



## The moderating effect of environmental dynamism on the relationship between entrepreneur leadership behavior and new venture performance

Michael D. Ensley<sup>a,\*</sup>, Craig L. Pearce<sup>b,1</sup>, Keith M. Hmieleski<sup>c,2</sup>

<sup>a</sup> *Rensselaer Polytechnic Institute, Lally School of Management and Technology, Troy, NY 12180-3590, United States*

<sup>b</sup> *Claremont Graduate University, Peter F. Drucker Graduate School of Management, Claremont Graduate University, Claremont, CA 91711, United States*

<sup>c</sup> *Texas Christian University, M.J. Neeley School of Business, Fort Worth, TX 76129, United States*

---

### Abstract

This article outlines a model of when, why, and how the influence of entrepreneur leadership behavior on new venture performance is likely to be moderated by the level of environmental dynamism. The model is tested using a sample of 66 new ventures. The results indicate that environmental dynamism has a significant positive moderating effect on the relationship between transformational leadership and new venture performance, and a significant negative moderating effect on the relationship between transactional leadership and new venture performance. Implications for theory and practice are discussed.

© 2005 Elsevier Inc. All rights reserved.

*Keywords:* Environmental uncertainty; High growth; Organizational behavior

---

---

\* Corresponding author. Tel.: +1 518 276 3336.

*E-mail addresses:* [enslem@rpi.edu](mailto:enslem@rpi.edu) (M.D. Ensley), [craig.pearce@cgu.edu](mailto:craig.pearce@cgu.edu) (C.L. Pearce), [k.hmieleski@tcu.edu](mailto:k.hmieleski@tcu.edu) (K.M. Hmieleski).

<sup>1</sup> Tel.: +1 909 607 9248.

<sup>2</sup> Tel.: +1 817 257 7280.

## 1. Executive summary

New ventures cannot be created without the leadership of founders who initially define the mission of their organizations, set specific goals, and organize and motivate the efforts of their employees. All entrepreneurs, however, do not go about leading their new ventures in the same way. Instead, their behavior tends to vary across two distinct dimensions of leadership behavior—transactional and transformational. Transactional leadership is focused on motivating the behavior of followers through exchange processes, such as administering rewards and punishments. In so doing, entrepreneurs utilizing transactional leadership capitalize on the self-interests and extrinsic motives of their employees. Conversely, transformational leadership is focused on motivating followers by appealing to their ideals and intrinsic motives. Entrepreneurs utilizing transformational leadership inspire their followers to adopt the vision of the organization as though it were their own and to focus their energy toward the accomplishment of higher level goals, rather than the obtainment of rewards or avoidance of punishments.

Our results suggest that the performance of new ventures is highly dependent on the behavior of their leaders, and that new venture performance is affected by both transactional and transformational types of leadership. Moreover, our findings suggest that environmental dynamism moderates the leadership–performance relationship such that transactional leadership is most effective when environmental dynamism is low and that transformational leadership is most effective when environmental dynamism is high. These findings are depicted in a moderator model that extends the transactional–transformational leadership paradigm and adds to our understanding of how entrepreneurs initiate and grow new ventures.

We tested our model using a sample of 66 new venture top management teams from *Inc. Magazine's* annual list of America's fastest growing private firms. Each participant was a founder and/or significant equity stakeholder (i.e., owned at least 10% of the company), and was asked to rate the leadership behavior of their CEO. A previously validated measure of leadership behavior developed by Pearce et al. (2003) was used to measure the transactional and transformational behaviors of the CEOs. Environmental dynamism was calculated using a formula that accounts for industry revenues, number of industry establishments, number of industry employees, and industry research and development intensity. Performance was measured using the sales growth rate and absolute sales volume of the new ventures. Our model explained 36% of the variance in sales growth and 65% of the variance in actual sales. As such, our results appear to have important implications for research and practice. Specifically, it appears that entrepreneurial leaders would do well to modify their leadership behavior according to the environmental conditions in which their firms operate. In this respect, they should engage in relatively more transactional-type behaviors when environmental dynamism is low and in relatively more transformational-type behaviors when environmental dynamism is high.

For future research, these results highlight the importance of the context on the relationship between the behaviors of entrepreneurs and the performance of their firms. Longitudinal research is, however, necessary to delineate the extent to which particular entrepreneur leadership behaviors are drivers versus resultants of high performance.

In terms of practice, it appears that the costs of employing transformational leadership behaviors are worthwhile for new ventures in dynamic environments. Justification for applying transformational rather than transactional behaviors in benign environments is, however, more tenuous.

## 2. Introduction

The fields of leadership and entrepreneurship have, in many ways, shared similar developmental routes. For example, several of the initial studies of leadership examined the individual attributes of leaders (Jenkins, 1947). Specifically, these studies focused on characteristics that were more often present in leaders than in followers or subordinates. Although differences between leaders and followers on such factors as capacity, achievement, responsibility, participation, and status were observed, these characteristics failed to translate to the prediction of leader performance and therefore were found to be of little value in terms of the training or selection of leaders (Stogdill, 1974). Similarly, much of the initial research in the field of entrepreneurship focused on identifying characteristics that differentiate entrepreneurs from non-entrepreneurs (McClelland, 1961; Brockhaus, 1980; Carland et al., 1984). Differences in characteristics such as locus of control, self-efficacy, risk-taking propensity, and need for autonomy were identified; and similarly—only weak links between these factors and new venture performance were found (Sandberg, 1986; McDougall, 1987; Gartner, 1988).

The initial lackluster results of what was termed the “traits approach” in leadership research led to a fragmentation of research programs split between those studying the effect of the situation on leadership (e.g., Wofford and Liska, 1993) and those examining the behavior of leaders (e.g., Sims and Manz, 1984; Bass, 1990). Likewise, entrepreneurship researchers divided between those considering the effect of the environment on entrepreneurship (e.g., Kirzner, 1997) and those examining the behavior of entrepreneurs (e.g., Shaver and Scott, 1991). Thus, the purpose of this research is to bridge these gaps, as recommended by Vecchio (2003). We do so by examining the effect of entrepreneur leadership behavior on firm performance and subsequently by assessing the moderating influence of environmental dynamism on the relationship between leadership behavior and firm performance.

In this research, we draw on the transactional–transformational model of leadership to examine entrepreneur leadership behavior. The roots of this model can be traced to Burns’ (1978) seminal book on political leadership. He defined transactional leadership as behavior that clarifies reward contingency relationships: “[transactional leaders] approach followers with an eye to exchanging one thing for another” (Burns, 1978, p. 3). On the other hand, his conception of transformational leadership was focused on transforming followers’ motivational states, and drew heavily on the work of Maslow (1954) in this regard. Burns described transformational leadership as a case in which “leaders and followers raise one another to higher levels of motivation and morality” (1978, p. 20). Bass (1985); Avolio and Bass (1988); Bass and Avolio (1993) operationalized and empirically tested Burns’ articulation of leadership. While Bass’ theory is rooted in Burns’ work, he extended the model to organizational leaders and

developed specific leader behaviors associated with both transactional and transformational leadership.

As well researched as the transactional–transformational leadership model has been, there is still much work to be done. For example, even though the transactional–transformational model theoretically recognizes the potential moderating influence of the situation on the effectiveness of leader behavior (e.g., Pawar and Eastman, 1997), few studies have actually tested for such moderating effects (e.g., Bass, 1996; Podsakoff and Bommer, 1996), and as indicated by Yukl (1999, p. 291), “. . .there is still not much [empirical] evidence of important moderator variables”.

