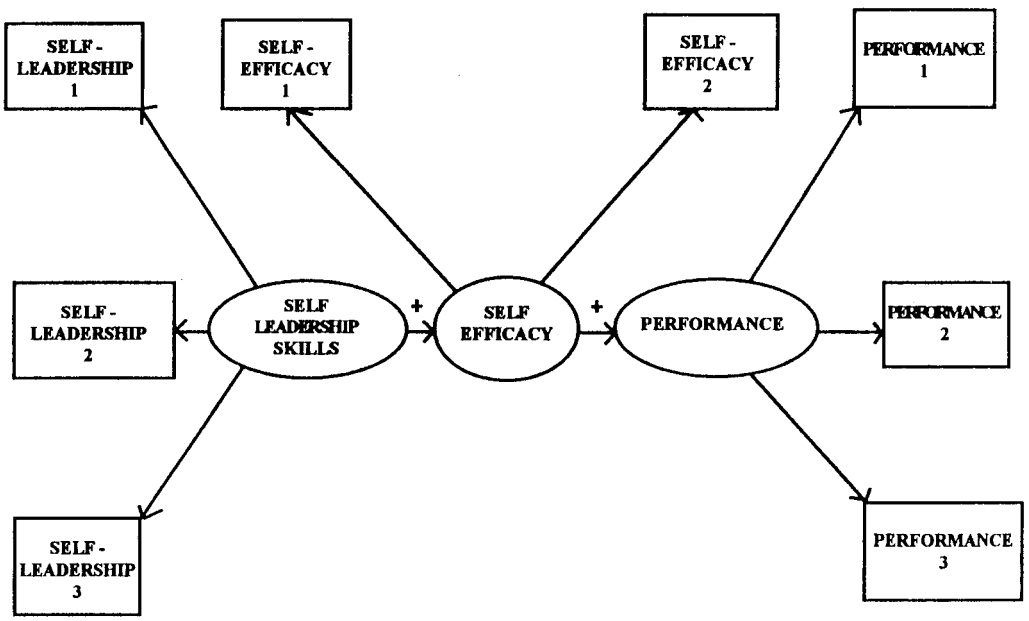

Figure 1. Structural representation of the proposed model. (Circles represent latent constructs)

Self-leadership → self-efficacy

Several studies have shown that leadership behaviors affect perceptions of self-efficacy. These studies focused on external leadership, self-management, or self-leadership influences on self-efficacy in a variety of task domains. Studies examining external leadership influences on self-efficacy perceptions generally focus on how the provision of feedback (e.g. Karl, O'Leary-Kelly and Martocchio, 1993) or the use of effective training techniques (e.g. Gist, 1989) influences these perceptions. However, two studies specifically emphasized leader behavior influences on self-efficacy perceptions. Redmond, Mumford and Teach (1993) found that leader behaviors,

including task direction and goal-setting, positively influenced self-efficacy expectations. Sherer, Adams, Carley and Wiebe (1989) found similar results in that the influence of an entrepreneurial parent (a leadership role) significantly affected subjects' level of self-efficacy and expectancy to pursue an entrepreneurial career.

Health science and organizational research indicates that self-management techniques also affect self-efficacy perceptions. Specifically, Dilorio, Faherty and Manteuffel, (1992) defined epilepsy self-management as 'activities that an individual can perform alone and that are known to either control frequency of seizures or promote well-being of the person with seizures' (p. 295). Their results indicate that the zero-order correlation between epilepsy self-management and self-efficacy was 0.50 ($p < 0.0001$). Furthermore, Frayne and Latham (1987; Latham and Frayne, 1989) found self-management techniques positively influenced self-efficacy for reducing absenteeism. In sum, research generally supports the positive effects of self-management behaviors on self-efficacy. Fewer studies, however, examined how the more general combination of self-leadership behaviors influence self-efficacy.

Conceptual writers suggest that empowerment is a process in which people act on their own behalf to achieve greater control over their lives (Conger and Kanungo, 1988; Staples, 1990). To the extent that individuals are in a position to experience confidence through greater self-control (i.e. self-leadership skill development), efficacy perceptions will be enhanced (Manz and Sims, 1996). While self-leadership theory indicates a variety of strategies that underlie empowerment, no empirical studies examined how the constellation of these strategies affects efficacy expectations. On the other hand, several studies examined individual components of self-leadership and provided an indication of their separate influence on self-efficacy. Bandura and Cervone (1986), for example, found that after setting goal standards, individuals high in self-efficacy increased their efforts to meet the standards, whereas those low in self-efficacy did not. In addition, Gist (1989) found that including cognitive modeling in a training session generated higher levels of trainee self-efficacy than for those exposed to lecture training only.

