

Behavioral Criteria for Grounding Entrepreneurship Education and Training Programs: A Validation Study*

by Travor C. Brown and Dennis Hanlon

The entrepreneurship literature lacks a systematically developed and validated framework to ground educational programs. We previously developed behavioral observation scales (BOS) consisting of 9 dimensions and 47 behaviors. In this study, we validated the BOS using 12 performance measures and a national survey of 149 entrepreneurs. The BOS were found to be valid. All 9 BOS dimensions, as well as the total score on the BOS, correlated significantly with many of the 12 nonbehavioral performance measures. These BOS provide entrepreneurship education and educators with a validated and systematically developed instrument that can be used to appropriately ground education programs.

Introduction

New firms contribute disproportionately to innovation, productivity growth, and job creation, but few people in innovation-based economies feel they possess the capabilities to pursue an opportunity (Amorós and Bosma 2013). Higher education and a wide range of economic support agencies have responded with a proliferation of entrepreneurship programs aimed at increasing the supply of entrepreneurs and/or their probability of success. Though the impressive growth and progress of entrepreneurship education are well documented (Bécharde and Grégoire 2005; Katz 2003; Kuratko 2005; Solomon, Duffy, and

Tarabishy 2002), there is still no accepted paradigm for teaching entrepreneurship (Fiet 2000; Solomon, Fernald, and Dennis 2003), leading Rideout and Gray to observe: “E-ed appears to be one of those phenomena where action and intervention have raced far ahead of the theory and pedagogy and research needed to justify and explain it” (Rideout and Gray 2013, p. 346).

Research on entrepreneurship education and training has failed to provide much evidence that we are actually teaching the skills most important to future entrepreneurs (Edelman, Manolova, and Brush 2008) or that help create more or better entrepreneurs (Martin, McNally, and Kay 2013). With few empirical findings available to support entrepreneurship

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education design (Honig 2004), most of the linkages between entrepreneurship education and the real world remain underspecified (Vanevenhoven 2013), leaving researchers and educators far too frequently relying on a “taken for granted” position (Fayolle 2013, p. 692). Unfortunately, a “taken-for-granted” strategy is also a risky strategy. In the case of business education, for example, a recent study by Rubin and Dierdorff (2007) found that the managerial competencies considered most critical were least represented in MBA curricula.

At the heart of much of the controversy is a concern for relevance. In some cases, approaches to entrepreneurship education have failed to keep up with the rapidly changing environment (Neck and Greene 2011). In other cases, programs may lack personal relevance and fail to translate to the reality of the workplace (Kwong, Thompson, and Cheung 2012). In another study, Edelman, Manolova, and Brush (2008) found a discrepancy of over 40 percent between the start-up activities typically present in entrepreneurship textbooks and the activities practiced by nascent entrepreneurs.

The purpose of this paper addresses the concern that we may not be teaching entrepreneurs what they need to do to be successful. There is a gap between what is taught in entrepreneurship and what entrepreneurs do, and this gap is not being addressed by entrepreneurship education research (Fayolle 2013). Because entrepreneurs play a key role in the success of their firms, understanding what it is that successful entrepreneurs do that differentiates them from less effective entrepreneurs should provide the platform from which effective training and education programs are developed. Our understanding of the effective behaviors of entrepreneurs must be derived from systemically developed and validated frameworks (Edelman, Manolova, and Brush 2008, p. 57). In the present paper, we provide one empirically grounded and validated answer to the question of what should be taught to would-be entrepreneurs. It focuses on “what entrepreneurs need to be able to do,” or what behaviors they must demonstrate, in order to perform effectively.

The layout of our paper is as follows. We begin by discussing the relationship between the entrepreneur and firm performance. We then overview the behavioral observation scales (BOS; Latham and Wexley 1994) method

and a previous pilot study where we used the BOS method to develop an empirically grounded set of behaviors associated with entrepreneurial effectiveness. This is followed by our validation study and the implications of that validation study.

Performance: The Role of the Entrepreneur

The shift from studies of entrepreneurial personalities to studies of behavior had a significant and positive influence on research in the discipline, but one, perhaps unintended, effect was a shift away from individual behavior toward firm-level behavior (Höglund, Lundgren, and Songsong 1999). Subsequently, we have seen revitalized interest in the role and influence of the individual entrepreneur (Bird and Schjoedt 2009; Sarasvathy 2004; Shane and Venkataraman 2000), perhaps because organizations are ultimately created and sustained by the purposeful, intentional behaviors of entrepreneurs (Bird 1988). Clearly, what we teach entrepreneurs is important as they play a critical role in the success (or failure) of the firm. Though important outcomes in all organizations can be linked to their senior managers (Hambrick and Mason 1984), the impact of key individuals should be even greater in new firms given the limited influence of other factors (e.g., external stakeholders, corporate structure, and culture; Bird 1988). Thus, during the early stages of a venture, its primary resource is typically the human capital (experience, knowledge, skills, etc.) embodied in the entrepreneur (Alvarez and Busentiz 2001; Brush, Greene, and Hart 2001; Cooper, Ramacharan, and Schoorman 1998; Haber and Reichel 2007).

The importance of the behaviors performed by entrepreneurs is supported by a variety of work. Even though the management process in new and small firms differs from large, established firms (Mueller, Volery, and von Siemens 2012), entrepreneurs still must fulfill a variety of basic managerial functions (Jennings and Beaver 1997) for their firms to survive and prosper. The behaviors of the entrepreneur across different stages of firm development may overlap because of the presence of a common set of “core” functions (Mueller, Volery, and von Siemens 2012), yet each stage tends to bring its own particular set of management challenges (Solomon, Fernald, and Dennis 2003). As their roles evolve, so too do

the behaviors required of entrepreneurs (Mueller, Volery, and von Siemens 2012). Start-up entrepreneurs, for example, tend to spend less time on “routine” activities and more time on environmental monitoring, with a fairly discernible switch from “doing” to “managing” as the organization evolves (Mueller, Volery, and von Siemens 2012).

In order for a successful transition from one stage to the next to occur, the entrepreneur must recognize that a change in his or her behavior is needed. Entrepreneurs lacking critical competencies, however, may be unable to identify behaviors appropriate for the firm’s circumstances or be unable to execute such behaviors effectively, ultimately leading to firm failure. In the case of young firms, lack of management ability is often cited as a major reason for firm failure, leading banks and lending organizations to emphasize the assessment of the owner/manager when evaluating new business proposals (Martin and Staines 1994). Indeed, the importance placed on the ability of management is the most consistent finding from studies of venture capital fund manager decision-making (Mason and Stark 2004).

