The Relationship of Entrepreneurial Traits, Skill, and Motivation to Subsequent Venture Growth

J. Robert Baum and Edwin A. Locke
University of Maryland

Previous research on entrepreneurship as well as goal, social–cognitive, and leadership theories has guided hypotheses regarding the relationship between entrepreneurial traits and skill (passion, tenacity, and new resource skill) and situationally specific motivation (communicated vision, self-efficacy, and goals) to subsequent venture growth. Data from 229 entrepreneur–chief executive officers and 106 associates in a single industry were obtained in a 6-year longitudinal study. Structural equation modeling revealed a web of relationships that impact venture growth. Goals, self-efficacy, and communicated vision had direct effects on venture growth, and these factors mediated the effects of passion, tenacity, and new resource skill on subsequent growth. Furthermore, communicated vision and self-efficacy were related to goals, and tenacity was related to new resource skill.

The important role of entrepreneurial activity for the conversion of technological and organizational innovation into new and more efficient products and services is well known (Schumpeter, 1934). Also, new businesses created sufficient new job growth during the 1980s and 1990s to overcome the elimination of over five million jobs in big business (Kirchhoff, 1997). However, more than 50% of new ventures terminate within 5 years (Aldrich, 1999); thus, it is important to understand the factors that drive new venture success.

Personality traits, organizational factors, and environmental factors have been studied by entrepreneurship researchers as causes of new venture success; however, from 1961 to 1990, research about entrepreneurs' traits found only weak effects (Aldrich & Wiedenmayer, 1993). The weak results for traits were surprising because new venture financiers and entrepreneurs themselves pointed to entrepreneurs' personal characteristics as dominant reasons for success (Sexton, 2001; Smith & Smith, 2000). Recently, a growing cohort of psychology-based researchers has renewed interest in entrepreneurs' personal characteristics as predictors of success by moving beyond the past focus on traits to study competencies, motivation, cognition, and behavior. More complex models, better research tools, and concepts that are closer to performance in terms of causality have been used (Baron, 1998; Baum, Locke, & Smith, 2001; Busenitz & Barney, 1997; Mitchell, Smith, Seawright, & Morse, 2000).

This study contributes to the revival of interest in understanding the effects of entrepreneurs' personal characteristics. Our empirical research extends and refines Baum et al.'s (2001) 2-year study of the effects of five categories of personal, organizational, and environmental factors on new venture growth that challenged entrepreneurship researchers' shift to external (organizational and environmental) explanations of new venture performance (Gartner, 1989). The Baum et al. (2001) study argued that entrepreneurship researchers' conclusion that personal characteristics are unimportant for new venture performance missed important indirect effects and personal characteristics other than traits. Baum et al. (2001) amalgamated the following: (a) three environmental variables (dynamicism, munificence, and complexity) to create an environment factor; (b) four strategic management variables (strategic focus, low cost, innovation, and quality differentiation) to create an organization-level factor; and (c) 10 personal characteristics to create a trait, skill, and motivation composite. For example, the motivation category is a combination of goals, self-efficacy, and vision; therefore, the relationships among goals, self-efficacy, and vision and their relationships with other individual difference variables were not examined. Baum et al. (2001) found that motivation and organization factors have direct effects on new venture performance; however, the effects of the trait and skill composite factors were indirect through motivation and organizational factors.

The present study supports the case for attention to entrepreneurs' personal characteristics; it involved the following six refinements, improvements, and extensions over Baum et al.'s (2001) study, using data from that study plus follow-up data.

1. Rather than using broad categories or factors, we used individual variables to analyze the separate effects and interrelationships among personal characteristics.
2. We used a 6-year follow-up compared with the previous 2-year period to provide a greater challenge to the proposed model of entrepreneurship characteristics.
3. We added the study of a situationally specific new resource skill, which is more oriented toward entrepreneurs' work than the general competencies studied by Baum et al. (2001). New resource skill is the ability to acquire and systematize the operating resources needed to start and grow an organization. For example, the
founder of a leading growth firm in our sample exhibited new resource skill when he convinced the manufacturer of a new laser wood-cutting machine to give him the prototype machine plus a year of free factory supervision and maintenance in return for 3 years of promotion and demonstration of the new machine to potential buyers.

4. We used an expanded measure of vision that reflected communication of the vision.

5. We included only growth-oriented founders—owners who managed their young ventures. In contrast to Baum et al. (2001) we excluded purchasers of established businesses, absentee founders, and founders-managers of mature businesses. This is consistent with researchers’ recent suggestions that entrepreneurship research focus on those who discover and exploit new products, new processes, and new ways of organizing rather than on those who manage established businesses or those who manage businesses they did not create (Davidson, Low, & Wright, 2001; Shane & Venkataraman, 2000; Zahra, Ireland, & Hitt, 2000). This narrow definition of the entrepreneur may provide a more homogeneous set of subjects and better represent the entrepreneurial essence (Timmons, 2000).

We chose venture growth as the outcome for this study rather than other types of performance (e.g., entrepreneurs’ personal satisfaction, rate of commercialized innovation, or improvements in market efficiency) because venture growth is the firm-level outcome that reflects personal and market performance gains (Kirzner, 1985). Venture growth causes valuable economic and social gains, including job creation (Aldrich, 1999), and venture growth is a measurable and well-understood venture goal according to Kirzner (1985). Covin and Slevin (1997) explained that venture growth is the essence of entrepreneurship.

Theory and Hypotheses

The Relationship of Traits to Subsequent Venture Growth

Early entrepreneurship research focused on finding general traits and motives of successful entrepreneurs (Brockhaus, 1980). Researchers hoped that personality screening could help entrepreneurs avoid personal disappointment and could help nations avoid wasted resources (McClelland, 1965). However, research about the most significant traits in terms of their correlation with venture performance (need for achievement, locus of control, and risk-taking propensity) found weak (though not always null) results (Aldrich & Wiedenmayer, 1993). For example, Johnson’s (1990) meta-analysis concluded that need for achievement was the most significant trait predictor of new venture performance; however, he found that less than 7% of the variance in new venture performance is explained by this motive. Researchers concluded that the study of entrepreneurs’ personal characteristics was a dead-end strategy (Gartner, 1989).