In sum, research shows that particular leadership behaviors affect self-efficacy perceptions. However, no research directly examined whether the constellation of self-leadership behaviors influences self-efficacy. We conclude from our research review that the use of self-leadership strategies will influence self-efficacy perceptions for a specific task. Therefore, we propose the following hypothesis.

Hypothesis 1: Self-leadership strategies have a direct, positive effect on the level of self-efficacy.

Self-efficacy → performance

Empirical research on self-efficacy indicates a strong and consistent link between self-efficacy and subsequent outcomes. For example, researchers have linked self-efficacy to job search success (Kanfer and Hulin, 1985; Rife and Kilty, 1990), improved attendance behavior (Frayne and Latham, 1987; Latham and Frayne, 1989), increased task performance (Barling and Beattie, 1983; Lee and Gillen, 1989; Mathieu, Martineau and Tannenbaum, 1993) and academic achievement (Multon, Brown and Lent, 1991; Relich, Debus and Walker, 1986). The positive influences of self-efficacy have been well documented and strong empirical support exists for the effects of self-efficacy on performance. Thus, we propose the following hypothesis.

Hypothesis 2: Self-efficacy has a direct, positive effect on performance.

Self-leadership → self-efficacy → performance

Self-efficacy results from the acquisition of cognitive, social, linguistic, or physical skills through personal and/or vicarious experience (Bandura, 1982). Individuals synthesize and evaluate this information about their task abilities and make decisions about choice of action, level of effort, and duration of persistence for subsequent task activities (Bandura and Cervone, 1986). In contrast, self-leadership represents a constellation of behaviors, attitudes, and cognitions which represent a less specific orientation. Strategies such as monitoring progress, using self-encouragement, and envisioning positive job factors apply across task domains. Self-leadership is, therefore, a more global or general level phenomenon than self-efficacy. However, domain specific perceptions such as self-efficacy may mediate the effects of general behavioral strategies on subsequent outcomes.

Previous empirical research examined the mediating influences of self-efficacy in a variety of task domains. For example, Feltz's (1982) results indicate that self-efficacy mediates the relation between diving anxiety and diving performance. In addition, Bandura (1982) reported coping self-efficacy mediates the impact of individual distress on the performance of threatening tasks. Finally, Pieper and Johnson (1991) found that self-efficacy mediates the effects of feedback on performance in a computerized simulation of a space shuttle mission.

In contrast, limited research examined whether self-efficacy operates as a mediator through which general leadership behaviors are translated into performance outcomes. Research done by Kirkpatrick and Locke (1996) found self-efficacy did not mediate the effects of visionary and charismatic leader behaviors on performance. They did, however, find support for a 'two-part causal linkage' wherein leader behaviors affected performance to the extent that they initially influenced self-efficacy. On the other hand, a study by Frayne and Latham (1987; Latham and Frayne, 1989) showed self-efficacy mediates the influence of self-management behaviors on attendance. But self-management training is distinct from an overall approach to improve global self-leadership skills (Manz, 1986). Self-efficacy may be a task-specific mechanism through which global self-leadership strategies affect performance. This relationship represents the final hypothesis.

> *Hypothesis 3:* Self-efficacy mediates the relation between self-leadership strategies and performance.

The proposed model (see Figure 1) was tested using covariance structure analysis. Analyzing the hypothesized relations simultaneously leads to more accurate estimates of relations among constructs and avoids bias associated with single-indicator models (James, Mulaik and Brett, 1982). Furthermore, this method allowed for both a test of the proposed model and also a direct comparison of alternative theoretical specifications. Anderson and Gerbing's (1988) two-stage process of analysis was followed: the measurement model was examined in stage 1 of the analysis; structural verification of the model proposed in Figure 1 was tested in stage 2. Competing measurement and structural specifications were examined in each stage, respectively.

Method

Sample and procedure

Data were obtained from 151 students enrolled in three separate undergraduate entrepreneurship classes at a large southwestern university. Ages ranged from 20 to 49 years, and the average age

was 27 years. Sixty-six per cent of the sample was male and 88 per cent were seniors or graduates. Finally, respondents averaged 9.3 years of work experience.