The foregoing suggests that entrepreneurship education must include elements related to both management and entrepreneurship.

A summary of comprehensive frameworks aimed at describing the sets of behaviors important to entrepreneurs and small and medium-sized enterprises (SMEs) appears in Table 1. Many of these frameworks were not systematically developed using empirical methods, but were based on literature reviews instead. The table also suggests that the field is disjointed, with little consensus evident. We believe several factors may account for the lack of consensus. First, different study contexts may result in categories being conceptualized at varying levels of abstraction. Second, where frameworks have been compiled from literature reviews, discrepancies may suggest a fragmented literature. Third, methodological differences often make it difficult to compare results across studies. Sampling strategies may have an especially large impact because competency requirements can vary across different stages of firm development. The overall picture that emerges is of a field lacking the empirical rigor needed to ground training and development programs. Such a state of affairs is hardly unique to the entrepreneurship field. For

decades, scholars have bemoaned the faddish tendencies and nonsystemic methods used in management training and education programs (Latham 1988). Fortunately, more recent reviews have shown improved rigor in such programs (Aguinis and Kraiger 2009).

In this paper, we seek to address the gap concerning the lack of systematically developed and validated frameworks available to ground entrepreneurship education programs. We looked at the broader organizational behavior/human resource management (OB/HRM) field to help us bridge this gap for several reasons. First, that discipline often examines issues related to individual performance and development as well as the link between individual performance and organizational effectiveness (Latham et al. 2005). Second, OB/HRM methods could avoid “reinventing the wheel.” Third, applying proven OB/HRM techniques could reveal new insights about which of the myriad of behaviors performed by entrepreneurs are especially critical for firm success. Finally, it answers the call of scholars to borrow techniques from other disciplines, particularly the OB field, to examine entrepreneurial behavior (Bird and Schjoedt 2009).

Performance: Insights from OB/HRM

For more than 40 years, OB/HRM researchers have advocated behavioral measures of performance developed using a systematic job analysis (Arvey and Murphy 1998; Campbell et al. 1970; Smith and Kendall 1963). Behavioral measures of performance describe the specific behaviors a person must perform to effectively perform the task.

BOS, and the items they include, are by definition a behavioral performance measure (Latham and Wexley 1994). The psychometric evidence concerning BOS is impressive. Extensive investigation indicates that BOS are reliable, valid, and legally defensible measures of individual performance (see review in Latham and Wexley 1994). BOS have high levels of inter-rater reliability and correlate with other nonbehavioral measures of performance (Brown and Latham 2006; Latham and Wexley 1977; Taggar and Brown 2001). For example, total BOS score (i.e., summing the frequency ratings across all BOS items) has been shown to correlate with other performance measures (Brown and Latham 2006; Latham and Wexley

Table 1
**Entrepreneurial and SME Management Behavior/
Competency Frameworks^a**

Study	Construct	Dimensions	Sample/Method	Dependent Variables
Bird, Schjoedt, and Baum (2012)	Exemplar entrepreneur behaviors	26 behaviors, for example: Time spent developing ties Problem solving Organizing Scanning frequency	Literature review of entrepreneurs' behavior research	n/a
Chandler and Hanks (1994)	Founder competencies	Entrepreneurial Managerial	New (≤ 10 years) manufacturing firms $n = 155$ Literature-based dimensions Hierarchical regression	Firm performance
Chandler and Jansen (1992)	Founder competencies	Human/conceptual Opportunity recognition Drive Technical/functional Political	New (mostly) firms in 5 industries $n = 134$ 21 items from literature Factor analysis Canonical discriminant analysis	Firm performance
Gasse and Amboise (1997)	Entrepreneurial–managerial competencies	Vision People management Operations Resources Strategies	SMEs $n = 47$ Literature-based model Qualitative analysis of interview data	Firm performance (growth)
Man et al. (2002, 2008)	Entrepreneurial competencies	Opportunity Relationship Conceptual Organizing Strategic Commitment	Theory development Literature-based 2008 single-industry study ($n = 153$) 68 items Factor analysis Revised to 10 competencies	Firm performance
Mueller et al. (2012)	Entrepreneurs work behavior	7 activities 10 functions	Literature-based	n/a
Orser, Cedzynski, and Thomas (2007)	Owner experience (precursor of competencies)	SME management. General management Fiscal Marketing Technology management Innovation	SMEs $n = 326$ 23 items from literature Structural equation modeling	Firm stage Growth intentions
Rathna and Vijaya (2009)	Competencies of entrepreneurs versus intrapreneurs	Managerial behavior Interpersonal behavior Decisive behavior Ethical behavior Venturing behavior Enterprising behavior Learning orientation	30 entrepreneurs and 30 intrapreneurs 121 items Literature-based Preexisting instrument	Importance Frequency
Sadler-Smith et al. (2003)	Managerial behaviors/competencies	Managing performance Entrepreneurial style Managing process Managing stakeholders Managing culture Managing vision Managing development	SMEs $n = 156$ 34 items from UK MCI senior manager Performance instrument Factor analysis	Entrepreneurial style Firm type (high versus low growth)
Thompson et al. (1996)	Competence domain groups for work performance excellence in top management team members	Overarching Sales and marketing Control Organization Technical innovation Human resources Inputs	SMEs $n = 30$ 36 items from RepGrid interviews Qualitative analysis	Work performance excellence

^an/a, not applicable.

1977; Taggar and Brown 2001). A core element of BOS is the five-point frequency assessment of each behavioral item. Other (non-BOS) methodologies have also assessed behavioral criteria using five-point frequency scales and report similar findings. For example, Latham, Wexley, and Rand (1975) found that behavioral criteria correlated with logger productivity, whereas Atwater et al.'s (2005) study of over 6,000 managers found that peer, subordinate, and self-ratings of leadership skills correlated with the level of a manager's competencies. Overall, evidence indicates that the frequency a person performs a behavior is a valid measure of performance.

BOS are also deemed highly effective for developmental purposes, such as the context of this study (Latham et al. 2005). Because they consist of behavioral items under the control of the individual, they provide users with the most accurate conception of the job (Wiersma, Van Den Berg, and Latham 1995). Users report that compared with other methods, BOS are better for giving feedback, easier to use, and better for setting goals (Wiersma, Van Den Berg, and Latham 1995).