On the basis of their review of the literature, Carsrud and Krueger (1995) suggested that need for achievement (McClelland, 1965), risk-taking propensity (Brockhaus, 1980), and internal locus of control (Sexton & Bowman, 1986) are the wrong traits for empirical study; therefore, we first reviewed other traits and motives that were referenced repeatedly by contemporary leadership researchers and entrepreneurship theorists as important for success (Huse & Shamir, 1993). Second, we reviewed the resultant trait candidates and rejected those that had produced discouraging results in entrepreneurship or leadership quantitative studies. Among the remaining trait candidates, we selected those that empower individuals who face challenges that are caused by characteristics of the entrepreneur’s situation: (a) extreme uncertainty (newness of products, markets, and organizations; lack of information), (b) resource shortages (financing, knowledge, operating assets, and legitimacy), (c) surprises, and (d) rapid change. To cope with these challenges, we believed that entrepreneurs had to genuinely love their work and be tenacious about pursuing their goals given the many obstacles they would face. Thus, passion and tenacity seemed most promising in terms of leadership and entrepreneurship theoretical support (Locke, 2000; Yukl, 1989) even though there had been no previous quantitative tests using these variables as predictors of entrepreneurship performance. Indeed, there were no empirical studies of passion.

Passion for work, or love of one’s work, has been identified in a qualitative analysis by Locke (2000) as a core characteristic of great wealth creators, such as Michael Bloomberg, Bill Gates, Ken Iverson (Nucor), and Mary Kay Ash (Mary Kay). These entrepreneurs confronted opportunity and challenges with fervor and ardor. Their enthusiasm for a type of business—their zeal for work—was so intense that they worked through financial barriers (Gates and Iverson) and challenges to their new products and their new ways of marketing (Ash). Smilor (1997) suggested that passion is “perhaps the most observed phenomenon of the entrepreneurial process” (p. 342), and Bird (1989) noted that entrepreneurial behavior is “passionate, full of emotional energy, drive, and spirit” (pp. 7–8).

We measured passion for work in terms of the emotions of love, attachment, and longing; however, passion can be witnessed over time in the long hours worked during venture start-up and growth phases and in the tendency for entrepreneurs to experience their venture’s successes and difficulties as personal events. Leadership researchers (Bass & Stogdill, 1990; House & Shamir, 1993) have claimed that passion for work is a characteristic of successful business leaders, and passion is relevant in the entrepreneurship setting because it drives entrepreneurs to face extreme uncertainty and resource shortages (Timmons, 2000).

Tenacity, or perseverance, is a trait that involves sustaining goal-directed action and energy even when faced with obstacles. In addition to being associated with successful leadership (Bass & Stogdill, 1990; House & Shamir, 1993; Locke, 2000), tenacity has been identified consistently as an archetypical entrepreneurship
trait because the business start-up process involves confrontation of formidable barriers to market entry (Gartner, Gatewood, & Shaver, 1991). There are no quantitative tests of the effects of tenacity on venture performance. Markman, Baron, and Balkin (2001) found that inventors who started new ventures have more tenacity than inventors who chose to be employees of established organizations; however, they did not study whether tenacity is related to performance among entrepreneurs. Entrepreneurs who hold stubbornly to their goals and who hate to give up increase their chances of start-up survival and success (Timmons, 2000). Thus, we hypothesized that passion and tenacity are direct predictors of subsequent venture growth.

Hypothesis 1a: The greater the entrepreneur–chief executive officer’s (CEO) passion for work, the greater the subsequent venture growth will be.

Hypothesis 1b: The greater the entrepreneur–CEO’s tenacity, the greater the subsequent venture growth will be.

The Relationship of New Resource Skill to Subsequent Venture Growth

We introduce new resource skill in this study, defining it as the ability to acquire and systematize the operating resources needed to start and grow an organization. Entrepreneurs’ new resource skill involves finding capital and human resources and setting up new operations and new systems (Bhide, 2000; Stevenson, 1985). Successful entrepreneurs must know how to search for and acquire financial and human resources, even while confronting new markets, resource shortages, and extreme uncertainty (Bhide, 2000; Smith & Smith, 2000; Stevenson, 1985).

It may appear that new resource skill is similar to organizational skill, as studied in Baum et al. (2001); however, organizational skill is defined there as a general management skill involving oral presentation, use of power, diagnosis, and decision making. It involves managing established resources in established settings. In comparison, we conceive of new resource skill as relating to resources that are new to the organization. The entrepreneur’s skill with integration, or systematization, of resources may make or break a start-up. Indeed, entrepreneurship has been described as the acquisition, combination, and redeployment of resources to provide new products and services through new organizations to new markets (Bygrave, 1993). Furthermore, Smith and Smith (2000) suggested that entrepreneurs’ successful efforts to arrange and organize resources are predictors of new venture success. Indeed, founders often experience limited growth because they lack new resource skill or fail to employ individuals who are skilled with resources (Timmons, 2000). Thus, we hypothesized direct effects upon venture growth.

Hypothesis 1c: The greater the entrepreneur–CEO’s new resource skill, the greater the subsequent venture growth will be.

The Relationship of Traits to New Resource Skill

We propose that traits affect new resource skill. Krampe and Ericsson (1996) suggested that traits affect specific skills such as expert musical and athletic performance. Although they did not test this relationship empirically, they noted that it takes tenacity and conscientiousness to practice a musical instrument for years and years, and they showed empirically that deliberate practice is a strong predictor of expert musical performance. Similarly, Krampe and Ericsson proposed, but did not test, that experts’ passion for the domain of their expertise impacts their amount of deliberate practice. Furthermore, Boyatzis (1982) found relationships between traits and specific skills among 8 of the 19 skills he studied; however, he did not study new resource skill. We propose that tenacity and passion will increase entrepreneurs’ skill with resource acquisition and systematization.

Hypothesis 2a: The greater the entrepreneur–CEO’s passion for work, the greater the entrepreneur–CEO’s new resource skill will be.

Hypothesis 2b: The greater the entrepreneur–CEO’s tenacity, the greater the entrepreneur–CEO’s new resource skill will be.

The Relationship of Situationally Specific Motivation to Venture Growth

Situationally specific motivation differs from traits and motives in that the former is not dispositional but focuses on the task and situation at hand. The literature suggests that at least three motivation factors impact business performance: vision, goals, and self-efficacy (Bandura, 1997; House & Shamir, 1993; Locke & Latham, 1990).

Communicated vision. Vision is a projected mental image of what a leader wants to achieve (Bass & Stogdill, 1990). Vision is a distant general goal, thus, it is motivational. It reflects the values and/or outcomes to which an organization should aspire (House & Shamir, 1993). An organization’s vision can be formal or informal, even privately held. Collins and Porras (1991) pointed to the positive effects of vision on organization performance.

