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How management level and environmental dynamism are related to change behavior and unit performance

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HOW MANAGEMENT LEVEL AND ENVIRONMENTAL DYNAMISM ARE RELATED TO CHANGE BEHAVIOR AND UNIT PERFORMANCE

by

Eric C. T. E. Larsen

A Dissertation
Submitted to the University at Albany, State University of New York in Partial Fulfillment of the Requirements for the Degree of Doctorate in Philosophy

School of Business
Organizational Studies Program
2010
How Management Level and Environmental Dynamism are Related to Change Behavior and Unit Performance

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ABSTRACT
A survey study was conducted to determine how management level and environmental dynamism affect change leadership by managers and its impact on work unit performance. An on-line survey was used to obtain data from subordinates of the managers in many different organizations. The results showed that change-oriented behavior was used more by high level managers than by low level managers, and when the environment was dynamic rather than relatively stable. Management level enhanced the effects of a manager's change behavior on unit performance, and the enhancing effect of dynamism was marginally significant. The results are consistent with theories about the importance of adapting leadership behavior to the situation, but they also indicate that some change-oriented behaviors are relevant for most managers.
CHAPTER I: INTRODUCTION

In several decades of research on leaders and managers, many types of behaviors have been identified (Yukl, 2010). A difficult challenge for scholars has been to organize numerous specific behaviors into a hierarchical taxonomy with a small number of broad meta-categories that incorporate the specific behaviors found to be relevant for most leaders.

The early leadership literature found evidence for two behavior meta-categories that involve either task-oriented or relations-oriented behaviors (e.g., Fleishman, 1953a; Halpin & Winer, 1957). The task-oriented meta-category (sometimes called “initiating structure” or “instrumental leadership”) includes short-term planning and scheduling of work activities, assigning tasks, clarifying objectives and priorities, directing and coordinating activities, monitoring operations, and dealing with day-to-day operational problems. The relations-oriented meta-category (sometimes called “consideration” or “employee-oriented behavior”) includes showing support and positive regard, providing recognition for achievements and contributions, providing coaching and mentoring, consulting with people about decisions that will affect them, and encouraging cooperation and teamwork. Extensive research using survey questionnaires, critical incidents, observation, and experiments show that both types of behaviors can enhance the satisfaction and performance of individual subordinates or small groups (e.g., Judge, Piccolo, & Ilies, 2004; Wofford & Liska, 1993).

A fairly extensive body of research has also tested contingency theories about situational variables that can enhance or neutralize the effects of task-oriented and relations-oriented leadership behaviors. The contingency theories include path-goal theory (e.g., House, 1971; House & Dessler, 1974; House & Mitchell; 1974) or
substitutes for leadership theory (e.g., Kerr (1977); Kerr & Jermier, 1978). The results in this research have been weak and inconsistent (Podsakoff, MacKenzie, Ahearne & Bommer, 1995; Wofford & Liska, 1993). Podsakoff, et al (1995) found specifically in 73 published studies containing 87 samples where tests for moderators were found that 4,303 appropriate tests of difference were found, of which 456 were significant (138 were significant out of 1562 for path-goal theory, and 318 out of 3741 for substitutes for leadership), overall only 11% were significant, which as the authors state is more than chance, but weak. Further weakening the case for the presence of moderators only 5% of the moderations found replicated. Moderators found included subordinate, task, organizational, and supervisory characteristics (Podsakoff, et al, 1995).

In the past two decades researchers have found that change-oriented behavior appears to be another distinct meta-category that is relevant for effective leadership (e.g., Ekvall & Arvonen, 1991; Yukl, 1999; Yukl, Gordon & Taber, 2002). Change-oriented behaviors, discussed in theory and prior change behavior studies (e.g., Yukl, Gordon & Taber, 2002; Yukl & Lepsinger, 2004; Yukl 2008), include monitoring the environment to identify threats and opportunities; interpreting events and explaining why major change is needed; articulating an inspiring vision; taking risks to promote change; building a coalition of supporters for a major change; and determining how to implement a new initiative or major change.

Another entire categorization scheme was identified in the 1980s, and it is usually called transformational leadership (Bass, 1985). The component behaviors vary for different theories of transformational and neo-charismatic leadership, but they usually include relations-oriented behaviors such as supporting and developing subordinates, change-oriented behaviors such as articulating an appealing vision and encouraging
innovative thinking, and a few behaviors that are difficult to classify (e.g., leading by example, making self-sacrifices for the organization). Hundreds of studies in the past two decades examined the correlates of transformational leadership. Meta-analyses of survey studies on the consequences of using transformational leadership have found a positive relationship with subordinate satisfaction and motivation (Judge & Piccolo, 2004). However, most of the studies included in the meta-analyses only reported results for the composite measure of charismatic or transformational leadership, and they do not directly assess the independent effects of change behaviors on unit performance. Only a few studies examined situational moderator variables for transformational leadership, or charismatic leadership (a component of transformational leadership), and here again the results have been inconsistent.

**Research Objectives**

In contrast to the large number of studies on effects of task and relations behaviors, there has been much less research on the determinants and outcomes of change-oriented behaviors, or situational variables that can moderate the effects of these behaviors. One objective of my research is to verify that change-oriented behaviors are important for effective leadership by managers in most type of organizations.

A second objective of my study was to learn more about two situational variables that are likely to influence the amount of change-oriented behavior used by a manager and the effects of that behavior on unit performance. One situational variable is level of management. There are theoretical reasons to expect that some differences in change behavior will occur when comparing managers at the upper and lower levels of management in large organizations. Top management has more responsibility for interpreting relevant events and planning how the organization should respond to them,
but managers at all levels must share some of the responsibility for leading change (Yukl, 2008). The other situational variable is environmental dynamism. A dynamic environment is turbulent and uncertain because of intense competition, changing economic conditions, changing customer or client preferences, and changes in the technology used for work processes or the unit’s products and services. These conditions can create serious threats or attractive opportunities for a unit.

A third objective is to determine specifically if management level and organizational dynamism moderate the effects of change-oriented behavior on unit performance. There are reasons to expect that change-oriented behavior will have a stronger impact on unit performance for executives and for all managers in dynamic environments. This the first study to directly examine the effects of management level and environmental dynamism on change-oriented behavior by managers at different levels in the organization, and the first to examine the moderating effects of dynamism on the relationship between change-oriented leadership behavior and unit performance (rather than analysis at the organizational level using overall company performance).

**Organization of the Dissertation**

The next chapter reviews research on change behaviors, how change behaviors were discovered, and how they might be affected by management level and environmental dynamism. Hypotheses are also proposed in that chapter. The third chapter describes the survey study used to test the hypotheses, including the sample, measures, data collection procedures, and methods of data analysis. The fourth chapter describes and interprets results. The fifth chapter identifies limitations, evaluates the implications of the findings for researchers and practitioners, and offers suggestions for future research.
CHAPTER II: LITERATURE REVIEW AND HYPOTHESES

The literature review includes several relevant topics. First is empirical evidence for the change-oriented leadership behavior meta-category. Research on the importance of change behavior to leadership, and management level and environmental dynamism as determinants of change-oriented behavior, as well as examinations of the potential moderating affects of level and dynamism on the relationship between change-oriented leadership behaviors and performance outcomes follows. Then, specific hypotheses are made regarding the findings from the literature.

Identification of Change-Oriented Behavior

For some time, scientists have observed (e.g., Kotter, 1990), and theorized (Bass, 1985; Conger and Kanungo, 1988; House 1977) that creating change is an important aspect of leadership. Beginning in 1987 (Ekvall & Nystrom, 1987), Swedish researchers, starting with a study of leadership styles within a Swedish chemical company, began finding consistent empirical support for these theories and observations. In 1991, Ekvall and Arvonen used three separate samples drawn from course rosters of people who had trained with staff training organizations (e.g., Finnish Management Institute, Center for Creative Leadership) in Sweden, Finland, and the U.S.A., and ran factor analysis of subordinate ratings of their leader's behavior. Using a principal factors analysis with rotation to orthogonality using the varimax method, three factors with eigen values greater than 1.0 were retained, and they accounted for 92% of the variance. In addition to the established Ohio State factors of initiating structure (what the Swedish researchers called “production-centeredness”), and consideration (what the Swedish researchers called “employee-centeredness”); the third robust factor that appeared in the analysis was focused on the bosses promotion and creation of
change. The behaviors rated were ones used in prior studies by the Swedes, as well as ones that were created with the three concepts in mind. The change factor was comprised of the following items: pushes for growth; offers ideas about new and different ways of doing things; initiates new projects; experiments with new ways of doing things; makes quick decisions when necessary; encourages thinking along new lines; likes to discuss new ideas; is willing to take risk in decisions; sees possibilities rather than problems; and gives thoughts and plans about the future. Initially, the factor structure was found in each of the three separate samples, and then factor analyses were run on the combined samples, 711 managers, and the same three factor structure fit the data best (Ekvall & Arvonen, 1991).

In 1994 Ekvall and Arvonen expanded the empirical evidence for a three factor solution and the three meta-categories of leadership behavior (i.e., task-oriented, relations-oriented, and change-oriented) in a study examining subordinates’ perceptions of 3,857 supervisors from various types of organizations, at different levels within organizations, and from 13 countries. The 3,857 respondents included the 711 managers from the 1991 study. A cross sectional instrument, which included a leader behavior description questionnaire based on prior Swedish work (Ekvall & Nystrom, 1987; Ekvall & Arvonen, 1991) and Ohio State University questionnaires (Fleishman 1953b, 1967) was used to produce the measures. An exploratory principal factor analysis, with varimax rotation, was run on the total dataset and again the three factor (n.b., with eigen values larger than one) solution emerged, and accounted for 97% of the variance (i.e., change-oriented behaviors and the two established Ohio State factors). The specific change-oriented behaviors items were: offers ideas about new and different ways of doing things; pushes for growth; initiates new projects; experiments with new
ways of doing things; and gives thought and plans about the future. This change behavior scale had an \( \alpha \) of .85. Task-related behavior had an alpha of .76, and relations-related behavior had an alpha of .75. The factors were related with correlations between them of Task and Relations: .23, Task and Change: .38, and Relations and Change: .43 (Ekvall & Arvonen, 1994). Although significantly related, especially in the case of Relations and Change, the correlations were low enough as to support their being different constructs (Tabachnick & Fidell, 2001).

