
Entrepreneurship Research and Practice

A Call to Action for Psychology

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Entrepreneurship is a major source of employment, economic growth, and innovation, promoting product and service quality, competition, and economic flexibility. It is also a mechanism by which many people enter the society's economic and social mainstream, aiding culture formation, population integration, and social mobility. This article aims to illuminate research opportunities for psychologists by exposing gaps in the entrepreneurship literature and describing how these gaps can be filled. A "call to action" is issued to psychologists to develop theory and undertake empirical research focusing on five key topic areas: the personality characteristics of entrepreneurs, the psychopathology of entrepreneurs, entrepreneurial cognition, entrepreneurship education, and international entrepreneurship. Methodological issues are discussed and recommendations provided. It is shown that psychologists can help identify the factors that influence new venture creation and success and inform the construction of public policy to facilitate entrepreneurship.

Keywords: entrepreneurship, intrapreneurship, psychopathology, education, international differences

Entrepreneurship, starting and managing a business for the purpose of growth and profit (Carland, Hoy, Boulton, & Carland, 1984), can be traced back to ancient Greece, where entrepreneurial activity brought independence and economic and social reform. Entrepreneurship is credited with the development of the assembly line, the airplane, the computer, the contact lens, and DNA fingerprinting (Baumol, 2004). It is a major source of employment, economic growth, and innovation and is an integral part of the economic renewal process (Kuratko, 2003). Entrepreneurship is also a mechanism by which many people enter the economic and social mainstream of society, facilitating culture formation, population integration, and social mobility (Bednarzik, 2000).

The Global Entrepreneurship Monitor (GEM; Reynolds, Bygrave, & Autio, 2004) described entrepreneurship as a "world-wide phenomenon" that is on the increase. The 1990s saw major start-up activity in transition economies, where private sector activity is relatively new (Peng, 2001). There was a rise in entrepreneurial activity in the United States in the late 1990s, peaking at the new millennium (Neck, Zacharakis, Bygrave, & Reynolds, 2003). In 2002, 11% of the American adult workforce was involved in the initial start-up phase or the development of a young busi-

ness (Neck et al., 2003). Around the world, 9 in every 100 people of working age are involved in entrepreneurship, with approximately 300 million in the venture creation phase (Reynolds et al., 2004). The generation of the 21st century has been branded *Generation E*, the most entrepreneurial since the Industrial Revolution (Kuratko, 2003). Eighty percent of would-be entrepreneurs in the United States are between the ages of 18 and 34, with approximately 6 million people in this age bracket actively trying to start their own businesses (see Kuratko, 2003). Entrepreneurship is also an important source of employment for women, and there has been significant worldwide growth in women's self-employment (Hisrich & Öztürk, 1999; Langan-Fox, 2005). In 2004, three times more women than men started firms in the United States. This could reflect the service-oriented economy and the fact that the service sector represents a strong area for women (Coughlin & Thomas, 2002). A dominant trend in the 21st century is likely to be ethnic entrepreneurship, with entrepreneurial activity in the developing world increasing because of free trade, the availability of venture capital, and the development of infrastructure (Morris, Schindehutte, & Lesser, 2002).

An Expanded Role for Psychology in Entrepreneurship

With the rapid expansion of entrepreneurship, academic interest in the topic has also grown, as evidenced by over 50 conferences and 1,000 publications each year (Filion, 1997). The entrepreneurship literature is vast, complex, and multifaceted, spanning economics, sociology, business, and psychology. A hallmark of the literature is an overabundance of theoretical work and a relative absence of empirical work (Gregoire, Noel, Dery, & Bechard, 2004). Furthermore, a recent review (Chandler & Lyon, 2001) of the methodologies used in entrepreneurship research signaled a need to reduce common method variance, improve construct validity and scale reliability, specify the level of

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analysis, and conduct longitudinal research to capture the entrepreneurship process over time. Psychology's theoretical sophistication and methodological rigor should make an important contribution to the development of a more comprehensive view of entrepreneurship. Several psychological variables are crucial to entrepreneurship. Entrepreneurial intent and success have been linked to social competence (Baron, 2000), motivation (Collins, Hanges, & Locke, 2004; Kontos, 2003; McClelland & Winter, 1969; Miron & McClelland, 1979; Segal, Borgia, & Schoenfeld, 2005), self-efficacy (C. C. Chen, Greene, & Crick, 1998; Zhao, Seibert, & Hills, 2005), and willingness to bear uncertainty (McMullen & Shepherd, 2006). Other research has investigated the common attributes of entrepreneurs (Baum & Locke, 2004; Hisrich, 1990) and the effect of variables such as gender (Lewis, 2006) and minority status (Ede, Panigrahi, & Calcich, 1998) on the propensity to consider entrepreneurship as a viable career option. However, Baum, Frese, Baron, and Katz (2007, p. 1) noted that "despite the belief that the entrepreneur's personal characteristics are important for new venture success, the psychology of the entrepreneur has not been thoroughly studied."

In this article we aim to illuminate research opportunities for psychologists by exposing gaps in the entrepreneurship literature and describing how these gaps can be filled. We present a call to action for psychologists to develop theory and undertake empirical research focusing on five key topic areas that are pertinent to psychology: the personality characteristics of entrepreneurs, the psychopathology of entrepreneurs, entrepreneurial cognition, entrepreneurship education, and international entrepreneurship. These topic areas can be used to identify the factors that affect new venture creation and success and to inform the

construction of public policy to facilitate entrepreneurship. Methodological issues are also presented and recommendations provided. In what follows, we define entrepreneurship as well as different types of entrepreneurs and the entrepreneurship process. We then discuss the role of psychologists in extending scientific inquiry into entrepreneurship, illustrating how entrepreneurship is fertile ground for psychological research and practice.

Defining Entrepreneurship

In the early 20th century, entrepreneurs were not frequently distinguished from managers and were viewed mostly from an economic perspective (see, e.g., Ely & Hess, 1937). With the integration of business, managerial, and personal terminology, the concept has evolved to include newness, creating, organizing, risk taking, and wealth (Ronstadt, 1984). Entrepreneurs are found in all professions: architecture, business, education, engineering, law, medicine, and psychology. To include all types of entrepreneurial behavior, we use the following definition as the foundation of this article: "Entrepreneurship is the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic, and social risks, and receiving the resulting rewards" (Hisrich, Peters, & Shepherd, 2005, p. 8).