Larwood, Falbe, Kriger, and Miesing (1995) conducted an empirical study of vision content and found that content is related to the amount of control executives exercise over their firms and the rate of organizational change. However, Larwood et al. did not study the relationship of vision content to organizational performance. Previous studies of the independent effects of vision on task performance have taken place only in the laboratory (Howell & Frost, 1989; Kirkpatrick & Locke, 1996).

Entrepreneurs have visions of the companies they want to build that include images of growing businesses, fame, and personal wealth (Bird, 1989). We studied entrepreneurs’ situationally specific vision in terms of the entrepreneur’s focus on new venture growth. Although vision content may include many concepts, we focused on vision content that paralleled the outcome variable of interest, venture growth. In Baum et al.’s (2001) study, vision was only part of a larger composite. That study also did not include vision communication.

We believe that communication of the vision is as important as vision content alone for motivating high venture performance. Entrepreneurs may communicate their vision through their behavior (Bandura, 1986); however, an entrepreneur’s vision can inspire more directly through speeches, pep talks, and written presentations (Tichy & Devanna, 1986). Communicated vision may help
align entrepreneur–employee goals (Locke, 2001). Baum, Locke, and Kirkpatrick (1998) reported the positive effects of communicated vision alone on growth; however, they studied only a 2-year period. Thus, we combined two separate but theoretically related dimensions of the entrepreneur’s vision motivation process: (a) references to and implications for growth in the vision itself and (b) showing and telling this vision to employees. (We also examined the effects of vision in the absence of communication.)

It is possible for entrepreneurs to have visions with high growth content and fail to communicate it, and well-communicated visions may have little growth content. Nevertheless, we believe that big dreamers are big communicators and that vision communication will occur with visions for high growth because big dreamers need support from employees and resource constituents to achieve their dreams. Even the most introverted inventor must convince others to help with commercialization (Timmons, 2000). Taken together, we propose that highly communicated vision growth content will predict high venture growth.

**Hypothesis 3a:** The greater the communicated venture growth content of the entrepreneur–CEO’s vision, the greater the subsequent venture growth will be.

**Self-efficacy.** The core concept in social–cognitive theory is self-efficacy, defined as task-specific self-confidence (Bandura, 1997). Self-efficacy reflects not only past experience and attainment but, more important, the conclusion one draws about one’s capacity for performance attainment from these past experiences. Self-efficacy indicates feelings of capability, so it is a useful indicator of action in the entrepreneurship setting in which outcomes are highly uncertain. Those individuals who are confident that they have the requisite entrepreneurship capabilities (in terms of risk-taking and business expansion) are more likely to choose an entrepreneurship career (C. C. Chen, Greene, & Crick, 1998). By extension, we believe that founders who are more confident about their entrepreneurial abilities will achieve greater new venture growth:

**Hypothesis 3b:** The greater the entrepreneur–CEO’s self-efficacy about venture growth, the greater the subsequent venture growth will be.

**Goals.** Goal theory proposes that specific, challenging goals lead to higher performance than other types of goals. No other theory of motivation has deeper or broader empirical support at the individual, group, and unit level (Landy & Becker, 1987; Locke & Latham, 1990, 2002). Entrepreneurship researchers cite goals as an important factor in venture growth (Covin & Slevin, 1997) and new venture survival (Carsrud & Krueger, 1995); however, this is the first empirical study to measure the independent effects of goals among entrepreneurs.

**Hypothesis 3c:** The higher the entrepreneur–CEO’s goals for venture growth, the higher the subsequent venture growth will be.

Because entrepreneurs choose their own goals, we assumed that they would be committed to them; and because they own their businesses, we assumed that they receive regular feedback about progress. Therefore, these two goal mediators were not measured.

The Relationship of Communicated Vision and Self-Efficacy to Goals

The relationship of communicated vision to goals. We believe that the motivation concepts studied here are interrelated. Specifically, we propose that communicated vision and self-efficacy affect goals. Collins and Porras (1991) defined vision, in part, as an image of the future based on general, long-term goals. Because we define goals as near-term objectives, we suggest that entrepreneurs’ near-term goals are based at least partly on their vision. Entrepreneurship texts prescribe this sequential tactic for entrepreneurs’ creation of business plans (Timmons, 2000). New venture financiers encourage nascent entrepreneurs to create their long-term vision for their new company, derive and present their business strategies, and finally, offer short-term goals or benchmarks as proof of their preparation for resource acquisition and systematization (Smith & Smith, 2000). Because goals mark the steps along the way to achievement of the vision, we propose that more challenging visions generate more challenging goals.

**Hypothesis 4a:** The more challenging the communicated venture growth content of the entrepreneur–CEO’s vision, the more challenging the goals for venture growth will be.

The relationship of self-efficacy to goals. Much prior research in nonentrepreneurship settings has found that high self-efficacy predicts high goals (Bandura, 1997; Locke & Latham, 1990) and that goals are partial mediators of the effects of self-efficacy on task performance (G. Chen, Gully, Whiteman, & Kilcullen, 2000). Thus, we hypothesized the following:

**Hypothesis 4b:** The higher the entrepreneur–CEO’s self-efficacy about venture growth, the higher the goals for subsequent venture growth will be.

The Relationship of Traits to Communicated Vision, Self-Efficacy, and Goals

The relationship of passion and tenacity to communicated vision. To our knowledge, there is no empirical research regarding the relationship of passion or tenacity to vision; however, leadership theorists have empirical evidence that related traits such as energy and proactiveness predict leadership behaviors such as vision (House & Shamir, 1993). Also, proposals whose vision reflects the values of the organization leader (Collins & Porras, 1991) support our view that passion and tenacity affect vision, because values and traits may affect vision through similar processes. Indeed, Filion (1991) observed that entrepreneurs, whose personal values had become integrated in their venture’s vision, were personally committed to and passionate about their venture’s vision. Thus, we expect that those entrepreneurs who have a passionate love of their work will have a vision of more venture growth because their passion will express itself through ambitious and challenging undertakings. Furthermore, we believe that (a) the small, simple structures of new ventures and (b) the control held by founders make it possible for entrepreneurs’ personal traits to influence the content and intensity of the entrepreneur’s vision. We also believe that entrepreneurs’ tenacity will be reflected in their communi-
The relationship of new resource skill to communicated achievement. Thus, we propose the following:

**Hypothesis 5a:** The greater the entrepreneur–CEO’s passion, the greater the communicated venture growth content of the vision will be.

**Hypothesis 5b:** The greater the entrepreneur–CEO’s tenacity, the greater the communicated venture growth content of the vision will be.