Though a well-developed method, BOS, like all performance appraisal methods, have disadvantages. These include BOS being expensive and time-consuming to develop and that raters can lack the time and ability to assess the frequency of the behaviors (Jackson, Schuler, and Werner 2009). However, given the evidence presented in the OB/HRM field, we believed that the BOS method was a strong candidate for developing a set of entrepreneurial behaviors.

Method

Pilot Study: Developing the BOS

In an earlier study, we developed the BOS in accordance with Latham and Wexley's (1994) guidelines. As the method used was described in detail in that study (Brown and Hanlon 2004), we now present only a brief summary of the five-step procedure employed.

First, subject matter experts (award-winning entrepreneurs) took part in a critical incident job analysis. Critical incidents were based on the subject matter experts' observations of other effective and ineffective entrepreneurs rather than self-reports. In step two, the researchers grouped similar (or identical) critical incidents into a total of 47 behavioral items. These 47 items represented behaviors deemed

critical to effective entrepreneurship. The two researchers then acted as "sorters," clustering these 47 behavioral items into natural groupings or "dimensions." In total, they found nine behavioral criteria (or clusters/dimensions). The third step involved assessing the "fit" of the BOS structure using a second group of subject matter experts (called judges). When we compared the groupings of the step two "sorters" with those of the step three "judges," the model fit was acceptable. Content validity was then examined in step four by setting aside 10 percent of the original critical incidents and examining them to see if they described behaviors not present in the BOS. In our case, no new behaviors were found, suggesting that the BOS had content validity and that no behaviors were overlooked. In the final step, the five-point Likert-type scale used in BOS (1 = almost never; 5 = almost always) was attached to each behavioral item.

The resulting BOS (Table 2) consisted of 47 behavioral items grouped into 9 dimensions: (1) relevant background for chosen business, (2) opportunity identification, (3) dedication to business, (4) mobilizing support and resources from others, (5) strategic business development and growth, (6) financial management, (7) employee management, (8) marketing/customer relations management, and (9) negotiation and risk-taking.

A significant advantage of this scale versus other frameworks and scales (such as the ones presented in Table 1) is that the BOS were created using a systematic and empirically grounded method from the OB/HRM literature. Though we felt that this presented a significant contribution to the field, we believed that it was insufficient to ground entrepreneurial education programs as the BOS had not been fully validated. The need for validation motivated the present study.

The Current Validation Study

In the present study, we retained the original BOS language from our pilot study. As previously noted, BOS use the critical incident technique. The critical incident method is considered sound, and few modifications have been proposed over the past 50 years (Gremler 2004). The fact that behaviors are identified from the respondents' perspective, and in their own words, is considered a strength of the technique (Gremler 2004) and a best practice (Campion et al. 2011). The reliability of behav-

Table 2
Proposed BOS^a

Entrepreneurial (Start-Up)	Managerial (Early Growth)
<p><i>1: Relevant Background for Chosen Business</i> Has relevant education for chosen business Has necessary industry knowledge prior to starting business Possesses general business knowledge</p> <p><i>2: Opportunity Identification</i> Conducts adequate market research prior to business start-up Identifies a suitable market niche that can sustain the business Develops products/services to match market needs</p> <p><i>3: Dedication to Business</i> Devotes long hours to the business Is physically present and assumes responsibility for day-to-day management of the business Demonstrates a conviction that the business will succeed Perseveres in spite of business setbacks Motivates himself or herself Does whatever it takes to get the job done</p> <p><i>4: Mobilizing Support and Resources from Others</i> Is honest in his dealing with key stakeholders Establishes credibility at upstart of the business Acquires sufficient capital prior to business start-up Takes advice from others Seeks advice from experts Acquires people with the competencies needed for the business Covers off his or her weaknesses by acquiring people with complementary skill sets Builds relationships to facilitate business venture Acquires the necessary equipment to produce a quality product/service</p> <p><i>9: Negotiation and Risk-Taking</i> Ability to negotiate deal closure Takes calculated risks when appropriate business opportunity arises</p>	<p><i>5: Strategic Business Development and Growth</i> Starts small and gradually grows the business Expands the business by identifying new markets for products/services Sets goals for the business Avoids overreliance on one or two customers Maintains decision-making control of the business Has a clear vision of where the business is going Remains focused on core business Keeps focused on key business priorities Readily adapts to changing environment</p> <p><i>6: Financial Management Skills</i> Demonstrates the financial skills needed to effectively run the business Regularly keeps track of the business's financial position Maintains low levels of overhead Does not spend excessive amounts on luxury or personal items Maintains a debt level that the business can manage</p> <p><i>7: Employee Management</i> Treats employees fairly Communicates regularly with employees</p> <p><i>8: Marketing/Customer Relations Management</i> Builds effective relationships with customers Proactively and aggressively sells products/services Meets customer's expectations Delivers exemplary service by exceeding customer expectations Ensures a high-quality product/service Adapts services/products to changing market needs Advertises and promotes products/services Develops an effective marketing plan</p>

^aBOS, behavioral observation scales.

ioral criteria, as well as the validity of the incidents and the dimensions, is improved if the writing is in the jargon of the job (Atkin and Conlon 1978). Thus, it is not surprising that we found no evidence of respondents having difficulties with item wording. In the absence of evidence to the contrary, we use the BOS verbatim; we did not tamper with a strength of the method.¹

As we prepared to conduct the validation study, we noted that that some of the nine BOS dimensions applied to the entrepreneurial domain (e.g., the start-up phase), whereas others were more traditional managerial functions (e.g., early-growth phase; see Table 2). As shown by our pilot study, having different people group behavioral items to behavioral dimensions (and checking for agreement across the different individuals or groups) is a well-accepted method of aggregating behaviors. We thus used the Q-sort procedure (Brown 1980) to classify each BOS dimension as representing the start-up stage or early-growth stage of a venture (respondents were forced to choose; ties were not permitted). Five subject matter experts (all university entrepreneurship instructors) sorted the dimensions according to the venture's stage of development. Five dimensions (*relevant background for chosen business, opportunity identification, dedication to business, mobilizing support and resources from others, and negotiation and risk-taking*) were associated with the start-up stage and four dimensions (*strategic business development and growth, financial management, employee management, and marketing/customer relations management*) were classified as early growth, with 95 percent overall agreement among raters.