In the current study, we work toward integrating streams of research from entrepreneurship and leadership. In so doing, we have two primary objectives. The first is to further our understanding of how the environment and entrepreneur interact to influence the performance of new ventures. Second, we seek to add to the ongoing development of the transactional–transformational leadership paradigm by testing a new and important moderator, environmental dynamism.

As such, we begin by describing the reciprocal advantages for the fields of leadership and entrepreneurship in studying the leadership of entrepreneurs. Next, we discuss the effect that environmental dynamism can have on the relationship between leadership and performance. We then drill down into specifically how transactional and transformational leadership behaviors are likely to differ in their utility based on the level of environmental dynamism. In so doing, we detail the transactional–transformational leadership paradigm, discuss resulting research that has important implications for entrepreneurship, and propose a model that depicts when, why, and how environmental dynamism moderates the relationship between leadership behavior and new venture performance. This moderator model, which extends previous work on transactional–transformational leadership, is then tested using a sample of entrepreneurs from 66 new ventures from 38 different industries. Finally, implications for research and practice are discussed.

### 3. Entrepreneurs as leaders

Definitions of entrepreneurship and leadership have undergone considerable revision throughout the history of their respective domains. Nonetheless, each field has moved toward agreement in these terms, as encapsulated in recent definitions by noted scholars in each of these fields. Baron and Shane (2005, p. 7), for example, define entrepreneurship as, “. . .a field of business (that) seeks to understand how opportunities to create something new. . .arise and are *discovered* or created by *specific persons*, who then use various means to *exploit or develop* them, thus producing a wide range of *effects*.” Therefore, the core components of entrepreneurship involve discovering and exploiting opportunities. An entrepreneurial episode (e.g., starting a new venture, or spinning off a business), thus, cannot occur without the exploitation of an opportunity, which first must be identified.

Leadership, as defined by Yukl (2002, p. 3), is “the process of influencing others to understand and agree about what needs to be done and how it can be done effectively, and the process of facilitating individual and collective efforts to accomplish a shared objective.” As such, leadership appears to be a core component of the entrepreneurial

process, considering that opportunities cannot be exploited without the facilitation of individual and collective efforts. Therefore, from the onset of a new venture, founders must exhibit leadership in order for their businesses to take form.

Since entrepreneurs are by definition leaders, new ventures appear to be a particularly fruitful arena in which to investigate leadership—and in some ways more promising than research in larger and more established organizations (e.g., Finkelstein and Hambrick, 1996). This is because the well-defined goals, structure, and work processes of more established corporations often make leadership less necessary or redundant (Kerr and Jermier, 1978). In such situations, managers who might otherwise be thought of as leaders simply follow mechanistic daily routines. In these cases, individual activities are shaped by pre-existing structural components of the organization (e.g., culture, operational routines). Even if managers in such situations want to lead, their ability to do so is often limited by constraints associated with the corporate structure (Finkelstein and Hambrick, 1996; Sathe, 2003). For this reason, the process of identifying actual leaders within large organizations can be complicated.

Conversely, new ventures consist of little, if any, organizational structure (Vinnell and Hamilton, 1999). As a result, many of the neutralizers and substitutes that impede leadership in large corporations are less prevalent in start-ups. Further, founders of emerging organizations are required to define the vision and goals of their ventures, and motivate their workers toward the achievement of specific outcomes (Baum et al., 1998; Kirkpatrick et al., 2002). For these reasons, entrepreneurship appears to be a promising context for leadership research. As such, studies within this context have considerable potential for contributing to our knowledge of how individuals create and successfully grow profitable new ventures, while also extending our understanding of leadership behavior. Next, we delineate why environmental dynamism is likely to be an important moderator of the leadership–performance relationship.

#### **4. Environmental dynamism**

Dynamic environments are characterized by unpredictable and rapid change, which increases uncertainty for individuals and firms operating within them (Duncan, 1972; Dess and Beard, 1984). Uncertainty is the difference between projected and actual outcomes, and results from the limited availability of information for decision making (Simon, 1955). Due to high levels of uncertainty, decision makers working in dynamic environments tend to suffer from greater information processing burdens (Tushman, 1979). As a result, these individuals are likely to experience high levels of stress and anxiety (Waldman et al., 2001). This effect can be partially mitigated by distributing decision making responsibilities across top management teams (Hambrick and Mason, 1984; Pearce and Conger, 2003; Pearce, 2004). The following discussion considers the effects of dynamism on the relationship between leadership and performance. In so doing, the importance of team composition and the negative influence of stress and anxiety are further illustrated.

Some of the most interesting work on dynamism has looked at the moderating effect of the environment on the relationship between top management team composition and organizational performance. For example, Hambrick and Mason (1984) suggest that

heterogeneous top management teams perform best in dynamic environments, whereas homogeneous teams perform best in more stable environments. These authors imply that diverse teams are more capable of making sense of ambiguous situations than are less diverse teams, which are likely to operate with a more narrow perspective. Priem (1990) agrees with Hambrick and Mason (1984) and adds that the level of consensus within top management teams will likely relate to performance such that low consensus teams will perform best in dynamic environments, whereas high consensus teams will perform best in stable environments. In support of these complimentary views, a study by Homburg et al. (1999) found that top management team consensus tends to have a lower impact on performance in dynamic rather than stable environments.

The moderating effect of the environment on decision behavior and firm performance has also been considered. For example, Eisenhardt (1989) found that the behavior of effective decision makers working in dynamic environments is characterized by speed and comprehensiveness. Her results suggest that effective decision makers maintain sophisticated information search and processing routines, whereas less effective decision makers resort to using less complex routines to cope with the time pressure and stress that is brought about by their uncertain and rapidly changing environmental conditions. Similarly, a study by Judge and Miller (1991) found that, in dynamic environments, those who simultaneously consider more alternatives tend to outperform those who do not. Further support is offered by Glick et al. (1993), who found rational decision processes to be critical to the performance of firms operating in dynamic environments. Interestingly, their study found no such relationship between strategic decision making and firm performance in stable environments. The authors explain that in stable environments, where uncertainty is minimal, strategic planning can be unnecessary. A somewhat similar study by Priem et al. (1995) replicated these results.

Two important underlying assumptions can be drawn from these studies. The first is that multiple and diverse perspectives are necessary for making sense of dynamic environments (Hambrick and Mason, 1984). Second, decision makers working in dynamic environments must be able to circumvent the effects of stress, which can impair cognitive processing, in order to maximize their ability to rapidly acquire and process information (Fiedler, 1986).

In response, we contend that leadership can be used to both optimize the performance of heterogeneous teams and decrease the negative effects of stress and anxiety. For example, leaders can unify heterogeneous teams by influencing them to adopt a common goal that equally benefits all members (Conger and Kanungo, 1987), which can simultaneously decrease the negative effects of stress and anxiety (Kouzes and Pozner, 1987).

For example, Li and Simerly (1998) found that, in dynamic environments, high performing firms tend to be managed by individuals holding an ownership stake in their company, suggesting that ownership unifies top management teams to work together toward a common goal, whereas top management teams consisting of members without an ownership stake are more likely to be fragmented by the individual agendas of their members. These results emphasize the possible gains that leaders can achieve by sharing the responsibility and rewards of their undertaking with followers, particularly in dynamic environments that require extraordinary commitment, focus and effort. The

following sections illustrate more specifically how different leadership behaviors (i.e., transactional and transformational) relate to performance across various environmental conditions.