The relationship of passion and tenacity to self-efficacy. Bandura (1997) argued against using omnibus traits as sole predictors of action because they are not situationally specific. In his view, trait effects are mediated through their effects on more specific processes such as self-efficacy. Those who passionately love their work are likely to acquire skill at it, which enhances their efficacy beliefs. Similarly, tenacious striving should improve capability and therefore self-efficacy. Thus, we propose the following:

**Hypothesis 6a:** The greater the entrepreneur–CEO’s passion for work, the higher the self-efficacy about venture growth will be.

**Hypothesis 6b:** The greater the entrepreneur–CEO’s tenacity, the higher the self-efficacy about venture growth will be.

The relationship of passion and tenacity to goals. Locke (2001) has shown that situationally specific goals can mediate the effects of general traits on performance outcomes. Entrepreneurship theorists propose that the entrepreneur’s goals are reflections of his or her personality (Naffziger, 1995). Some traits (value for achievement, self-esteem, and locus of control) have shown relationships to goal difficulty, commitment, and self-set goals (Locke & Latham, 1990); however, the relationship of goals to passion and tenacity has not been tested. We propose that those who have a passion for work derive pleasure from challenging goals and will set higher goals for venture growth. Furthermore, we propose that tenacious people will set higher goals because their toughness and persistence signal their interest in high achievement.

**Hypothesis 7a:** The greater the entrepreneur–CEO’s passion, the higher the goals for subsequent venture growth will be.

**Hypothesis 7b:** The greater the entrepreneur–CEO’s tenacity, the higher the goals for subsequent venture growth will be.

The Relationship of New Resource Skill to Communicated Vision, Self Efficacy, and Goals

The relationship of new resource skill to communicated vision. Entrepreneurs’ new resource skill involves the ability to acquire financing, assemble a team, acquire facilities and equipment, and set up systematic operations to exploit a new business idea. We propose that entrepreneur–CEOs with high new resource skill will create and communicate visions with high venture growth content because their images of a better future are generated with more confidence based on having necessary competencies. Thus, possession of new resource skill removes constraints on the scale of the dream that is captured in the vision.

New resource skill also includes ownership of an array of strategies to acquire resources including the knowledge that big dreams must be communicated to resource providers, including financiers and employees. These strategies include inspirational vision communication to constituents who can contribute to realization of the dream (House & Shamir, 1993). For example, an entrepreneur who is skilled in attaining financing is probably better able to envision a high-growth company than an entrepreneur who does not know where to look for the first round of debt or equity financing. Furthermore, successful acquisition of new venture financing involves hours of communication including creation of business plans that include vision statements. Finally, entrepreneurs who are skilled at hiring new employees exploit candidates’ attraction to growing companies with images of opportunity-laden futures.

**Hypothesis 8a:** The greater the entrepreneur–CEO’s new resource skill, the greater the communicated venture growth content of the vision will be.

**Hypothesis 8b:** The greater the entrepreneur–CEO’s new resource skill, the greater the goals for subsequent venture growth will be.

The relationship of new resource skill to self-efficacy. Central in social–cognitive theory is the proposition that self-efficacy is affected by enactive mastery, that is, skill through practice (Bandura, 1997). At the root of this proposition is that people are more confident about task performance when they believe they have sufficient skill due to experience or deliberate practice. We expect that entrepreneur–CEOs who have new resource skill will recognize their competency and hold beliefs about their ability to create and guide their organization to growth.

**Hypothesis 8c:** The greater the entrepreneur–CEO’s new resource skill, the greater the self-efficacy for subsequent venture growth will be.

The hypotheses (and results) are shown in Figure 1. In Figure 1, we propose that the trait and skill variables shown in the left column (passion, new resource skill, and tenacity) have direct effects on venture growth and indirect effects on growth through the motivation variables that are shown in the middle column (communicated vision, goals, and self-efficacy). The motivation variables are mediators, but they also have direct effects on venture growth. The hypothesized paths among the trait and skill variables and among the motivation variables are also shown. The four control variables are arrayed in the right column.
Sample

North American architectural woodwork firms comprised the population for the study (standard industrial classification 2421, 2431, and 2434). These firms employ architects, skilled woodworkers, applied technologists, high-tech machinery operators, carpentry installers, managers, and salespersons. A complete list of industry members was formed from data provided by the Architectural Woodwork Institute in Centreville, Virginia, and the National Hardwood Lumber Association in Washington, DC. In 1993, the industry’s 849 CEOs were asked to return a response card if they were willing to participate, and they were asked to identify a subordinate employee with whom they worked directly. Four hundred forty-two CEOs were willing to participate, and they were asked to identify a subordinate employee-participants (EPs) agreed to participate.

1993 questionnaire. A questionnaire was mailed in 1993 to each of the CEOs and EPs who had agreed to participate. The CEO questionnaire included measures of the six predictor concepts (passion, tenacity, new resource skill, communicated vision, goals, and self-efficacy), four control variables, and 1991 and 1992 performance data (the 1991 performance data were collected for calculation of the past venture growth control variable). The measures had been developed and tested using a trial of a draft questionnaire by 16 industry CEOs and the suggestions they made during subsequent structured interviews. All of the data for measurement of latent independent variables were collected in 1993. EPs received a questionnaire that included measures of the predictor concepts (except for CEOs’ self-efficacy, which is privately held).

We received 414 CEO responses (414/849 = 49% of the population) and 189 EP responses (189/849 = 22% of the population). We performed \( z \) tests of the mean number of employees and the mean sales volume of the 414 respondents versus the means of the population of 849. The tests showed no significant difference between (a) the mean number of employees \( (z = .32, p < .38) \) or (b) the mean sales volume \( (z = 1.00, p < .16) \). There were no significant differences in employment or sales among the 189 CEOs for whom we had EP responses and the 225 for whom we had no EP responses.

1999 questionnaire. A second questionnaire was mailed in 1999 to the 1993 CEO participants to collect 1998 performance data. Taking the two questionnaires together, we disqualified 185 CEO responses from (a) single-employee firms, (b) CEOs who had not founded their businesses, (c) founders who did not intend to grow their business, (d) founders who were not the same active owner–manager for the 6-year study period, (e) founders who had established their businesses more than 6 years before 1993, (f) founders who sold or merged their firms to others, and (g) those who supplied incomplete predictor data.