Surveys were administered to students at the beginning of the semester to obtain information about self-leadership strategies and self-efficacy perceptions prior to in-class performance. (The survey instrument is available by request from the second author). Performance scores were determined at the end of the course and represented comprehensive measures of performance. Two classes were taught by the second author and one by the first author. In order to facilitate valid combination of data sets, instructional methods were coordinated to ensure a consistent learning experience and performance evaluation across the three classes. Following data collection, *t*-tests indicated no significant differences in total points (exam scores, writing performance, and contribution evaluations) existed between the two authors' classes.

Measures

Self-leadership

Results from an earlier study were used to develop indicators of the self-leadership construct. The previous study sample was composed of 194 students attending a junior-level management course, who responded to a 90-item instrument assessing self-leadership. Mean age was 22.7 years, 80 per cent were caucasian, and 45 per cent were female. Exploratory factor analysis was applied to the instrument, and 14 factors of three or more items were extracted. Examination of the substantive meanings underlying the factors and corresponding items was undertaken in order to purify the factors (cf. Cavusgil and Zou, 1994). Only items with consistent meanings (factor loadings above 0.44) that were not cross-loaded with other factors (cross-loadings of 0.33 or greater) were retained for measuring each factor. Following assessment of empirical relevance, theoretical justification determined which factors were included in the operational model.

Three factors corresponded to the three theoretical categories of self-leadership strategies (Manz, 1992a). The behavioral-focused strategies factor comprised six items including 'I think about my progress in school/work' and 'I work toward specific goals I have set for myself'. The natural reward strategies factor was composed of six items stressing responsibility as a natural reward. The natural reward value of specific activities stems from a sense of competence and self-control enjoyed while performing a task (Manz, 1986). Seeking responsibility is consistent with this thrust in that an individual initiates personally chosen areas over which to increase control and competence. Items in this factor included 'I try to extend my area of responsibility' and 'I look for activities that I can do beyond my basic responsibilities'.

The final factor, constructive thought pattern strategies, comprised eight items including 'If I have a problem, I first try to solve it myself' and 'I try to think of positive changes I can make in my job (schoolwork) on my own'. While constructive thought patterns encompass several other elements, self-problem solving represents a pattern of thought atuned to opportunities rather than obstacles and is vital to self-leadership (Manz, 1992a). Table 1 indicates factor loadings and cross-loadings for the three retained factors.

While the derived factors did not capture the entire theoretical breadth of self-leadership behaviors, they did correspond to the three categories of self-leadership strategies. Thus the obtained factors were used to indicate the self-leadership construct. Items within factors were averaged to create separate indicators (see Vandenberg and Scarpello, 1990). Coefficient alpha for the three factors was estimated at 0.73, 0.87, and 0.88 respectively.

Table 1. Factor analysis of self-leadership items

	Behavior-focused strategies	Natural reward focused strategies	Constructive thought focused strategies
I think about my progress in my job	**0.69**	0.18	0.24
I make a point to keep track of how I'm doing	**0.66**	0.13	0.03
I pay attention to how well I'm doing	**0.57**	0.06	0.19
I consciously have goals in my mind	**0.50**	0.17	0.33
I keep a record of progress in my tasks	**0.46**	0.07	0.09
I pay attention to what I'm telling myself	**0.44**	0.26	0.12
I try to extend my area of responsibility	0.14	**0.78**	0.15
I focus on ways I can extend my responsibility	0.09	**0.77**	0.08
I think about new responsibilities I can take over	0.12	**0.75**	0.10
I try to do more than my assigned responsibilities	0.20	**0.74**	0.14
I think about increasing my responsibilities	−0.01	**0.68**	0.19
I look for activities beyond my responsibilities	0.03	**0.58**	0.17
I take action to solve problems on my own	0.08	0.19	**0.77**
I like to act to solve problems by myself	−0.06	0.08	**0.76**
If I have a problem, I solve it myself	0.30	0.08	**0.74**
I identify solutions to problems in my mind	0.12	0.11	**0.73**
I think through solutions to problems on my own	0.14	0.04	**0.72**
I think up ways to solve problems	0.09	0.09	**0.69**
I choose to make improvements in how I do my job	0.02	0.26	**0.53**
I try to think of positive changes I can make in my job	−0.09	0.26	**0.51**
Eigenvalues	3.39	3.83	22.65
Percentage of variance explained	3.8	4.3	25.2