## 5. Transactional leadership

Transactional leadership is focused on exchange relationships between leaders and their followers or subordinates (Burns, 1978). Through this process, leaders appeal to the self-interest of their followers as a means to motivate them toward the accomplishment of specific tasks. Primary transactional leadership behaviors include contingent reward behavior and active management by exception (Pearce and Sims, 2002; Pearce et al., 2003). Contingent reward behaviors include clarifying expectations, and administering rewards and punishments according to specific performance criteria. Active management by exception involves the use of close monitoring of subordinates in order to ensure that goals are met. In this case corrective action, usually in the form of punishment, is used to quickly adjust performance deficiencies.

Although transactional leadership has typically been characterized as leadership of the past (Bass, 1996), it clearly is still a viable leadership strategy in ongoing organizational operations (Yukl, 2002; Cox et al., 2003; Pearce, 2004). For example, Bryant (2003) proposes that transactional leadership is likely to be most effective for exploiting knowledge at the organizational level. Transactional leadership behavior can yield positive new venture outcomes because it forms the backdrop for what most leadership development professionals would consider rational, effective maintenance leadership. For example, early in the life of a start-up, transactional leadership aids coordination by setting performance expectations and clarifying reward contingencies. Over time, transactional behavior can be used to leverage performance monitoring and send signals that enable continuous coordination and adjustment of individual behavior to achieve new venture objectives.

**Hypothesis 1.** Transactional leadership will be positively related to new venture performance.

Pawar and Eastman (1997) further delineate the importance of the context and suggest that the presence of factors within the organization such as an efficiency orientation, dominant technical core units, bureaucratic organizational structure, and market or bureaucratic modes of governance will increase the acceptance and effectiveness of transactional leadership. Unfortunately, most studies of transformational–transactional leadership have failed to consider the potential moderating role of these factors.

Without considering moderating effects, it is not surprising that many empirical studies have found a negative relationship between transactional leadership behaviors and organizational performance (e.g., Wofford et al., 1998; Yammarino et al., 1998). These results might be partially due to a bias toward studying large corporations operating in environments in which transactional behaviors often limit the exchange of information up, down and across the organization structure (Osborn et al., 2002). Thus, we set out to test the moderating role of environmental dynamism on the relationship between transactional

leadership and the performance of new ventures, which have minimal organizational structure. In so doing, we expect to find transactional leadership to be most effective when environmental dynamism is low.

**Hypothesis 2.** Environmental dynamism will negatively moderate the relationship between transactional leadership and new venture performance.

## 6. Transformational leadership

Transformational leadership is the participative process through which leaders and followers coordinate their efforts to reach “higher level” goals that bring about major change (Burns, 1978). In contrast to transactional leadership, transformational leaders appeal to the ideals and morals of their followers to inspire them to reach their highest levels of achievement and to take ownership in the goals of the group. Thus, transformational activities activate the intrinsic, rather than extrinsic, motives of followers. As such, followers are primarily motivated toward the achievement of the goal in and of itself, rather than rewards or punishments that might be associated with the outcome. Primary behaviors of transformational leadership include providing vision and inspiration, and challenging the status quo (Pearce et al., 2003).

Transformational leadership can help supply long-term vision to entrepreneurial endeavors by bringing meaning to otherwise disconnected activities. To a certain degree, transformational leadership may also supply a healthy motivational counterbalance to the instrumental focus of transactional leadership by engaging members of the new venture on a basis that extends beyond parochial self-interest. Supplying inspiration, vision, and deeper meaning may also promote incremental contributions through effort beyond the call of duty (Burns, 1978).

**Hypothesis 3.** Transformational leadership will be positively related to new venture performance.

Pawar and Eastman (1997) suggest that the presence of contextual factors within the organization such as an adaptation orientation, dominant boundary spanning units, simple organizational structure, and communal mode of governance will increase the acceptance and effectiveness of transformational leadership. Each of these contextual moderators is more likely to be present in new ventures than the inter-organizational factors described by Pawar and Eastman (1997), which we previously discussed in relation to effective transactional leadership.

In terms of external environmental factors, Osborn et al. (2002) propose that transformational leadership will be most effective in crisis situations due to the fact that traumatic instances activate the emotional centers of the brain, and that the same areas of the brain are influenced by the vision, hopes, and dreams that transformational leaders inspire in their followers.

Conger (1999) suggests that, in addition to crisis situations, entrepreneurial opportunity can act as a fertile ground for effective transformational leadership. He further suggests that transformational leaders might be able to create both perceptions of

crisis as well as entrepreneurial opportunity. In so doing, Conger sheds light on the potential importance of transformational leadership as an initiating factor in new venture development. This proposition is congruent with [Baglia and Hunt's \(1988\)](#) view that transformational leadership is most important during the growth of an organization. This might be, in part, due to the effect that transformational leaders have on the innovativeness of their followers. This effect was demonstrated in a study by [Sosik \(1997\)](#), which identified a positive relationship between transformational leadership and the number of unique solutions reported by followers. Similarly, [Pearce and Sims \(2002\)](#) found transformational leadership to be an important predictor of change management team effectiveness.

Some researchers have suggested that transformational leadership is beneficial to followers and their organizations, regardless of the situation ([Bass, 1996](#)). Further, there appears to be universal acceptance of the benefits of transformational leadership ([Bass, 1997](#)). For example, a recent study by the Global Leadership and Organizational Effectiveness (GLOBE) Research Program, which surveyed individuals residing in 59 different countries, found that most aspects of transformational leadership are consistently viewed as effective leader behaviors across cultures ([Den Hartog et al., 1999](#)).

Despite the abundance of positive findings in regard to the effectiveness of transformational leadership, there are numerous reasons to question whether transformational leadership is necessary in all situations and environments. For example, [Harrison \(1987\)](#) proposes that followers can be transformed to such an extent of emotional involvement that they can burn out. Further, [Yukl \(2002\)](#) suggests that transformational leadership implies a need for changes in the strategy and culture of an organization, which may not be appropriate. [Avolio and Bass \(1988\)](#) point out that we simply do not know much about the environmental conditions in which transformational leadership is most effective. [Conger \(1999\)](#) explains that there have been few studies considering the moderating role of contextual factors in transactional–transformational leadership because most leadership studies tend to be conducted by researchers from micro disciplines. As such, we seek to add a macro perspective to the transformational leadership–performance link by testing the effect of the external environment on this relationship using a sample of new ventures. Accordingly, we anticipate that transformational leadership in start-ups will

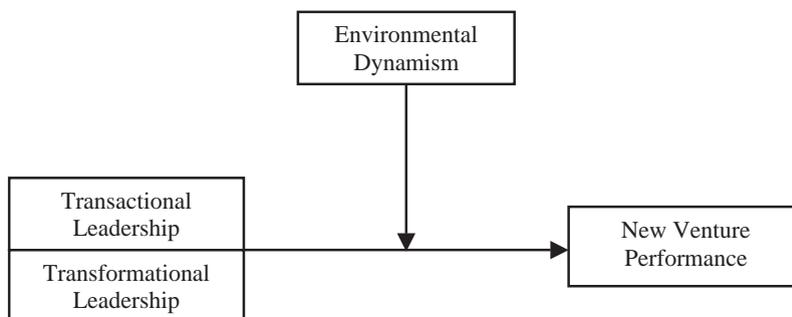


Fig. 1. The moderating effect of environmental dynamism on the relationship between leadership behavior (transactional and transformational) and new venture performance.

be most effective when environmental dynamism is high and least effective when environmental dynamism is low.