Thus, the elimination of 185 CEO responses from the 414 received yielded a sample of 229 entrepreneur–CEOs for this study (229/849 = 27% of the population or 229/414 = 55% of the respondents). The average participant had 6 employees in 1993 and 20 in 1998. Average sales increased from $0.8 million in 1993 to $2.4 million in 1998. We accepted 106 responding EPs (46% of the qualified entrepreneur–CEO sample of 229) because they had worked with their matching qualified entrepreneur–CEOs for 12 months or more, had submitted complete data, and had reported that they knew their CEO well. The average CEO–EP relationship was 6 years, so it is likely that accepted EPs could evaluate their CEO’s passion for work, new resource skill, tenacity, vision, and goals. (We guaranteed confidentiality to the CEOs and their EPs.)

Measures

Table 1 summarizes the measurement model latent variables, number of measurement items, measurement description and format, and composite reliability (CR). CR is a structural equation model (SEM) reliability statistic (LISREL 8 and PRELIS 2) that is conceptually similar to alpha (see Note 6 of Table 1); it should exceed .60 for exploratory model testing (Hayduk, 1987). The format and content of the measurement items were guided by the research cited with each latent variable and adapted following the 16 industry CEO interviews.典型 measurement items are presented in the following text, and the complete questionnaire is available from J. Robert Baum.

Venture growth. Venture growth was measured with two items using data from the 1993 and 1999 questionnaires: (CR = .94): (a) the compound annual sales-growth rate from year-end 1992 to year-end 1998, which covers 6 years, and (b) the compound annual employment-growth rate from year-end 1992 to year-end 1998. Despite follow-up efforts, 18 of the entrepreneur–CEOs who qualified for the sample in all other respects had incomplete 1992 performance data and 10 had incomplete 1998 data. These cases were completed with data supplied by Dun and Bradstreet (1994, 2001). The accuracy of the raw performance data was confirmed by checking the agreement of a random sample of 25 of the firms with Dun and Bradstreet (1994) reports about 1992 performance. (the \( t \) tests revealed no significant differences between the CEO reports and the Dun and Bradstreet data).
Table 1

Measurement Model

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>No. of items</th>
<th>Format*</th>
<th>CRb</th>
<th>Research reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture growth</td>
<td>2</td>
<td>6-year sales &amp; employment</td>
<td>.94</td>
<td>Low &amp; MacMillan (1988)</td>
</tr>
<tr>
<td>Passion</td>
<td>5</td>
<td>5-point scales</td>
<td>.86</td>
<td>Locke (1993)</td>
</tr>
<tr>
<td>Tenacity</td>
<td>5</td>
<td>5-point scales</td>
<td>.83</td>
<td>Gartner, Gateswood, &amp; Shaver, (1991)</td>
</tr>
<tr>
<td>New resource skill</td>
<td>5</td>
<td>5-point scales</td>
<td>.73</td>
<td>Stevenson (1985)</td>
</tr>
<tr>
<td>Communicated vision</td>
<td>2</td>
<td>2 ratings plus 2 yes or no questions</td>
<td>.83</td>
<td>Baum, Locke, &amp; Kirkpatrick (1998)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>2</td>
<td>8-point scales</td>
<td>.89</td>
<td>Bandura (1997)</td>
</tr>
<tr>
<td>Age</td>
<td>1</td>
<td>1992-year founded</td>
<td>1.00</td>
<td>Low &amp; MacMillan (1988)</td>
</tr>
<tr>
<td>Size</td>
<td>1</td>
<td>1992 employees</td>
<td>1.00</td>
<td>Pugh, Hickson, Hining, &amp; Turner (1968)</td>
</tr>
<tr>
<td>Regional munificence</td>
<td>4</td>
<td>5-point scales</td>
<td>.70</td>
<td>Hambrick &amp; Finkelstein (1987)</td>
</tr>
</tbody>
</table>

Note. *See Method section for details. b Composite reliability (CR), an indication of internal consistency, is the sum of the square roots of the item-squared multiple correlations squared and divided by the same quantity plus the sum of the error variances (Werts, Linn, & Joreskog, 1974).

Bradtstreet reports.) Zero percentage sales and employment growth were assigned to 58 firms that had closed after their 1993 participation. **Passion for work.** Five 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree), were used to measure passion for work (CR = .86). Examples are “I love my work” and “I look forward to returning to work when I am away from work.” These statements were derived from descriptions of real entrepreneurs’ passion in Locke’s (1993) study.

**Tenacity.** Tenacity was measured with five 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree; CR = .83). Examples are “I can think of many times when I persisted with work when others quit” and “I continue to work hard on projects even when others oppose me” (Gartner et al., 1991).

**New resource skill.** New resource skill was measured with five 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree; CR = .73). Examples are “I am good at finding money and people to start a new organization or new program” and “I know how to find the resources that we need” (Gartner et al., 1991).

**Communicated vision.** Respondents were asked to write out their company vision or to enclose a copy or it. An author and a PhD student interested in vision research and experienced in terms of written content analysis both evaluated the vision statements using an 11-point scale that reflected the degree of reference to growth. An author provided guidelines for the raters to score visions as follows: Visions that referred directly to high growth of sales, employment, market share, or financial strength were scored 8, 9, or 10. Visions with implications of growth or references to modest growth were scored 4, 5, or 6. Visions with no implications of or references to growth were scored 0, 1, 2, or 3 (Baum et al., 1998; the blind coder correlation was .77, p < .001). In addition, the respondents completed two items about vision communication: “Does your company have a written vision?” and “Have you talked to your employees about your vision for the company in the last 6 months?” The ratings of the two content raters were added and standardized. The questionnaire responses to the two communication questions were added (yes = 1; no = 0) and standardized. The two resulting standardized scores were the two items that reflected the latent-variable communicated vision (CR = .83; the size of the item coefficients was similar: λ = .82 and .86; both λ / standard error > 2.0).

**Goals.** In 1993, we had CEOs report their annual goals for sales and employment for 1993, 1994, and 1995. We measured goals with (a) the average annual sales growth-rate goal based on the reported sales goals and (b) the average annual employment growth-rate goal based on the reported employment goals (CR = .75; Locke & Latham, 1990).

**Self-efficacy.** Entrepreneur–CEO self-efficacy was measured in 1993 with two 8-point self-assessment scale questions (CR = .89; one each for sales and number of employees). Examples are “Thinking about your skills, write a number from the confidence scale ranging from 0 (no confidence at all) to 7 (complete confidence), to show how sure you are that you can beat each listed percentage change in annual sales from year-end 1992 to year-end 1995.” The respondents recorded their confidence in achieving average annual rates of growth from ~25% or more to 100% or more (Bandura, 1997). We used a parallel scale for employment. The scores entered on the scale about sales were summed to yield the first measure of self-efficacy, and the employment scores were summed to yield the second measure. The two sums were used in the measurement model.

