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Individual Entrepreneurial Intent: Construct Clarification and Development of an Internationally Reliable Metric

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Individual entrepreneurial intent is a key construct in research on new business formation. However, neither a clear or consistent definition of nor a uniform and reliable way to measure individual entrepreneurial intent has yet emerged. Several management scholars have highlighted the impediment this constitutes to the advancement of entrepreneurship research. This paper first seeks to clarify the construct of individual entrepreneurial intent and then reports the development and validation of a reliable and internationally applicable individual entrepreneurial intent scale.

The intention of individuals to set up new businesses has proven to be a fundamental, enduring, and frequently used construct in research on entrepreneurship (Bird, 1988; Carr & Sequeira, 2007; Krueger, Reilly, & Carsrud, 2000; Webster, 1977; Wilson, Kickul, & Marlino, 2007). Individual entrepreneurial intent has been used as a dependent or independent variable in numerous studies (Autio, Keeley, Klofsten, & Ulfstedt, 1997; Brandstätter, 1997; Chen, Greene, & Crick, 1998; Davidsson, 1995; Francis & Banning, 2001; Frank & Lüthje, 2004; Hmieleski & Corbett, 2006; Kennedy, Drennan, Renfrow, & Watson, 2003; Krueger et al.; Lüthje & Franke, 2003; Vesalainen & Pihkala, 1999), and is likely to remain an important construct in research relating to enterprising individuals, their cognitions of business opportunities, and their decisions of whether or not to risk exploiting them by creating new ventures (Palich & Bagby, 1995).

However, no uniform approach to defining and measuring individual entrepreneurial intent has yet emerged (Shook, Priem, & McGee, 2003). Indeed, the term entrepreneurial intent has been used loosely to cover a range of related but differing concepts, such as career orientation (Francis & Banning, 2001), vocational aspirations (Schmitt-Rodermund & Vondracek, 2002), nascent entrepreneurs (Korunka, Frank, Lueger & Mugler, 2003), outlook on self-employment (Singh & DeNoble, 2003), and the desire to own a business

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(Crant, 1996). In consequence, as Autio et al. (1997) have noted, the measurement of individual entrepreneurial intent has been characterized by disparate metrics, and no rigorously developed and psychometrically validated measurement scale has so far been developed.

The lack of a clear definition of individual entrepreneurial intent and the absence of a systematically derived and reliable metric for its measurement have hindered progress in identifying the individual cognitions, personality traits, personal circumstances, and micro- and macro-environmental conditions associated with entrepreneurship (Bruyat & Julien, 2001; Gartner, 1985; Low & MacMillan, 1988; Shane & Venkataraman, 2000). The continuing lack of a consistent and rigorously validated measure for individual entrepreneurial intent threatens to impede progress in both theoretical and empirical studies in some areas of entrepreneurship, and, as a corollary, to add strength to criticisms that research on new venture creation is often characterized by deficits both of theoretical sophistication (Shane & Venkataraman) and of methodological rigor (Aldrich & Baker, 1997; Shook et al., 2003).

This threat to research progress is evident in studies that find inconsistent results when using individual entrepreneurial intent as a key, but differently defined and measured variable. Such inconsistent findings have, on one hand, prompted calls for better specified variables and more reliable metrics in entrepreneurship research generally (Krueger et al., 2000). On the other, inconsistent research results have generated specific suggestions that a consistent definition of entrepreneurial intent be used by scholars (Shook et al., 2003). In response to these suggestions, this paper attempts, first, to clarify the concept of individual entrepreneurial intent, and, second, reports the development and validation of an internationally reliable scale for its measurement.

Necessity of the Entrepreneurial Intent Construct

Individual entrepreneurial intent has proven to be an important and continuing construct in entrepreneurship theory and research (Carr & Sequeira, 2007; Hmieleski & Corbett, 2006; Wilson et al., 2007). The frequency of its use as a proxy for entrepreneurial activity may have declined somewhat over the past decade as scholars have sought more direct indicators, but entrepreneurial intent is substantially more than merely a proxy for entrepreneurship—it is a legitimate and useful construct in its own right that can be used as not just a dependent, but as an independent and a control variable