The superiority of a three factor solution, using a new battery of items created from existent leadership scales (e.g., the Multi-factor Leadership Questionnaire – MLQ), was also found in a US exploratory field study (Yukl, 1997). In a study conducted in several US companies and government agencies Yukl (1999) used data collected from 318 direct reports on 48 managers to test whether or not change-oriented behaviors were a unique category of leadership behaviors or not. The direct reports rated the extent to which their bosses engaged in a variety of leadership behaviors using representative items from the MLQ and Managerial Practices Survey (MPS), as well as more change oriented items constructed based on theory from the literature. The three factor solution (one of which was change-oriented behaviors) accounted for 55% of explained variance and was superior to any two factor solution. All the change-oriented items loaded predominately on the change-oriented factor, and thus further support for a change-oriented meta-category of leadership behavior was garnered.

Also in 1999, Sverke, Arvonen, and Lindell performed a similar study using Swedish and US samples to test, via confirmatory factor analysis, if the three factor model fit the data. The three factor model fit in the Swedish sample (GFI = .93; NFI = .90; RMSEA=.07; and a chi-square difference test that indicated that it is significantly
better than the one factor model). The three factor model did not fit the US sample. The factors in the Swedish sample were related with correlations between them of Task and Relations: .24, Task and Change: .38, and Relations and Change: .38, which was similar to prior studies.

Strong confirmatory factor analysis model fit was found by Yukl, Gordon & Taber, (2002). Yukl, Gordon and Taber (2002) in two samples combined, one with 174 mid-level managers and a second with 101 MBA students, (N=275) produced a confirmatory factor analysis where the three factor model had superior fit to either that of a one-factor, or two factor model (three factor: $\chi^2 (151, df 51), p = .00$, GFI = .92, CFI = .95, and RMSEA = .08). Although not as strong, work by LaPolice and Constanze (2003) found that, based on analysis of data collected from 16,795 employees in 16 government agencies, again the three factor model fit the data significantly better than the two factor solution. The researchers used 15 items selected from the 155 items of the Office of Personnel Management’s Organizational Assessment Survey classified as either task, relations, or change oriented by four independent raters $r_{wg(i)} = .94$. The three factor model fit better than other solutions; however, from the measures of fit reported: $\chi^2 (87, N=16,795) = 15,295.62$ $p<.0001$, NFI = .975, TLI = 96., CFI = .975, and RMSEA = .10), not all fit indices indicated great fit (e.g., RMSEA ideally below .08).

Barrasa (2004) in meso-level research conducted among 78 healthcare teams in public hospitals in Spain, using data from the 328 participants yielded fit indices of ($\chi^2 - 734.14$, df 102, $p = 1.00$, GFI = .97, and RMSEA = .00), which although not as strong as the results of Yukl, Gordon & Taber (2002) did also support the superiority of the three factor solutions over two factor solutions.
Ample evidence appears to be accumulating so as to support change-oriented leadership behaviors as being a unique aspect of leadership behaviors. Change-oriented leadership behaviors is comprised of behaviors such as encouraging innovation, encouraging collective learning, promoting and facilitating change, and monitoring the external environment.

**Change Behavior in Management Theories**

The importance of change behaviors for effective leadership is indicated in several theories of organizational effectiveness, strategic management, strategic leadership, and charismatic or transformational leadership (e.g., Bass, 1985; Katz & Kahn, 1978; Mintzberg, 1973; Yukl, 2010). For example, in the Flexible Leadership Theory (Yukl, 2008), executives use change behavior in combination with management programs and systems to influence the prosperity and survival of their organization.

Katz and Kahn (1966) “consider the essence of organizational leadership to be the influential increment over and above mechanical compliance with the routine directives of the organization” (Katz & Kahn, 1966, p 302). This influential increment is often towards creating change of the organization in relations to its environment, or in creating change internal to the organization. The scientists theorized that the openness of the organization as a system existing with in a constantly changing environment (including legal, technical, cultural, climatic, as well as other factors), requires that the organization itself be changed to adapt along with and in harmony with its environment. They also theorized that organizations need be incomplete in design in order to function, and that internal needs for growth, an organization’s need to absorb external factors that impinge on the organization by increasing sovereignty over once external
elements, and the nature of human membership within organizations all require change behaviors on the part of leaders within the organization (Katz & Kahn, 1966).

Mintzberg's (1973) research further supports the importance of change. His main goal was to describe work content of executives. Through first-hand observation of chief executives in five organizations, Mintzberg identified ten managerial roles. Among the core reasons he identifies for organizations needing managers (Mintzberg 1973:95-96) is that managers need to “take charge of the organization's strategy-making system, and therein adapt the organization in a controlled way to its changing environment,” Although his definition of managers excludes many middle managers, Mintzberg further comments that findings from work activity studies indicate that bosses at all hierarchy levels within organization (e.g., frontline, middle, senior managers, and chief executives) demonstrate behaviors similar to the 10 managerial roles.

Survey Studies on Effects of Change Behavior

Only a few survey studies have examined the correlates of change-oriented behavior, and they found evidence that it is related to effective leadership (Ekvall & Arvonen, 1994; Gil, Rico, Alcover & Barrasa, 2005; Zhu, Chew & Spangler, 2005).

Gil, Rico, Alcover and Barrasa (2005)

Gil, Rico, Alcover and Barrasa (2005) examined the effect of change-oriented leadership on team performance and team satisfaction. Team climate was theorized as mediating the relationship between change-oriented leadership and both team outcomes. The researchers used a sample drawn from healthcare professionals at different public hospitals throughout Spain. The final sample was comprised of 67 healthcare teams, which ranged in size from three to 24 members per team (with a mean of 10.6 per
Change-oriented leadership was evaluated using Yukl’s managerial practices survey (TRCQ-15G), designed by Yukl on the basis of prior behavior inventories (Yukl et al., 2002). The change-oriented leadership scale contained five subscales with four items for each subscale. These subscales were monitoring the environment ($\alpha = 0.90$); explaining need for change ($\alpha = 0.95$); envisioning change ($\alpha = 0.93$); encouraging innovative thinking ($\alpha = 0.66$); and taking personal risks ($\alpha = 0.96$).

Team satisfaction was measured using a scale of three items that capture how satisfied respondents are with how the team works, with their colleagues, and with the team overall. Team performance was assessed by supervisors and managers external to the team, but who were familiar with the team's operations. A five item scale measured a team’s technical innovation quality, schedule adherence, budget adherence, conflict resolution, and efficiency. The technical innovation quality aspect of which should be the only aspect of which that would capture much associated with change behaviors, and thus a better dependent variable could be used.

A significant correlation was found between change-oriented behavior and team performance ($r = .46$, $p<.01$). To test the mediation of team climate as group process between change-oriented leadership and team performance, a set of hierarchical regressions were run which indicated that team climate does partially mediate the relationship between change-oriented leadership and performance. The effect of change-oriented leadership on team performance diminishes when team climate is controlled. Hierarchical regression analysis was also used to test the mediating effect of team climate on the relationship between change-oriented leadership and group satisfaction, which produced an increment of $R^2 = 0.48$, $p< .01$. 
Zhu, Chew and Spangler (2005)

Zhu, Chew and Spangler (2005), focused ostensibly on CEO transformational leadership and its relation to performance outcomes. As noted in the introduction, transformational leadership includes some change-oriented behaviors as well as some relations-oriented behaviors. HR executives rated the leadership behavior of their CEOs on a short version of the MLQ. The researchers conducted a field survey of 170 firms located in Singapore and were particularly interested in whether or not human capital-enhancing human resource management mediates the relationship between CEO transformational leadership and organizational outcomes. The criterion variables were average sales, absenteeism, and subjective past organization performance (i.e., over the last three years compared to competitors, as reported by the CEOs).

A significant correlation was found between transformational leadership and subjective ratings of past organization performance (correlation = .57, p < .01). The researchers also found that positive HRM fully mediates the relationship between CEO transformational leadership and subjective assessments of past organization performance and partially mediates the relationship between CEO transformational leadership and absenteeism. They found no relationship of CEO transformational leadership with actual sales, nor any mediation of the relationship by positive HRM. Thus, it is inconclusive as to whether transformational leadership by CEOs caused positive organizational performance.

Management Level and Change-Oriented Leadership

Several studies provide evidence that the change-oriented behaviors may be more relevant for top executives than for lower-level managers. The research includes comparative studies of managers at different levels, and intensive case studies of
successful and unsuccessful change efforts in organizations. Key studies are reviewed in this section.

**Jacobs and Lewis (1992)**

Jacob and Lewis (1992) introduce stratified systems theory, a theory that states that there are distinct and different levels with organizations and that at each of these levels specific sets of behaviors happen. Based on initial leadership performance requirement by levels conceptualized by Jacobs and Jaques (1987), and using level designations and descriptions developed by Jaques and Clements (1991), Jacob and Lewis (1992) suggest that leaders in the upper two stratum (i.e., VI: Worldwide Diagnostic Accumulation, and VII: Put Business Units into Society) must engage in change behaviors. What the authors call the “strategic systems” part of organizations is where they argue the most change related behaviors like monitoring the environment, explaining the need for change, assessing strengths and weaknesses of alternative strategies, envisioning alternative futures, and creating systems and cultures to achieve those visions, is most appropriate and necessary.