Self-efficacy

Two indicators were used to assess self-efficacy. The first evaluated respondents' confidence in their exam taking, paper writing, and class contribution capabilities. Following Bandura's (1977) recommended structure, self-efficacy was assessed over a range of performance levels. For example, to indicate confidence in exam taking, subjects indicated whether or not they could (1) get an 'A' on all examinations, (2) get at least a 'B' on all examinations, and (3) get at least a 'C' on all examinations. For each performance level indicated with a 'yes' response, subjects also indicated confidence in achieving that level on a scale ranging from 1 to 100. Similar formats were used to assess confidence in paper writing and class contribution. Scale scores for exam taking, paper writing, and class contribution confidence were consequently averaged to derive an indication of overall 'efficacy strength'. The efficacy strength score thus comprised the first indicator of the self-efficacy latent construct.

Bandura (1977) originally suggested that both efficacy magnitude (the number of 'yes' responses) and efficacy strength (the numerical scale score) could be used to assess self-efficacy. However, Bandura (1977) indicated that the strength score is most relevant, and recent studies examining self-efficacy measure efficacy strength only (e.g. Bandura and Cervone, 1986; Prussia and Kinicki, 1996) instead of any combination of strength and magnitude efficacy assessments (e.g. Gist, 1989). For these reasons magnitude was not included in the assessment of self-efficacy.

The second self-efficacy indicator was assessed using six items representing confidence in school skills. This instrument was used in a previous study (Davy and Anderson, 1988) which found acceptable validity and reliability information for the scale. All items began 'How would you rate your . . .' and ended with either test taking abilities, paper writing abilities, note taking abilities, ability to concentrate in class lectures, ability to study, or ability to understand concepts

presented in class. Responses were obtained on a 5-point Likert scale ranging from *extremely good* (1) to *extremely poor* (5). All items were reverse scored such that higher responses represented stronger self-efficacy perceptions. Coefficient alpha for this scale was estimated at 0.70. Items were averaged to derive the second indicator of the self-efficacy construct—school skills self-efficacy.

Performance

Three scores were used to indicate the latent construct of performance: exams, writing, and oral contribution. By using these indicators of performance, problems associated with common method dependence were avoided. Exam performance was assessed by means of a multiple choice/true–false and short answer exam given at the end of the course. A single writing assignment was used to indicate writing performance, and oral performance was evaluated by student contributions to class discussions. Course scores represented final performance for the semester in which the student completed the initial questionnaire. *t*-Test results indicated no instructor group differences for performance measures ($t = 1.18$, n.s.).

Analysis

All models were tested using the elliptical estimation procedure within Bentler's (1989) EQS program. Further, model goodness of fit was assessed by three fit indexes: model chi-square, comparative fit index (CFI), and parsimonious fit index (PFI). The chi-square statistic is computed on the basis of differences between the observed covariance matrix and a 'reproduced' matrix. An insignificant chi-square indicates the hypothesized model accurately reflects the observed data (Bollen, 1989). The CFI was used to evaluate model fit due to its resistance to errors associated with sample size (Bentler, 1990). CFI values of 0.90 and greater are indications of adequate model fit (Bentler, 1989). The PFI was also used to gauge model parsimony (James *et al*., 1982). This index provides for evaluation of model fit while considering degrees of freedom in a target model. Values of 0.60 and above are suggested as an *ad hoc* rule for model retention using this index (Williams and Podsakoff, 1989).

Following the recommendation by Anderson and Gerbing (1988), the latent variable model underwent two separate stages of analysis. Stage 1 involved assessment of the measurement model and evaluation of construct independence. Stage 2 provided verification of the structural model.

In stage 1, the three-factor model shown in Figure 2 was fitted to the data. This confirmatory factor analysis provides an indication of the convergent validity of the indicators used to represent the latent constructs (Bentler, 1989; Williams and Podsakoff, 1989). Alternative nested models, which combine theoretically independent constructs, were then contrasted with the original model. This evaluation yields an indication of the discriminant validity of the hypothetical constructs (Brooke, Russell and Price, 1988). First, a measurement model specifying perfect correlation among the three latent variables was assessed to test overall discriminability. Next, the discriminant validity of the self-leadership and self-efficacy constructs was examined in order to evaluate their theoretical independence. This test involved comparing the fit of the baseline measurement model with a two-factor model that constrained the 'self' constructs to be perfectly correlated and equally correlated with other constructs in the model (Brooke *et al*., 1988).