The BOS validation method is described by Latham and Wexley (1994). Fit is assessed by a statistical item analysis to determine whether any behavioral items should be removed from a BOS dimension. Criterion validity of BOS has been assessed by examining correlations

between BOS (a behavioral measure of performance) and nonbehavioral performance measures (e.g., amount of wood cut for loggers, Latham and Wexley 1977; student academic performance, Brown and Latham 2006; Taggar and Brown 2001). In the present study, we validated the BOS derived from the pilot study by: (1) assessing the underlying structure of the BOS using item analysis, (2) examining the criterion validity of the BOS in terms of the correlation between BOS and nonbehavioral measures of performance, and (3) using these results to determine if changes were needed in the BOS.

Sample

The sampling frame consisted of firms incorporated during a single month in Canada. A focus on companies enhanced the reliability of the study because incorporated entities must register with government, whose databases are comprehensive and inclusive. We solicited the cooperation of company registries in all 10 provinces and 2 territories. All but one province agreed to cooperate.

Additional restrictions were imposed to ensure the appropriateness of participating firms. First, we excluded preexisting, out-of-province firms (i.e., those merely seeking to register in another geographic territory). We also excluded holding companies because our interest was in operating companies. Finally, we excluded not-for-profit entities because many of the firm performance measures we used are less relevant to them. After these restrictions, the sampling frame consisted of 7,210 firms.

Procedure

We sent mail-out surveys to a random sample (stratified by province) of 4,781 firms six years following their incorporation. Thus, most firms had completed five fiscal years of operations since their inception. We chose this timeframe because we were interested in

¹Results of the frequency analysis reported later in the paper confirm that respondents were able to differentiate between behavioral frequencies. A subsequent study ($n = 38$) requesting small business owners to assist with fine-tuning the properties of the BOS instrument included two questions explicitly asking for the identification of any items "confusing or difficult to interpret." Only one item was cited by more than one respondent. Results indicated the negative wording associated with the financial item "Does not spend excessive amounts on luxury or personal items" may be potentially confusing, as two of three respondents citing this item noted "*double negative*" even though the wording was technically correct. Overall, there was strong support for the meaningfulness of all items.

identifying the key behaviors needed to build a robust, durable business (as opposed to achieving a launch only). Firms less than six (Ireland and Webb 2007) to eight (Bamford, Dean, and Douglas 2004) years old can be regarded as "new," and five years is an adequate time period to evaluate change and performance in new and small firms (Bracker and Pearson 1986; Hofer and Bygrave 1992).

Surveys were available in English and French. A reminder card was sent after two weeks. We searched the web to locate firms whose surveys were returned because of a wrong address; any firms we located received a follow-up telephone solicitation and a re-mailing of the survey.

Screening questions at the beginning of the questionnaire verified eligibility. Not-for-profits and firms in existence more than six months prior to incorporation were excluded. Excluding preexisting firms restricted the sample to new firms and contributed to the likelihood that firms in the sample faced a similar set of economic conditions during their history.

Additional conditions ensured the appropriateness of the survey respondent. First, the instructions indicated the survey should be completed by the person responsible for making the firm's key decisions. A subsequent question served as a check, asking respondents to indicate who was responsible for key decisions. Second, respondents had to have founded the firm individually or as a member of the founding team. Third, only respondents who held ownership in the firm at the time of founding were asked to complete the survey.

Measures

Behavioral Measures. The 47-item BOS presented our behavioral measures. As we did not want to bias respondents to the proposed nine-dimension structure, BOS items were presented randomly. Per the BOS procedure, respondents were asked to indicate the frequency (on a scale of 1 = almost never to 5 = almost always) they performed each behavior.

The use of self-BOS ratings was guided by past research and our study context, as using outside observers to rate the behaviors of entrepreneurs was not feasible. Ratings from supervisors or peers have been used in other studies (e.g., Atwater et al. 2005; Brown and Latham 2000) because the critical behaviors are generally performed in a workplace where they can be readily observed by others. In the case of

entrepreneurs, however, observers may not have sufficient opportunity to view the full scope of relevant behaviors. The problem is compounded by the fact that some behaviors could be expected to occur during prestart-up, before substantive engagement with employees and others. Moreover, some critical behaviors may occur in relative privacy, in the absence of any outside observer whatsoever.

Evidence indicates that self-ratings of behavioral performance correlate with ratings from outside observers (Atwater et al. 2005). Moreover, we incorporated factors to minimize the problems associated with self-reports. First, the frequency-based BOS items were nonevaluative and nonsensitive and therefore less prone to social desirability and other self-serving biases. Second, we specifically asked respondents to rate themselves from the perspective of a trusted advisor. Research confirms that this latter strategy minimizes social desirability bias (Schoorman and Mayer 2008).

Note that we, in a subsequent study using these BOS, asked small business owners ($n = 38$) to assist with fine-tuning the instrument. At that time, we also administered the Marlow-Crowne Social Desirability Scale (SDS) (short form; Strahan and Gerbasi 1972). Following Tzinger et al. (1996), we employed two criteria for detecting problematic items: (1) an item-total correlation of at least 0.55 and (2) a lack of significant correlation of the items with the SDS. We found no evidence of social desirability effects; item correlations ranged from -0.26 to 0.24 (mean 0.01), and none of the item correlations with the SDS were significant ($p > .10$). Overall, the precautions used (and the evidence provided) suggest that social desirability bias is not present.

Performance Criteria. BOS validation requires that BOS be validated against nonbehavioral performance measures. As business founder performance should be measured by the firm performance (Chandler and Hanks 1994; Schein 1987), we used 12 nonbehavioral measures of business performance. These 12 measures were grouped into four categories: start-up success, financial performance, operational performance, and a weighted average index.

Start-up success was measured by two variables: *number of employees in year 1* and *sales year 1*. The use of temporally proximate performance measures (Bamford, Dean, and Douglas 2004) helped to ensure the impact of

early behaviors would be detected in the event that some of the behaviors became less important over time.

The remaining 10 measures assessed financial and operational domains, providing a more complete picture of overall business performance (Venkatraman and Ramanujam 1986). With respect to financial outcomes, three variables assessed growth (*employee growth*, *objective sales growth*, and *subjective sales growth*) and three measured profitability/cash flow (*profit*, *cash flow*, and *personal income*). These variables were chosen because growth and profitability are the two most frequently investigated dimensions of financial performance (Carton and Hofer 2006).

Three criterion variables (*product/service quality*, *employee satisfaction*, and *customer satisfaction*) measured operational performance. Operational measures are especially useful in conjunction with financial performance measures “when they provide information about opportunities that have been created, but not yet financially realized” (Carton and Hofer 2006, p. 42). Measures of operational performance can also help to circumvent the “black box” problem by revealing key operational success factors that might lead to financial performance (Venkatraman and Ramanujam 1986).