**Hypothesis 4.** Environmental dynamism will positively moderate the relationship between transformational leadership and new venture performance.

In summary, although we expect the main effects of transactional and transformational leadership to be positive, we anticipate that transactional leadership will be less effective in dynamic environments than benign environments and that transformational leadership will be more effective in dynamic rather than benign environments. The moderating effect of the environment on the relationship between leadership behavior and firm performance is depicted in Fig. 1, and represents the model that is tested in the current study.

## 7. Method

Given our focus on the leadership of new ventures, we gathered data from the top management teams of the *Inc. 500*. The *Inc. 500* is a group of the fastest growing private firms in the United States. Because the *Inc. 500* consists typically of small firms, in relatively early stages of development, it seemed an appropriate sample for study. Firms such as these are still highly dependent upon the vision and direction of their top management. The *Inc. 500* list is developed annually, and the 1999 list was used in the current study.

### 7.1. The sample: the 1999 *Inc. 500*

Each of the 1142 officers of the 500 firms received a personalized letter and individually numbered questionnaire. Individual names and addresses for the top management team members were obtained from the *Dun and Bradstreet* market identifiers database. Of the 1142 questionnaires mailed, a total of 258 responses were returned from 164 firms. However, after eliminating firms that were no longer in existence, firms from whom we received responses from less than half of the top management team, managers who were not active on the top management team, and managers who provided incomplete responses, our sample was reduced to 168 managers from 66 firms, a response rate of 17.6%. In addition to the fact that each respondent was considered an “officer” by *Inc. Magazine*, to be considered a top management team member, each had to be either a founder and/or a significant equity holder (10% or more), and actively involved in strategic decision making. As expected, these restrictive criteria yielded rather small teams, ranging in size from two to six members. However, while conservative, this operationalization focuses directly on those managers most likely to influence venture performance. This method was crosschecked by interviewing the CEOs, each of whom were asked to identify their top management team. Managers not identified by their CEO were dropped. Various sources of non-response bias were also examined. *T*-tests on six variables including strategic orientation, revenue, firm age, size, growth rate, and profit level were conducted. All yielded non-significant results.

Of the 168 managers, 93% were male and the average age was 37.2 years. Seventy-four percent were founders, 82% held at least 10% equity in their firms, and all were involved

in strategic decision making. Ninety percent considered themselves entrepreneurs and 34% had been involved in a new venture previously. During the previous 5 years, revenue growth for these firms ranged from 634% to 10,432% and averaged 1623%. A total of 38 industries were represented and age ranged from 5 to 7 years, with an average of 5.6. The median number of employees was 53 and the median revenue was \$7,152,000.

## 7.2. Scales and measures

We examined four sub-dimensions of both transactional and transformational leadership using scales developed by Pearce et al. (2003). For each item, participants were asked to mark their responses on a 5-point Likert-type scale ranging from strongly disagree to strongly agree. The transactional leadership sub-dimensions are active management by exception, contingent reprimand, contingent personal reward, and contingent material reward. The transformational leadership sub-dimensions are providing vision, encourages opportunity thinking, encourages teamwork, and challenges the status quo. Each sub-dimension is comprised of three items. Participants rated their CEO's leadership behavior across each of these dimensions.

Correlation analysis was performed on all eight of the scales. The sub-dimensions of the transactional leadership produced alphas that ranged from 0.71 to 0.84. The transformational leadership sub-dimensions produced alphas that ranged from 0.72 to 0.81. Pearce et al. (2003) conducted extensive psychometric tests on the scales used in this study and found strong reliability and validity across three different studies. Our findings are consistent with those of Pearce et al. (2003), and further validate the use of these scales.

For both transactional and transformational leadership dimensions, the mean of the individual responses (with regard to the leadership behavior of the CEO) within each new venture top management team was used as the study variable. For both the transactional and transformational sub-dimensions, the level of within-team agreement was assessed before the individual measures were combined to form study variables (Amason, 1996; Smith et al., 1994). We used the reliability within groups on  $j$ -number of items procedure, known as the  $r_{WG(j)}$ . Originally developed as a measure of within team reliability, James et al. (1993) noted that it is actually a measure of within team agreement. The  $r_{WG(j)}$  produces a value between 0 and 1.0, with scores above 0.70 denoting acceptable agreement. For the transactional leadership sub-dimensions, the  $r_{WG(j)s}$  ranged from 0.77 to 0.92. For transformational leadership sub-dimensions, the  $r_{WG(j)s}$  ranged from 0.74 to 0.89. Thus, there was acceptable agreement within the teams on the use of both transactional and transformational leadership behaviors of the CEOs being rated.

Dynamism was measured using the standard errors of four regression slopes, following the work of Dess and Beard (1984), Sharfman and Dean (1991), Keats and Hitt (1988), and Castrogiovanni (2002). In each case, the independent variable was time. The dependent variables were industry revenues, number of industry establishments, number of industry employees, and research and development intensity:

$$ir_t = b_0 + b_1(t) + a_t$$

$$e_t = b_0 + b_1(t) + a_t$$

$$\text{est}_t = b_0 + b_1(t) + a_t$$

$$\text{rd}_t = b_0 + b_1(t) + a_t$$

where  $y_t$ =time;  $ir$ =total industry revenues;  $e$ =total industry employees;  $est$ =number of industry establishments;  $rd$ =research and development intensity; and  $a$ =the residual in each regression. Boyd et al. (1993) were clear in their theoretical work that the choice of environmental measure should be based on the application and its intent. Our intent is to understand the extent to which the rate of change in the task environment affects the relationship between top management leadership behavior and firm performance. In addition, Boyd et al. (1993) noted that simple trends in archival data and the use of measures of dispersion are not direct measures of dynamism. Therefore, the standard error of the regression (i.e., the part of the regression that the general linear model is not able to predict) is a direct measure of the change in a certain variable that is not predictable using trend and data analysis.

Industry revenues have been used as measures in prior studies (e.g., Keats and Hitt, 1988; Sharfman and Dean, 1991), and number of employees is a common measure for use in research involving small and closely held businesses. The number of establishments has been used by Aldrich (1979) as the basis for understanding industry size and the extent of industry change. Finally, industry wide research and development intensity is a variable that captures the speed of technological evolution of the industry (Dess and Beard, 1984; Castrogiovanni, 2002).

Each of these variables was regressed with a dummy variable for 10 years of data. The standard error of the regressions divided by the mean of the respective variable was the measure of market, establishments, employee, and technological instability. Following the logic set out by Sharfman and Dean (1991), the calculation of the dynamism variable was as follows:

$$\text{Dynamism} = Z(\text{MI} + \text{NEI} + \text{NESTI}) + Z(\text{TI}) + 10$$

where MI is equal to market instability, NEI is equal to number of employees instability, NESTI is equal to the number of establishments instability, and TI is equal to technological instability. Market instability, establishments' instability, and number of employees instability were found to be statistically related and were summed to eliminate multicollinearity. Z-scores were used to ensure that all measures were on the same metric. The constant was added to assure that the measures were positive.