Types of Entrepreneurs

Entrepreneurship can be conceptualized along a continuum ranging from entrepreneur at one end to administrator at the other (Hisrich et al., 2005). It can also be viewed in absolute terms, "new firm versus no new firm," or in relative terms, "more entrepreneurial versus less entrepreneurial." An important distinction is that between invention (opportunity discovery) and innovation (opportunity ex-

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plotation). Innovation, creating a new organization, product, or process, may be further distinguished from imitation, entering an established market (Ruef, Aldrich, & Carter, 2003), reflecting Schumpeter's (1952) notion of the entrepreneur as an innovator.

Typologies of entrepreneurs. Several typologies have grouped entrepreneurs on the basis of their psychological characteristics, with most typologies focusing on the personality characteristics of entrepreneurs (e.g., Miner, 1997, 2000; Muller & Gappisch, 2005). Some typologies have examined the psychological characteristics of subpopulations of entrepreneurs and have formed typologies of potential entrepreneurs (Erikson, 2001), nascent entrepreneurs (Korunka, Frank, Lueger, & Mugler, 2003), female entrepreneurs (Langan-Fox & Roth, 1995), retiree entrepreneurs (Singh & DeNoble, 2003), and fatherless entrepreneurs (Strenger & Burak, 2005). Typologies of entrepreneurs are presented in Table 1.

There are so many permutations of entrepreneurs that some sort of grouping is necessary if only for the benefit of parsimony. Typologies of entrepreneurs are beneficial for theory development because theories require the summarization of variable content in order to arrive at a set of variables that make a meaningful whole. Clustering recognizable types will enable researchers to identify types and replicate research findings, as well as aid analysis (e.g., discriminant analyses of variables associated with different types). Types also have practical value inasmuch as one can ascertain which types might prove to be more or less successful entrepreneurs, and this has implications for selection and training.

Team entrepreneurs. A new business is more likely to grow and survive if more than one person is

involved in the start-up phase (see Shane, 2003). Although research has traditionally focused on solo entrepreneurs, team entrepreneurs have become widespread and play a significant role in new product innovation, particularly in high-tech industries, where a diversity of expertise is often required (Chowdhury, 2005). The term team entrepreneurs refers to a group of owners and managers of the same firm (Ensley, Carland, & Carland, 2000). Family firms are a common form of team entrepreneurs (Ucbasaran, Lockett, Wright, & Westhead, 2003). Team entrepreneurs may be able to avoid some of the functional and social-psychological pitfalls associated with solo entrepreneurship. For instance, multimember teams have immediate access to emotional and instrumental social support, a larger and a more diverse set of skills, and a stronger capacity for innovation. On the downside, coordinating and integrating team members may prove costly (Ucbasaran et al., 2003). Past research has examined topics such as friendship within entrepreneurial teams (Francis & Sandberg, 2000), lead entrepreneurs (Ensley et al., 2000), team member entry and exit (Ucbasaran et al., 2003), and team skill heterogeneity and functional diversity (Ensley, Carland, & Carland, 1998) in the context of team process variables and team effectiveness. Ensley et al. (2000, p. 60) noted that "little investigative effort has been expended on the general behavioral and cognitive dynamics of an entrepreneurial team," suggesting an opportunity for future research in this area.

Corporate entrepreneurs ("intrapreneurs").

The entrepreneur construct can be broadened to include those who exhibit innovative and enterprising behavior within an existing organization, that is, corporate entrepreneurs or intrapreneurs; the distinction between entrepreneurship and intrapreneurship is that the former is for self-gain and the latter for organizational gain (Hisrich, 1990). Intrapreneurship may encompass business venturing; competitive aggressiveness; proactiveness; process, product, or service innovation; risk taking; and self-renewal (Christensen, 2004). There are relatively few "official" intrapreneurs because of the belief that firms must wait for them to emerge or self select (Davis, 1999). Intrapreneurship is crucial for the survival of the mature organization (Jelinek, 1997). It can be used to harness creative energy and enhance morale, and may have a snowball effect throughout the organization (Carrier, 1996; Pryor & Shays, 1993). Any organization not involved in intrapreneurial activity has probably made an unintentional decision not to stay in business for long (Merrifield, 1993). Past research on intrapreneurship has largely centered on determining the characteristics of intrapreneurs who lead their firms to new venture success (Antoncic & Hisrich, 2003; Christensen, 2004; Davis, 1999; Russell, 1999). Other research has addressed the role intrapreneurs play in recognizing and developing new ventures both domestically and abroad (Altinay, 2004). In addition, Abraham (1997) studied the relationship between intrapreneurship, individualism, and collectivism.

Table 1
Typologies of Entrepreneurs

Author(s)	Name of entrepreneur type	Description of type
Cooper, Ramachandran, & Schoorman (1997)	Craftsman	Emphasizes noneconomic goals (e.g., doing the work he or she wants to do and avoiding working for other people); is less likely to have had previous, high-level management experience; devotes less time to administrative activity and more time to "doing" activity (e.g., sales, production).
	Administrative (more successful)	Emphasizes economic goals (e.g., is less likely to see the business as a vehicle for a certain lifestyle); is more likely to have had previous, high-level management experience; delegates "doing" activity and allocates time to administrative activity.
Erikson (2001) Typology of potential entrepreneurs	Ready	Proactive; sees entrepreneurship as desirable and feasible; self-governed; continuously recognizes new opportunities; allocates resource base to meet situational demand.
	Ready reluctant	Not proactive, sees entrepreneurship as desirable and feasible; might not act on opportunities unless encouraged.
	Ready unfeasible	Proactive; sees entrepreneurship as desirable but unfeasible.
	Ready unconvinced	Proactive; sees entrepreneurship as undesirable but feasible.
	Daydreamer	Not proactive, sees entrepreneurship as desirable but unfeasible.
	Undesirable	Not proactive; sees entrepreneurship as undesirable but feasible.
	Uncredible Bureaucrat	Sees entrepreneurship as neither desirable or credible. Will probably never become an entrepreneur.
Korunka, Frank, Lueger, & Mugler (2003) Typology of nascent entrepreneurs	Nascent entrepreneurs against-their-will	Low need for achievement; low internal locus of control; low personal initiative; strong push factor; little social support; underestimation of organizational effort; low use of information.
	Would-be nascent entrepreneurs	Strong self-realization motive; strong perception of positive role models; enhanced internal locus of control; enhanced security motive; unfavorable financial situation.
	Networking nascent entrepreneurs with risk-avoidance patterns	Low risk-taking propensity; perceived supportive environment; intense use of information; low organizational effort; careful appraisal of risk.
Lafuente & Salas (1989) Typology of entrepreneurs based on work expectations	Craftsmanship	Primarily guided by expectations of work itself; secondary expectations focus on performance and organizational context; uncertainty and challenge are not potential sources of satisfaction.
	Security	Expectations are centered on impact of work on family welfare; expectations related to challenge and uncertainty also play a role.
	Risk/challenge	Likes risk and challenge; expectations for improving family welfare are unimportant.
	Managerial	Managerial expectations; secondary expectations related to improving family welfare.
Langan-Fox & Roth (1995) Typology of female entrepreneurs	Need achiever	Highest on need for Achievement (<i>nAch</i>); lowest on activism (planning for a career), job satisfaction, self-attributed need for Achievement (<i>sanAch</i>), ability to influence/have power, need for influence, and self-attributed need for Power (<i>sanPow</i>)
	Pragmatic	Moderate <i>nAch</i> , <i>sanAch</i> , ability to influence/have power, activism, job satisfaction, and trust; lowest on independence from family, internal locus of control, and resistance to subordination; motivated by opportunity to pass on business to children and earning more money in self-employment.
	Managerial	Lowest on <i>nAch</i> ; high ability to influence/have power; <i>sanPow</i> and Influence, and resistance to subordination; highest on activism, internal locus of control, job satisfaction, <i>sanAch</i> ; low trust.