**Gabarro (1987)**

Gabarro (1987) engaged in two sets of field studies in which he investigated 14 management successions. The first set was a three year longitudinal study that tracked four newly assigned division presidents. The second set was used to verify the first set, and was a secondary analysis of case studies of management successions. Both functional and general managers were examined from US and European organizations with sales ranging from $3 billion down to $1.2 million. On-site observation, analysis of company documents, and field interviews with new presidents and their subordinates were used at times over nine distinct measurement points within the three periods. The
sample included companies in normal situations as well as those going through
turnarounds, and it included turnaround successes and failures. The types and pace of
change these executives made when they took control of the companies varied, and
Gabarro found that some leaders changed systems, some changed strategies, some
changed policies. However, without exception the use of change behaviors was a
constant across all the cases.

**Ghosn and Ries (2005)**

As CEO of Nissan, Carlos Ghosn achieved a massive turnaround for the
Japanese automobile company by creating the most profitable large automobile
company in the world from what just years before had been a firm on the edge of
bankruptcy. When Carlos Ghosn was named COO of Nissan in 1999, the company was
close to bankruptcy, and within eighteen months he had helped get the company
profitable again. He did so by intensively examining every aspect of the business, then
announcing his turnaround strategy. He made major changes, closing plants, firing
workers, breaking up long-standing supply networks, and selling off marginal assets.
He introduced changes throughout the company, from engineering and manufacturing
to sales and marketing (Ghosn & Ries, 2005). This case study clearly shows that
change behaviors at the organizational level are related to positive outcomes.

**Nanus (1992)**

Nanus demonstrates through theoretical case study (n.b., akin to Einstein’s
“thought experiments”) how critical visions are to the performance of companies. He
focuses particularly on how a State Department of Parks and Recreation and a pet food
compny developed their visions. All vision related steps that he proposes that are
critical in order to achieve the maximum potential possible for the organization.
**Tichy and Ulrich (1984)**

Tichy and Ulrich (1984) theorize that the pressure for fundamental organizational change will not diminish, but intensify, over the years; they further theorize that upper echelon leaders must develop a new vision for their organizations, get employees to accept the new vision, mobilize those employees to work toward that vision, and then institutionalize the necessary changes. The authors see the quality of leadership in the top echelons of business and government organizations as the key determining factor as to the success of organizations, and propose that those leader can not continue along the paths of before, but that instead they must transform their businesses and take altogether new paths going forward. Beyond making major changes in an organization's mission, structure, and human resource management, these critical leaders at the top of organizations must also change the core political and cultural systems of the their organizations.

**Mumford, Campion and Morgeson (2007)**

Building in part on stratified systems theory (Jacob & Lewis 1992), Mumford, Campion, and Morgeson (2007) further develop the concept of different organizational levels requiring differing leadership skill requirements. These authors overlay the organizational levels within an organization with the leadership skills necessary in an organization to form what they term a “stratplex” of required leadership skills at each organizational level. The researchers theorize that strategic, business, interpersonal, and cognitive skills are necessary for leaders. They hypothesize that as level increases so to shall the need for strategic skills. The researchers measure strategic skills using six items: problem identification (identifying the nature of problems), systems perception (determining when important changes have occurred in a system or are likely to occur),
visioning (developing an image of how a system should work under ideal conditions), system evaluation (looking at many indicators of system performance, taking into account their accuracy), identification of key causes (identifying the things that must be changed to achieve a goal), identification of downstream consequences (determining the long-term outcomes of a change in operations), and solution appraisal (observing and evaluating the outcomes of problem solution to identify lessons learned or redirect efforts). Internal consistency reliability for strategy skills was .91. Cognitive skills were assessed using six items and had an internal consistency reliability of .90. Interpersonal skills were assessed using four items and had an internal consistency reliability of .84, and business skills were assessed using another four items and had an internal consistency reliability of .75. Level of job in the organization was measured using a classification system of the organization, and the jobs were grouped into three levels: junior, mid, and senior.

Mumford, et al (2007) found in their sample of 1023 professional employees working in an international agency of the U.S. government focused on five different career specialties (i.e., administrative, public relations, economic analysis, political analysis, and multifunctional) in 156 different countries that the relationship between leadership skill requirements and organizational level, although not much different, is stronger for strategic skill requirements than for interpersonal and cognitive skill requirements. The partial correlations between leadership skill requirement categories and organizational level were .25 for strategic skill requirements, .28 for business skill requirements, .20 for interpersonal skill requirements, and .15 for cognitive skill requirements.
Baum, Locke and Kirkpatrick (1998)

Studies on the influence of CEO visions on company performance also indicate the relevance of change-oriented behaviors for top executives (e.g., Baum, Locke & Kirkpatrick, 1998; Nanus, 1992). To assess the relationship between vision and organizational growth, Baum, Locke, and Kirkpatrick (1998) studied architectural woodwork industry companies in the US that had more than five employees, and whose owner-founders, or owner-buyers, had been CEO for less than 12 years, and whom when starting, or buying, the organization had intended to grow their businesses beyond “income substitution”. The researchers worked with a sample comprised of 183 companies with paired responses from both CEOs and employee participants. The researchers theorized that vision attributes and vision content would both directly affect venture growth, and also indirectly through vision communication, which would in turn affect venture growth.

If a company provided Baum, Locke and Kirkpatrick the requested written vision it was coded by multiple raters as to the presence of seven key attributes (i.e., clarity, brevity, challenge, future orientation, abstractness, ability to inspire or desirability, and stability) that were combined to produce a vision attribute variable, which had a composite reliability of .96. Vision content was also coded by multiple raters as the extent to which the vision contained growth imagery. The resulting variable had a correlation between raters of .77, p<.001), and a composite reliability of .88. Vision communication was comprised of the responses to two items by employee participants, one which asked about the presence of a vision, and the other about whether or not the CEO had talked about the vision, and had a composite reliability of .81. Venture growth was a composite measure of sales growth, employment growth,
and profit growth, and had a composite reliability of .85. Structural equation modeling was used to test the direct and indirect effect models (i.e., indirect: where vision communication was seen as mediating the relationship between vision content and vision attributes and venture growth), the researchers report the indirect effects model had superior fit. Vision attributes and vision content both directly affected venture growth (i.e., .18, and .19 respectively), and also indirectly through vision communication (i.e., .49 and .30 respectively), which in turn affected venture growth (i.e., .30).

Environmental Dynamism and Change-Oriented Leadership

Several scholars provide reasons that change behaviors may be more important for effective leadership in a very uncertain and turbulent environment (Crossan, Vera & Nanjad, 2008; Pillai, 1995; Yukl, 2008; Zhu, Chew & Spangler, 2005). Top executives and managers of boundary spanning units have the primary responsibility for doing such monitoring, but it is useful for managers at all levels to explain why changes are necessary, encourage innovative thinking and collective learning, and help to implement changes that are approved by top management. When the environment is very dynamic more innovation and major change are needed to maintain organizational effectiveness.

Crossan, Vera and Nanjad (2008) hypothesized that adaptation and innovation would be more important for effectiveness when the environment is turbulent, and that concurrently higher levels of organizational level leadership will be more focused on change-related behaviors. For example, a behavior that would become more important would be that of sense-making, and in order for more sense-making to occur, increased levels of monitoring of the external environment would have to be engaged in by those leaders. In dynamic environments the authors also see strategy as having a strong
emergent component and that the organization as a whole would need to rely strongly on self-organization where all organization members are involved in change. Although not just leaders would be involved in such situations, the leader’s role would become one of coalescing the information available and packaging it as a cohesive whole to others in the organization as the big picture, and then serving up a unifying and coherent approach that would enable the environment, strategy, and the organization to be aligned. They argued that with unprecedented levels of change being experienced by many organizations in this day and age, a portfolio of leadership behaviors including those considered change-oriented would be important for leaders of organizations in these highly dynamic contexts.

Several survey studies have tested the proposition that environmental dynamism enhances the effects of leadership behaviors on firm performance. In most cases, the leadership behaviors were transformational and charismatic, rather than focusing directly on change-behaviors.

**Jansen, Vera and Crossan (2009)**

Jansen, Vera, and Crossan (2009) studied executives of 89 independently controlled branches of a large European financial services firm with revenues in excess of $350 billion. Transformational leadership was assessed using 20 items from the Multifactor Leadership Questionnaire (MLQ), four items each for the inspirational motivation, individualized consideration, and intellectual stimulation components of transformational leadership, and eight items for the idealized influence component. Exploratory innovation was measured using a six item scale designed to capture the extent to which branches go after new markets, or emerging customers by radically innovating, and breaking from existing knowledge. Environmental dynamism was
measured using a scale that tried to capture the instability and rate of change in the external market. As opposed to the conceptualization of environmental dynamism in my study, or in (Waldman et al, 2001; Waldman et al, 2004) the measure used by Jansen, et al (2009) did not include items assessing how critical these changes in environmental dynamism could be to the organization. Measures for exploratory innovation and environmental dynamism were aggregates of executive director and a senior team member scores for each branch. Transformational leadership scores were the composites scores of rating of between two to eight senior team members of the executive director’s leadership.

They found a significant relationship between transformational leadership and exploratory innovation ($\beta = 0.31, p<.01$), but there was not a significant moderating effect of environmental dynamism.