Testing our hypotheses necessitates the development of time-varying measures of industry-specific dynamism. Kogut (1991), Folta (1998), and Folta and Miller (2002) each measured industry-specific uncertainty, however, all three of these studies calculated the variance of some output or indicator (e.g., stock price, GDP, sales, etc.) over time, an approach that has two critical shortcomings. First, it fails to account for trends in the data, which will increase the measured variance even though they may not constitute an element of dynamism if they are predictable. Second, this approach does not allow for the possibility that the variance may be heteroskedastic (i.e., not constant over time), a characteristic that is typical of many economic time series (Campa, 1993). To address these concerns, the Durbin–Watson test for serial correlation and the White test for heteroskedasticity were

conducted on each of the measures of dynamism. The findings indicated that serial correlation was not a problem, but that homoskedasticity was potentially a problem. Therefore, the measures of dynamism were adjusted by using a 1-year lag. Tests for *white noise* indicated that the errors were no longer correlated and therefore the measures of dynamism conformed to the assumption of homoskedasticity that is important in the implementation of OLS.

Performance measures were chosen based on the work of several authors (McGuire et al., 1986; Keats and Hitt, 1988; Schaefer et al., 1990). Growth is often cited as an objective of new ventures (Brush and Vanderwerf, 1992). Thus, the sales growth rate over the past 5 years was used. The final performance measure was absolute sales volume which, when used in conjunction with growth rate and firm age, has been shown to be a good indicator of new venture performance (Chandler and Hanks, 1993). Sources for the performance data included *Inc. Magazine* and CEO interviews. These data were double-checked using *Dun and Bradstreet*. Survey data were not used to assess performance in order to reduce the potential for common method contamination.

Control variables included firm age, firm size, and top management team size. Firm age was acquired from *Inc. Magazine*, and measured as the number of years since the foundation of the firm. Firm size was measured as the natural log of the number of employees. Top management team size was the number of managers meeting our criteria for inclusion in the team.

In addition, we worked diligently to assure the temporal integrity of the data. Following Mitchell and James (2001), we gathered environmental data that corresponded directly to the point in time at which the surveys were administered. Each of the CEOs were contacted and documentation of their firm's continued sales after the survey was gathered within 60 days of the survey administration. Data from the *Inc. 500* were used as a starting point from which we later updated, through interviews with the CEOs of these firms. Significant differences were not found between the data published in *Inc. Magazine* and our updates. The environmental data were gathered for the exact time period of the survey. Therefore, the temporal integrity of the data is intact.

### 7.3. Statistical procedures

Moderated regression analysis was utilized in this study as the primary statistical procedure. All interactions were graphed using a procedure developed by Cohen and Cohen (1987), and then the slopes of the graphs were tested using a procedure developed by Aiken and West (1991). The significance of each graphed interaction slope was tested. These tests allow us to expand on both the importance and the significance of the interaction.

## 8. Results

Table 1 provides means, standard deviations, and bi-variate correlations among measured items. Additionally, scale reliability estimates are provided along the diagonal within Table 1.

Table 1  
Descriptive statistics and variable intercorrelations

	Mean	SD	1	2	3	4	5	6	7	8	9
1. Firm age	5.60	1.40									
2. Log employees	3.06	0.31	0.30**								
3. Team size	2.44	1.48	0.08	0.05							
4. Dynamism	0.45	0.80	0.01	-0.02	0.01						
5. Transactional	3.16	0.91	0.06	0.03	0.08	0.08					
6. Transformational	3.44	1.07	0.02	0.08	0.11***	0.11***	0.46*				
7. Transactional × dynamism	1.94	0.61	0.04	0.07	-0.12***	0.27*	0.57*	0.29*			
8. Transformational × dynamism	2.26	0.67	0.06	0.09	0.15**	0.34*	0.21*	0.71*	0.41*		
9. Log of growth	3.22	0.34	0.06	0.28*	0.31*	-0.16**	0.17**	-0.31*	-0.24*	0.21*	
10. Log of rev.	4.07	0.49	0.09	0.77*	0.09	-0.24**	0.23**	-0.44*	-0.62*	0.34*	0.37*

\*  $p < 0.01$ .

\*\*  $p < 0.05$ .

\*\*\*  $p < 0.10$ .

Table 2 provides the outcomes of the moderated regression analysis. Hypothesis 1 stated that transactional leadership would be positively related to firm performance. Transactional leadership was positively related to both sales growth ( $\beta = 0.18$ ,  $t < 0.01$ ) and sales volume ( $\beta = 0.20$ ,  $t < 0.01$ ). Thus, Hypothesis 1 is supported.

Hypothesis 2 stated that environmental dynamism will negatively moderate the relationship between transactional leadership and new venture performance. Although the main effect of transactional leadership was positive, the interaction of transactional leadership behaviors and dynamism on both new venture growth ( $\beta = -0.27$ ,  $t < 0.01$ ) and new venture revenues ( $\beta = -0.23$ ,  $t < 0.01$ ) was negative and significant. Thus, Hypothesis 2 is supported.

Table 2  
Transactional/transformational dynamism leadership model

Dependent variable	Log growth	Log sales
Firm age	0.02	0.03*
Number of employees (LOG)	0.10	0.56*
Team size	0.19*	0.15**
Dynamism	-0.47*	-0.29*
Transactional leadership index	0.18*	0.20*
Transformational leadership index	-0.21*	-0.16*
Dynamism × transactional	-0.27*	-0.23*
Dynamism × transformational	0.33*	0.28*
F-ratio	4.04*	9.61*
R <sup>2</sup>	0.36	0.65

$N = 66$  new venture teams.

\*  $t < 0.01$ .

\*\*  $t < 0.05$ .

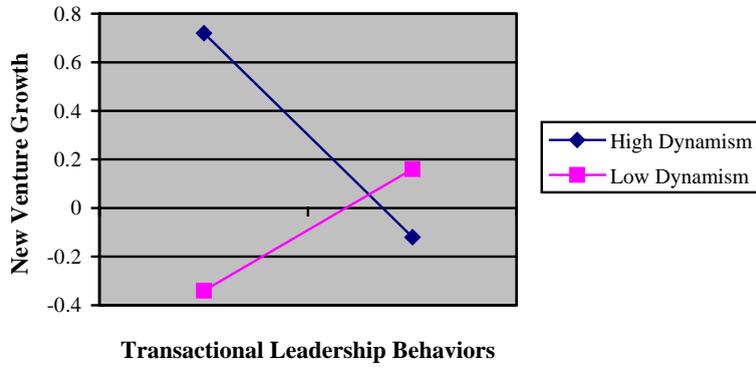


Fig. 2. Interaction graph of transactional leadership behaviors with dynamism on growth.

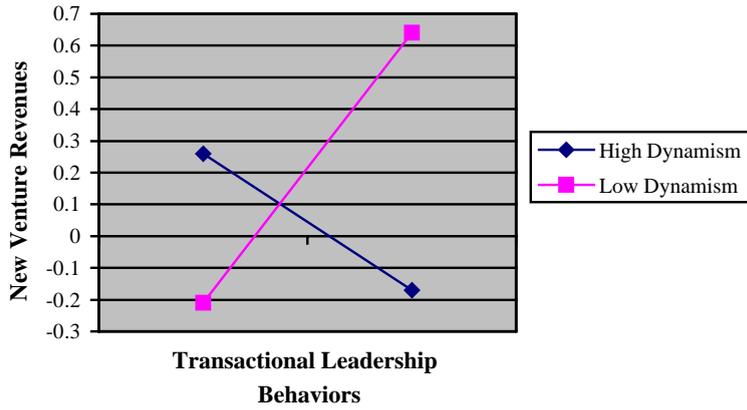


Fig. 3. Interaction graph of transactional leadership behaviors with dynamism on revenue.