Table 1 (continued)

Author(s)	Name of entrepreneur type	Description of type
Miner (1997, 2000)	Personal achiever	Need to achieve; desire to plan and set goals; desire for feedback; strong personal initiative; strong personal commitment to firm; belief that one person can make a difference; internal locus of control; belief that work should be guided by personal goals, not by others.
	Empathic super salesperson	Capacity to understand and empathize; desire to help others; belief that social processes are important; belief that a sales force is crucial to company strategy; desire to have strong positive relationships with others.
	Real manager	Desire for corporate leader role; decisiveness; positive attitude to others; desire to compete; desire to stand out from crowd; desire for power.
	Expert idea generator	Desire to innovate; love of ideas; belief that new product development is crucial to company strategy; intelligence; desire to avoid risk taking.
Miner, Smith, & Bracker (1992)	Craftsman	(See Smith, 1967, below)
	Opportunistic Inventor	(See Smith, 1967, below) Craftsman orientation; high priority placed on new product development strategies and patent production; uses his or her firm as a vehicle for invention and producing the product invented rather than for growth.
Muller & Gappisch (2005)	Creative acquirer	Idea generator or intuitive type; tolerance of ambiguity, intuitive problem-solving orientation and salesperson type; interpersonal reactivity.
	Controlled perseverator	Stress resistance, emotional stability; level of arousal; analytical problem-solving orientation.
	Distant achiever	Need for achievement and autonomy.
	Rational manager	Assertiveness, analytical problem-solving orientation, risk-taking propensity.
Singh & DeNoble (2003) Typology of retiree entrepreneurs	Egocentric agitator	Maladapted type, level of arousal; low interpersonal reactivity, internal locus of control.
	Constrained	High entrepreneurial attitude, self-efficacy, and entrepreneurial and innovative orientation.
	Rational Reluctant	Medium on entrepreneurial attitude, self-efficacy, and innovation. Low on entrepreneurial attitude, self-efficacy, and innovation.
Smith (1967); Smith & Miner (1983)	Craftsman	Narrowness in education and training (technical only); low social awareness and involvement; a feeling of incompetence in dealing with the social environment; limited time orientation.
	Opportunistic	Breadth in education and training; high social awareness and involvement; confidence in dealing with the social environment; awareness of and orientation to the future.
Strenger & Burak (2005) Typology of fatherless (male) entrepreneurs	Entrepreneurs who become their own fathers (successful)	Emotionally come to terms with their fathers' failure; use entrepreneurship as a way to repair the emotional damage of having been let down.
	Self-destroyers (unsuccessful)	Deep-seated rage and unconscious guilt; overtly cocky and rebellious but do not feel they truly deserve success; destroy their own achievement.
	Grandiose dreamers (unsuccessful)	Desperate need for their fathers' affection and love; feel an inner void; fantasize about becoming successful; driven by an image of being praised and recognized; strive for ever-grander achievement; lose ability to differentiate between actual personal capacity and fantasized grandeur; ignore warning signs leading to downfall.

Note. All typologies are empirically based with the exception of Singh and Denoble's (2003), which is theoretically grounded.

The Entrepreneurship Process

It is generally agreed that entrepreneurship is a multiphase process consisting of entrepreneurial intent and opportunity search, discovery/recognition, evaluation, and exploitation (Eckhardt & Shane, 2003; Shook, Priem, & McGee, 2003). In modeling the entrepreneurship process, it is useful to distinguish between supply side factors, emphasized by psychologists, and demand side factors, emphasized by economists (Eckhardt & Shane, 2003; Shaver, 1995). Lafuente and Salas (1989) noted that although demand side factors such as the demand for goods and services and the relative cost of inputs provide the stimuli for entrepreneurial activity by influencing the number of potential opportunities, they do not guarantee that such opportunities will be recognized and exploited. They argued that supply side factors such as psychological characteristics (e.g., attitudes, preferences) are important for the study of entrepreneurship because they influence the number of potential entrepreneurs. As such, psychological characteristics have to be identified in policy oriented toward promoting entrepreneurial activity, which renders a purely economic view of entrepreneurship insufficient (Lafuente & Salas, 1989). Of course, demand side factors (e.g., economy, technology) also have an impact on new venture success, and this should be noted by psychologists. The results of the entrepreneurship process are typically measured in terms of financial performance, yet both economic and noneconomic outcome variables are important given that venture creation is often a rewarding outcome in itself (Hisrich et al., 2005).

Entrepreneurship Research and Practice: A Call to Action for Psychology

In the following sections, we review and critique the literature on psychology and entrepreneurship. The discussion is organized around five key topic areas that provide abundant opportunities for psychological research. We propose a number of research questions that provide a call to action for psychologists interested in entrepreneurship. The research questions aligned with each topic area are shown in Table 2.

The Personality Characteristics of Entrepreneurs

Research on personality and entrepreneurship has focused on two broad research questions: Why do some people but not others become entrepreneurs? Why do some people make more successful entrepreneurs than others? (Shaver, 2007). The personality approach provided the impetus for substantial research in the 1960s and 1970s, with research on need for achievement (*nAch*; McClelland, 1961), the most frequently studied personality characteristic, peaking in the 1980s (Rauch & Frese, 2007).