Of the 12 performance measures, 4 were objective and 8 were subjective. The four objective measures were *number of employees in year 1*, *employee growth*, *sales year 1*, and *sales growth*. The total number of employees in a firm was calculated by converting the four job categories on the survey to full-time job equivalents: 1 point per permanent full-time position, 0.50 points per permanent part-time position, 0.50 points per contractual full-time position, and 0.25 points per contractual part-time position. Employee growth was measured as the increase in the number of employees (permanent full-time, permanent part-time, contractual full-time, contractual part-time) from the firm’s first fiscal year to the most recent fiscal year; for most firms in our sample, this covered the first five years of operations. The number of

full-time employees was used to control for initial firm size. In order to normalize the distribution, a logarithmic transformation was used. Year 1 sales revenue was measured by six categories (1 = <\$100k; 2 = \$100k–249k; 3 = \$250–499k; 4 = \$500k–999k; 5 = \$1M–5M; 6 = >\$5M). For sales growth, participants indicated which of the seven categories best presented their sales growth over the past five years (0 = not applicable; 1 = <5 percent; 2 = between 5 and 9 percent; 3 = between 10 and 19 percent; 4 = between 20 and 34 percent; 5 = between 35 and 50 percent; 6 = >50 percent).²

The eight subjective indicators of performance took into account the differing goals of entrepreneurs (Downey and Ireland 1988). Subjective measures assessed respondents’ satisfaction with a performance dimension because satisfaction with performance has been shown to have a high disclosure rate, strong internal consistency, and relatively strong inter-rater reliability (Chandler and Hanks 1993). The subjective indicators, most of which were adapted from Gupta and Govindarajan (1982), included *sales growth*, *net profit*, *product/service quality*, *cash flow*, *employee satisfaction*, *customer satisfaction*, and *personal income*. We assessed each using a seven-point Likert-type scale (1 = not satisfied, 7 = extremely satisfied). We specifically varied the response scale here as changing response categories has been argued to reduce survey fatigue (Kervin 1992).

The eighth subjective measure consisted of a weighted index of overall subjective performance. Entrepreneurs rated the importance of each subjective performance dimension (on a scale of 1 = no importance to 5 = extremely important). Using the data on dimensional importance as weights, a weighted-average subjective performance index was constructed for each firm.

Owners of privately held firms are the sole gatekeepers of performance information (Dess and Robinson 1984). Consequently, our performance criteria were based on self-report data, which other research has shown to possess

²We provided an “n/a” category to avoid having to use negative labels like “loss” or “decline.” Our coding rule here was to treat an “n/a” response as missing data unless we were able to verify that the firm also experienced zero or negative employee growth; in the latter instances, we coded the response as “0.” All instances of “n/a” turned out to warrant a coding of 0. We were unable to identify any plausible alternate interpretations of an “n/a” response.

good accuracy and reliability for both recent and past years (Brush and Vanderwerf 1992; Chandler and Hanks 1993).

Results

Sample Composition

We received 329 completed surveys. According to Baldwin et al.'s (2000) seminal work on survival rates for young Canadian firms, only 31 percent of the surveyed firms would be expected to be in existence at the time of the survey. Thus, we estimate that only 1,482 of the firms to which we mailed surveys were still in existence; the 329 surveys returned represent 22 percent of our estimate of "available" firms.^{3,4} Given that response rates of 11–12 percent are not unusual for large-scale mail surveys of existing SMEs (c.f. Julien and Ramangalahy 2003; Westhead, Ucbasaran, and Wright 2005), the response rate appears acceptable. Of the 329 completed surveys, 134 firms were eliminated by the screening questions (i.e., preexisting firms, nonprofit entities). Imposing the additional constraints guiding the eligibility of individual respondents (responsible for key decisions, founder/member of founding team, ownership at the time of start-up) reduced the final sample to 149 surveys.

Among qualifying firms ($n = 149$), the mean firm size was 8.02 employees. On average, respondents (and their spouses) owned 83.3 percent of the firm at the time of start-up and the majority (66.9 percent) had completed a postsecondary education program. Females comprised 17.8 percent of the respondents whereas 82.2 percent were male. Firms were distributed across all industry categories, with the largest frequencies observed in "other" (e.g., consulting, film, software development, etc., 27.2 percent), business services (21.1 percent), and construction (14.3 percent) categories.

Because reliable data concerning the demographics of firms incorporated during the period of interest do not exist, few tests for sample bias were possible. We did run two

such tests. The first test examined nonresponse bias by geographic region (east, central, west) and was not significant. A second test considered the potential for performance differences in nonrespondents. It is plausible that entrepreneurs less likely to respond would be those who are too busy trying to either survive or keep up with the growth of their businesses. We assessed the potential for response bias by comparing early and late responders (c.f. Armstrong and Overton 1977; Dean, Shook, and Payne 2007). The first and last third of the respondents were compared using *t*-tests on each of the 12 performance measures. No significant differences were found.

BOS Analysis

The BOS analysis consisted of several steps. First, we ran frequencies on all 47 items. This was done as some BOS items may be critical for effective performance yet be performed so frequently (or infrequently) that they fail to differentiate effective from ineffective performance (Latham and Wexley 1994). Latham and Wexley (1994) give an example of when over 90 percent of ratees received the same score on the five-point scale and only two of the five-scale points were used, as evidence of insufficient variation. In our study, only three items had distributions where the frequency on any one-scale point was more than 65 percent (namely, 65.8 percent, 70.5 percent, and 82.8 percent) and all but one had responses for all points on the five-point frequency scale (the exception had responses on four-scale points). Thus, all BOS items demonstrated adequate variation and "passed" Latham and Wexley's variance test.

Second, following Latham and Wexley (1994), we assessed the BOS structure by treating each BOS dimension as a scale and examining the internal consistency (or reliability) of each dimension using item analysis.⁵

Correlations between single items and total scale scores of 0.30 are typically considered "good" (Nunnally 1978). Our analysis of the

³We also examined the surveys returned by Canada Post. In total, 1,134 surveys were returned to us. Of that number, we were able to find contact information for 169 (14.9 percent) in order to resend the survey. This suggests that as few as 14.9 percent of the companies for whom surveys were returned were still in business.

⁴When applying an eligibility requirement (i.e., "surviving" firms), one first must estimate the number of eligibles among the nonrespondents (Wiseman and Billington 1984).