**Controls.** Age and size variables consistently exhibit significant relationships with firm performance (Pugh, Hickson, Hining, & Turner, 1968), although they seldom do so in studies of very early-stage new ventures (i.e., 0 – 4 years old; Low & MacMillan, 1988). Nevertheless, we wanted to isolate any variance that may not have been involved in the relationships between the independent and dependent variables of the study. Thus, venture age was measured as the number of years from founding to the end of 1992, and venture size was measured with the number of full-time equivalent employees at the end of 1992. We introduced a control variable for regional industry munificence. Munificence is the environment’s support for organizational growth in terms of market demand, community support, availability of financial resources, and competitive threats (Hambrick & Finkelstein, 1987). Munificence was measured with CEO responses that used four 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree; CR = .70). A typical scale item is “Our region is rich in investment capital.” We were concerned that the 6-year venture growth studied may have been an artifact of past venture growth, so we included two items to isolate the variance of past venture growth (CR = .89): (a) the percentage change in sales between 1991 and 1992 [(1992/1991) −1.0], and (b) the percentage change in employment between 1991 and 1992 [(1992/1991) −1.0]. (For firms founded during 1991, 12-month 1991 sales and employment data were imputed from monthly data.) We also conducted a single-industry study to avoid confounding by industry-specific conditions.

**Results.**

The measurement model had eight latent variables with CR > .80 and three latent variables with CR between .70 and .79, and all measurement-item coefficients were significant (λ > 2.0; p < .05). Taken together, these statistics suggest that the measurement items are reliable reflections of their latent variables (Hayduk, 1987). There were three statistical indications that the measurement model had discriminant validity:
1. We subjected the scale items to a principal-components analysis using varimax rotation (Harman, 1967). From this exploratory factor analysis, six factors emerged with average item loading > .75. (The factors represented passion, tenacity, new resource skill, vision communication, self-efficacy, and munificence.) The remaining measurement-model items were either objective (goals, company age, historic sales, and historic employment) or were scored by raters (vision content).

2. For each latent variable, the average variance extracted by the latent variable’s measures was larger than the latent variable’s shared variance with any other latent variable (Fornell & Larcker, 1981).

3. The highest bivariate correlation between predictor variables was .42 (See Table 1; Jones, Lanctot, & Teegen, 2000).

Common-source bias was checked with two procedures:

1. We conducted a confirmatory factor analysis using the 229 CEO responses by linking a common latent variable with the measures. The resultant coefficient ($\lambda = .03; t = .31; p < .74$) indicated that common variance was less than 2%. 2. The principal components varimax rotation of the scale items that were reflections of six latent variables had only three cross loadings above .25. (The highest was .37.) There appeared to be little threat that common-source bias was a problem.

We checked the statistical similarity of responses from CEOs and their EPs for the 106 matching cases to support our claim that the 106 CEO responses were corroborated by their associates. Furthermore, we used multiple sample analysis (LISREL MSA) of the 106 CEO and 106 EP latent-variable matrices to analyze the similarity of covariance matrices across samples (Jöreskog & Sörbom, 1993). We set the lambda, iota, and theta matrices equal to zero for both samples, which forced variances into the phi matrix. We then tested the hypothesis that the phi matrices were equal by minimizing the fit function across the two. A $\chi^2(6, N = 2) = 7.96$ resulted. With the equality constraint relaxed, the chi-square value dropped to 4.82, so the hypothesis of equal latent-variable relationships was tenable. This process is similar to one that would involve comparison of a single descriptor of a set of relations derived from pooled data with a single descriptor of a set of relations derived from independent data. If there is little difference between the two descriptors, similarity is indicated.

Following the LISREL MSA procedure, we also found statistical similarity across the covariance matrix responses from CEOs with EPs ($n = 106$) and without EPs ($n = 123$). The fit function with the equality constraint produced $\chi^2(6, N = 2) = 8.44$. With the equality constraint lifted, the chi-square value dropped to 5.04, so the equality hypothesis was supported.

The finding that the covariance matrices of the responses from the 106 CEOs and the 106 EPs are similar is not surprising given the strong univariate similarity results. Because the matrices of the responses from CEOs and without EPs are similar, we would expect univariate similarity between the response matrices from the 123 CEOs and their EPs had we collected matching EP data. Taken together, these tests support our claim that the CEOs offered valid representations of their personal and venture characteristics.

The descriptive statistics (means, standard deviations, and correlations) of the study variables are shown in Table 2. The results, including the lambda coefficients, of testing the hypothesized (research) model are shown in Figure 1. Fifteen of the 19 hypothesized paths had significant coefficients. The fit statistics for the resultant model (including the hypothesized but insignificant paths) fit the data well: goodness-of-fit index = .93; adjusted goodness-of-fit index = .90; root-mean-square residual = .049; root-mean-square error of approximation = .07; and expected cross-validation index = .89. Also, the chi-square statistic for the model, $\chi^2(28, N = 229) = 66.12$, $p < .00$, was significantly smaller than was the chi-square statistic for the structural null model in which the paths among the study’s variables were all set.

Table 2
Means, Standard Deviations, and Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Venture growth</td>
<td>0.11</td>
<td>0.36</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Passion</td>
<td>3.73</td>
<td>0.49</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Tenacity</td>
<td>3.45</td>
<td>0.33</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4. New resource skill</td>
<td>4.0</td>
<td>0.99</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Communicated vision</td>
<td>2.91</td>
<td>1.16</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6. Self-efficacy</td>
<td>3.63</td>
<td>0.50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7. Goals</td>
<td>0.16</td>
<td>0.40</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8. Age</td>
<td>3.58</td>
<td>1.15</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9. Size</td>
<td>6.28</td>
<td>5.17</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>10. Regional munificence</td>
<td>3.73</td>
<td>0.51</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>11. Past venture growth</td>
<td>0.07</td>
<td>0.15</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. $N = 229$.
*p < .05. **p < .01. ***p < .001.
to equal zero, $\chi^2(49, N = 229) = 1,241.16$. Thirty five percent of the variance was explained. Furthermore, the fit of the model was significantly better than a model with direct effects only, which explained 31% of the variance; $\chi^2(41, N = 2) = 102.07, p < .00$; goodness-of-fit index = .90; adjusted goodness-of-fit index = .86; root-mean-square residual = .05; root-mean-square error of approximation = .086; expected cross-validation index = .82. As expected, fit statistics improved when insignificant paths were removed from the model; however, we present the hypothesized model in Figure 1, complete with insignificant hypothesized paths, to help us emphasize the importance of the indirect effects of traits and skill.