Rauch and Frese (2007) described the personality approach as a classic but controversial approach to the psychology of entrepreneurship. Currently there is disagreement in the literature as to whether personality is a

useful construct in entrepreneurship research. For instance, some research has shown that personality characteristics fail to reliably distinguish between entrepreneurs and non-entrepreneurs (e.g., managers) and generally account for only a small proportion of the variance in entrepreneurial success (Cromie, 2000; Hisrich, 2000). Meta-analytic research has revealed a small, positive relationship between autonomy, internal locus of control, and risk-taking propensity and new venture creation and success, and a moderate, positive relationship between innovativeness, *nAch*, and self-efficacy and new venture creation and success. Risk-taking propensity has a weaker association with both outcome variables, and self-efficacy has a stronger association with success (see Rauch & Frese, 2007, for a review). However, it is possible that the role of personality in entrepreneurship has been underestimated in past research because of design and methodological limitations.

Improving Design and Measurement in Personality-Based Research

Entrepreneurship as a process: The need for longitudinal research. Entrepreneurship is a complex, dynamic, multiphase process, yet the important personality characteristics at each phase have not been identified. Past research has tended to focus on the start-up phase, with characteristics of entrepreneurs and nonentrepreneurs compared on the basis of the assumption that innate or stable characteristics cause the dependent variable of entrepreneurship status (Davidsson, 2007). This approach is problematic for a number of reasons. First, such an approach does not test for reversed causation. That is, it is difficult to evaluate whether the personality characteristics of entrepreneurs are a predisposing factor or are learned from the role itself. Empirical work has generally assumed the former perspective: that those displaying the characteristics in question self-select into entrepreneurship (see Shane, 2003). Second, the personality characteristics that predict start-up behavior may not predict behavior later on in the entrepreneurship process (Eckhardt & Shane, 2003). For example, the trait of openness may be suited to creating a new venture (creative mindset) rather than sustaining one (managerial mindset) (Ciavarella, Buchholtz, Riordan, Gatewood, & Stokes, 2004). Finally, distal person characteristics are unlikely to be a strong predictor of a proximal event (i.e., start-up; Davidsson, 2007). Longitudinal research is needed to identify antecedent personality characteristics as well as the characteristics involved in persistence and long-term success. Davidsson (2007) recommended using a behavioral aggregate of entrepreneurial activity such as entrepreneurial career performance as an alternative to the dichotomous outcome variable of entrepreneurship status (i.e., founder vs. nonfounder).

Matching of predictor and criterion variables. Studies of how successful entrepreneurs differ from less successful entrepreneurs have also been problematic. Such studies have utilized a cross-level design in which individual-level personality characteristics are used to explain firm-level performance (Davidsson, 2007). Yet personality characteristics should relate more strongly to

Table 2
Topic Areas and Research Questions

Topic area	Research questions
The personality characteristics of entrepreneurs	<ul style="list-style-type: none"> • Are the personality characteristics of entrepreneurs a predisposing factor, or are they learned from the role itself? That is, what are the antecedent personality characteristics for entrepreneurship? • What is the relative importance of different personality characteristics at each phase of the entrepreneurship process? Do the personality characteristics that predict start-up differ from those that predict growth and survival? • Which personality characteristics need to remain stable, and which personality characteristics need to change or develop over time? • Are personality characteristics a longitudinal predictor of success? • Which personality characteristics are associated with failure? • What are the moderating and mediating variables in the personality–entrepreneurship relationship? • Do the important personality characteristics differ for individual versus corporate or team-based entrepreneurs?
Psychopathology: exploring the dark side of entrepreneurs	<ul style="list-style-type: none"> • Is there a link between psychopathology and entrepreneurship? • Is the prevalence of psychopathology higher among entrepreneurs? • How are entrepreneurs perceived by their employees? Are they dysfunctional managers? • Do entrepreneurs share a particular familial and/or work history? • Are psychological variables associated with ethical/unethical entrepreneurship? Is there a link to psychopathology? • Can ethical entrepreneurship be regulated, for example, through screening or selection? • Do entrepreneurs have higher resilience and work output capacity than nonentrepreneurs? • Do entrepreneurs benefit from counseling or psychotherapy on a professional level (e.g., survival and growth of the firm)? What types of intervention are most effective?
Entrepreneurial cognition	<ul style="list-style-type: none"> • What is the nature of the cognitive process underlying opportunity recognition and exploitation? • What is the relationship between cognitive shortcuts and entrepreneurial success? • What is the relationship between general ability and entrepreneurial success? What other types of intelligence are important (e.g., successful intelligence)? • Are different aspects of intelligence required for different phases of the entrepreneurship process? • How do entrepreneurs organize knowledge about the entrepreneurship process? What do their mental models of the entrepreneurship process look like?
Entrepreneurship education	<ul style="list-style-type: none"> • What are the critical competencies (e.g., knowledge, skills, and abilities [KSAs]) underlying entrepreneurship? How do these change over the course of the entrepreneurship process? • Which KSAs are predisposing factors and which KSAs need to be learned? • How do the educational needs of different types of entrepreneurs (e.g., individual, corporate, team-based) differ? • Can opportunity recognition be taught or learned? • What tasks are involved in starting a business and leading it to success? Which KSAs are aligned with these tasks? • Which tasks are common and unique to particular phases or types of entrepreneurship?
Expanding entrepreneurship as a global phenomenon	<ul style="list-style-type: none"> • How should national culture be operationalized in the context of entrepreneurship research? What are the cultural dimensions relevant to entrepreneurship? • Does the relationship between national culture and entrepreneurship differ depending on the outcome measured (e.g., venture creation vs. self-employment or corporate entrepreneurship)? • How do national culture and contextual factors combine or interact to predict entrepreneurship? • How do national culture and organizational factors combine or interact to predict corporate entrepreneurship? • How does religion influence entrepreneurial activity and success? Does the relationship between religiosity and entrepreneurship vary depending on the religious grouping? • Given a particular religious grouping, are entrepreneurs more or less religious than nonentrepreneurs?

individual-level performance (e.g., personal financial success) than to firm-level performance (e.g., growth, profitability), particularly in larger firms (Rauch & Frese, 2007). Predictor and criterion variables should be measured at the same level of analysis.

Construct operationalization. Entrepreneurship has been operationalized inconsistently, and this fact has hampered interstudy comparison (Hisrich et al., 2005). For instance, Stewart and Roth (2001) argued that different operational definitions of entrepreneurship may have obscured risk propensity differences between entrepreneurs and managers. In their meta-analytic review, Stewart and Roth found that entrepreneurs had a higher risk propensity than managers and that this difference was greater for growth-oriented entrepreneurs than for income-oriented entrepreneurs.

Valid and reliable measures. Measures designed specifically to assess entrepreneurial personality characteristics have been of questionable validity and reliability (Cromie, 2000; Rauch & Frese, 2000). Rather than trying to develop a suite of personality measures exclusively for entrepreneurs, which would be of limited value, future research should use established measures from mainstream personality psychology. Coming from a long and sound tradition, projective measures of motives (e.g., *nAch*) have proven utility in the entrepreneurship literature (McClelland, 1961, 1987) and should be used alongside psychometrically established measures of traits such as the theoretically grounded and empirically validated NEO-Personality Inventory (a measure of 30 subtraits classified according to the Big Five). The inclusion of such measures should ensure that key motives and traits are not overlooked.