**Tosi, Misangyi, Fanelli, Waldman and Yammarino (2004)**

Tosi, Misangyi, Fanelli, Waldman and Yammarino (2004) conducted a study to test the hypothesis that the positive relationship between firm performance and CEO charisma is stronger under conditions of high uncertainty. The used a sample comprised of 59 CEOs from the largest U.S. firms (i.e., from the Fortune, 500) drawn from 26 industries as listed on Disclosure in 1992. Data for firm performance was determined using Compustat. Both a market-based (i.e., shareholder return), and an accounting-based measure (i.e., ROA), of firm performance were used, and these performance measures were standardized for industry (two-digit SIC classification) by year. The charisma scale of the MLQ was used to measure perceived CEO charisma. (e.g., ‘Gives reasons to be optimistic about the future’ and ‘I have complete confidence in him/her’). Environmental uncertainty perceived by top managers was
measured using a 10-item scale; it was factor analyzed using principal components method and yielded dimensions, one representing perceived political uncertainty, and the other representing perceived market uncertainty. Hierarchical Linear Modeling (HLM) techniques indicated that the interaction of charisma and perceived market uncertainty was significantly related to shareholder return, but the effect size was small ($r = .088$, or 1% of the total variance),

**Waldman, Ramirez, House and Puranam (2001)**

Waldman, Ramirez, House and Puranam (2001) conducted a study to test the proposition that environmental uncertainty moderates the relationship between CEO leadership and financial performance. The sample included 48 Fortune 500 firms. Two informants were used from each firm. One survey was sent to selected financial managers and another survey was sent to non-financial managers. Charismatic and transactional leadership of CEOs were evaluated as predictors of financial performance, as was the hypothesized moderator, perceived environmental uncertainty. Charisma the defined as a relationship between a single leader and one or more followers based on favorable attributions on the part of followers combined with leader behaviors. Favorable attributional effects by the followers include strong admiration or respect, making followers feel good in his/her presence, and the generation of confidence in the leader. Core behaviors on the part of the leader include articulating a sense of mission and a vision, communicating high performance expectations, and showing determination. Hierarchical regression indicated that environmental uncertainty has a significant and strong moderating effect on the relationship between both CEO charisma leadership and subsequent financial performance ($\Delta R^2 = .13$). Charisma did
not predict financial performance under conditions of certainty, but did predict financial performance under conditions of uncertainty.

**Angle, Nagarajan, Sonnenfeld and Srinivasan, 2006**

In 2006, Angle, Nagarajan, Sonnenfeld and Srinivasan randomly chose a sample of 500 CEOs from the Monitor Publishing Company’s Financial 1000 and Corporate 1000 Yellow Books. 128 CEOs agreed to participate and surveys were then sent to their top management teams. An average of six respondents per firm was used in the final analyses. A measure of perceived charisma of the CEO was taken from each participant. Organizational performance was measured using both subjective and objective measures, namely one stock return, which was annualized industry-adjusted stock return, and three accounting measures (i.e., ROA, ROE, and ROS). Environmental uncertainty was measured objectively as volatility of stock returns, adjusted for industry volatility. Charismatic leadership was related to measures of organizational performance prior to the measure of charismatic leadership, but neither charismatic leadership, nor the interaction between charismatic leadership and environmental uncertainty was significantly related to subsequent organizational performance (Angle, et al, 2006).

**Waldman, Javidan and Varella (2004)**

In 2004, Waldman, Javidan and Varella looked at 69 firms in the US and Canada toward determining the answers to four major research questions. The basic research question was whether or not CEO charismatic leadership would predict firm performance. They also wanted to get insight as to whether CEO charismatic leadership would be associated with strategic change in an organization. Finally they tested the proposition that perceptions of CEO charismatic leadership moderate the relationship
between strategic change and a firm’s performance. They ended up finding that CEO charismatic leadership predicts subsequent firm performance, but that environmental uncertainty does not moderate the relationship. They also found that although CEO charismatic leadership is related to strategic change, there was no evidence that perceptions of CEO charismatic leadership moderated the relationship between strategic change and firm performance.

The scientists attempted to demonstrate the validity of their change measure, but no other sources correlated highly with the results. Some of the items in their measure do not seem relevant to some of the companies in the wide array of firms that they sampled, and the strategic change question was asked in a way that does not ensure that the CEO was in any way the cause of the change. They also used performance measures taken long after the CEO charisma data, and it is possible that a different CEO was leading the company when the performance data were collected. It is especially troubling when even after the authors controlled for CEO tenure they found no relationship at all between firm performance and CEO charismatic leadership in the five year period prior to the survey administration and yet they found a strong correlation between the two variables for the five years afterwards.

Ensley, Pearce and Hmieleski (2006)

Ensley, Pearce and Hmieleski (2006) looked at dynamic environments as a moderator of the relationship between transformational leadership by CEOs and firm performance. The scientists used a sample of teams taken from the Inc. 500 (some of the US’s fastest growing private firms), and located using the Dun and Bradstreet market identifiers database. Useable responses came from 168 managers from 66 firms. Among other criteria, the member of each team had to be identified by the CEO as part
of the top management teams and had to be either a founder and/or a significant equity holder (10% or more). These restrictions yielded teams, ranging in size from two to six members. Using a scale designed by Pearce and Conger (2003) transformational leadership was measured using four dimensions each comprised of three items. The dimensions were: challenging the status quo, providing vision, encouraging opportunity thinking, and encouraging teamwork. Environmental dynamism was measured using the standard errors of four regression slopes. In each case, the independent variable was time. The dependent variables were research and development intensity, number of industry establishments, number of industry employees, and industry revenues. Each dependent variable was regressed with a dummy variable for 10 years of data, and the standard error of the regressions divided by the mean of the respective variable was the measure of technological instability; establishments; employee; and market. Establishments’ instability, number of employees’ instability, and market instability were statistically related and were thus summed to reduce multicollinearity issues. To ensure all measures were on the same metric z-scores were used, and the constant was added to make the measures positive.

A negative main effect of transformational leadership on performance was observed. The interactions of transformational leadership behaviors and dynamism on both new venture growth ($\beta = 0.33$, $p < .01$) and new venture revenues ($\beta = 0.28$, $p < .01$) were both positive and both significant. Slope tests confirmed that in lower dynamism environments lower levels of transformational leadership improves performance and that in higher dynamism environments transformational leadership behaviors improved performance.
Hypotheses

There are strong theoretical reasons to expect that level of management and environmental dynamism are related to the use of the change-oriented behaviors, and also that these situational variables moderate the effects of change-oriented behaviors on determinants of organizational performance. Case studies also provide support for the importance of change-oriented behavior for top executives in dynamic environments. The lack of stronger, more consistent results for the survey studies may be due in part to differences in their samples and measures, and in addition, change-oriented leadership is not adequately represented in the measures of transformational or charismatic leadership used in the studies. Thus, there is a need for more research to directly assess the effects of change-oriented leadership on the performance of the leader’s organizational unit. The relevant theory and research provide justification for testing the following five hypotheses:

Hyp. 1: The level of management is positively related to the amount of change-oriented behavior used by a manager.

Hyp. 2: Environmental dynamism is positively related to the amount of change-oriented behavior used by a manager.

Hyp. 3: The amount of change-oriented behavior used by a manager is positively related to unit performance.

Hyp. 4: The relationship of change-oriented behavior to unit performance is stronger for high level managers than for low-level managers.

Hyp. 5: The relationship of change-oriented behavior to unit performance is stronger for managers in a high dynamism environment than in a low dynamism environment.
CHAPTER III: METHOD

This chapter will describe the sample and data collection procedures, the measures of variables that were used, and the data analysis procedures. The basic research method was a survey field study. A sample of leaders at different levels of management in a variety of different organizations was collected. The sample was provided by StudyResponse, which is a project to facilitate research by sending recruitment and reminder messages to members of their on-line survey Panel. StudyResponse project is hosted by the School of Information Studies at Syracuse University.

Sample and Procedures

The sample came from randomly selected members of the StudyResponse population of panelist in the USA. Panelists are people who have agreed to take part in on-line surveys sent to them by StudyResponse. The panelists were recruited using a snowball approach where those who were originally invited by random outbound e-mails and whom decided to participate, where then invited to ask others they know to join the panel. The panel represents a nationwide convenience sample of adults who use the Web and who have agreed to participate in online research. StudyResponse maintains an interactive panelist registration, and panel and process description on a public web-site. StudyResponse no longer actively recruits to obtain panelists, and most new panelists join after hearing about the panel by word of mouth from another participant, or by seeing a link on another site (Stanton & Weiss, 2002). An internet-based questionnaire was administered via SurveyMonkey to a sample of full-time employees of business organizations. The respondents were anonymous and were assured that their answers would be used only for research purposes and would not be seen by anyone else in their organization. A small incentive was offered to further
induce response from potential subjects. A five dollar cash payment was provided to each person who completed the survey, and these respondents were entered into a raffle that would award an additional $100 dollars to three of them. After one week a reminder e-mail was sent to all those participants who had not responded to the survey.

The survey was administered starting on March 29, 2010, and was in the field for two weeks. A total of 494 US panelists were randomly selected from those indicating that they worked full time, and invited to participate, and 297 (60%) of the eligible and interested participants provided their correct StudyResponse ID number and were included in the final sample. Male respondents made up 53 percent of the sample, and 68 percent of the bosses described by respondents were male. With regard to respondent age, 17 percent were less than 30 years old, 42 percent were between 31 and 40 years old, 21 percent were between 41 and 50 years old, and 20 percent were more than 50 years old. The respondents had worked for their bosses for a mean of 5.7 years, with 9 percent having worked for their boss for less than one year (but more than six months), and 80 percent for more than two years. The respondents came from a diverse set of industries, organizations, and occupations; 52 percent of the respondents worked for corporations, 24 percent were employed by small business firms, 13 percent were employed by a government agency, and 12 percent worked for some other organization (e.g., church, military unit).

Measures

Situational Variables

Management level was measured by asking respondents to indicate the managerial position of their immediate boss. The respondent selected one of the following choices adapted from a managerial position scale used in previous research: (1) CEO or
Company President, (2) Senior or Upper Level Executive (e.g., Executive Vice President, Division Head), (3) Mid-Level Manager (e.g., Department head, Section head), or (4) Low-level manager (e.g., Supervisor). Please see Appendix A for the actual scale.