All new firms set up by individuals, or groups of individuals outside the formal context of existing firms, begin with some degree of planned behavior on the part of those individuals (Krueger et al., 2000; Shook et al., 2003). On occasion, new business opportunities may, of course, be stumbled upon inadvertently by those who might not previously have consciously planned to become entrepreneurs, but even then, as motivational theories of behavior suggest (Ajzen, 1991; Fishbein, 1967), the exploitation of such inadvertently discovered opportunities through starting a firm begins, nevertheless, with purposeful intention that precipitates action. Not all new business opportunities that are stumbled upon result in new firms because, as Krueger (2007, p. 124) emphasizes, "behind entrepreneurial action are entrepreneurial intentions," and not all individuals will have such intentions, either before or after they find by serendipity a new business opportunity. The "intentionality" (Katz & Gartner, 1988, p. 431) of would-be entrepreneurs has therefore long been stressed as an important variable in understanding the formation of new business ventures (Bird, 1988; Webster, 1977).

Intent to start a new business venture is not confused by these authors with mere desire or fancy, nor is it confused with personal disposition: many individuals may abstractly have a whimsical desire, and, indeed, the personality to become entrepreneurs in theory, yet in practice, never go beyond merely flirting casually with the notion of in fact starting a new venture. Rather, intent is used in the sense of a conscious and planned resolve that drives actions necessary to launch a business. It is precisely because not all individuals develop such an intent and because the majority of those who do develop such intent in fact fail to start firms (Aldrich, 1999) that a clearly articulated and reliably measured construct of entrepreneurial intent is needed for the advancement of theory and research into aspects of both new business formation and *non*formation.

Existing research suggests that the setting up of new firms by intending individuals is moderated and mediated by personal circumstances, such as parental background and educational level (Carsrud, Olm, & Eddy, 1987), by individual cognitions of new business opportunities (Busenitz & Lau, 1996; Choi & Shepherd, 2004; Mitchell, Smith, Seawright, & Morse, 2000), and by broader environmental factors at both individual and national institutional levels (Hunger, Korsching, & Van Auken, 2002; Korunka et al., 2003; Westlund & Bolton, 2003). Scientifically discovering and examining the effect of such moderating and mediating factors on intending individuals' decisions finally either to start or not to start new firms requires a prior assessment of those individuals' intent to become entrepreneurs in the first place. This again demands a clear and common definition of entrepreneurial intent and a consistently uniform metric for its measurement.

More fundamentally, research into the existence and traits of the "entrepreneurial personality" and its links to entrepreneurial behavior (Kets de Vries, 1977; McClelland, 1961) can be greatly assisted by the development of a clearly conceived and measured construct of entrepreneurial intent. As Gartner (1985) observed two decades ago, research on entrepreneurial traits and character has needed the development and better understanding of the basic structure of personality itself. The intervening two decades has seen substantial development of personality theory and how basic personality traits relate to a range of behaviors (Paunonen & Ashton, 2001), including entrepreneurship (Schmitt-Rodermund, 2004). Sufficient personality and entrepreneurship studies have now been undertaken that Zhao and Seibert (2006) have been able to undertake a meta-analysis, which has found evidence that entrepreneurs' traits appear to differ secularly from those of managers with respect to some elements of the big five model of basic personality (Goldberg, 1993). Whether or not a single or several types of entrepreneurial personality are ultimately found to exist (Cressy, 1995; Miner, Smith, & Bracker, 1992), it is clear that not all individuals with a given degree of such personality traits will necessarily ever intend to set up a new firm. Scholars will therefore rightly ask what makes some people, but not others, with such personality traits go on in fact to develop entrepreneurial intent. Answering such a question necessarily demands both a clear definition of individual entrepreneurial intent and a consistent and validated means to measure it.

Conceptions of Entrepreneurial Intent

"Good science has to begin with good definitions," as Bygrave and Hofer (1991) note in relation to entrepreneurship research (p. 15). At the organizational, as opposed to individual–level, research on pre-existing firms' entrepreneurship has been advantaged by clear definitions and validated measurement instruments for firm-level entrepreneurship and related constructs (Brown, Davidsson, & Wiklund, 2001; Covin & Slevin, 1989; Knight, 1997; Lumpkin & Dess, 1996; Miller & Friesen, 1978). But at the level of

individual entrepreneurship, both theoretical and empirical research has been hampered by varying conceptions and operationalizations of the notion of individual entrepreneurial intent. Little research that alludes to the idea of individual entrepreneurial intent in the examination of the "who, why, when, and how" of new business venture creation (Eckhardt & Shane, 2003; Shane & Venkataraman, 2000) explicitly defines individual entrepreneurial intent as a concept or construct (Shook et al., 2003). Insofar as definitions of the term entrepreneurial intent are derivable in existing research, it is often only by implication from context or the means by which entrepreneurial intent is measured (Table 1).