Moderating and mediating variables. Rauch and Frese (2007) noted that broad taxonomies of personality traits such as the Big Five have been less frequently studied in the entrepreneurship literature and that general traits have lower predictive validity than specific traits in this context owing to the specificity of performance measures (e.g., sales growth). They suggested that (a) predictor and criterion variables should be matched on the basis of broadness versus specificity and (b) the effect of broad traits on new venture creation and success may be mediated by specific traits. Nonperson mediator and moderator variables should also be included in future research (Davidsson, 2007). For instance, previous findings for internal locus of control and risk propensity are heterogeneous, suggesting the presence of moderator variables (Rauch & Frese, 2007).

Psychopathology: Exploring the "Dark Side" of Entrepreneurs

Entrepreneurs "break the mold" by rejecting society's prevailing norm of seeking employment with another organization or person (Teal & Carroll, 1999). Many entrepreneurs are misfits, difficult employees who start their own firms because they are unwilling to submit to authority and find it difficult to work in a prestructured environment (Kets de Vries, 1985). Kets de Vries (1985, p. 161) noted

that "entrepreneurs seem to be driven by a magnificent obsession," and Winslow and Solomon (1988) described entrepreneurs as mildly sociopathic. Yet the dysfunctional psychological characteristics of entrepreneurs have received little attention. Past work has been based on clinical case studies or small patient samples rather than large-scale survey research with established measures (e.g., Kets de Vries, 1985, 1996; Strenger & Burak, 2005), thus limiting its objectivity and generalizability. Nonetheless, case study research may be valuable as a lead-up to survey research. The in-depth, case-by-case analysis of real-world behavior may be superior for hypothesis development, and the longitudinal nature of case study research could provide insight into the interplay between individual, task, and environmental characteristics in the entrepreneurship process (Davidsson, 2007).

McClelland (1961) attributed the dark side of entrepreneurs to high *nAch* coupled with inner-directedness. Other work has suggested that entrepreneurs are characterized by a need for control, a sense of distrust, a desire for applause, and defense mechanisms such as splitting (Kets de Vries, 1996), that is, seeing the world as all good or all bad (American Psychiatric Association, 2000). This may have a catastrophic effect not only on entrepreneurs themselves but on communication, decision making, morale, and productivity within their firms (Kets de Vries, 1985, 1996). In addition, psychopathology may be linked to carelessness, extravagant, or unethical entrepreneurial behavior. As McClelland (1961, p. 331) noted more than 40 years ago, "We do not know at the present time what makes an entrepreneur more or less ethical in his (her) dealings but obviously there are few problems of greater importance for future research." Understanding the psychopathology of entrepreneurs has practical implications for entrepreneurs who are heading for trouble and for investors who need to assess whether entrepreneurs are likely to succeed (Strenger & Burak, 2005).

Historically, entrepreneurship has been synonymous with *economic* well being, far removed from *psychological* well being. A possible starting point for clinical research is the family background of entrepreneurs. Kets de Vries (1996) identified the classic familial profile as consisting of an emotionally or physically absent father and a controlling, overbearing mother, with death, illness, and separation as prominent themes. He argued that any self-destructive behavior of entrepreneurs is likely to stem from insecurity, low self-esteem, and a fragile sense of self. Through starting their own firms, entrepreneurs establish a secure foundation, take control, and obtain affirmation and recognition (Kets de Vries, 1985, 1996). Strenger and Burak (2005) observed that many male entrepreneurs are characterized by fatherlessness, the experience of growing up with an absent, abusive, insufficient, or weak father. They reasoned that fatherlessness may provide the future entrepreneur with the incentive to create his own environment in much the same way that lack of paternal authority does in Freud's Leonardo hypothesis. However, although entrepreneurs cope with fatherlessness by transforming it into an asset, only those who psychologically come to

terms with their father's failure (entrepreneurs who become their own fathers) will succeed. In contrast, those who cannot let go of their rage (self-destroyers) or inner void (grandiose dreamers) will fail (see Table 1 for details). Entrepreneurs who "become their own fathers" typically grow up with a neglectful father, whereas self-destroyers typically grow up with an abusive one (Strenger & Burak, 2005).

The start-up experience is filled with anxiety, enthusiasm, frustration, and hard work. The failure rate is high because of competition, poor sales, restricted capital, and lack of managerial ability (Hisrich et al., 2005). Financial and emotional risk can also be high. It takes a complex personality to survive the troubled waters of new venture creation. Entrepreneurs' personality quirks and mix of creative and irrational impulses may be responsible for their drive, energy, and success, making them interesting subjects for research (Kets de Vries, 1985).

Entrepreneurial Cognition

Cognition is *the* nouveau area in the entrepreneurship literature (Baron, 2004). Entrepreneurial cognition can be defined as "knowledge structures that people use to make assessments, judgments or decisions involving opportunity evaluation, venture creation and growth" (R. K. Mitchell et al., 2002, p. 97). Entrepreneurial cognition is a valuable topic given that cognitive strategies can be learned or mastered through training (Palich & Bagby, 1995). Although research is in a formative stage, work to date has suggested that the cognitive variables that distinguish entrepreneurs from nonentrepreneurs are opportunity recognition, risk perception, and cognitive shortcuts.

Entrepreneurs appear to make cognitive leaps about potential opportunities long before they can be rationally and systematically evaluated (Busenitz et al., 2003). Entrepreneurs may have a special ability for identifying opportunities that other people fail to recognize (Shane, 2003). Recent attention to opportunity recognition (the cognitive process through which opportunities are identified) has been a major theoretical development in the entrepreneurship literature (Baron, 2006). Opportunity recognition has been attributed to active search (Gilad, Kaish, & Ronen, 1989); alertness or "notice without search" (Gaglio & Katz, 2001; Kirzner, 1979); prior knowledge and cognitive mechanisms (this may overlap with perception; see below; Shane & Venkataraman, 2000); ability, efficacy, motivation, and desirability (Hostager, Neil, Decker, & Lorentz, 1998); and, more recently, pattern recognition or "connecting the dots" (Baron, 2006). However, despite a plethora of theoretical work, exploration of opportunity recognition is undeveloped in empirical work (Gaglio & Katz, 2001). Given the methodological challenge of capturing opportunity recognition at its point of execution, experimental and laboratory research (e.g., computer simulation) could be a useful research paradigm.