The CFI difference between two nested models (Anderson and Gerbing, 1988) and the sequential chi-square difference test (SCDT; James *et al*., 1982) were interpreted to determine

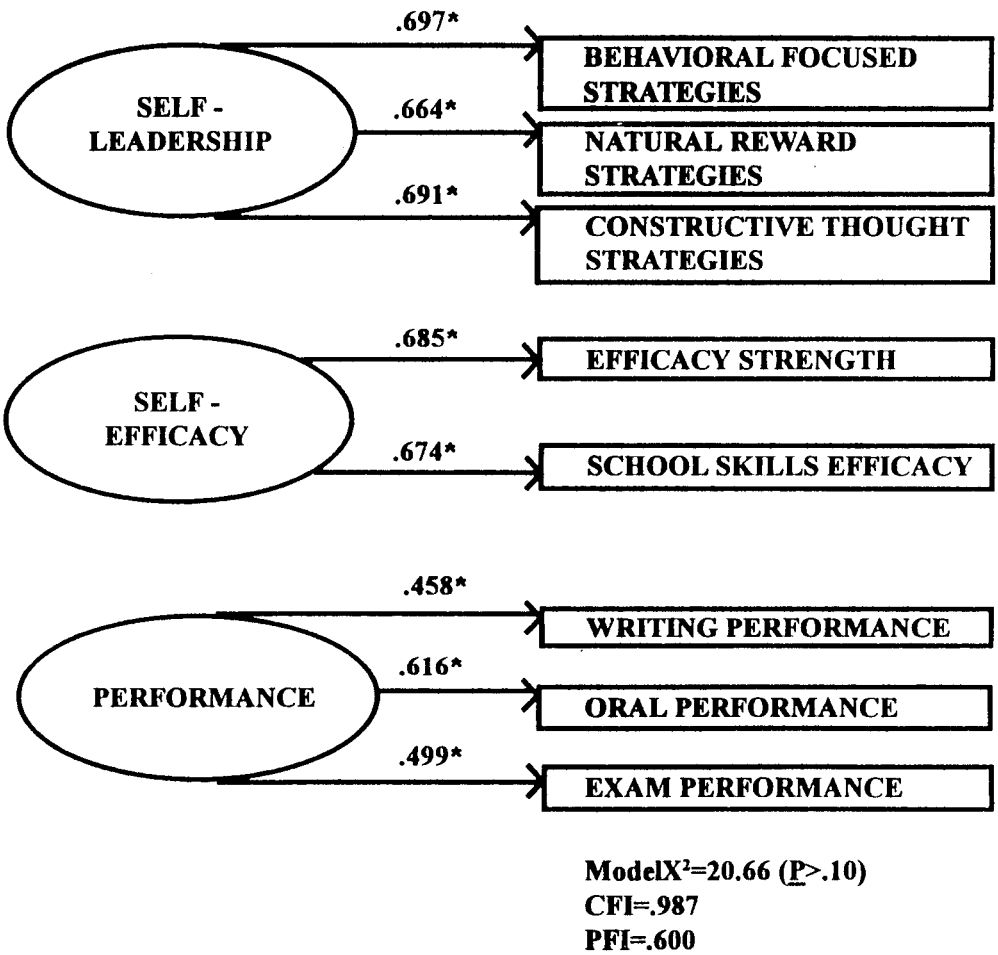

Figure 2. Three-factor measurement model. (Circles represent factors; boxes represent empirical indicators. Standardized factor loadings, all statistically significant, appear along unidirectional arrows. Measurement errors and factor correlations are omitted for clarity)

whether equating latent variables materially reduced model fit. Model differences in CFI exceeding 0.01 indicate practical differences in nested-model fit (Widaman, 1985). Alternatively, the SCDT provides a comparison of nested models by evaluating the chi-square difference between such models. An insignificant chi-square difference value indicates acceptance of the less constrained model (James *et al.*, 1982).

The structural model was examined in stage 2 (Anderson and Gerbing, 1988). Once again, model chi-square, CFI, and PFI were used to determine goodness of fit, and the structural path estimates were tested for significance. In addition, a nested model was used to compare competing conceptual structural models (James *et al.*, 1982). As mentioned earlier, self-leadership is theorized to have a positive influence on performance outcomes (Manz, 1992a). Thus, the final structural model analysis involved examination of the extent to which self-efficacy mediates the relation between self-leadership and performance. The nested modeling procedure used to evaluate this relationship followed satisfaction of the first three conditions required to indicate

mediation (Baron and Kenny, 1986). Specifically, three conditions must be met to establish complete mediation: (1) the independent variable significantly affects the dependent variable; (2) the independent variable significantly influences the hypothesized mediator; and (3) the hypothesized mediator significantly affects the dependent variable. However, to assess complete mediation, a fourth condition must hold; the independent variable has no direct effect on the dependent variable when the mediator is held constant (Hom, Griffeth, Palich and Bracker, 1995).