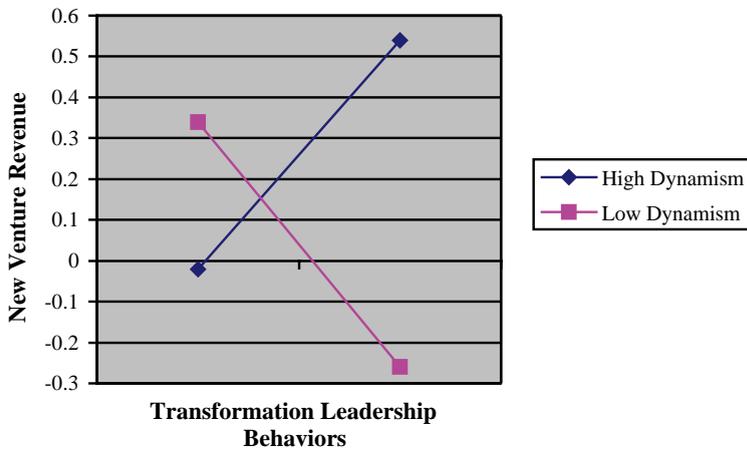


Fig. 4. Interaction graph of transformational leadership behaviors with dynamism on revenue.

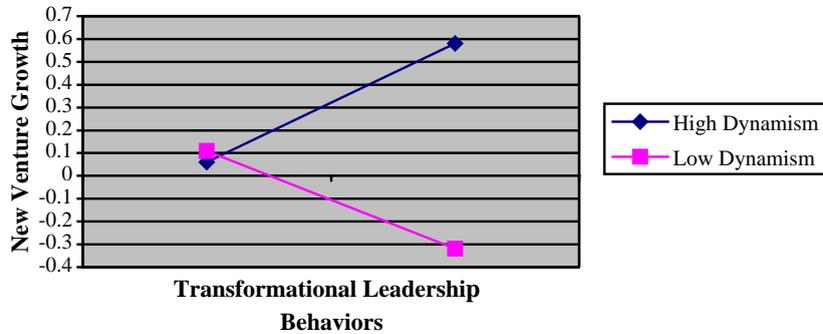


Fig. 5. Interaction graph of transactional leadership behaviors with dynamism on growth.

To better illustrate the moderating effect of the environment on the efficacy of leadership behavior, we graphed the interaction effects following procedures set forth by Cohen and Cohen (1987). Please see Figs. 2 and 3 for the resulting graphs. We then used methods described by Aiken and West (1991) to test the simple slopes of the graphed interactions to identify if they were significantly different from zero. Significance of the interaction graphs was found. Specifically, the slope significance test demonstrated that higher levels of transactional leadership did improve performance when the environment was less dynamic. However, the slope tests also demonstrated that the reverse was also true. As Aiken and West (1991) argue, it is not enough to simply assume that the interaction graph demonstrates that the change in performance is significantly different than zero without testing for the significance of the slope.

Hypothesis 3 stated that transformational leadership would be positively related to firm performance. Hypothesis 3 is not supported, since a negative main effect of transformational leadership on performance was observed. Hypothesis 4 stated that environmental dynamism will positively moderate the relationship between transformational leadership and new venture performance. The interaction of transformational leadership behaviors and dynamism on both new venture growth ( $\beta=0.33$ ,  $t<0.01$ ) and new venture revenues ( $\beta=0.28$ ,  $t<0.01$ ) was positive and significant (Figs. 4 and 5). Thus, Hypothesis 4 is supported. The slope tests confirmed that in the presence of higher levels of dynamism transformational leadership behaviors improved performance. The slope test also demonstrated that in the presence of low dynamism that lower levels of transformational leadership improved performance.

## 9. Discussion

This research examined the effects of entrepreneur leadership behavior on new venture performance. The model of leader behavior that guided this research was based on the transactional–transformational paradigm of leadership (e.g., Bass, 1985). Specifically, the individual effects of both transactional and transformational leadership on new venture performance were tested, as well as the moderating effect of environmental dynamism on the leadership–new venture performance relationship. As expected, the main effect for

transactional leadership was positive, and largely extends previous research findings from other organizational settings (e.g., Bass and Avolio, 1993; Bass, 1998). The main effect for transformational leadership was, however, negative and contrary to the mainstream leadership literature, which has primarily been drawn from studies of large, established organizations. We suggest here that the lack of structure within start-ups, as discussed in our Introduction, might hyper-sensitize new ventures to the effects of transformational leadership, more so than for large organizations. As such, transformational leadership, especially within benign environments, might distract members from carrying out important maintenance functions—since the structure and culture for carrying out these functions has yet to be fully developed in these new ventures.

Even though most articulations of leadership theory implicitly suggest that various leader behaviors are differentially effective depending on environmental circumstances (Osborn et al., 2002; Cox et al., 2003; Pearce, 2004; Pearce and Conger, 2003), little empirical research has examined moderators of the leadership–performance link (Yukl, 1999). As such, perhaps the most important contribution of this research is the results of our examination of environment dynamism as a moderator of the link between entrepreneur leadership behavior and new venture performance. Our findings indicate that environmental dynamism appears to moderate the effects of entrepreneur leadership behavior on new venture performance, which directly addresses Yukl's (1999) call for more empirical research on the moderators of the leadership–performance link. As predicted, our results suggest that transactional leadership is less efficacious the more dynamic the environment. Perhaps this is because transactional leader behaviors are more routine, and as Cox et al. (2003) suggest, are more attuned to “maintenance” functions than responding to crises. On the other hand, we found transformational leader behavior to be more efficacious the more dynamic the environment, which clearly reinforces the notion that transformational leadership is imperative in crisis situations (Conger, 1999).

One of the most widely accepted characteristics of high performing leaders is the ability to shift their behavior according to the demands of the moment (Quinn, 1988; Bass, 1998). Our results certainly do not detract from this view. We expand upon this notion in order to provide some practical insight to the entrepreneur. Although it appears safe to say that founders of organizations operating within dynamic environments are likely to have an overall positive effect on the performance of their firms by adopting a transformational leadership style, such action should not be taken haphazardly. On occasion when the environment is highly dynamic, it is particularly important that the routine maintenance functions of the organization run in a consistent and dependable way. For example, removing the conference tables and chairs from the board room directly prior to a meeting in which top management is scheduled to discuss radical changes to the core strategy of the firm in order to “try something new” is probably not a good idea. As in this case, when the environment is changing rapidly, it is good for some things to remain constant. Conversely, in benign environments, changes to simple maintenance functions might be refreshing and even helpful. Further, in turbulent environments, where crisis appears to lay waiting behind every corner, organizational members are likely to yearn for radical ideas and changes that can potentially “save the day.” On the other hand, the same unconventional brilliance that saves the day during a crisis is likely to be interpreted as “simply wacky” in a stable environment. In other

words, a little knack for appropriate balance can go a long way in respect to the effectiveness of leadership.

## 10. Conclusion

Our findings suggest that leaders of new ventures need to adapt to the environmental conditions surrounding their firms. While both transactional and transformational leaderships were found to be important predictors of new venture performance, their effects are somewhat complex: transactional leadership appears more efficacious in stable environments, whereas transformational leadership appears more efficacious in dynamic environments. Taking these results in concert with the fact that entrepreneurial firms exist in widely divergent environments (Stevenson and Harmeling, 1990; Bygrave and Hofer, 1991; Smilor, 1997; Baron, 1998; Minniti and Bygrave, 2001; Leach, 2003), it is our contention that understanding the link between performance and the choice of leader behaviors is imperative to the performance and survival of new ventures.