The classic image of the entrepreneur is one of an adventurous, bold, and visionary risk taker. Entrepreneurs strike a balance between aversive and opportunistic risk. The failure to pursue a potentially profitable venture may

be just as costly in the long term (i.e., "sinking the boat" risk vs. "missing the boat" risk; Dickson & Giglierano, 1986). As described earlier, the risk-taking behavior of entrepreneurs has been explained in terms of a stable disposition, that is, a higher risk-taking propensity (McClelland, 1961; Stewart & Roth, 2001). However, recent work on entrepreneurial cognition has suggested that entrepreneurs and nonentrepreneurs differ not in regard to their risk propensity *per se* (i.e., conscious acceptance of risk) but rather in how they perceive risk (Busenitz, 1999; Busenitz & Barney, 1997). The central thesis of this work is that entrepreneurs are characterized by lower risk perception, thus giving the illusion of greater risk tolerance. Research has shown that entrepreneurs categorize ambiguous business scenarios significantly more positively than do nonentrepreneurs (Palich & Bagby, 1995) and rate the probability of securing desired career attributes (e.g., leadership) significantly higher than do nonentrepreneurs (Amit, MacCrimmon, Zietsma, & Oesch, 2000). Entrepreneurs also appear to use cognitive shortcuts (e.g., heuristics) in decision making that lower their risk perception (Busenitz & Barney, 1997; Keh, Foo, & Lim, 2002; Simon, Houghton, & Aquino, 1999). However, an experimental study (Forlani & Mullins, 2000) found that entrepreneurs' decision making (new venture choice) was influenced by inherent risk, perceived risk, and risk propensity, which suggests a more complex decision-making process.

Applying cognitive shortcuts may be the only way forward for entrepreneurs given the emotion, fatigue, information overload, novelty, uncertainty, and time pressure associated with new venture creation (Alvarez & Busenitz, 2001; Baron, 1998). Busenitz and Barney (1997, p. 10) argued that without cognitive shortcuts, "many entrepreneurial decisions would never be made." On the other hand, cognitive shortcuts may also give rise to cognitive error (Busenitz et al., 2003). Baron (1998) proposed that entrepreneurs may be more susceptible to cognitive error because of affect infusion, counterfactual thinking, planning fallacy, self-serving bias, and self-justification. However, only one of these cognitive mechanisms, counterfactual thinking, has been empirically investigated. Baron (2000) reported that entrepreneurs were in fact *less* susceptible to counterfactual thinking than were potential entrepreneurs and nonentrepreneurs. An important question is whether successful entrepreneurs are less prone to cognitive shortcuts and errors than are less successful entrepreneurs (Baron, Frese, & Baum, 2007). Notably, no research to date has explored the use of cognitive shortcuts in a naturalistic setting, for instance, over the course of the entrepreneurship process.

A cognitive variable that has been overlooked in the entrepreneurship literature is general ability, that is, intelligence (Markman, 2007; Rauch & Frese, 2007; Sternberg, 2004). This is surprising given the well-established relationship between general ability and job performance in the occupational literature (Schmidt & Hunter, 1998). Only a handful of studies have investigated the general ability of entrepreneurs. Ray and Singh (1980) found that the general ability of farmer entrepreneurs predicted growth rate, that

is, the difference between their outputs from 1970 to 1974. A longitudinal study (van Praag & Cramer, 2001) found that academic intelligence at age 12, measured by knowledge comprehension tests on school subjects, was a positive predictor of entrepreneurial talent in adulthood. Creativity, intuition, and divergent thinking should also be important, but these aspects of cognitive ability have likewise been neglected in entrepreneurship research (J. R. Mitchell, Friga, & Mitchell, 2005; Shane, 2003). Sternberg (2004) argued that successful entrepreneurship is likely to require a blend of analytical, creative, and practical intelligence ("successful intelligence"). Busenitz and Arthurs (2007, p. 134) theorized that entrepreneurs need *entrepreneurial capabilities*, "the ability to identify new opportunities and develop the resource base needed to start a firm," and *dynamic capabilities*, "the ability to reconfigure the firm's resource base to meet changing demands."

It is evident that the array of characteristics needed for entrepreneurship is extensive. At the same time, it is unrealistic to expect all budding entrepreneurs to possess these characteristics. Entrepreneurship education, discussed below, can be used to "make a person a more competent and a more professionalized business owner" (Katz, 2007, p. 211).

Entrepreneurship Education

The notion that it is possible to boost new venture creation and success through education is gaining popularity, and there is increasing support for the idea of entrepreneurship as a discipline that can be taught and learned (Kuratko, 2003). Katz (2007, p. 209) summarized the evidence that entrepreneurship education is associated with entrepreneurial activity and success and noted, "Although evidence is widely dispersed and unintegrated, the effort does seem to work": Entrepreneurship MBA graduates are more likely to be involved in new venture creation or ownership than are nonentrepreneurship MBA graduates; small firms that receive assistance from a Small Business Development Center (e.g., one-on-one counseling, training) show a higher rate of survival and growth than do other small firms; and the firms of entrepreneurship MBA graduates show a higher rate of sales and employment growth than do the firms of nonentrepreneurship MBA graduates. However, research incorporating a Gene \times Environment approach is needed before the traditional hypothesis that entrepreneurs are born, not made (the proposed "entrepreneurship gene") can be ruled out.

There is also evidence to suggest that characteristics associated with entrepreneurial success, such as achievement motivation, can be learned. McClelland and Winter (1969) developed an achievement motivation training program for entrepreneurs based on the rationale that increasing the strength of this motive may increase a country's economic development. Small businessmen in India were trained how to think, talk, and act like people who score high on *nAch*. Results indicated that there was an increase in business activity two years after training. Similarly, achievement motivation training for minority business people in the United States was associated with an increase in

monthly sales, personal income, and profit six months after training (Miron & McClelland, 1979).

Entrepreneurship education may take the form of an academic program, entrepreneurship training, and individual or peer coaching (see Katz, 2007). Entrepreneurship education is currently a hot topic, and there has been a substantial increase in the number of courses offered in the past 20 years—over 2,000 courses, 1,500 schools, and 100 funded centers in the United States alone (Kuratko, 2003). A similar trend has emerged in Europe and China. For example, the German government recently funded 25 chairs in entrepreneurship, and in China courses are taught in many higher education institutions (Hisrich, 2005).