Correlations between the latent constructs were used to evaluate the first condition, while model parameter estimates indicated whether the second and third conditions were satisfied. Nested modeling procedures were used in the evaluation of the fourth condition for mediation and followed satisfaction of the first three conditions. A model including a direct path from self-leadership to performance was compared to the baseline structural model in order to evaluate the fourth condition for mediation.

Complete mediation is indicated if all four steps are satisfied and the independent variable has no direct effect on the dependent variable. Partial mediation is indicated by the following: (1) satisfaction of the first three mediation conditions; and (2) continued mediator influence on the dependent variable following the inclusion of a *significant* path between the independent variable and the dependent variable.

Results

Results from stage 1 analysis are presented first. Correlations among indicator variables and model-fit indexes are presented in Tables 2 and 3, respectively. The original baseline measurement model (Model 1 in Table 3) accurately reproduced the observed covariance matrix (CFI = 0.987), indicating that the model explained 98 per cent of the variance found in the sample data above that explained by the null model (Bentler, 1989, 1990). The insignificant model chi-square also supports measurement model fit (James *et al.*, 1982).

Results shown in Figure 2 reveal all standardized factor loadings are significant, thus supporting the convergent validity of the variables used to indicate the latent constructs (Anderson and Gerbing, 1988; Bentler, 1989). In contrast, the single factor model used to assess overall discriminability (model 2 in Table 3) poorly accounted for the sample data. Specifically, combining self-leadership, self-efficacy, and performance significantly reduced model fit, χ^2 (20, $N = 151$) = 86.158, $p < 0.01$; CFI = 0.764. Furthermore, the SCDT was significant ($p < 0.01$), indicating a reduction in model fit. These results indicate the need to maintain the multi-dimensionality of the model.

The conceptual distinction between self-leadership and self-efficacy was then evaluated. Constraining the two constructs to be equivalent (model 3 in Table 3) produced a significantly worse fitting model compared to the baseline model. The SCDT ($p < 0.01$) indicates the increase in chi-square from the baseline model to model 3 is significant even with the gain in degrees of freedom. The decrease in CFI (0.98 to 0.82) (CFI difference = 0.166) also indicates a material reduction in practical model fit (Widaman, 1985). These results support the independence of the self-leadership and self-efficacy constructs.

Overall, results from the measurement model evaluation indicate acceptance of the baseline measurement model. Measurement model indicators proposed in the baseline model were thus retained for analysis of the structural model, and no further measurement refinements were made.

Table 2. Means, standard deviations, and correlations for indicator variables

Indicator variable	*M*	*S.D.*	1	2	3	4	5	6	7	8
1. Behavior self-leadership strategies	4.09	0.51	—							
2. Natural reward self-leadership strategies	3.90	0.70	0.42*	—						
3. Constructive thought pattern self-leadership strategies	4.22	0.58	0.51*	0.48*	—					
4. Efficacy strength	91.14	7.90	0.27*	0.29*	0.11	—				
5. School skills self-efficacy	3.95	0.50	0.29*	0.32*	0.23*	0.46*	—			
6. Writing performance	44.45	2.63	0.03	0.08	−0.04	0.19*	0.17*	—		
7. Oral contribution performance	127.05	12.25	0.11	0.20*	0.09	0.40*	0.31*	0.33*	—	
8. Exam performance	135.53	11.99	0.22*	0.19*	0.18*	0.29*	0.30*	0.29*	0.23*	—

*$p < 0.05$.

Table 3. Fit indexes for nested sequence of measurement models

Model	χ^2	*df*	CFI	PFI	χ^2 difference	*df*	CFI difference
1. Baseline measurement model	20.664	17	0.987	0.600			
2. Single-factor model	86.158*	20	0.764	0.545	65.494*	3	0.223
3. Equate self-leadership and self-efficacy	69.374*	19	0.821	0.557	48.710*	2	0.166

CFI, comparative fit index; PFI, parsimonious fit index.
*$p < 0.05$.