⁵A factor analysis can also be used to assess the fit of BOS items to BOS dimensions when there are "three to five times as many individuals to be rated as there are behavioral items" (Latham and Wexley 1994, p. 90). Our data barely met this ratio. As argued by the creators of the BOS method (Latham and Wexley 1994), the

corrected item-total score correlation results found that all items in dimensions 1, 2, 7, 8, and 9 demonstrated correlations greater than, or equal to, 0.30. For the remaining scales, one item on Dimension 3 had a correlation of 0.28. Removing that item would increase the dimension's reliability, as measured by Cronbach's alpha, only marginally, from 0.69 to 0.70. On Dimension 4, two items had correlations below 0.30 (e.g., 0.28 and 0.26); however, the overall scale (including these two items) demonstrated a Cronbach's alpha of 0.77. For Dimension 5, one item had a correlation of less than 0.30; however, the overall Cronbach's alpha for the scale was 0.79. Finally, Dimension 6 had two items with correlations less than 0.30 (both 0.28). However, removing these items did not increase the Cronbach's alpha to the desired level of 0.70. Considered together, the results were fairly strong, but less than ideal. This is not totally surprising given that independent criteria may be ideal for statistical purposes but unlikely for judgments of human behavior (Latham and Wexley 1994). In sum, of the correlations below the 0.30 threshold of "good," most were marginally below the threshold.

We subsequently summed the behavioral items associated with each BOS dimension. Table 3 shows the mean, standard deviation, and Cronbach's alpha for each BOS dimension and their summation (i.e., total BOS score). Most dimensions had Cronbach's alphas at, or near, the 0.70 level. Notable exceptions were Dimensions 6 (financial management) and 9 (negotiation and risk-taking), where the alphas were below the 0.60 level. Dimension 9's alpha may have been low because Cronbach's alpha can be sensitive to very small (e.g., two-item) scales (Hulin and Cudeck 2001). Per Hulin and Cudeck's recommendation, we ran a Spearman-Brown split reliability analysis on both two-item scales and the reliability coefficients were not significantly better (0.57 and 0.59 for dimensions 7 and 9, respectively).

Removing items did not improve the scales' reliability to the 0.70 level.

Where item analysis indicates potential weaknesses in the scales, experts on BOS (Latham and Wexley 1994) and achievement tests (Nunnally 1978) indicate that human judgment must play the deciding role as to whether an item is included or rejected. In particular, content validity should be given priority over statistical analysis. Nunnally, for example, states: "item analysis . . . is secondary to content validity . . . with achievement tests considerable pains are taken to ensure all items have content validity before they are submitted to item analysis. Thus all items submitted for analysis are assumed to be good, and the analysis provides additional information only" (1978, p. 264). Because considerable effort was made in our pilot study to ensure content validity, we did not remove or reclassify any BOS items before proceeding to correlational analysis. Overall, these results suggest that the BOS, and its dimensions, demonstrated an acceptable level of internal consistency.

To demonstrate criterion validity, BOS must correlate with nonbehavioral performance measures. Table 3 presents the two-tailed Pearson correlations between BOS dimensions and the 12 (nonbehavioral) performance measures. There were 65 significant correlations between BOS dimensions and performance measures at the 0.05 level and 14 at the 0.10 level. Each dimension correlated with two or more performance measures ($p \leq .05$); the mean number of correlates per BOS dimension was approximately seven. All dimensions but one (negotiation and risk-taking) correlated with five or more performance measures ($p \leq .05$). The total BOS score correlated significantly ($p \leq .05$) with all performance measures but one (employee growth).

In our third step, we set out to fine-tune the BOS structure based on our preceding analyses. When faced with the decision to accept the empirically derived fit of the BOS

main advantage of factor analysis is that "it saves time" (p. 91). Moreover, they assert that factor analysis seeks to ensure that behavioral criteria (or dimensions) are independent of each other, which is unlikely to take place for workplace behaviors given that the criteria are frequently logically related. Thus, many works report Cronbach's alpha coefficients and do not conduct factor analysis on the items contained in BOS (e.g., Brown and Latham 2000, 2006; Morin and Latham 2000; Sue-Chan and Latham 2001). Hence, we only focus on the "human judgment" model in this paper. However, we did conduct a factor analysis. In brief, each of the nine factors had an Eigen value greater than 1.3 and the nine-factor model explained 57.61 percent of the variance in the sample. For full results of the factor analysis, please contact the authors.

Table 3
Correlations: BOS Dimensions and Performance Measures^a

BOS	Performance										
	Start-Up			Growth			Profitability/Cash Flow			Operational	
	Employees Year 1 (log)	Sales Year 1	Employee Growth (log)	Sales Growth Objective	Sales Growth Subjective	Profit	Cash Flow	Personal Income	Quality	Employee Satisfaction	Customer Satisfaction
Entrepreneurial (Start-Up)	M = 0.29 S.D. = 0.43	M = 1.96 S.D. = 1.25	M = 0.44 S.D. = 0.60	M = 3.38 S.D. = 2.10	M = 4.30 S.D. = 1.78	M = 4.33 S.D. = 1.72	M = 4.40 S.D. = 1.70	M = 4.33 S.D. = 1.70	M = 5.52 S.D. = 1.22	M = 5.12 S.D. = 1.30	M = 5.82 S.D. = 1.00
	0.11	0.24**	-0.04	0.14	0.26**	0.23**	0.30***	0.25**	0.22**	0.21*	0.19*
Managerial (Early Growth)											
Total BOS Score											

^aBOS, behavioral observation scales; M, mean; S.D., standard deviation.
+significant at $p \leq .10$; *significant at $p \leq .05$; **significant at $p \leq .01$; *** significant at $p \leq .001$.
Bold numerals highlight significant ($p \leq .05$) correlations.

structure or the qualitative human judgment model, past research has opted for the qualitative model (see Taggar and Brown 2001). In the present case, the Cronbach's alphas for the scales were generally acceptable and we found significant correlations between each of the nine BOS dimensions (as well as the total BOS score) with other nonbehavioral, performance measures. Consequently, we do not suggest that the structure be changed at this time.

That being said, two BOS dimensions may warrant additional investigation. In particular, Dimension 9 (negotiation and risk-taking) was problematic in our pilot study, where it demonstrated the lowest level of agreement between "judges" and "sorters." Dimension 9 had a Cronbach's alpha of 0.59 and demonstrated limited validity in terms of the small number of significant correlations with the performance measures. Nevertheless, this dimension correlated at the 0.10 level with an additional five performance measures. It seems premature to remove this dimension (or these items) as a larger sample could have resulted in these latter correlations being significant.