Reasonably enough, given the ostensibly straightforward usage of the terms "entrepreneurial" and "intent" in common parlance, many studies appear to take entrepreneurial intent as being a more or less self-defining concept (Audet, 2004; Autio et al., 1997; Boyd & Vozikis, 1994; Davidsson, 1995; Krueger et al., 2000; Lee, Chua, Chen, & Wong, 2004; Lee & Wong, 2004; Raijman, 2001). This is problematic, first because the implicit meaning of entrepreneurial intent used by these authors, the intention to start a firm, conflicts with the term "entrepreneurial intentions" as used by Jenkins and Johnson (1997) to mean the "desires of the individual entrepreneur" who is already up and running in business (p. 895).

Taking entrepreneurial intent to be a more or less self-defining concept is problematic, second, because the term entrepreneur is itself a vague and imprecise term that is interpreted and operationalized differently by scholars with respect to intent. Singh and DeNoble (2003), for instance, appear, from the 5-item measure they detail, to regard entrepreneurial intent as largely akin to a combination of owning a business and being self-employed. Crant (1996) would seem implicitly to equate entrepreneurial intent with business ownership, judging by the three items of his measure. Both a 2-item measure used by Lüthje and Franke (2003) and a 4-item measure they subsequently employ (Frank & Lüthje, 2004) suggest that they equate entrepreneurial intent specifically with self-employment. However, the intentions to own a business or to be self-employed are, as Carland, Hoy, Boulton, and Carland (1984) and Shook et al. (2003) have argued, quite different to, and each are achievable without, enterpreneurially setting up a new firm. For example, an individual who wants to own a firm can simply buy an existing firm and then retain or put in place managers to run it without, in practice, undertaking any of the actions or elements commonly associated with entrepreneurship. Similarly, self-employment can be achieved by buying a franchise or right to sell, for instance, insurance or other products.

Some studies do not clearly detail how individual entrepreneurial intent is measured, and so render it difficult to deduce accurately the definition they implicitly use. Other studies allude to individual entrepreneurial intent as a way of referring synonymously to related but clearly different concepts. For example, the term "emerging entrepreneurs" is used by Bruyat and Julien (2001), "developing entrepreneurs" are alluded to by Reynolds and Miller (1992), Thomas and Mueller (2000), and Vivarelli (2004) refer to "potential entrepreneurs." Such terminology would seem to shift away somewhat from the idea of intentional, planned behavior toward the notion of a personal predisposition, or, to use Stewart, Carland, Carland, Watson, and Sweo's (2003) phrase, an "entrepreneurial proclivity" that may, but not necessarily will, in future produce deliberative intentions to start a firm.

Taking a still further shift away from the deliberative intention to set up a firm are streams of research in psychology and career vocation. Studies in these fields may often allude to entrepreneurial intent, but their key focus is generally on broader personal orientations, dispositions, desires, or interests that are thought potentially to lead to or to constitute an entrepreneurial proclivity (Bonnett & Furnham, 1991; Sagie & Elizur, 1999; Wang & Wong, 2004). While individuals with particular personality traits and orientations

Table 1

Implicit Constructs and Variable Measurement in Studies Alluding to Individual Entrepreneurial Intent