There were no significant direct paths ($p < .05$) from passion, tenacity, or new resource skill to venture growth; thus Hypotheses 1a, 1b, and 1c were not supported (trait and skill direct effects). Passion was unrelated to new resource skill, thus failing to support Hypothesis 2a; however, Hypothesis 2b was supported in that tenacity was significantly related to new resource skill ($\lambda = .14$). Communicated vision ($\lambda = .22$), goals ($\lambda = .26$), and self-efficacy ($\lambda = .34$) had significant paths to venture growth, thus supporting Hypotheses 3a, 3b, and 3c. The paths from vision ($\lambda = .28$) and self-efficacy ($\lambda = .22$) to goals were also significant, thus supporting Hypotheses 4a and 4b. Finally, all paths from traits and skill to the motivation variables were significant. To repeat in detail, the paths from passion ($\lambda = .13$), new resource skill ($\lambda = .24$), and tenacity ($\lambda = .12$) to vision; the paths from passion ($\lambda = .14$), new resource skill ($\lambda = .21$), and tenacity ($\lambda = .15$) to goals; and the paths from passion ($\lambda = .23$), new resource skill ($\lambda = .19$), and tenacity ($\lambda = .22$) to self-efficacy were all significant, thus supporting Hypotheses 5a, 5b, 6a, 6b, 7a, 7b, 8a, 8b, and 8c.

We present totally standardized SEM results, so the relative size of the lambda coefficients points to the relative size of the effects. Of course, measurement quality affects the size of effects, and it is not appropriate to focus on one coefficient in a recursive indirect-effects model as if the other coefficients were fixed. Nevertheless, with caution, it is interesting to note that self-efficacy had the strongest direct effect on venture growth among the predictor variables. Indeed, there was no stronger relationship among any of the study variables. Vision and goals were also highly significant predictors of venture growth ($p < .01$), and vision had a highly significant relationship with goals. In summary, the motivation cluster studied here is a highly significant predictor of subsequent venture growth. The relationships between passion and tenacity and self-efficacy and between new resource skill and vision stand out as very significant but not as significant as the motivation to venture growth effects.

Our vision variable was composed of measures of venture growth content and separate measures of vision communication. We reran our analysis to see how well vision growth content alone predicted growth, and we found a reduction in the standardized lambda coefficient between vision and venture growth and a statistically significant reduction in the chi-square fit statistic. Also, the correlation between the vision growth content item (a standardized combination of the two rater scores) and the vision communication item (a standardized combination of the two questions about communication) was high ($r = .51; p < .001$), and the two-item CR was .79. Taken together, we found that entrepreneurs who tend to have dreams of significant growth tend to communicate their dreams, and we found that the joint tendency predicts venture growth better than either vision content or vision communication alone.

Goals that are set too high inspire risk taking that may lead to reduced performance (Knight, Durham, & Locke, 2001). Thus, we checked for a U-shaped relationship between goals and venture growth. We ran a regression analysis, with venture sales growth as the dependent variable and both sales-growth goals and sales-growth goals squared as independent variables to test for nonlinearity. The sales-growth goals squared term did not develop a significant coefficient ($\beta = .025; t = 0.24; p < .81$).

### Discussion and Conclusion

There are seven theoretical and applied contributions of this study. The most important finding of this study is that specific component variables of entrepreneurs’ traits, skill, and motivation categories are significant direct or indirect predictors of venture growth for a period of 6 years following initial measurement. Such long-term follow-up periods are quite rare in industrial–organizational psychology. A notable exception is the study by Howard and Bray (1988), who were able to predict managerial promotions over a 25-year period. However, the only motivational predictor of note in their study was a personal ambition factor that focused on how many managerial levels the managers wanted to move up in their organization rather than on organization performance. In the present study, in contrast, we found that a variegated but interrelated set of motivational traits and concepts (along with skill) work in concert to affect performance. Findings that the situationally specific motivation concepts studied here have strong direct effects on venture growth are fully consistent with previous applied psychology and social psychology research (Bandura, 1997; Baum et al., 1998; Locke & Latham, 1990). The positive effects for goals and self-efficacy are consistent with the results of hundreds of performance studies. Of course, at times goals may be set so high that risk taking is increased; although increasing risk may sometimes lead to high performance (Knight et al., 2001), it can also lead to disaster when the risks are foolish. Similarly, self-efficacy is usually beneficial to performance (Bandura, 1997), but overconfidence can be harmful when it is based on conditions and assumptions that no longer hold true (Audia, Locke, & Smith, 2000).

Second, the findings for communicated vision are of particular interest. Although the concept of vision is widely discussed in the leadership literature, this is the first study in which communicated vision was shown to be independently and quantitatively related to performance in a field setting over a multiyear period. Vision had not only an indirect effect on growth through specific goals but also a direct effect. Vision in our study was measured in terms of growth aspirations or imagery—which were most logically related to the dependent variable. Firm growth, however, is not the only outcome measure of relevance to CEOs, regardless of whether they are entrepreneurs. Profitability, survival, career satisfaction, and innovation are other potential dependent variables that could be studied in future research. Obviously CEO visions could be explored in more depth, possibly through interviews, and different scoring criteria could be applied, especially when other dependent variables are of interest.

It should be noted that in the literature, the term vision is used in a wider sense than as just a general goal. Locke (2000) defined
vision as foresight, seeing the potential of some market, technology, product, or service; by implication, vision includes strategic vision—how the company competes successfully in the market. This aspect of vision clearly requires study. Indeed, vision has been defined from various viewpoints, and its meaning in common usage is evolving. Therefore, it is important to note that our findings for vision relate to business vision as our respondents understood the concept. Furthermore, we measured one specific feature of the respondents’ vision—the references and implications for distant future growth. Thus, we measured vision as a long-term goal, and the positive findings of this study for vision must be interpreted as support for the use of long-term goals.

Third, the finding that passion and tenacity had no direct effect on venture performance suggests that the weak results of previous studies of entrepreneurial traits may not have been caused by studying the wrong traits but by the fact that the traits have indirect rather than direct effects. In this respect, our results agree with Baum et al.’s (2001), in which aggregated trait effects were indirect. These results are also in concert with Locke’s (2001) review (mostly of laboratory studies) in which he found that personality and other general motivational effects on performance are mediated by the situationally and task-specific factors of goals and self-efficacy. Thus, it is not the case that traits have small or no explanatory power but that their effects are through specific, nontrait mechanisms, such as goals, efficacy, and vision.