## References

- Aiken, L.S., West, S.G., 1991. *Multiple Regression: Testing and Interpreting Interactions*. Sage, Thousand Oaks, CA.
- Aldrich, H., 1979. *Organizations and Environments*. Prentice-Hall, Englewood Cliffs, NJ.
- Amason, A.C., 1996. Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: resolving a paradox for top management teams. *Academy of Management Journal* 39 (1), 123–148.
- Avolio, B.J., Bass, B.M., 1988. Transformational leadership, charisma, and beyond. In: Hunt, J.G., Baliga, B.R., Dachler, H.P., Schriesheim, C.A. (Eds.), *Emerging Leadership Vistas*. Lexington Books, Lexington, MA, pp. 29–49.
- Baglia, B.R., Hunt, J.G., 1988. An organizational life cycle approach to leadership. In: Hunt, J.G., Baliga, B.R., Dachler, H.P., Schriesheim, C.A. (Eds.), *Emerging Leadership Vistas*. Lexington Books, Lexington, MA.
- Baron, R.A., 1998. Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people. *Journal of Business Venturing* 13, 275–294.
- Baron, R.A., Shane, S., 2005. *Entrepreneurship: A Process Perspective*. Southwestern Thomson, Cincinnati, OH.
- Bass, B.M., 1985. *Leadership and Performance Beyond Expectation*. Free Press, New York.
- Bass, B.M., 1990. *Handbook of Leadership: A Survey of Theory and Research*. Free Press, New York.
- Bass, B.M., 1996. *A New Paradigm of Leadership: An Inquiry into Transformational Leadership*. U.S. Army Research Institute for the Behavioral and Social Sciences, Alexandria, VA.
- Bass, B.M., 1997. Does the transactional–transformational leadership paradigm transcend organizational and national boundaries? *American Psychologist* 52 (2), 130–139.
- Bass, B.M., 1998. *Transformational Leadership, Industry, Military, and Education Impact*. Lawrence Erlbaum Associates, Mahwah, NJ.
- Bass, B.M., Avolio, B.J., 1993. Transformational leadership: a response to critiques. In: Hunt, J.G., Baliga, B.R., Dachler, H.P., Schriesheim, C.A. (Eds.), *Emerging Leadership Vistas*. Lexington Books, Lexington, MA, pp. 29–40.
- Baum, J., Locke, E., Kirkpatrick, S., 1998. A longitudinal study of the relation of vision and vision communication to venture growth in entrepreneurial firms. *Journal of Applied Psychology* 83 (1), 43–54.
- Boyd, B.K., Dess, G.G., Rasheed, A., 1993. Divergence between archival and perceptual measures of the environment: causes and consequences. *Academy of Management Review* 18 (2), 204–226.

- Brockhaus, R.H., 1980. Risk-taking propensity of entrepreneurs. *Academy of Management Journal* 23 (3), 509–520.
- Brush, C.G., Vanderwerf, P.A., 1992. A comparison of methods and sources for obtaining estimates of new venture performance. *Journal of Business Venturing* 7, 157–170.
- Bryant, S.E., 2003. The role of transformational and transactional leadership in creating, sharing and exploiting organizational knowledge. *Journal of Leadership and Organizational Studies* 9 (4), 32–44.
- Burns, J.M., 1978. *Leadership*. Harper & Row, New York.
- Bygrave, W., Hofer, C., 1991. Theorizing about entrepreneurship. *Entrepreneurship Theory and Practice* 16 (2), 12–22.
- Campa, J., 1993. Entry by foreign firms in the United States under exchange rate uncertainty. *The Review of Economics and Statistics* 75 (4), 614–622.
- Carland, J.W., Hoy, F., Boulton, W.R., Carland, J.C., 1984. Differentiating entrepreneurs from small business owners: a conceptualization. *Academy of Management Review* 9, 354–359.
- Castrogiovanni, G.J., 2002. Organization task environments: have they changed fundamentally over time. *Journal of Management* 28 (2), 129–150.
- Chandler, G.N., Hanks, S.H., 1993. Market attractiveness, resource-based capabilities, venture strategies, and venture performance. *Journal Business Venturing* 9, 331–349.
- Cohen, J., Cohen, P., 1987. *Applied Multiple Regression/Correlation Analyses for The Behavioral Sciences*, 3rd ed. Lawrence Erlbaum, Hillsdale, NJ.
- Conger, J.A., 1999. Charismatic transformational leadership in organizations: an insider's perspective on these developing streams of research. *Leadership Quarterly* 10 (2), 145–179.
- Conger, J.A., Kanungo, R., 1987. Toward a behavior theory of charismatic leadership in organizational settings. *Academy of Management Review* 12, 637–647.
- Cox, J.F., Pearce, C.L., Sims, H.P., 2003. Toward a broader agenda for leadership development: extending the traditional transactional–transformational duality by developing directive, empowering and shared leadership skills. In: Riggio, R.E., Murphy, S. (Eds.), *The Future of Leadership Development*. Lawrence Erlbaum, Mahwah, NJ, pp. 161–180.
- Den Hartog, D.N., House, R.J., Hanges, P.J., Ruiz-Quintanilla, S.A., Dorfman, P.W., et al., 1999. Cultural specific and cross-culturally generalizable implicit leadership theories: are attributes of charismatic/transformational leadership universally endorsed? *Leadership Quarterly* 10 (2), 219–256.
- Dess, G.G., Beard, D.W., 1984. Dimensions of organizational task environments. *Administrative Science Quarterly* 29, 52–73.
- Duncan, R.B., 1972. Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly* 17, 313–327.
- Eisenhardt, K.M., 1989. Making fast strategic decisions in high-velocity environments. *Academy of Management Journal* 32 (3), 543–576.
- Fiedler, F., 1986. The contribution of cognitive resources and leader behavior to organizational performance. *Journal of Applied Social Psychology* 16, 532–548.
- Finkelstein, S., Hambrick, D.C., 1996. *Strategic Leadership: Top Executives and Their Effects on Organizations*. West, Minneapolis, MN.
- Folta, T.B., 1998. Governance and uncertainty: the trade-off between administrative control and commitment. *Strategic Management Journal* 19 (11), 1007–1028.
- Folta, T.B., Miller, K.D., 2002. Real options in equity partnerships. *Strategic Management Journal* 23 (1), 77–88.
- Gartner, W., 1988. Who is an entrepreneur? Is the wrong question. *American Journal of Small Business* 12 (4), 11–32.
- Glick, W.H., Miller, C.C., Huber, G.P., 1993. The impact of upper echelon diversity on organizational performance. In: Huber, G.P., Glick, W.H. (Eds.), *Organizational Change and Redesign: Ideas and Insights for Improving Performance*. Oxford University Press, New York, pp. 176–214.
- Hambrick, D.C., Mason, P.A., 1984. Upper echelons: the organization as a reflection of its top managers. *Academy of Management Review* 9, 193–206.
- Harrison, R., 1987. Harnessing personal energy: how companies can inspire employees. *Organizational Dynamics* 16 (2), 5–20.