Entrepreneurs need to be multiskilled (Markman, 2007). Even experienced, motivated, and visionary entrepreneurs are not immune to failure (Shane, 2003) and may benefit from education to hone their skills as their firms expand or change direction. Given what we have learned about entrepreneurs' cognitive shortcuts (see above), it is possible that entrepreneurs fall prey to erroneous decision making that could be avoided through appropriate education. In addition, entrepreneurs' possible dysfunctional personality characteristics may mean that they lack the social skills necessary to succeed. Baron and Markman (2000) highlighted the importance of social competencies, including social adaptability, social perception, impression management, and persuasion and influence. Busenitz and Arthurs (2007) stated that many entrepreneurs lack the managerial and technical skills needed for developing an organization. Baum, Locke, and Smith (2001) found that owner-manager CEOs' specific competencies (e.g., technical skills) but not general competencies (e.g., diagnostic use of concepts) directly predicted new venture growth. Baum and Locke (2004) introduced the construct of *new resource skill*, that is, skill in finding capital and human resources and setting up new systems, and found that it was a significant predictor of venture growth.

Behaviorally specific skills or competencies are invisible assets that can be exploited and leveraged. McClelland (1987) identified several competencies that distinguished successful from less successful entrepreneurs: assertiveness, commitment to work, efficiency orientation, initiative, and systematic planning. It may be difficult to establish and measure entrepreneurial competencies given that we do not have a complete understanding of how competencies change over the life cycle of the business. Markman (2007) argued that what is needed is a knowledge, skills, and abilities (KSAs) analysis of entrepreneurship. Although there has been extensive research on the personality characteristics of entrepreneurs, there is a relative absence of research on the KSAs needed to get a venture off the ground and make it flourish. A constructive way forward would be to document the tasks that entrepreneurs need to perform to start up a business and lead it to success. By beginning with job analysis and deciphering the tasks that are common and unique to particular phases (e.g., start-up) and types (e.g., team-based) of entrepreneurship, psychologists will be able to identify important KSAs throughout the entrepreneurial process. A comprehensive taxonomy of

entrepreneurial tasks will allow researchers to better test and apply entrepreneurship theory by enabling interstudy comparison. Furthermore, knowledge of the KSAs associated with different entrepreneurial tasks would be valuable for selection and training. For instance, the KSAs associated with start-up could be used as a tool for assessing people's natural potential for entrepreneurship.

A recent special issue on entrepreneurship education in the *Academy of Management Learning & Education* journal identified several areas for development, including teaching opportunity recognition as a core competency (DeTienne & Chandler, 2004) and educating entrepreneurs about emotion management in the context of learning from failure (Shepherd, 2004). Given the importance of protecting investor capital, ethics education is also a priority (Bechard & Gregoire, 2005).

Entrepreneurship as a Global Phenomenon

The entrepreneurship literature is characterized by a lack of reliable, internationally comparable data (Hisrich, Honig-Haftel, McDougall, & Oviatt, 1996; Thomas & Mueller, 2000). Yet there are two major reasons why international research should be given more attention. First, given the global economy, a critical new challenge for entrepreneurs is working on an international scale. Entrepreneurs are no longer restricted to the domestic market, and international entrepreneurship is emerging as the new breed of business activity (Dess et al., 2003). Furthermore, even locally oriented entrepreneurs must be aware of international competitors, customers, employees, and suppliers (Hisrich, Vahcic, & Glas, 1999). Morris et al. (2002) argued that recognizing cultural similarities and differences is crucial to building trust when negotiating, purchasing, selling, and working on an international scale. Second, cultivating native industry through indigenous entrepreneurship may provide a solution to unemployment and economic dependence in the developing world (W. Chen, 2000). Understanding the relationship between culture and entrepreneurship is vital to the internationalization of entrepreneurship theory including policy to promote new venture creation on a global scale (Thomas & Mueller, 2000). The role of cultural values in entrepreneurship and economic development outside the Western context has received less attention, with past research focusing on environmental factors such as capital, labor, and so forth (Morris et al., 2002).

A major source of information on international differences in entrepreneurship is the Global Entrepreneurship Monitor (GEM), an ongoing initiative based on large-scale household sampling across 40 countries, including the United States. Entrepreneurial activity is measured using two indices, the Total Entrepreneurial Activity index (those active in starting a new business) and the Firm Entrepreneurial Activity index (innovation and growth in established firms) (Reynolds et al., 2004). GEM data are available to participating institutions for secondary data analysis. Although secondary data analysis is attractive in terms of cost and time efficiency, a major limitation of this data set and other archival entrepreneurship data sets (e.g., the Panel Study of Entrepreneurial Dynamics) is that they

typically focus on sociological variables (e.g., personal background). Psychological variables are often lacking or have to be approximated using distant, single-item proxy measures (Davidsson, 2007).

Culture and entrepreneurship. Cultural variation may stem from ethnic, language, national, regional, religious, or social class variation (Basu & Altinay, 2002). Culture may affect the supply of entrepreneurs by influencing preferences for entrepreneurship (Davidsson, 1995) or the personal characteristics of the population (Davidsson & Wiklund, 1997). Alternatively, culture may affect entrepreneurship indirectly via contextual factors. For instance, a culture's prevailing attitude toward entrepreneurship could affect the amount of financial support available to entrepreneurs or infiltrate the education system to determine the amount and quality of entrepreneurship education and training (Hisrich, 1996). For example, America's individualistic culture is amenable to entrepreneurship (Lee & Peterson, 2000). Walt Disney, Sam Walton, Ray Kroc, and Bill Gates embody the essence of entrepreneurship and the American entrepreneurial dream (Burn, 2001), and it is through entrepreneurship that the majority of the Fortune 200 companies were realized (Purrlington & Bettcher, 2001). The United States is currently a world leader in financial support for entrepreneurship (Reynolds et al., 2004). In contrast, Russia has been forestalled by the persisting culture of the communist regime, although a transition to a more entrepreneurial culture is now evident (Lee & Peterson, 2000). Russian entrepreneurs typically rely on personal funding and thus have restricted capital (Puffer & McCarthy, 2001).

Empirical studies of culture and entrepreneurship have tended to focus on Hofstede's (1980) conceptualization of national culture (i.e., individualism–collectivism, uncertainty avoidance, power distance, and masculinity–femininity) (Hayton, George, & Zahra, 2002). A review of empirical studies on national culture and entrepreneurship (Hayton et al., 2002) indicated that (a) high individualism, low uncertainty avoidance, and high power distance are associated with national entrepreneurship; (b) individualism, power distance, and uncertainty avoidance are related to entrepreneurial characteristics such as cognitive scripts and traits; (c) entrepreneurs are higher in power distance, individualism, and masculinity and lower on uncertainty avoidance than are nonentrepreneurs; and (d) Hofstede's cultural dimensions are meaningfully related to aspects of corporate entrepreneurship such as entry mode, innovation, spin-offs, and strategic renewal.