Environmental dynamism was measured subjectively as Milliken (1987) has argued is superior to objective measures, because it then is a “perceived inability to understand the direction in which an environment might be changing, the potential impact of those changes on that individual's organization, and whether or not particular responses to the environment might be successful.” Environmental dynamism was measured with an environmental uncertainty scale used in previous research (Waldman et al., 2004; Waldman et al., 2001). The scale was based on work by Khandwalla (1976) and by Miles and Snow (1978). The four items used in this study are as follows: (1) Very dynamic, changing rapidly in technical, economic, and cultural dimensions, (2) Very risky, one false step can mean the unit’s undoing, (3) Very rapidly expanding through the expansion of old markets and the emergence of new ones, (4) Very stressful, hostile, hard to keep afloat. Each item had a 5-point, Likert-type response format (5 = Agree strongly, 4 = Agree, 3 = Neither agree nor disagree, 2 = Disagree, 1 = Disagree strongly). Please see Appendix B for the actual scale. Reliability for the dynamism scale (alpha = .69) was almost the same as what was found in earlier studies using similar scales (alpha = .63 for Waldman et al, 2001; alpha = .69 for Waldman et al, 2004).

Leadership Behaviors

Leadership behaviors were measured using Yukl’s managerial practices behavior questionnaire, version TRCQ G 17-3 to capture the components of boss behavior that
align with dimensions found in prior work (e.g., Ekvall & Arvonen, 1991; Yukl, 1999; Yukl, Gordon & Taber, 2002). The 51 items were also drawn from previous versions of the TRCQ and MPS as well as newly created items added in an attempt to best capture the three critical dimensions to organizational effectiveness as described in flexible leadership theory (Yukl & Lepsinger, 2004; Yukl, 2008). The items measuring the extent to which bosses use various change-oriented behaviors was also based on prior research on change behavior (e.g., Yukl, 1998; Yukl, et al., 2002; Gil, Ares & Barrasa, 2003). The scale for change-oriented behavior has 12 items selected to capture aspects of behavior likely to be relevant for effective leadership at most levels of management. Each item had the following 5-point response format: 1 = Not at all or not applicable, 2 = To a limited extent, 3 = To a moderate extent, 4 = To a considerable extent, and 5 = To a very great extent. Sample items include the following: (1) Analyzes external events and trends to identify threats and opportunities, (2) Encourages innovative thinking and new approaches for solving problems, (3) Explains why a policy or procedure is no longer appropriate and should be changed, (4) Look for ways to adapt best practices used by other units or organizations, (5) Describes a proposed change or new initiative with enthusiasm and optimism, (6) Plans how to implement necessary changes in the organization. Please see Appendix C for examples of the actual change-oriented scale items, and please see Appendix D for examples of the items in both the task-oriented behaviors and relations-oriented behaviors scales. The scale was factor analyzed, as will be discussed under the results section, and again three strong factors emerged. The internal consistency reliabilities for the factors were: change-oriented leadership behaviors, alpha = .92, task-oriented leadership behaviors, alpha = .90, and relations-oriented leadership behaviors, alpha = .90. No mention of
“leader” or “manager” was made in the question, or items, so as to minimize the bias effects of implicit leadership theories (Epitropaki & Martin, 2005) respondents hold, and toward trying to capture the best recollections of actual boss behavior.

**Unit Effectiveness**

Unit effectiveness was measured with a two-item scale. One item asked a respondent to compare the performance of the unit to other units in the organization and to select one of the following response choices: (1) Much better, (2) somewhat better, (3) slightly better, (4) about the same, (5) slightly worse, (6) somewhat worse, and (7) much worse. The second item asked a respondent to compare the performance of the unit to past performance and to select one of the following response choices: (1) Increased a lot, (2) Somewhat increased, (3) Slightly increased, (4) Stayed about the same, (5) Slightly decreased, (6) Somewhat decreased, and (7) Decreased a lot. Please see Appendix E for the actual scale. The internal consistency reliability for the scale was acceptable (alpha = .74). Finally, several demographic variables were measured, including the respondent's age and gender, how long the respondent was working for the manager, and the tenure and gender of the manager.
CHAPTER IV: RESULTS

This chapter includes several sections. The first section describes preliminary analyses, including procedures for screening the data, results of the factor analysis for the leader behaviors questionnaire, and descriptive statistics and scale reliabilities. The next section presents results for the correlational analyses and the results for tests of the hypotheses. Finally, results are reported for some exploratory analyses of component behaviors of change-oriented leadership.

Preliminary Analyses

Data Screening

SPSS 17.0 statistical software package was used for all of the data screening, preparation, and analysis. The total sample was screened for out of range values, missing data, normality and both univariate and multivariate outliers. Regression equations with missing data (dummy coded 1) were run for all variables missing more than 1%, which was more conservative than the recommended 5% (Tabachnick & Fidell, 2001) to see if there were any significant differences between the responders and non-responders. No significant difference between responders and non-responders were found on any items. No variables were skewed enough, or had kurtosis levels that were high enough, to warrant the use of transformation techniques. The test of univariate outliers by z scores >± 3.29 (Tabachnick & Fidell, 2001) was utilized, and no outliers were found in variables used in the final analyses, as was the same for Cooks’ test for multivariate outliers and using the recommended cut-off of above 20 on the Mahalanobis distance statistic (Tabachnick & Fidell, 2001). There was no colinearity >.9.
Factor Analyses

As in most survey research on leader behaviors, the correlations among the behaviors were high, but not so high as to preclude a factor analysis of the correlation among behavior scales. The determinant of the correlation matrix, which tests for sufficient absence of multicollinearity was 1.45E-005, which was above the 1.00E-.005 level of concern (Tabachnick & Fidell, 2001). The Kaiser-Meyer-Olkin measure of sampling adequacy tests whether the partial correlations among variables are small, and should be greater than .6, for this sample KMO = .96 (Tabachnick & Fidell, 2001).

Factor analysis was used to test whether the taxonomy with three meta-categories (i.e., tasks, human relations, and change) was supported to a greater degree than either the two or one factor solution. A principle component analysis was conducted to test how component behaviors would load on the a priori expected three factors. A principal components analysis was conducted with a Varimax rotation and Kaiser normalization. The results of this analysis are shown in Table 1. One, two, and three factor solutions were considered. The one-factor solution accounted for 28 percent of the total variance explained, two-factor solution on accounted for 55 percent of the total variance explained, whereas the three-factor solution accounted fully for 80 percent of the total variance explained. The scree plot, and eigen values indicated that three factors was an appropriate solution, as the scree plot slope approached zero substantially more moving toward the fourth factor. All component behaviors clearly loaded on their intended meta-category factor (the loading was .63 or higher) and 7 out of 12 component behaviors loaded at .70 or higher on their intended factors. Only three component behaviors (monitoring, supporting, encouraging innovation) loaded at .50 or higher on a second factor.
Table 1 shows the factor loading of the change-oriented items on the change-oriented leadership behavior factor, as well as the items loading on the task-oriented and relations-oriented factors. Table 2 shows the means, standard deviations, and correlations for all key variables. Although change-oriented, task-oriented, and relations-oriented have high intercorrelations (i.e., .81-.83), with high alphas (i.e., .90-.92), and the fact that change is significantly and positively related to level of management and environmental dynamism to a greater degree than either task-oriented, or relations-oriented are supports that there is discriminate validity.

Table 1
Factor Loadings of the Rotated Component Matrix

<table>
<thead>
<tr>
<th>Leadership Behavior</th>
<th>Change</th>
<th>Task</th>
<th>Relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage Innovation</td>
<td>.64</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Encourage Learning</td>
<td>.76</td>
<td>.43</td>
<td></td>
</tr>
<tr>
<td>Promote Change</td>
<td>.81</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>Monitor Environment</td>
<td>.75</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>Clarify</td>
<td></td>
<td>.81</td>
<td>.31</td>
</tr>
<tr>
<td>Plan</td>
<td>.45</td>
<td>.70</td>
<td>.33</td>
</tr>
<tr>
<td>Monitor</td>
<td>.53</td>
<td>.64</td>
<td></td>
</tr>
<tr>
<td>Problem Solve</td>
<td>.44</td>
<td>.63</td>
<td>.37</td>
</tr>
<tr>
<td>Support</td>
<td></td>
<td>.56</td>
<td>.70</td>
</tr>
<tr>
<td>Consultation</td>
<td>.40</td>
<td>.41</td>
<td>.68</td>
</tr>
<tr>
<td>Recognize</td>
<td>.41</td>
<td>.44</td>
<td>.64</td>
</tr>
<tr>
<td>Delegate</td>
<td>.33</td>
<td></td>
<td>.80</td>
</tr>
</tbody>
</table>

Note. Loadings greater than .60 are in bold. Loading .30 and below suppressed.
Descriptive Statistics for Original Scores

The descriptive statistics and correlations involved are shown for the original scores before any variables were dichotomized. The positive and significant correlation between change-oriented behavior and level of management (.27, p<.01), is consistent with hypothesis 1. The positive and significant correlation between change-oriented behavior and environmental dynamism (.38, p<.01) is consistent with hypothesis 2. The significant and positive correlation between change-oriented behavior and unit performance (.50, p<.01) is consistent with Hypothesis 3.