Study	Construct implicitly used	Measurement approach	Number of scales/items	Full measure detailed	Replicability	Relibility tests	Validity tests
Audet (2004)	Entrepeneurial intent	Continuous	One 2-item scale	Yes	Yes	None reported	None reported
Bonnett and Furnham (1991)	Differences between high school and school leavers	Categorical—researcher ascribed	One item	Yes	Doubtful	None feasible	None reported
Brandstätter (1997)	Aspiring entrepreneurs	Categorical—researcher ascribed	One item	Yes	Doubtful	None feasible	None reported
Carter et al. (1996)	Nascent entrepreneurs	Categorical—self-categorization	Three items	Yes	Yes	None feasible	None reported
Chen et al. (1998)	Entrepreneurial intent	Continuous	One 5-item scale	No	Not possible	Alpha of .92 reported	None reported
Chrisman (1999)	Enquirers at small business development center	Categorical—researcher ascribed	One item	Yes	Doubtful	None feasible	None reported
Crant (1996)	Business ownership	Continuous	One 3-item scale	No	Not possible	Alpha of .93 reported	None reported
Davidsson (1995)	Entrepeneurial intent	Continuous	One 3-item scale	Yes	Yes	Alpha of .84 reported	None reported
Francis and Banning (2001)	Career goals	Categorical—researcher ascribed	One item	Yes	Doubtful	None feasible	None reported
Frank and Lüthje (2004)	Self-employment	Continuous	One 4-item scale	Yes	Yes	Not reported	Pilot study reported
Jenkins and Johnson (1997)	Business objectives	Qualitative	Unapplicable	Unapplicable	Unapplicable	Unapplicable	Unapplicable
Kennedy et al. (2003)	Entrepeneurial intent	Continuous	One 3-item scale	Yes for items, no for measurement scales	Partial	Alpha of .80 reported	Reference to Davidsson (1995)
Korunka et al. (2003)	Business-startup information-day attenders	Categorical—researcher ascribed	One item	Yes	Doubtful	None feasible	None reported
Krueger et al. (2000)	Entrepeneurial intent	Continuous	One single-item scale	Yes	Yes	None feasible	None reported
Lee and Wong (2004)	Entrepeneurial intent	Categorical	One item	Yes	Yes	None feasible	None reported
Lee et al. (2004)	Entrepeneurial intent	Categorical	One item	Yes	Yes	None feasible	None reported
Lüthje and Franke (2003)	Self-employment	Continuous	One 2-item scale	Yes	Yes	Not reported	Pilot study reported
Mueller and Thomas (2001)	Locus of control and innovativeness	Continuous	Two scales	Adapted Rotter (1966) and Jackson (1974). Items not given.	Not possible	Alphas of between .53 and .82 reported	None reported
Raijman (2001)	Thought of starting business	Categorical—self-categorization	One item	Yes	Yes	None feasible	None reported
Reitan (1997)	Entrepreneurial attitude	Continuous	One 21-item scale	No	Not possible	Alphas between .53 and .88 for subscales	None reported
Reynolds et al. (2004)	Attempting to start business	Categorical—self-categorization	One item	Yes	Yes	None feasible	None reported
Sagie and Elizur (1999)	Differences between small business and economics students	Categorical—researcher ascribed	One item	Yes	Yes	None feasible	None reported
Schmitt-Rodermund and Vondracek (2002)	Vocational interests and skills	Continuous	Three scales	Adapted Holland (1985). Items not given.	Not possible	Scale alphas reported	None reported
Singh and DeNoble (2003)	Business ownership/self-employment	Continuous	One 5-item scale	Yes	Yes	Alpha of .86 reported	None reported
Thomas and Mueller (2000)	Differences between business/ economics/engineering and other students	Categorical—researcher ascribed	One item	Yes	Yes	None feasible	None reported
Vesalainen and Pihkala (1999)	Entrepreneurial intent	Continuous	Two multi-item and one single-item scale	No	Not possible	Not reported	None reported

might constitute latent entrepreneurs, they need not have, nor indeed need they ever come to exhibit, any particular intentions or planned behaviors that might result in them taking steps toward establishing new firms.

Another term sometimes used synonymously for individuals possessing entrepreneurial intent is "nascent entrepreneurs." The term is often, but certainly not always, used in a way that is suggestive of individuals whose conscious intention to set up a business has progressed from an early stage of initial interest and formative plans onto a relatively advanced stage at which concrete actions are being undertaken to effect the reasonably imminent possible birth of a new firm. This approximate use of the term nascent entrepreneurs would seem implicitly, from the categorical criteria used to differentiate nascent from non-nascent entrepreneurs, to be employed in both the Panel Study of Entrepreneurial Dynamics, PSED (Gartner, Shaver, Carter, & Reynolds, 2004), and Global Entrepreneurship Monitor, GEM (Bosma & Harding, 2007, p. 6), plus several analyses stemming from them (Carter, Gartner, & Reynolds, 1996; Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007; Reynolds, Carter, Gartner, & Greene, 2004; Wagner, 2007).