Tung, Walls, and Frese (2007) noted that despite evidence linking culture with venture creation, success, and failure, the culture–entrepreneurship relationship is inconsistent, small, and temporally unstable, with the nonequivalence of measures (e.g., cross-cultural differences in response styles and reference groups) contributing to this problem. The blurred empirical distinction between cultural values and individual values is also problematic. For instance, culture is conceptualized at the national level but measured at the individual level (Davidsson, 2007). Hayton et al. (2002) identified the relationship between culture and

heuristics or scripts as a fruitful area for future research given that such characteristics (unlike individual values) are conceptually removed from cultural values. The development of a new measure of national culture focusing on cultural dimensions that are directly relevant to entrepreneurship is pertinent. For instance, Hofstede's (1980) broadly defined taxonomy (developed in the organizational context) might not adequately capture cultural dimensions that relate to entrepreneurship and/or cultural heterogeneity within a country or region (Basu & Altinay, 2002; Hayton et al., 2002). Basu and Altinay (2002) found that cultural dimensions such as attitudes toward education, business experience, family ties, family tradition in business, migration motives, and religion predicted business entry motives, pattern of start-up finance, and family involvement in business.

Culture, religion, and entrepreneurship.

"Culture is greatly influenced by religion since religion determines a person's basic values and beliefs" (Basu & Altinay, 2002, p. 373). Yet, despite its status as a key component of culture and ethnic identity, religion has been underresearched in the international entrepreneurship literature. Bellu and Flume (2004) found that religion moderated the effect of pursuing material wealth on life satisfaction. Personal religiosity was associated with higher life satisfaction. Dodd and Seaman (1998) argued that religion may act as a munificence factor for entrepreneurship as well as strengthening (or weakening) other environmental munificence factors. For instance, religion may influence one's decision to become an entrepreneur by supporting (a) independent economic activity; (b) entrepreneurs' subsequent business strategies via personal religiosity (e.g., faith, morals); or (c) entrepreneurs' social networks (e.g., access to professional advice and support; Dodd & Seaman, 1998). Dodd and Seaman (1998) found that there were no significant differences between entrepreneurs and nonentrepreneurs with respect to religious affiliation (belonging to a particular religion), adherence (attending religious meetings), and impact (difference religion made in one's life). Furthermore, religious adherence was unrelated to entrepreneurial status or success. Note, however, that this study was based on a British sample in which religious behavior was generally low and skewed toward Christianity. Thus, it is possible that further research combining greater religious diversity with a between-groups design may reveal a stronger relationship between religiosity and entrepreneurship. In addition, the effect of religion on entrepreneurship may be mediated or moderated by other variables. Entrepreneurs interact with bankers, investors, customers, and employees, who form a major resource network that is vital to the longevity of the business (Baron, 2000; Hisrich, 1990). Entrepreneurs might be able to use their religious affiliations to help develop such networks (Dodd & Seaman, 1998).

Policy and entrepreneurship. Countries need a strategy for entrepreneurship. The challenge is forging a culture to encourage entrepreneurial activity. Governments have the potential to influence the rate of new venture creation through policy that is either directly or indirectly

related to entrepreneurship (Hisrich et al., 2005). An interesting case is Northern Ireland, where government funding was used to kick-start the war-torn economy, making entrepreneurship an important cornerstone in the country's economic revival (Hisrich, 1988). Deng Xiaoping's dismantling of the communist system in China in the late 1970s is another example of how policy can have a dramatic impact on the development of entrepreneurship (see Tung et al., 2007). The British government has been proactive in implementing a strategy for entrepreneurship that focuses on encouraging the start-up market; developing regulatory policy; increasing access to capital; improving services for small firms; building skills to grow firms; promoting entrepreneurship among the disadvantaged; underpinning entrepreneurship with resources; and evaluating results (Gome, 2005). To further entrepreneurship worldwide, Reynolds et al. (2004) suggested that international policy should focus on decreasing the cost of registering firms, giving official recognition to property ownership, reducing government control over national economic activity, and providing training.

Conclusion: The Way Forward

As a catalyst for innovation and job creation, entrepreneurship has significance for prosperity and well-being at the individual, family, community, and national levels. There is a wealth of research on entrepreneurship in business, economics, management, and sociology, but psychology's contribution is yet to be fully exploited, demanding this "call to action" for psychologists. There are a number of gaps in the literature that need to be filled, and in this article we have identified research opportunities for psychologists in five key topic areas: the personality characteristics of entrepreneurs, the psychopathology of entrepreneurs, entrepreneurial cognition, entrepreneurship education, and international entrepreneurship. These topic areas can be divided into two clusters: the characteristics of the entrepreneurs themselves, namely, individual differences such as personality, psychopathology, and cognition, and psychological variables that relate to the infrastructure of the entrepreneur's environment, specifically, system variables such as education and national factors, including culture and policy.

With regard to the characteristics of entrepreneurs, research opportunities reside in clarifying the role of personality in the entrepreneurship process through longitudinal research and appropriate matching of predictor and criterion variables; improving construct operationalization and measurement (e.g., validity, reliability); exploring mediating and moderating variables in the personality-entrepreneurship relationship; and examining the psychopathology of entrepreneurs, including dysfunctional entrepreneurial behavior and its link to familial and/or work history. The study of entrepreneurial cognition, a nouveau area of entrepreneurship research, can provide a fresh outlook on the characteristics of entrepreneurs. Research opportunities abound in investigating the nature of opportunity recognition; examining cognitive shortcuts and their impact on success and failure; and establishing the importance of general and specific cognitive abil-

ities for the entrepreneurship process. The possibility that an entrepreneurship gene may determine the personality and cognitive characteristics of entrepreneurs must also be given research attention.

Research on the infrastructure of the entrepreneur's immediate and broader sociocultural environment is needed to improve entrepreneurship education and promote local, ethnic, and international entrepreneurship. Research opportunities include identifying the KSAs that underpin entrepreneurship and incorporating these in education and training; establishing a reliable, internationally comparable database that includes psychological variables; improving studies of the culture–entrepreneurship relationship by addressing the level-of-analysis problem and developing new measures of national culture; and, finally, exploring the role of religion in entrepreneurship.

This article should serve as a stimulus for a new era of research on the psychology of entrepreneurship. Psychology's contribution to entrepreneurship research and practice has the potential to revolutionize our understanding of the dynamics of new venture creation and success. Most entrepreneurs start out with a dream: a magnificent obsession. As we have shown, there are several psychological variables that may influence the realization of this dream. These variables will need to be translated into practical solutions if the dream is to come true. The dream can be accomplished; psychology *can* help.

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