Table 2
Means, Standard Deviations, and Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Change Behavior</td>
<td>3.37</td>
<td>0.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Task Behavior</td>
<td>3.60</td>
<td>0.88</td>
<td>.83**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Relations Behavior</td>
<td>3.60</td>
<td>0.92</td>
<td>.81**</td>
<td>.83**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Level of Management</td>
<td>2.53</td>
<td>1.00</td>
<td>.27**</td>
<td>.13*</td>
<td>.15**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Dynamism</td>
<td>3.12</td>
<td>0.79</td>
<td>.38**</td>
<td>.28**</td>
<td>.22**</td>
<td>.22**</td>
<td></td>
</tr>
<tr>
<td>6. Unit Performance</td>
<td>5.12</td>
<td>1.14</td>
<td>.50**</td>
<td>.49**</td>
<td>.52**</td>
<td>.19**</td>
<td>.20**</td>
</tr>
</tbody>
</table>

Note: N = 297

* p < .05 (2-tailed).
** p < .01 (2-tailed).
Effects of Level and Dynamism on Change Behavior

The joint effects of environmental dynamism and management level on change-oriented behavior were assessed with a two-way, between-subjects analysis of variance (2 X 2 ANOVA) with categorical independent variables and a continuous dependent variable. Moderated regression using hierarchical techniques were also run in parallel for this and most of the other analyses, and the results were mostly consistent. Analysis of variance was chosen as the primary analysis tool consistently throughout to report to provide more interpretable interaction results. The discrete classification of level and dynamism was necessary for an analysis of variance, and examinations of frequency distributions for the situational variables suggested that the ratings are more consistent with an ordinal scale than with an interval scale. The number of managers in each of the four choices for management level suggested that a dichotomous classification (low versus high level) would be appropriate. The two lowest levels were similar when checked for significant differences against other key variables, and they were combined into a single lower-level category; similarly the two highest levels were combined into a single higher-level category. For this dichotomous variable, 51% of the managers were classified as higher level and 49% as lower level. For dynamism, the modest reliability for the scale and the frequency distribution for total scores suggested that a dichotomous classification would also be appropriate for this situational variable. A cut-off point of 3.0 on the scale score for dynamism was used to classify 44% of the managers in the high dynamism category and 56% in the low dynamism category.

The means and standard deviations for change-oriented behavior by dynamism and level are reported in Table 3. The results for the 2 X 2 ANOVA are shown in Table
4. Both main effects were significant, but the interaction was not significant. Consistent with Hypothesis 1, more change behavior was used by high level managers (M = 3.58, SD = .94) than by low level managers (M = 3.15, SD = .93). Consistent with Hypothesis 2, more change behavior was used by managers when the environment was highly dynamic (M = 3.67, SD = .85) than when it was lower in dynamism (M = 3.14, SD = .97). The eta squared values (i.e., .03 for level of management and .05 for environmental dynamism) indicate that the direct effects of the situational variables were relatively weak, which is consistent with the results from the correlations in Table 2.

Table 3
Means and Standard Deviations for Change-Oriented Behavior by Dynamism and Level

<table>
<thead>
<tr>
<th>Dynamism</th>
<th>Level</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>3.27</td>
<td>3.84</td>
<td>3.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.02)</td>
<td>(.78)</td>
<td>(.94)</td>
</tr>
<tr>
<td></td>
<td>[68]</td>
<td>[83]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>3.06</td>
<td>3.37</td>
<td>3.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.93)</td>
<td>(.89)</td>
<td>(.93)</td>
</tr>
<tr>
<td></td>
<td>[99]</td>
<td>[46]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.14</td>
<td>3.67</td>
<td>3.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.97)</td>
<td>(.85)</td>
<td>(.96)</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets
Table 4

Effect of Dynamism and Level on Change Behavior

<table>
<thead>
<tr>
<th>Source squared</th>
<th>df</th>
<th>Mean Square</th>
<th>F (1, 295)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>1</td>
<td>8.0</td>
<td>9.7</td>
<td>.00</td>
<td>.03</td>
</tr>
<tr>
<td>Dynamism</td>
<td>1</td>
<td>13.2</td>
<td>16.1</td>
<td>.00</td>
<td>.05</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>1.2</td>
<td>1.4</td>
<td>.24</td>
<td>.01</td>
</tr>
</tbody>
</table>

Moderating Effects of Situational Variables

Management Level

The proposed moderating effect of managerial level on the relation of change-oriented behavior to unit performance was assessed with another two-way, between-subjects ANOVA, with level and change (dichotomized) as the independent variables and unit performance as the continuous dependent variable. Means and standard deviations for unit performance by level and change behavior are shown in Table 5, and the results are shown in Table 6 and Figure 1. The main effects for change behavior and the interaction were both significant. However, the main effect for change behavior (i.e., $\eta^2 = .19$) was much stronger than the interaction effect ($\eta^2 = .02$). The results are consistent with Hypotheses 1 and 3.
Table 5
Means and Standard Deviations for Unit Performance by Level and Change Behavior

<table>
<thead>
<tr>
<th>Change Behavior</th>
<th>Level</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>4.55</td>
<td>5.83</td>
<td>5.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.09)</td>
<td>(.99)</td>
<td>(1.20)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[60]</td>
<td>[90]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.63</td>
<td>5.32</td>
<td>4.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.98)</td>
<td>(1.00)</td>
<td>(1.04)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[87]</td>
<td>[58]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4.60</td>
<td>5.63</td>
<td>5.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.02)</td>
<td>(1.02)</td>
<td>(1.14)</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets

Table 6
Effect of Change-Oriented Behavior and Level on Unit Performance

<table>
<thead>
<tr>
<th>Source squared</th>
<th>df</th>
<th>Mean Square</th>
<th>F (1, 295)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change-Oriented</td>
<td>1</td>
<td>68.0</td>
<td>66.7</td>
<td>.00</td>
<td>.19</td>
</tr>
<tr>
<td>Level</td>
<td>1</td>
<td>3.4</td>
<td>3.3</td>
<td>.07</td>
<td>.01</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>6.2</td>
<td>6.1</td>
<td>.01</td>
<td>.02</td>
</tr>
</tbody>
</table>


Environmental Dynamism

The proposed moderating effect of dynamism on the relation of change-oriented behavior to unit performance was assessed with two-way, between-subjects, ANOVA, with environmental dynamism and change (dichotomized) as the independent variables and unit performance as the continuous dependent variable. The means and standard deviations for unit performance by dynamism and change behavior are reported in Table 7, and the results are shown in Table 8 and Figure 2. Consistent with Hypothesis 1, the main effect was significant for change-oriented behavior. The interaction was only marginally significant (p = .058). However, when the analysis was done using only the item for unit performance in relation to other units, the interaction was clearly
significant ($F = 4.81, p = .029$). The overall results provide limited support for Hypothesis 4, and once again the main effect (i.e., $\eta^2 = .20$) was much stronger than the interaction (i.e., $\eta^2 = .01$).

Table 7

Means and Standard Deviations for Unit Performance by Dynamism and Change Behavior

<table>
<thead>
<tr>
<th>Change Behavior</th>
<th>Dynamism</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>4.42 (0.92)</td>
<td>5.72 (1.02)</td>
<td>5.29 (1.16)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[43]</td>
<td>[85]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>4.68 (1.06)</td>
<td>5.50 (1.01)</td>
<td>4.99 (1.12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[103]</td>
<td>[63]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.60 (1.03)</td>
<td>5.63 (1.02)</td>
<td>5.12 (1.14)</td>
<td></td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets

Table 8

Effect of Change-Oriented Behavior and Dynamism on Unit Performance

<table>
<thead>
<tr>
<th>Source squared</th>
<th>df</th>
<th>Mean Square</th>
<th>F (1, 294)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change-Oriented</td>
<td>1</td>
<td>74.5</td>
<td>71.5</td>
<td>.00</td>
<td>.20</td>
</tr>
<tr>
<td>Dynamism</td>
<td>1</td>
<td>0.1</td>
<td>0.03</td>
<td>.88</td>
<td>.00</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>3.8</td>
<td>3.6</td>
<td>.06</td>
<td>.01</td>
</tr>
</tbody>
</table>
Supplemental Analyses for Specific Change Behaviors

Further exploratory analysis was performed to determine if the results were similar for the specific component behaviors of change-oriented leadership (i.e., encouraging innovation, encouraging collective learning, promoting and facilitating change, and monitoring the environment). The means, standard deviations, and reliabilities for the component behaviors are shown in Table 9, and the correlations are shown in Table 10.
Table 9
Change-Oriented Component Behavior Means, Standard Deviations and Reliabilities

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Encouraging Innovation</td>
<td>3.50</td>
<td>1.06</td>
<td>.89</td>
</tr>
<tr>
<td>2. Encouraging Collective Learning</td>
<td>3.33</td>
<td>1.10</td>
<td>.89</td>
</tr>
<tr>
<td>3. Promoting and Facilitating Change</td>
<td>3.25</td>
<td>1.07</td>
<td>.90</td>
</tr>
<tr>
<td>4. Monitoring the Environment</td>
<td>3.42</td>
<td>1.01</td>
<td>.89</td>
</tr>
</tbody>
</table>

Table 10
Change-Oriented Component Behavior Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Encouraging Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Encouraging Collective Learning</td>
<td>.77**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Promoting and Facilitating Change</td>
<td>.75**</td>
<td>.76**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Monitoring the Environment</td>
<td>.71**</td>
<td>.75**</td>
<td>.77**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Level of Management</td>
<td>.25**</td>
<td>.21**</td>
<td>.26**</td>
<td>.26**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Environmental Dynamism</td>
<td>.35**</td>
<td>.38**</td>
<td>.39**</td>
<td>.26**</td>
<td>.22**</td>
<td></td>
</tr>
<tr>
<td>7. Unit Performance</td>
<td>.50**</td>
<td>.47**</td>
<td>.41**</td>
<td>.44**</td>
<td>.19**</td>
<td>.20**</td>
</tr>
</tbody>
</table>

Note: N = 297
* p < .05 (2-tailed), and ** p < .01 (2-tailed).
Due to the high intercorrelations of the change-oriented component behaviors a multivariate analysis of variance (MANOVA) was used, with level of management and environmental dynamism as the categorical independent variables. Table 11 shows the cell means and standard deviations and Table 12 reports the results of the 2 X 2 MANOVA. The multivariate F test for the main effect of level of management was significant (Wilk’s value = .95, F = 3.63, p < .01), and the univariate F tests were significant for encouraging innovation (p < .05), promoting and facilitating change (p < .01), and monitoring the environment (p < .01), but not for encouraging collective learning. The multivariate F test for the main effect of environmental dynamism was also significant (Wilk’s value = .91, F = 6.87, p < .01), and the univariate F tests were significant for encouraging innovation (p < .01), encouraging collective learning (p < .01), promoting and facilitating change (p < .01), and monitoring the environment (p < .05). The multivariate F test was not significant for the interaction between level of management and environmental dynamism.
Table 11
Cell Means and Standard Deviations for the Change-Oriented Behavior Component Variables as a Function of Dynamism and Level