However, other studies (Chrisman, 1999; Honig & Karlsson, 2004; Korunka et al., 2003; Mueller, 2006; Rotefoss & Kolvereid, 2005) using the term nascent entrepreneurs cover individuals who have merely shown interest in starting a firm but may not have yet reached a relatively advanced stage at which concrete actions are being undertaken to effect the reasonably imminent possible birth of a new firm, and such studies also use a range of means to identify what they term nascent entrepreneurs that differ considerably from the PSED and GEM system of categorization (Gartner et al., 2004). For example, in a recent study by Mueller, "individuals are classified as nascent entrepreneur regarding their self-reported intention to become self-employed" (p. 47).

Toward a Clearer Definition of Individual Entrepreneurial Intent

The above review of individual entrepreneurial intent's general usage suggests that individuals who possess such intent lie between, at one end of a nomological continuum, those who merely have entrepreneurial dispositions, and, at the other end, those who are taking concrete actions formally and reasonably imminently to possibly set up a new firm, with these latter being individuals that have been and might usefully continue to be termed nascent entrepreneurs in the sense used by the PSED and GEM.

Individuals with entrepreneurial intent may be distinguished from those who merely have an entrepreneurial disposition or personality by the facts of their having, first, given some degree of conscious consideration to the possibility of themselves starting a new business at some stage in the future, and then, second, having *not rejected* such a possibility. Those with an entrepreneurial disposition but who do not possess entrepreneurial intent may either not yet have gotten around consciously to considering setting up a new business, or, alternatively, may have considered the possibility, but, for various reasons, rejected it.

Although it is possible to make a sharp conceptual distinction between those who do and do not have entrepreneurial intent with regard to personality traits and dispositions, making a clear-cut distinction between individuals with entrepreneurial intent and nascent entrepreneurs is more difficult. Part of the problem lies in the range of different implicit definitions of nascent entrepreneurs. However, if the kind of categorization of nascent entrepreneurs used in the PSED and GEM is adhered to, this suggests that nascent entrepreneurs differ from those possessing only entrepreneurial intent insofar as they are actively engaged in activities regarded as indicative of formally and reasonably imminently setting up a new firm. As such, entrepreneurial intent is a necessary but not

sufficient condition to deem someone a nascent entrepreneur, and nascent entrepreneurs necessarily still possess entrepreneurial intent, and they do so until they in fact either start a firm and thereby become in reality, rather than just intention, entrepreneurs, or give up the idea of starting a business altogether.

Defining nascent entrepreneurs as those actively engaged in activities regarded as indicative of formally and reasonably imminently setting up a new firm could be clarified if there was agreement about what such activities in fact constitute. In a useful step toward achieving this, and using Gatewood, Shaver, and Gartner (1995) as a basis, Carter et al. (1996) have attempted to specify a list of advanced startup activities undertaken by nascent entrepreneurs. However, while some of these activities do indeed relate only to the final stages of formally setting up a firm, such as forming a legal entity, others, like gathering information and saving money to invest in a start-up, are more general and could be the actions of individuals with only entrepreneurial intent at a relatively early stage in the process of possibly starting a new business.

Clarifying the concept of entrepreneurial intent in such a way as to separate it in a theoretically and practically useful way from the notion of nascent entrepreneurs is vital if research on either construct is to be advanced. The key point is to determine at what stage does someone with entrepreneurial intent become a nascent entrepreneur. Existing models of the process of new business formation by individuals offer only limited guidance. Such models suggest theoretical continuums of new venture creation stages and concomitant activities that generally begin with individual entrepreneurial intent, in line with Ajzen's (1991) model of planned behavior.

Katz and Gartner (1988), for instance, propose that an initial stage of entrepreneurial intent is followed by a phase of assembling necessary resources. Krueger (1993) posits that entrepreneurial intentions precede the search by budding entrepreneurs for business opportunities. Shook et al. (2003, p. 381) advance a four-stage process that begins with entrepreneurial intent, progresses through business opportunity searching, then a decision phase when opportunity exploitation via a start-up is decided upon, and then, finally, a phase of undertaking activities to set up a firm to grasp identified opportunities. Reynolds et al. (2004, p. 265) propose a sequential scheme in which intending entrepreneurs first "conceive" a business start-up idea, which then goes through a "gestation" period of start-up processes before the actual "birth" of the "infant" firm.