Table 4. Fit indexes for nested sequence of structural models

Model	χ^2	*df*	CFI	PFI	χ^2 difference	*df*	CFI difference
1. Baseline structural model	21.287	18	0.988	0.640			
2. Revised model including path from self-leadership to performance	20.664	17	0.987	0.599	0.623	1	0.001

CFI, comparative fit index; PFI, parsimonious fit index.
*$p < 0.05$.

Stage 2 evaluated the proposed structural model and a competing nested model. Table 4 provides fit indexes for the baseline structural model and the alternative nested model. The baseline model accurately explained the sample data: χ^2 (18, $N = 151$) = 21.287, n.s. Moreover, both the CFI (0.988) and the PFI (0.640) supported model specifications. Finally, the standardized path estimates were significant and sizable. The predicted influence of self-leadership

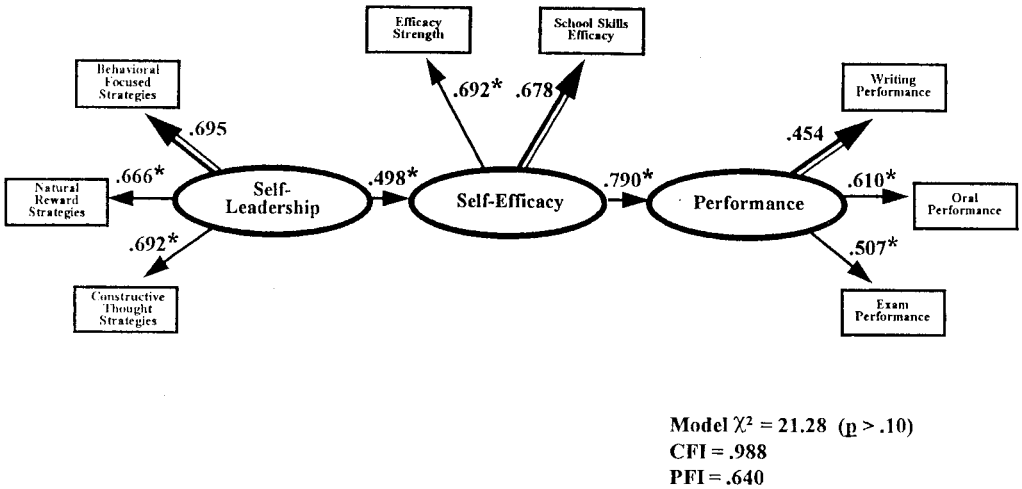

Figure 3. Baseline structural model. (Circles represent factors; boxes represent empirical indicators. Causal effects are given by arrows connecting circles; latent variables' effects on indicators are given by arrows relating circles to boxes. Thicker arrows represent reference indicators. Asterisks depict significant standardized parameter estimates. Disturbance and measurement error effects are omitted for clarity

strategies on self-efficacy perceptions was supported (0.498, $p < 0.05$). Additionally, the expected positive path from self-efficacy to performance is significant (0.790, $p < 0.05$). These results provide support for hypotheses 1 and 2.

The nested model comparison addressed the fourth mediation condition set forth by Hom and his colleagues (Hom *et al.*, 1995). Prior to examining these results, the three mediation conditions (Baron and Kenny, 1986) were evaluated. Specifically, the correlation between self-leadership and performance constructs was significant (0.34, $p < 0.05$) indicating satisfaction of the first condition for mediation. Results from Figure 3 show support for the second and third mediation conditions: parameter estimates disclose that self-leadership positively influences self-efficacy and self-efficacy positively affects performance.

To test the fourth mediation condition, a nested model comparison evaluated the degree to which self-efficacy fully mediated the relation between self-leadership and performance. Thus, an alternative model (model 2 in Table 4) included a direct path between self-leadership and performance. This model yielded an insignificant chi-square difference when compared to the baseline structural model: SCDT, χ^2 (1, $N = 151$) = 0.623. The insignificant SCDT suggests the less constrained model, the baseline structural model, should be retained. Furthermore, reductions in CFI and PFI indicate a worse model fit when compared to the baseline model. Finally, the added path between self-leadership and performance was insignificant (-0.10, n.s.), and the paths between self-leadership and self-efficacy (0.52, $p < 0.05$) and between self-efficacy and performance (0.86, $p < 0.05$) remained significant. Results from this analysis indicate that self-efficacy fully mediates the influence of self-leadership on performance and provide support for hypothesis 3.

Taken together, these results provide support for the measures used to indicate the proposed latent constructs, and also indicate support for the structural relations between those constructs. In particular, self-leadership strategies influence self-efficacy perceptions which subsequently affect performance outcomes. Furthermore, self-efficacy fully mediates the relation between self-leadership and performance.