Similarly, we did not remove Dimension 6 (financial management). Though this dimension had the lowest Cronbach's alpha coefficient (0.55), it correlated with six of the nonbehavioral performance measures ($p \leq .01$). Given the importance of financial management and the apparent face validity that appears to be associated with this dimension, we felt that from a developmental perspective, grouping these items together is important for emphasizing the significance of prudent financial management among new entrepreneurs in education programs.

Correlational Patterns

The correlational evidence provides relatively strong support for the validity of the BOS. On average, each BOS dimension correlated with 7.2 nonbehavioral performance measures; six of the nine BOS dimensions correlated with performance measures in each of the four major performance categories. Seven BOS dimensions correlated with the weighted subjective index of overall performance and the total BOS score correlated with 11 of 12 performance measures.

Seven BOS dimensions correlated with measures of start-up performance, year 1 employee size, and year 1 sales. As expected, there was

more evidence for the importance of entrepreneurial behaviors, but both entrepreneurial (start-up) and managerial (early growth) behaviors emerged as important. All four entrepreneurial dimensions and three managerial dimensions had significant correlations. Of the managerial dimensions, employee management skills appear to have the strongest implications for the firm's early performance as this dimension correlated with both measures of start-up performance. It may be that entrepreneurs with stronger employee management competencies are better able to attract and select appropriate human capital.

Correlational results for the growth-related measures suggest that entrepreneurial behaviors may be a more important predictor of growth than managerial behaviors, although both types of behaviors correlated with performance. Significant correlations were observed on all of the entrepreneurial BOS dimensions and three of the four managerial dimensions (the exception was financial management); however, the entrepreneurial dimensions displayed a noticeably higher proportion of correlations. Overall, only one BOS dimension (negotiation and risk-taking) correlated with employee growth, suggesting that this performance measure possessed limited utility in our sample. Although we applied the log transformation on this variable, we noted in the original raw scores that the median number of employees gained during the period was 0.5 (mean = 3.83, mode = 0). The chance of detecting a relationship with this measure was likely severely constrained by the limited variation present. Interestingly, a comparison of the correlation results for measures of sales growth indicates that the magnitudes of the correlations on seven of the nine BOS dimensions were greater in the case of the objective measures rather than the subjective measures. Subjective measures of performance have been criticized because they can be prone to halo effects. Our results suggest that though halo effects cannot be ruled out, their overall impact in this study is likely minimal.

The last two major categories of performance were profitability/cash flow and operational performance. In the case of profitability/cash flow, correlations were observed on all four entrepreneurial dimensions, with two entrepreneurial dimensions (relevant background for chosen business and dedication to business) especially prominent as they corre-

lated significantly with each performance measure is this category. Three managerial dimensions (strategic business development and growth, financial management, and marketing/customer relations management) correlated with profitability/cash flow, with financial management exhibiting the strongest association. All but one of the BOS dimensions (negotiation and risk-taking) correlated with operational performance. Consistent with the argument that variations in operational performance are often manifest earlier than variations in profitability (Carton and Hofer 2006), the operational performance category displayed the strongest correlational relationship with the BOS behavioral dimensions. Our understanding of entrepreneurship as a process can likely be enhanced by further efforts to develop and select performance measures appropriate for different stages of firm development.

Discussion

Over the course of prestart-up, launch, and the early stage development of a business, entrepreneurs perform a myriad of behaviors. A goal of our study was to identify which behaviors are most important to the early success of the business. Nine behavioral dimensions were identified, all of which could be clearly linked to the performance of the firm. Space limitations preclude the systematic consideration of all of these in sufficient depth; as a compromise we now focus on two representative dimensions: opportunity identification and dedication to business.

Opportunity identification is considered to be one of the most important abilities of successful entrepreneurs (Ardichvili, Cardozo, and Ray 2003) and a potential source of competitive advantage (DeTienne and Chandler 2004). This dimension correlated with all four performance categories, providing strong support for the value of its component behaviors: market research, identifying a niche, and developing products that match market needs. A primary goal of market research is the estimation of market size and preparation of sales forecasts, but it also facilitates segmentation of the market so that limited resources can be strategically employed in a more focused manner to better serve a portion of the market and achieve a competitive advantage. Firms with broader niches may have difficulty developing capabilities providing superior value in any one

area, and also appear more likely to push the boundaries of the firm (exposing themselves to greater risk of failure) when introducing new products (Sorenson et al. 2006).

Given the potential benefits of opportunity identification behaviors, it might be expected that most entrepreneurs would engage in them wholeheartedly. Surprisingly, this is not the case. Marion, Friar, and Simpson (2012), for example, found the new ventures they examined did not use customer or retailer input in developing new products, relying instead on their own design standards. Broader studies of nascent entrepreneurs report similar findings, with fewer than one in four start-ups engaging in activities to define an opportunity by the time they are initiated (Shane 2008). Although opinions differ as to whether opportunities are discovered or created, evidence is accumulating that opportunity identification can indeed be taught (DeTienne and Chandler 2004; Muñoz, Mosey, and Binks 2011) and that certain identification processes may be better suited for different opportunity types. For example, in situations of high uncertainty, experienced entrepreneurs seek alternatives to textbook market research practices (Read et al. 2009). In such situations, it is being argued that innovations in entrepreneurship education including lean methodology (Jones et al. 2013) and the business model perspective (Ehret, Kashyap, and Wirtz 2013) promise to achieve a better fit between new business offerings and market needs by engaging with a variety of stakeholder to “co-create” value.

Dedication appears to be the most important behavioral dimension according to our results. This dimension also correlated with all 4 performance categories, and 11 of 12 possible performance measures (employee growth being the sole exception). Dedication included behaviors such as devoting long hours, being physically present, demonstrating a conviction the business will succeed, persevering in spite of setbacks, etc., all of which reflect the entrepreneur's commitment. Starting a business is a daunting task (Aldrich 1999). It requires significant effort and is fraught with setbacks. Moreover, research indicates successful entrepreneurs become increasingly busy as their businesses prosper, working up to 12 to 18 hours per day and having little time for activities outside the firm (Baron and Markman 2003). An entrepreneur's self-efficacy is believed to play an important role in explaining why entre-

preneurs may be willing to display such high levels of effort and commitment (Krueger, Reilly, and Carsrud 2000). Entrepreneurs select tasks and put forth effort based on their expectations, which are heavily influenced by their perception of their own skills and abilities (Gatewood et al. 2002). Self-efficacy is also linked to *perseverance* (Krueger, Reilly, and Carsrud 2000), which is the tendency to persist and endure in the face of adversity (Markman, Baron, and Balkin 2005), and *resilience*, (Bullough, Renko, and Myatt 2014), which is the ability to continue with a purposeful life after hardship and adversity, and thus strongly connected to one's reaction to failure.