These conceptual models of new business formation have proven difficult empirically to establish generally, perhaps because each is somewhat more neatly sequential than available evidence suggests is the messier, nonlinear procedural reality of specific new business formations (Bhave, 1994). Reynolds and Miller (1992), for example, find that the sequencing of new business formation can follow several patterns, and Carter et al. (1996) show that what activities are undertaken, and when, varies considerably in the process of creating a new business. For example, because the accidental stumbling across of a new business opportunity in fact triggers entrepreneurial intent in the first place, the business opportunity scanning phase may never occur. Perhaps the only certain stages of any start-up sequence in previously proposed models are the first and last. The first stage generally involves the crystallization in the mind of the individual that they might intend to become an entrepreneur, what Shook et al. (2003) term the "conscious state of mind that precedes action" (p. 380). The last stage, if it is reached, constitutes a period when specific actions necessary formally to setting up and operating a new firm, such as creating a legal structure, hiring personnel, or renting space, are undertaken. When individuals reach this last stage, they not only possess entrepreneurial intent, but they might reasonably be termed nascent entrepreneurs and can be identified by the advanced nature of the particular start-up actions they undertake.

A Definition of Individual Entrepreneurial Intent

Drawing on the above discussion, individual entrepreneurial intent is perhaps most appropriately and practically defined as a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future. That point in the future might be imminent or indeterminate, and may never be reached. Those with entrepreneurial intent need not ever actually set up a new business because myriad personal circumstances and environmental factors may militate against this. Some with entrepreneurial intent may advance to being nascent entrepreneurs, that is, those undertaking advanced actions formally to set up a new firm. However, while having entrepreneurial intent is a necessary condition for a nascent entrepreneur, becoming a nascent entrepreneur is neither necessary for having entrepreneurial intent, nor is it entrepreneurial intent's inevitable outcome. The degree and intensity of individuals' entrepreneurial intent might reasonably be expected to vary from person to person possessing it, and to vary for the same person at different points in time depending on circumstances.

Existing Measurements of Individual Entrepreneurial Intent

Defined in the above way, whether or not someone has individual entrepreneurial intent is not simply a yes or no question, but a matter of extent ranging from a very low, effectively zero, to a very high degree of personal, conscious conviction and planning to start a new business. Accordingly, individual entrepreneurial intent ought to be most appropriately assessed using a continuous, as opposed to a categorical, measurement approach. Additionally, entrepreneurial intent is most suitably measured by reflective rather than formative indicators, because conscious conviction and planning do not necessarily lend themselves to the kind of direct, absolute measurement needed for index construction (Diamantopoulos & Siguaw, 2006).

While the vast majority of existing measures of entrepreneurial intent are in fact reflective, and many use continuous variables, several use categorical measures. Categorical measures found in the literature exhibit considerable heterogeneity, confounding comparability of findings. For example, Sagie and Elizur (1999) compare small business students, assumed to have entrepreneurial intentions, with business and economics students, who are assumed not to have such intentions. By contrast, Thomas and Mueller (2000) categorize potential entrepreneurs specifically as business and economics, plus engineering, students. Differently again, Bonnett and Furnham (1991) categorize entrepreneurial students by whether or not they are on a government "young enterprise" scheme designed as a part of a package of measures to reduce unemployment among those leaving high school at age 16. Those remaining in high school after age 16 are categorized as nonentrepreneurial. Brandstätter (1997) categorizes subjects into those who do or do not have an assumed "interest in founding" a business based on whether or not they have membership in a chamber of commerce's "association of aspiring entrepreneurs" (p. 165). Korunka et al. (2003) categorize nascent entrepreneurs by whether or not they have attended a business startup information day, and Chrisman (1999) categorizes them as individuals who have sought counsel from a small business development center. Francis and Banning (2001) use content analysis of students' career goal statements to categorize subjects into entrepreneurial or otherwise. Less ascriptively, some researchers use self-categorization measures. Raijman (2001), for instance, asks subjects to respond yes or no to whether or not they have ever thought of starting a business. Lee and Wong (2004) use a yes or no variable

about whether or not subjects have any intention to found a business venture, as do Lee et al. (2004).

While categorical measures used in studies of entrepreneurial intent offer ostensible neatness and clarity, they have a tendency to oversimplify the distinction between those who do and do not possess entrepreneurial intent, and they all tend to be based on the subjective ascription of single proxy criteria used to discriminate between those with and without entrepreneurial intent. Moreover, they all suffer from the intrinsic inability of categorical variables to capture anything of the intensity or degree of intention held. Accordingly, many researchers have opted to use continuous measures in studies alluding to entrepreneurial intent. Krueger et al. (2000), for example, use a 1-item measure, "estimate the probability that you'll start your own business in the next 5 years" (p. 421). Admirably, these authors fully recognize and acknowledge the problems of reliability and validity of their single-item measure and suggest that for improved design in entrepreneurship research, it might be "valuable if future studies would employ multiple-item measures of key constructs to reduce measurement error" (p. 425).