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>Environmental Dynamism</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>(n = 167)</td>
<td>High</td>
<td>(n = 129)</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>(n = 145)</td>
<td>High</td>
<td>(n = 151)</td>
</tr>
<tr>
<td>Change Behaviors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourage Innovation</td>
<td>3.27</td>
<td>(1.07)</td>
<td>3.71</td>
<td>(1.00)</td>
</tr>
<tr>
<td></td>
<td>3.28</td>
<td>(1.14)</td>
<td>3.77</td>
<td>(.87)</td>
</tr>
<tr>
<td>Encourage Learning</td>
<td>3.14</td>
<td>(1.07)</td>
<td>3.51</td>
<td>(1.10)</td>
</tr>
<tr>
<td></td>
<td>3.05</td>
<td>(1.10)</td>
<td>3.69</td>
<td>(.98)</td>
</tr>
<tr>
<td>Promote Change</td>
<td>3.01</td>
<td>(1.04)</td>
<td>3.48</td>
<td>(1.06)</td>
</tr>
<tr>
<td></td>
<td>2.99</td>
<td>(1.08)</td>
<td>3.59</td>
<td>(.97)</td>
</tr>
<tr>
<td>Monitor Environment</td>
<td>3.20</td>
<td>(1.02)</td>
<td>3.62</td>
<td>(.97)</td>
</tr>
<tr>
<td></td>
<td>3.25</td>
<td>(1.02)</td>
<td>3.63</td>
<td>(.97)</td>
</tr>
</tbody>
</table>
Table 12
Tests of Level and Dynamism for Change-Oriented Behavior Component Dependent Variables

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>Wilk’s Value (F)</th>
<th>Univariate F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>Encourage Innovation</td>
<td>0.95 (3.63)**</td>
<td>8.17*</td>
</tr>
<tr>
<td></td>
<td>Encourage Learning</td>
<td></td>
<td>3.61</td>
</tr>
<tr>
<td></td>
<td>Promote Change</td>
<td></td>
<td>9.90**</td>
</tr>
<tr>
<td></td>
<td>Monitor Environment</td>
<td></td>
<td>10.75**</td>
</tr>
<tr>
<td>Dynamism</td>
<td>Encourage Innovation</td>
<td>0.91 (6.87)**</td>
<td>10.98**</td>
</tr>
<tr>
<td></td>
<td>Encourage Learning</td>
<td></td>
<td>21.40**</td>
</tr>
<tr>
<td></td>
<td>Promote Change</td>
<td></td>
<td>16.09**</td>
</tr>
<tr>
<td></td>
<td>Monitor Environment</td>
<td></td>
<td>5.29*</td>
</tr>
<tr>
<td>Level X Dynamism</td>
<td>Encourage Innovation</td>
<td>0.95 (1.35)</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>Encourage Learning</td>
<td></td>
<td>.25</td>
</tr>
<tr>
<td></td>
<td>Promote Change</td>
<td></td>
<td>2.31</td>
</tr>
<tr>
<td></td>
<td>Monitor Environment</td>
<td></td>
<td>1.66</td>
</tr>
</tbody>
</table>

* p < .05,  
** p<.01
To further probe the relationships in this exploratory analysis, separate 2 X 2 ANOVAs were run for each component change-oriented behavior as the dependent variables with level of management and environmental dynamism as categorical independent variables. Tables 13 & 14 show the supporting data, and results of the two-way, between subject, ANOVA when encouraging innovation is the dependent variable. Both the main effect of level (F = 8.2, p = .01, \( \eta^2 = .03 \)) and dynamism (F = 11.0, p = .00, \( \eta^2 = .04 \)) are significant, but the interaction is not.

Table 13
Means and Standard Deviations for Encouraging Innovation by Level and Dynamism

<table>
<thead>
<tr>
<th>Dynamism</th>
<th>Level</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.47</td>
<td>3.91</td>
<td>3.71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.13)</td>
<td>(.84)</td>
<td>(1.00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[68]</td>
<td>[83]</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.15</td>
<td>3.53</td>
<td>3.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.13)</td>
<td>(.88)</td>
<td>(1.07)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[99]</td>
<td>[46]</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.28</td>
<td>3.77</td>
<td>3.49</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.14)</td>
<td>(.87)</td>
<td>(1.06)</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets
Table 14
Effect of Dynamism and Level on Encouraging Innovation

<table>
<thead>
<tr>
<th>Source squared</th>
<th>df</th>
<th>Mean Square</th>
<th>F (1, 294)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>1</td>
<td>8.5</td>
<td>8.2</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>Dynamism</td>
<td>1</td>
<td>11.4</td>
<td>11.0</td>
<td>.00</td>
<td>.04</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>.1</td>
<td>.1</td>
<td>.83</td>
<td>.00</td>
</tr>
</tbody>
</table>

Tables 15 & 16 show the supporting data, and results of the two-way, between subject, ANOVA when encouraging learning is the dependent variable. The main effect of dynamism is significant ($F = 21.4, p = .00, \eta^2 = .07$), but neither the main effect of level, nor the interaction is significant.
Table 15
Means and Standard Deviations for Encouraging Learning by Level and Dynamism

<table>
<thead>
<tr>
<th>Level</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>3.18</td>
<td>3.79</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>(1.18)</td>
<td>(.94)</td>
<td>(1.10)</td>
</tr>
<tr>
<td></td>
<td>[68]</td>
<td>[83]</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>2.96</td>
<td>3.52</td>
<td>3.14</td>
</tr>
<tr>
<td></td>
<td>(1.04)</td>
<td>(1.05)</td>
<td>(1.07)</td>
</tr>
<tr>
<td></td>
<td>[99]</td>
<td>[46]</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3.05</td>
<td>3.69</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>(1.10)</td>
<td>(.98)</td>
<td>(1.10)</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets

Table 16
Effect of Dynamism and Level on Encouraging Learning

<table>
<thead>
<tr>
<th>Source squared</th>
<th>df</th>
<th>Mean Square</th>
<th>F (1, 294)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>1</td>
<td>4.0</td>
<td>3.6</td>
<td>.58</td>
<td>.01</td>
</tr>
<tr>
<td>Dynamism</td>
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<td>23.6</td>
<td>21.4</td>
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<td>.07</td>
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<tr>
<td>Interaction</td>
<td>1</td>
<td>0.04</td>
<td>0.04</td>
<td>.85</td>
<td>.00</td>
</tr>
</tbody>
</table>
Tables 17 & 18 show the supporting data, and results of the two-way, between subject, ANOVA when promoting and facilitating change is the dependent variable.

Both the main effect of level (F = 9.9, p = .00, eta² = .03) and dynamism (F = 16.1, p = .00, eta² = .05) are significant, as is the interaction (F = 4.6, p = .03, eta² = .02), which is shown in Figure 3.

Table 17

Means and Standard Deviations for Promoting and Facilitating Change by Level and Dynamism

<table>
<thead>
<tr>
<th></th>
<th>Dynamism</th>
<th></th>
<th>Average</th>
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<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>3.06</td>
<td>3.82</td>
<td>3.48</td>
<td>3.48</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.09)</td>
<td>(.91)</td>
<td>(1.06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[68]</td>
<td>[83]</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Low</td>
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<td>3.17</td>
<td>3.01</td>
<td>3.01</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(1.08)</td>
<td>(.95)</td>
<td>(1.04)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[99]</td>
<td>[46]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.99</td>
<td>3.59</td>
<td>3.25</td>
<td>3.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.08)</td>
<td>(.97)</td>
<td>(1.07)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets
### Table 18

Effect of Dynamism and Level on Promoting and Facilitating Change

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>F (1, 294)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
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<td>10.2</td>
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<td>.03</td>
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<td>Dynamism</td>
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<td>16.6</td>
<td>16.1</td>
<td>.00</td>
<td>.05</td>
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<tr>
<td>Interaction</td>
<td>1</td>
<td>4.8</td>
<td>4.6</td>
<td>.03</td>
<td>.02</td>
</tr>
</tbody>
</table>

### Figure 3

Effect of Level on Relationship of Dynamism and Promoting and Facilitating Change

Tables 19 & 20 show the supporting data, and results of the two-way, between subject, ANOVA when monitoring the environment is the dependent variable. Both the
main effect of level ($F = 10.8$, $p = .00$, $\eta^2 = .04$) and dynamism ($F = 5.3$, $p = .02$, $\eta^2 = .02$) are significant, but the interaction is not.

Table 19

Means and Standard Deviations for Monitoring the Environment by Level and Dynamism

<table>
<thead>
<tr>
<th>Dynamism</th>
<th>Level</th>
<th>Low (1.07)</th>
<th>High (.82)</th>
<th>Total (.97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td></td>
<td>3.36</td>
<td>3.84</td>
<td>3.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.07)</td>
<td>(.82)</td>
<td>(.97)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[68]</td>
<td>[83]</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>3.18</td>
<td>3.24</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.97)</td>
<td>(1.12)</td>
<td>(1.02)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[99]</td>
<td>[46]</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.25</td>
<td>3.63</td>
<td>3.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.02)</td>
<td>(.97)</td>
<td>(1.01)</td>
</tr>
</tbody>
</table>

Note: standard deviations are in parentheses; cell sizes are in brackets

Table 20

Effect of Dynamism and Level on Monitoring the Environment

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>$F$ (1, 294)</th>
<th>Significance</th>
<th>Eta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
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<td>10.3</td>
<td>10.8</td>
<td>.00</td>
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<tr>
<td>Dynamism</td>
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<td>5.1</td>
<td>5.3</td>
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<td>.02</td>
</tr>
<tr>
<td>Interaction</td>
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<td>3.0</td>
<td>3.1</td>
<td>.08</td>
<td>.01</td>
</tr>
</tbody>
</table>
CHAPTER V: DISCUSSION

This study was conducted to examine the effects of dynamism and level of management on leadership change behaviors and the moderating effects of these situational variables on the relationship between change-oriented leadership behaviors and unit performance. The research has some unique features that make a worthwhile contribution to the leadership literature. It is the first study to directly examine the effects of management level and environmental dynamism on change-oriented behavior by managers, and the first to examine the moderating effects of level of management or environmental dynamism on the relationship between this behavior and unit performance (rather than just overall company performance).