Passion has also been suggested as an important construct underlying entrepreneurial involvement, dedication, and persistence (Cardon et al. 2013). According to these authors, passion is at the heart of entrepreneurship and is an affective state stemming from engagement in activities in roles that are meaningful and salient to the self-identity of the entrepreneur. Involvement in the business provides an indication of the entrepreneur's level of effort and reflects the degree to which the work associated with the business is a central life interest of the entrepreneur (Hernández-Maestro and González-Benito 2011). One obvious benefit of involvement is that it can help to keep costs lower than they would be otherwise. A second expected benefit would be tighter control over the implementation of the entrepreneur's vision. Recent research indicates that involvement by the entrepreneur has the ability to enhance the value delivered to the customer, resulting in better firm performance (Hernández-Maestro and González-Benito 2011). Vos and Roulston (2008) found that SME owner involvement was related to financial performance, but not growth; here it was argued that the increased reliance the owner has on the business for both income and wealth produces a strong incentive to ensure the business performs well. Entrepreneurial passion also has the potential to influence firm performance by motivating others, especially employees. Breugst et al. (2012) found empirical support for the proposition that that entrepreneurial passion strengthens the commitment of employees, arguing that passion facilitates the communication of the entrepreneur's vision.

From an education perspective, it appears the greatest potential for education to have an

impact on entrepreneurial dedication is through curricula and programming designed to enhance the entrepreneurial self-efficacy of students. Krueger, Reilly, and Carsrud (2000) contend that we already know how to increase self-efficacy and this claim has empirical support (Wilson, Kickul, and Marlino 2007). Others, however, suggest the situation is far from clear. Wilson, Kickul, and Marlino (2007), for example, argue that designing entrepreneurship education that truly enhances entrepreneurial self-efficacy is a complicated issue and that designing a complete program that can build self-efficacy should be a top priority for entrepreneurship educators.

Importantly for educators, self-efficacy is task and domain specific. The broad-based nature of the behaviors our findings indicate to be critical to the success of entrepreneurs suggests that education and training interventions should be designed at the program level, should be comprehensive in nature, should include curricula that encourage mastery of relevant behaviors through practice (Neck and Greene 2011), and should include systematic evaluation and feedback. We therefore endorse Neck and Greene's (2011) suggested focus on a portfolio of practice-based pedagogies. Activities to support such an approach might include starting a business as coursework, simulations, lean start-up curriculum, providing opportunities to conduct market research for other firms through consultancy-based courses and projects, and apprenticeships.

Overall, our findings provide practical applications for educators and others interested in the question "What do entrepreneurs need to be able to do?" Findings that entrepreneurship textbook content (Edelman, Manolova, and Brush 2008) and education program content (Ojastu, Chiu, and Olsen 2011) are misaligned with what entrepreneurs actually do reinforce the need for education and training programs to be grounded in research and theory (Fayolle 2013; Tannenbaum and Yukl 1992) and to be relevant (Laukannen 2000). These BOS have been subject to an empirical validation involving practicing entrepreneurs, are supported by strong conceptual underpinnings, and provide an empirical foundation for the development (and refinement) of entrepreneurship education and training programs. BOS can also be

used for needs assessment and evaluation of entrepreneurial education programs. When used as the dependent variable, BOS can assess the effectiveness of education/training programs. Alternatively, entrepreneurs (or trainers) may choose to first identify the performance criterion that is most important to them and then develop and improve the BOS dimension that correlates most heavily with that criterion.

Limitations and Future Research

Clearly, our study contains some survivor bias as we were unable to collect data from “ineffective” entrepreneurs whose firms had ceased operations prior to the survey. Consequently, we cannot draw conclusions concerning which BOS dimensions or items differentiate surviving firms from failures. A longitudinal study tracking success versus failure remains important for future research.

Second, we were unable to assess the predictive power of BOS because we gathered BOS ratings and performance outcome measures concurrently. In a future study, it would be helpful to collect performance outcome data after the BOS ratings to see if the BOS ratings indeed predict performance. It bears mention, too, that the cross-sectional nature of our design does not demonstrate the existence of causal relationships and that the results of our study should not be construed to imply that BOS constitute a simple recipe for firm success.

Third, we were unable to calculate a true response rate as we used the contact information from incorporations that were six years old. In future research, cleaning the mailing list prior to sending out the survey would have greatly reduced mailing costs and enable an accurately calculated response rate.

Fourth, a potential reason why entrepreneurs in our sample did not indicate that the behaviors reported under financial capabilities were frequently performed is that they avoided them because of a lack of comfort or confidence with their skill set in this area. Thus, avoidance (or confidence) may be an issue. Bandura (1997) asserted that increasing self-efficacy can reduce avoidance behavior. A meta-analysis by Colquitt, LePine, and Noe (2000) concluded that self-efficacy was a predictor of training motivation and training outcomes; other human resource (HR) scholars

assert that the effectiveness of training and education programs depend upon the extent that they bolster self-efficacy (Saks and Haccoun 2010). Though beyond the scope of this paper, future research should examine the role of self-efficacy. For example, if the present BOS were used to ground an education program, measuring self-efficacy pre and post-training could be used to test the program effectiveness. Training and education studies in the broader HR literature (e.g., Brown and Latham 2000, 2006) that have used BOS and self-efficacy could be used to guide such research.

A fifth limitation of this study is the composition of the sample, which was over 80 percent male. Future research should strive for a more diverse sample.

Conclusion

There is wide acknowledgment of a lack of consistent evidence showing that entrepreneurship education and training creates more or better entrepreneurs (Edelman et al. 2008). This is hardly a trivial concern, yet hardly any research is available to inform entrepreneurship curriculum (Albornoz 2008) and little is known about what entrepreneurs actually do (Bird, Schjoedt, and Baum 2012). In this study, we validated a comprehensive performance instrument (BOS) that contributes to entrepreneurship education and practice in several ways. First, we believe this to be the first study in the literature to validate an empirically derived set of behaviors for entrepreneurship. Second, the study employs a broad-based multi-industry sample to test the generalizability of the new venture behaviors identified as critical. Although other frameworks have been tested on samples of comparable industry scope, those samples used existing, rather than new, firms. The identification of behaviors transferable across settings is useful for our educational context and unique in the literature.

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