Several different multi-item measures have in fact been used in past research alluding to entrepreneurial intent. Mueller and Thomas (2001), for instance, use a combination of Rotter's (1966) external–internal locus of control and Jackson's (1994) innovativeness scales. Schmitt-Rodermund and Vondracek (2002) report use of a scale based on three subscales adapted from Holland's (1985) vocational interests, skills, and behavioral measures, Reitan (1997) reports using a 21-item scale, and Chen et al. (1998, p. 306) report using a 5-item measure, Vesalainen and Pihkala (1999) report using three different continuous measures of entrepreneurial intent, one a single item and two multi-item scales, and Audet (2004) uses a 2-item scale. Davidsson (1995) details a 3-item scale to gauge likelihood of starting a firm, and Kennedy et al. (2003) reference using this same scale, although they make some significant modifications to Davidsson's original wording both for items and interval measures.

Although a few studies report validity statistics, in many cases, full reporting (1) of items, (2) of interval measures used, (3) of dimensionality, and (4) of internal and temporal reliability statistics is absent. Moreover, no studies discuss or detail the conceptual derivation, content validity, or empirical development of measures of entrepreneurial intent. The consequence, as in other fields of management research (Boyd, Gove, & Hitt, 2005), has been an inconsistency of measurement that has rendered difficult the comparison, validation, synthesis, or extension of existing research findings.

Research Objectives and Methods

As a latent and continuous variable, the valid and reliable measurement of individual entrepreneurial intent lends itself to effective assessment using a multiple reflective-item scale of the sort recommended by business researchers generally (Boyd et al., 2005), and by some entrepreneurship scholars in particular (Krueger et al., 2000). As management scholars have noted, it is necessary to "mount a full-scale attack on the construct validity of a new, previously untested, or substantially modified measure" before it can be of practical and rigorous scientific use (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993, p. 389). Accordingly, in addition to existing entrepreneurship research on measure development (Davidsson & Klofsten, 2003), guidelines for scale construction and validation commonly used in management research more generally were followed to develop a short, content-valid, internally reliable, unidimensional, criterion-valid, and cross-

culturally invariant metric of individual entrepreneurial intent (Carmines & Zeller, 1979; DeVellis, 2003; Hinkin, 1995; Spector, 1992).

Scale Design and Method Variance Considerations

A number of considerations informed scale design. One was to produce an English-language scale of broad applicability across nationality, age, and occupation. Another was to develop a maximally reliable but parsimonious metric so as to minimize respondent fatigue, and thereby assist researchers to maximize sample sizes. A further consideration was to produce a metric ameliorating two measurement-biasing but reducible forms of method variance (Podsakoff & Organ, 1986). One form of method variance is acquiescence response set (Winkler, Kanouse, & Ware, 1982), the tendency to answer consistently positively or negatively to questions irrespective of content, a problem that can be reduced by using both positively and negatively worded items (Idaszak & Drasgow, 1987).

Another form of method variance arises from priming effects (Salancik & Pfeffer, 1977), a circumstance in which respondents deduce or guess, rightly or wrongly, from item content and context what a scale is measuring and then endeavor to give responses they think are consistent with their own perspective in relation to their assumption of the underlying construct being addressed rather than give accurate answers to the explicit questions posed by each item (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A way to reduce priming effects used in psychometric scales (see Scheier & Carver, 1985) is to introduce distracter or filler items that can help obscure and mask the measurement construct by acting as red herrings. The inclusion of distracter items in scales can thereby reduce socially desirable responding and produce truer measurement of the construct of interest (Robinson, Shaver, & Wrightsman, 1991).

Study 1—Content-Valid Item-Idea Generation

To help generate a pool of potential reflective item ideas with cross-national content validity, a quasi-grounded approach was used (Glaser & Strauss, 1967). Procedurally, 13 executive postgraduate business students and six business undergraduates at an international, English-based university in East Asia participated in two separate and voluntary focus-group discussions in English. Four of the participants were American, three were Thai, two Indonesian, two Burmese, with the others coming from eight different European and Asian countries. The executive postgraduates had an average age of 32, undergraduates, 21. Four of the postgraduates reported having started their own businesses, and a further six of them said they were planning to do so. Having been given the above definition of individual entrepreneurial intent, participants first discussed the construct, and then, individually, wrote as many measurement item ideas as they could think of, in English.