The findings provide support for management level and environmental dynamism as antecedents of change-oriented behavior. The change-oriented behaviors were used more often by higher level managers and more often by managers in more dynamic environments. The study also provides support for the importance of change-oriented behaviors for effective leadership in most situations. Even though management level and environmental dynamism enhanced the effects of change behavior on unit performance, it was a weak moderating effect. From a theoretical perspective the study provides additional evidence that change-oriented leadership behaviors are linked to unit performance, both at the subunit and organizational level. It is also evident that at least two situational variables (both level of management and environmental dynamism) moderate the specific relationship between change-oriented leadership behaviors and overall unit performance. The overall pattern of results is consistent with theories of strategic leadership such as the Flexible Leadership Theory (Yukl, 2008), where higher level leaders are more involved in a greater degree of change-oriented behaviors, and in
environments with dynamism leaders are more involved with change behaviors, and consistent with theories of transformational and visionary leadership. The results were not as strong as they could have been for a myriad of reasons, which will be discussed under limitations.

**Limitations and Suggestions for Future Research**

This study has several limitations that are common to most leadership studies. One limitation is that leadership behaviors are often complex patterns of actions and decisions, and it is difficult for subordinates to accurately describe this behavior in terms of the frequency choices used in most questionnaires. Compounding the problem of getting accurate assessments of a single leader's behavior is that outcomes may be determined by the actions of multiple leaders (Pearce & Conger, 2003), and by organizational programs and systems not influenced by the leader (Yukl, 2008).

Use of a convenience sample provided by Syracuse University project is another limitation. The panel is comprised of people willing to engage in many surveys for relatively small rewards, and they may not have been highly motivated to provide accurate answers. In future survey research it would be worthwhile to obtain a larger, more systematic sample with data from multiple sources and high variance on all of the key situational variables.

A survey study with a single source of data obtained at one point in time is a weak research design. When all data are from the same respondent and based on fixed-response survey items, rater bias may inflate the relationship of behavior to subordinate ratings of leader effectiveness. Rater biases such as halo effects may have contributed to the extremely high correlations between leader behaviors. Overall, common method bias is probably of least concern with level of management and environmental
dynamism measures, which are more objective. For the analyses, tests of main effects are more likely to be influenced by common method bias than tests of interactions.

Some possible ways to improve the measure of leader behavior in future research include finding a more representative sample of managers at top, middle, and lower levels in organizations. It is desirable to have the behavior of managers rated by more than one subordinate to verify accuracy of their ratings. Even better is to provide instruction in identification of behaviors encourage subordinates to observe leader behaviors over an extended period of time and make notes before completing their ratings. If possible it is desirable to use more than one type of behavior measure (e.g., checklist diaries, critical incidents, video taping) and to observe behavior over a period of several months.

The measure of environmental dynamism could also be improved in future research. Environmental dynamism has been measured in various ways, and whenever possible the different measures should be included in the same study. Environmental dynamism should be measured independently from leader behavior (e.g., by the leaders), and researchers should verify that it is not confounded with other situational variables. Both as a check on confounding and to identify other potential moderators, it is desirable to measure situational variables such as type of organization, size of the organization, age and evolutionary stage for the organization, subunit size and function, and lateral interdependence with other units in the organization. Many of these variables were intended to be captured in this study, but the question about company and unit affiliation, which was going to be used to reference secondary sources of information was required to be optional due to anonymity concerns of the IRB and the responses were too incomplete to allow for rigorous analysis.
The measure of management level could be improved in future research. Since management level may be only a proxy for other variables, future studies should also test for other key variables such as the level of autonomy, degree of accountability, and control over resources.

The dependent variable used to measure the effects of change-oriented leadership behaviors could also be improved in future research. The unit performance variable used is more of an overall measure that captures differences in performance that might be attributed to more that the effects of change-oriented leadership behaviors. Creating a dependent variable that is more sensitive to variations in change-oriented leadership behaviors might better elucidate moderating and potential mediating variables. To avoid same-source bias, it is desirable to include independent measures of leadership effectiveness (e.g., objective unit performance and change in performance over time, effectiveness ratings by the manager's bosses).

Survey studies like this one cannot show causality. To assess causality, it is desirable to conduct some experiments or simulation studies in which leader behavior is manipulated in different situations to assess the effects on unit performance. It is easier to conduct this type of experiment in a laboratory setting than in an actual organization. However, a field experiment is feasible when an organization will allow researchers to provide behavioral feedback and coaching to samples of managers in different situations and collect pre-measures and post-measures of behavior and performance. The performance post-measures should be scheduled long enough after the intervention to allow researchers to accurately assess the effects of leader actions.

The exploratory analysis clearly indicated that not all component change-oriented leadership behaviors are similarly affected by either management level, or
environmental dynamism. It would beneficial to run further tests to determine how the component behaviors differ for these, and other, situational variables. It would also be informative to see what, if any, differences exist between the component change behaviors and outcome variables like unit performance.

**Implications for Practice**

The findings suggest that some change-oriented behaviors are relevant for most leaders in today's organizations, and the list of behaviors includes some that are not explicitly included in widely-used measures of transformational leadership (e.g., actively monitoring the environment, promoting and facilitating change, and encouraging collective learning). The change-oriented behaviors are especially relevant for top executives in organizations with dynamic environments, and the increasing pace of economic, political, cultural, and technological change suggests that few organizations will have stable environments in the future. Some of the behaviors are also very relevant for middle and lower-level managers with important responsibilities that involve adaptation to dynamic environments (e.g., research and development, marketing and public relations, purchasing and supply chain management, entrepreneurial subsidiaries and joint ventures) or implementation of major changes authorized by top management. The skills necessary to determine which change behaviors are relevant and how they can be used effectively should be included in management development programs. Multi-source behavior feedback on change-oriented behaviors may be a useful way to assess the behaviors and identify any needs for additional training or executive coaching.
REFERENCES


Appendix A

Measure of Level

1. What is the managerial position of your boss? (Please check one below)
   ___ CEO or Company President
   ___ Upper Level/Executive (for example, Executive Vice President, Division Head)
   ___ Mid-Level Manager
   ___ A Low Level Manager for whom most or all direct reports are non-managerial employees (for example, a First Level Manager, Section Head, Work Team Leader, Supervisor)
Appendix B

Measure of Environmental Dynamism

How would you characterize the external environment within which your unit functions? The term "unit" refers to the team, department, division, or company for which your boss is formally in charge. In rating your environment, where relevant, please consider not only the economic but also the social, political, and technological aspects of the environment.

For each of the statements below, how strongly do you agree or disagree that the statement describes the external environment of your unit? After you select an appropriate response for each statement write the number or code for it on the line provided next to that statement. The response choices are as follows.

5  Agree Strongly
4  Agree
3  Neither Agree nor Disagree
2  Disagree
1  Disagree Strongly

1. Very dynamic, changing rapidly in technical, economic, and cultural dimensions.
2. Very risky, one false step can mean the unit’s undoing.
3. Very rapidly expanding through the expansion of old markets and the emergence of new ones.
4. Very stressful, exacting, hostile, hard to keep afloat.
Appendix C

Sample Change-Oriented Behavior Items from the MPS

CHANGE-ORIENTED BEHAVIOR

Encouraging Innovation:
Encourages innovative thinking and new approaches for solving problems

Encouraging Collective Learning:
Conduct a review session after a unit activity to learn what can be improved

Promoting and Facilitating Change:
Proposes major change in objectives or strategy

Monitoring the Environment:
Analyzes external events and trends to identify threats and opportunities
Appendix D

Sample Items from the Managerial Practices Survey
for the Task and Relations Factors

TASK-ORIENTED BEHAVIOR

*Clarifying Roles and Responsibilities:*
Clearly explains task assignments and member responsibilities

*Short-term Planning:*
Plans and organizes unit activities to use people, equipment, and resources efficiently

*Monitoring Activities and Performance:*
Evaluates the job performance of unit members in a systematic way

*Resolving Work-related Problems:*
Takes the initiative in identifying and resolving work-related problems

RELATIONS-ORIENTED BEHAVIOR

*Supporting:*
Shows concern for the needs and feelings of individual members

*Consultation:*
Modifies a proposal or plan to include member suggestions and deal with their concerns

*Recognizing:*
Provides recognition for member achievements and contributions

*Delegating:*
Encourages members to determine themselves how to carry out a task or assignment
Appendix E

Measures of Unit Performance

1. How does your unit perform compared to other units in the organization?

   ___ 1  Much better
   ___ 2  Somewhat better
   ___ 3  Slightly better
   ___ 4  About the same
   ___ 5  Slightly worse
   ___ 6  Somewhat worse
   ___ 7  A lot worse
   ___ ?  Not comparable

2. Compared to your unit’s past performance, has the unit’s performance

   ___ 1  Increased a lot
   ___ 2  Somewhat increased
   ___ 3  Slightly increased
   ___ 4  Stayed about the same
   ___ 5  Slightly decreased
   ___ 6  Somewhat decreased
   ___ 7  Decreased a lot