- Homburg, C., Krohmer, H., Workman, J.P., 1999. Strategic consensus and performance: the role of strategy type and market-related dynamism. *Strategic Management Journal* 20, 339–357.
- James, L.R., Demaree, R.G., Wolf, G., 1993. Rwg: an assessment of within-group interrater agreement. *Journal of Applied Psychology* 78 (2), 306–309.
- Jenkins, W.O., 1947. A review of leadership studies with particular reference to military problems. *Psychological Bulletin* 44, 54–79.
- Judge, W.Q., Miller, A., 1991. Antecedents and outcomes of decision speed in different environmental contexts. *Academy of Management Journal* 34, 449–463.
- Keats, B.W., Hitt, M.A., 1988. A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal* 31, 570–598.
- Kerr, S., Jermier, J., 1978. Substitutes for leadership: their meaning and measurement. *Organizational Behavior and Human Performance* 22, 375–403.
- Kirkpatrick, S.A., Wofford, J.C., Baum, J.R., 2002. Measuring motive imagery contained in the vision statement. *Leadership Quarterly* 13, 139–150.
- Kirzner, I., 1997. Entrepreneurial discovery and the competitive market process: an Austrian approach. *Journal of Economic Literature* 35, 60–85.
- Kogut, B., 1991. Joint ventures and the option to expand and acquire. *Management Science* 37, 19–33.
- Kouzes, J.M., Posner, B.Z., 1987. *The Leadership Challenge: How to Get Extraordinary Things Done in Organizations*. Jossey-Bass, San Francisco.
- Leach, E., 2003. The entrepreneurship dynamic: origins of entrepreneurship and the evolution of industries. *Canadian Journal of Administrative Sciences* 20 (1), 87–98.
- Li, M., Simerly, R.L., 1998. The moderating effect of environmental dynamism on the ownership and performance relationship. *Strategic Management Journal* 19, 169–179.
- Maslow, A.H., 1954. *Motivation and Personality*. Harper, New York.
- McDougall, P., 1987. *An Analysis of New Venture Business Level Strategy, Entry Barriers, and New Venture Origins as Factors Explaining New Venture Performance*. Unpublished Doctoral Dissertation, University of South Carolina, Columbia.
- McClelland, D., 1961. *The Achieving Society*. Van Nostrand, Princeton, NJ.
- McGuire, J., Schneeweis, T., Hill, J., 1986. An analysis of alternative measures of strategic performance. *Advances in Strategic Management*. JAI Press, New York, pp. 124–156.
- Minniti, M., Bygrave, W., 2001. A dynamic model of entrepreneurial learning. *Entrepreneurship Theory and Practice* 25 (3), 12–17.
- Mitchell, T.R., James, L.R., 2001. Building better theory: time and the specification of when things happen. *Academy of Management Review* 26 (4), 530–547.
- Osborn, R.N., Hunt, J.G., Jauch, L.R., 2002. Toward a contextual theory of leadership. *Leadership Quarterly* 13, 797–837.
- Pawar, B.S., Eastman, K.K., 1997. The nature and implications of contextual influences on transformational leadership: a conceptual examination. *Academy of Management Review* 22 (1), 80–109.
- Pearce, C.L., 2004. The future of leadership: combining vertical and shared leadership to transform knowledge work. *Academy of Management Executive* 18 (1), 47–57.
- Pearce, C.L., Conger, J.A. (Eds.), 2003. *Shared Leadership: Reframing the Hows and Whys Leadership*. Sage Publications, Thousand Oaks, CA.
- Pearce, C.L., Sims Jr., H.P., 2002. Vertical versus shared leadership as predictors of the effectiveness of change management teams: an examination of aversive, directive, transactional, transformational, and empowering leader behaviors. *Group Dynamics, Theory, Research, and Practice* 6 (2), 172–197.
- Pearce, C.L., Sims, H.P., Cox, J.F., Ball, G., Schnell, E., Smith, K.A., Trevino, L., 2003. Transactors, transformers and beyond: a multi-method development of a theoretical typology of leadership. *Journal of Management Development* 22 (4), 273–307.
- Podsakoff, P.M., Bommer, W.H., 1996. Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors. *Journal of Management* 22 (2), 259–298.
- Priem, R.L., 1990. Top management group factors, consensus, and firm performance. *Strategic Management Journal* 11, 469–478.

- Priem, R.L., Rasheed, A.M.A., Kotulic, A.G., 1995. Rationality in strategic decision processes, environmental dynamism and firm performance. *Journal of Management* 21 (5), 913–929.
- Quinn, R.E., 1988. *Beyond Rational Management: Mastering the Paradoxes and Competing Demands of High Performance*. Jossey-Bass, San Francisco.
- Sandberg, W.R., 1986. *New Venture Performance: The Role of Strategy and Industry Structure*. D.C. Heath and Company, Lexington, MA.
- Sathe, V., 2003. *Corporate Entrepreneurship: Top Managers and New Business Creation*. Cambridge University Press, Cambridge.
- Schaefer, A.D., Kenny, J.T., Bost, J.E., 1990. Performance measures and strategy: a review, critique, and extension. *Advances in Marketing*, 152–157.
- Sharfman, M., Dean, J., 1991. Conceptualizing and measuring the organizational environment: a multi-dimensional approach. *Journal of Management* 17 (4), 681–700.
- Shaver, K., Scott, L., 1991. Person, process, choice: the psychology of new venture creation. *Entrepreneurship Theory and Practice* 16 (2), 23–45.
- Simon, H.A., 1955. A behavioral model of rational choice. *Quarterly Journal of Economics* 69 (1), 99–119.
- Sims, H.P., Manz, C.C., 1984. Observing leader verbal behavior: toward reciprocal determinism in leadership theory. *Journal of Applied Psychology* 69, 222–232.
- Smilor, R.W., 1997. Entrepreneurship: reflections on a subversive activity. *Journal of Business Venturing* 12 (5), 341–346.
- Smith, K.A., Smith, K.A., Olian, J.D., Sims, H.P., O'Bannon, D.P., Scully, J.A., 1994. Top management team demography and process: the role of social integration and communication. *Administrative Science Quarterly* 39, 412–433.
- Sosik, J.J., 1997. Effects of transformational leadership and anonymity on idea generation in computer-mediated groups. *Group and Organization Management* 22 (4), 460–487.
- Stevenson, H., Harmeling, S., 1990. Entrepreneurial management's need for a more "chaotic" theory. *Journal of Business Venturing* 5 (1), 1–14.
- Stogdill, R.M., 1974. *Handbook of Leadership: A Survey of The Literature*. Free Press, New York.
- Tushman, M., 1979. Work characteristics and sub-unit communication structure: a contingency analysis. *Administrative Science Quarterly* 24, 82–97.
- Vecchio, R.P., 2003. Entrepreneurship and leadership: common trends and common threads. *Human Resource Management Review* 13 (2), 329–346.
- Vinnell, R., Hamilton, R., 1999. A historical perspective on small firm development. *Entrepreneurship Theory and Practice* 23 (4), 5–18.
- Waldman, D.A., Ramirez, G.G., House, R.J., Puranam, P., 2001. Does leadership matter? CEO leadership attributes and profitability under conditions of perceived environmental uncertainty. *Academy of Management Journal* 44 (1), 134–143.
- Wofford, J.C., Liska, L.J., 1993. Path-goal theories of leadership: a meta analysis. *Journal of Management* 19, 858–876.
- Wofford, J.C., Goodwin, V.L., Whittington, J.L., 1998. A field study of a cognitive approach to understanding transformational and transactional leadership. *Leadership Quarterly* 9 (1), 55–84.
- Yammarino, F.J., Spangler, W.D., Dubinsky, A.J., 1998. Transformational and contingent reward leadership: individual, dyad, and group levels of analysis. *Leadership Quarterly* 9 (1), 27–54.
- Yukl, G., 1999. An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. *Leadership Quarterly* 10, 285–305.
- Yukl, G., 2002. *Leadership in Organizations*. Prentice Hall, Upper Saddle River, NJ.