Discussion

This study examined the mediating effects of self-efficacy on the relation between self-leadership and performance. Stage 1 analyses examined the operational measures used to assess these constructs. Confirmatory factor analysis supported the operationalizations of the latent constructs. Results also indicated that the two 'self' constructs are distinct, thus supporting the multidimensionality of the proposed model.

Stage 2 analyses examined the structural relations in the proposed model and whether an alternative structural representation was tenable. Covariance structure analysis provided strong support for the relations proposed in the original model. The CFI of 0.98 revealed that the baseline model (model 1 in Table 4) accurately reproduced the observed covariances. Moreover, the individual relations derived from the model were supported. Specifically, self-leadership significantly affected self-efficacy. The utilization of general self-leadership strategies enhances self-efficacy perceptions.

In turn, the predicted positive relation between self-efficacy and performance was supported. Positive self-efficacy perceptions were significantly related to subsequent performance. This finding is consistent with previous research on the positive effects of self-efficacy (Bandura, 1986).

The nested model comparison examined in the current study indicated self-efficacy fully mediates the influence of self leadership on performance. These results are consistent with previous research examining the mediating effects of self-efficacy (e.g. Mathieu *et al*., 1993; Relich *et al*., 1986). Moreover, current results extend findings by Kirkpatrick and Locke (1996). These authors did not support the mediating effects of self-efficacy, but upon examining a two-part causal linkage in an exploratory path model they found that external leader behaviors affected self-efficacy, which then affected performance quality. While self-leadership behaviors are translated into action through their effects on self-efficacy, this relationship is less pronounced when considering external leader behavior effects.

Despite contributions of the present study, *three* limitations must be noted. The first pertains to generalizability. Because performance in an entrepreneurship class was used as the dependent (endogenous) variable, findings may be limited to other contexts involving academic performance. Also, a sample of entrepreneurship students may have characteristics that distinguish them from other students, limiting generalizability. Nevertheless, the self-leadership behaviors that were assessed reflect behavioral strategies that apply in any context. Furthermore, the relation between self-efficacy and performance is necessarily examined in specific contexts (Bandura, 1986), therefore the relations underlying the model can be applied in other organzational environments. Future research should examine model predictions in other task domains to substantiate this application.

The second limitation involves the use of unstandardized measures. Although the construct validity of these measures was unknown, present study findings supported the convergent and discriminant validity and reliability of the measures used. In addition, measurement model results indicate the measures used to indicate the constructs accurately reproduced the covariance matrix. Future research is needed to further establish the validity of the current study measures.

The third limitation involves implications regarding the causal relationship between self-leadership and self-efficacy. We hypothesized that self-leadership strategies directly affect self-efficacy, but the methodology used precludes definitive statements regarding causality. It is conceivable that self-efficacy perceptions drive self-leadership behaviors, but we did not examine this possibility. However, we provided theoretical rationale for the proposed relationships, and our results indicate the proposed model is a plausible representation of the relationship between

the constructs. Nonetheless, future research should examine the causal relationship between self-leadership and self-efficacy perhaps by using experimental or longitudinal methodologies.

Overall, these results contribute both methodologically and theoretically to the understanding of the mediating effects of self-efficacy on the self-leadership/performance relationship. Methodologically, this study is the first to examine self-leadership influences through a covariance structure analysis. By utilizing latent variables to assess the constructs of interest, the present study avoided measurement bias inherent in single indicator models (James *et al*., 1982; Williams and Podsakoff, 1989). Furthermore, tests of discriminant validity supported the independence of the hypothesized constructs.

Theoretically, support for the causal relations among constructs in the model highlights the importance of the direct and indirect effects of self-efficacy and of self-leadership on performance. These findings have practical implications for the design of organizational interventions geared toward performance improvements. Organizations emphasizing empowerment should utilize training programs aimed at demonstrated skill development and practice of self-leadership strategies. By equipping and allowing trainees to apply self-leadership strategies to specific work activities, their confidence and performance back on the job can be enhanced. For example, training might focus on constructive thought patterns by teaching cognitive modeling methods (e.g. Gist, 1989). The data reported here indicate that self-efficacy perceptions are enhanced as a result of such training and will consequently contribute to performance improvements. In sum, self-leadership strategies can be used as a guide for developing training programs that directly affect self-efficacy and indirectly affect performance outcomes.

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