If traits affect action mainly through other variables, it could be worthwhile to study both additional traits and additional mediators. This is especially relevant considering that the LISREL model accounted for only 35% of the variance in performance. For example, it may be useful to study some of the Big Five personality traits, including those that have been identified as “entrepreneurial” (Lumpkin & Dess, 1996). Extraversion, which is related to energy and ambition, would seem especially relevant. Conscientiousness might also play a role in firm growth even though it is not a specifically entrepreneurial trait. Core evaluations, which form a singly higher order factor consisting of self-esteem, general self-efficacy, internal locus of control, and nonneuroticism, have been found to have a variety of relationships with satisfaction, job and task choice, and performance (Erez & Judge, 2001), but core evaluations have not yet been studied in relation to entrepreneurs.

A fourth contribution of the present study is that it was conducted at the macro level. The dependent variable was not individual performance but the performance of the venture as a whole. Of course, in the case of relatively small companies like those used in the present study, the entrepreneur–CEO tends to have direct influence on every aspect of the business. Thus, what the entrepreneur–CEO thinks and wants tends to affect organizational outcomes more directly than in the case of larger organizations. The same may be true of entrepreneur–CEO skills. Here, new resource skill worked through motivational mechanisms, but such skill may also operate through situationally specific skills as well. In large organizations, in contrast, there may be many more links among the CEO’s vision, traits and goals, and organizational performance in that the actions of thousands or hundreds of thousands of employees and many management layers have to be coordinated to achieve the desired outcomes.

Fifth, these results have practical implications for facilitating venture growth. The trait findings are relevant to selection that could be relevant to venture capitalists who have to decide which applicants to fund. Self-efficacy is best developed through enactive mastery (Bandura, 1997) that comes from training and experience. Such experience can be deliberately chosen by the potential entrepreneur to build needed skills or it can be mandated by venture capitalists as a condition of funding. Visioning and goal-setting skills can be trained.

Sixth, we added to knowledge about entrepreneurship with this first empirical study of new resource skill. Our finding that new resource skill inspires more challenging visions of new venture growth, higher growth goals, and self-efficacy points to the importance of new resource skill for entrepreneurs’ motivation, and motivation variables are direct predictors of venture growth. Because experience is a known predictor of skill, our results for new resource skill may support a more complete explanation of why serial and habitual entrepreneurs are more reliable founders of successful businesses (Wright, Westhead, & Sohl, 1998).

Organization skill was used in an earlier version of this study, but we replaced it with new resource skill, a related concept, because new resource skill is more relevant to the new venture situation. That is, organization skill involves management of established resources rather than skill in assembling and organizing new resources. Nevertheless, we found in the earlier version that organization skill is a significant indirect predictor of venture growth through goals and self-efficacy. Results in this study show that new resource skill is a much stronger predictor of subsequent venture growth because of more significant indirect effects through vision, goals, and self-efficacy. In addition, new resource skill is a significant direct predictor of venture growth at \( p < .10 \), whereas organization skill had no significant direct effects at any acceptable level of significance. Details about measurement of organization skill and its effects on venture growth are available from J. Robert Baum.

Seventh, the significant correlation between tenacity and organizing skill also deserves further study in the entrepreneurship setting. Indeed, Boyatzis (1982) proposed that managers’ traits are manifested in their competencies because traits affect behavior and repeated behaviors build skill. For example, it would be useful to find out whether tenacious entrepreneurs develop increased organizing competency because they work harder and longer than those with less tenacity. This would be consistent with findings about the relationship between personality and skill development.

Limitations

First, analysis of a single industry provides control of industry effects and may add richness and clarity; however, entrepreneur-ship researchers have found that industry characteristics affect venture performance (Bhide, 2000). Thus, other industries should be studied. Second, we used SEM because it addressed our need to analyze multiple mediating paths, multiple measures of observed variables, unobserved variables, and measurement error. Nevertheless, we used regression analysis to test the potential U-shaped relationship between goals and venture growth because SEM assumes linear relationships. Future research may uncover additional nonlinear effects that we did not model.

Third, a larger sample of CEO–EP pairs would have allowed us to check our model with a fully verified set of CEO responses; we hope that future studies will respond to this shortcoming. Furthermore, the difference between the fit of the direct-effects model and
the total-effects model is statistically significant but moderate in absolute terms. Although our finding provides confidence that the indirect model is a better description of our data than the direct-effects model, the moderate absolute difference (35% explained variance vs. 31%) suggests that practitioners should be cautious about application of the indirect effects found here. Larger samples may mitigate the need for caution. However, practitioners may be confident about the findings from this study’s sample that motivation variables are important direct predictors of subsequent venture growth and that entrepreneurs’ personal characteristics matter for venture growth. Fourth, although we reviewed various literatures in search of relevant specific traits and skill for study, other traits and skills, as noted above, may be important. Fifth, this was a correlational study and not an experimental study. The longitudinal design combined with controls for past performance, company age, and company size gives some plausibility to a predictor interpretation of the results; however, we cannot rule out the possibility that our variables both affected and were affected by past performance (e.g., goals); thus, the causal relationships may be reciprocal.

Sixth, convenience motivated our choice of a 6-year time lag to challenge the model of entrepreneurship characteristics. Future research should look at other time lags to be certain that our findings are not unique to a 6-year follow-up period. Seventh, we chose to study venture growth to represent the force of dynamic capitalism; however, as we noted, there are other indicators of performance (personal satisfaction, survival, innovation, intangible assets) that must be studied. Eighth, there may be control variables relevant to firm performance that were not measured in our study. For example, regional variables such as investment capital and availability of skilled employees might favor certain regions over others. Ninth, the data were based on self-reports, but the measures did show convergent validity with EP reports, and a random sample of the performance data was validated against Dun and Bradstreet (1994, 2001) reports, suggesting that the self-report data were valid.

In conclusion, this 6-year study of the effects of traits, skill, and motivation offers support for recent research interest in personal characteristics as an explanation of new venture performance. We found that entrepreneurs’ passion, tenacity, and new resource skill affect venture growth through communicated vision, goals, and self-efficacy. The finding that personal characteristics matter opens significant opportunities for research exploration centered on the study of traits, skills, and mediators, and it points to the opportunities for psychology researchers within the entrepreneurship setting. Furthermore, personality assessment and skills and motivation training may have a role in development of entrepreneurs. Entrepreneurship education programs ought to teach vision-formation communication and goal setting. This study also confirms the soundness of financiers’ interest in entrepreneurs’ personal characteristics.

References


Received September 25, 2002
Revision received July 17, 2003
Accepted August 4, 2003