The pool of suggested item ideas was then reduced in an effort to derive a set comprising those that were both broadly distinct from each other and directly reflective of entrepreneurial intent. Accordingly, obvious item idea duplication and overlap were eliminated, as were ideas that related solely to mere wishful thinking or whimsical liking to be an entrepreneur. Also eliminated were item ideas that could only reflect the very final stages of setting up a new firm, such as engaging outside accountants or acquiring office space, as they appeared directly to reflect nascent entrepreneurship, a stage to which many with entrepreneurial intent never reach.

The set of item ideas was further reduced in an effort to make it as generally applicable as possible to most individuals with entrepreneurial intent without being overly

sensitive to their age, occupation, or nationality. Hence, item ideas relating to resigning from a job in order to be able to work full time on setting up a firm were removed as they would preclude answers from those not employed. Similarly, item ideas asking about the likelihood of starting a new firm within specific and short time periods were eliminated because they would preclude many employees at the start of professional training programs and students at the beginning of degree programs from answering. Also eliminated were item ideas that might be relevant in some countries but not others, such as applications for legally required licenses to do business. Likewise, item ideas relating only to some types of potential businesses but not to others, like patent or copyright registration, were also omitted.

The final pool of item ideas fell into four broad categories; (1) those directly asking about intentions or plans to start a firm, (2) those related to learning about starting a firm, (3) those related to looking for business opportunities, and (4) those relating actively to gathering initial resources to start a firm.

Study 2—Item Writing and Purging

Using the final pool of item ideas, eight positive and eight negatively keyed items were drafted, along with seven distracter items, and then sent by email to the focus-group participants in Study 1 asking them to assess (1) the simplicity of, and ease of understanding, the English from both native and non-native speaker perspectives, (2) the directness, clarity, and possible ambiguity of items, (3) the international applicability of items, (4) the extent to which items comprehensively encompassed but did not exceed the content domain of the individual entrepreneurial intent construct, and (5) the degree to which items would be broadly applicable to all those with entrepreneurial intent regardless of what stage in a start-up process they might be. The item stem was "*Thinking of yourself, how true or untrue is it that you . . .*," followed by the listed items, an example of which was ". . . *are seeking resources to begin a business*." An even numbered, 6-point interval measure—with 1 being very untrue, 6 being very true—allowing for no neutral midpoint was decided upon because no items could logically have a neutral response.

After minor adjustments resulting from received comments, the scale of items was incorporated as a block into a questionnaire containing an additional 51 items relating to a disparate set of subject measures also being developed, and then sent to a sample of 450 drawn randomly from a larger international convenience sample compiled by getting several thousand students at an international university in East Asia to volunteer contact details for their family and friends. Recipients were told only that the questionnaire was part of an ongoing international business research project, and no indication that it contained a set of questions relating to individual entrepreneurial intent was given.

A total of 102 usable responses was received, 52 of which were from females. Some 39% of respondents were undergraduate students, 18% worked for private companies, 15% were senior high school students, 10% were self-employed, 9% worked for government bodies, with the remainder classifying themselves as either retired, full-time homemakers, graduate students, unemployed, or working for charities. Fifty-four percent were 18–25 years old, 31% were over 25, and 15% were 15–17 years old. Thirty-four percent were from America, 11% came from Europe, 11% from India, and the rest came from 15 other Asian countries.

In a first stage of item purging, corrected item–total correlations were calculated to remove progressively those items detracting most substantially from Cronbach's coefficient of reliability. Beginning with the removal of the worst item, a process of balanced elimination was followed, whereby alternately negative and positively keyed detracting

items were removed, which reduced the number of items to 10, with an alpha of .91. Then, to begin the process of reducing the number of items to a maximally parsimonious but adequately reliable and construct-encompassing total of six, those items contributing most marginally to overall reliability were removed. Finally, to assist further item purging and to help ensure a unidimensional scale, exploratory factor analysis was also used. Different combinations of remaining items were entered into analyses, and the six that loaded together on a single factor most heavily were retained. This procedure meant that one item, *Read books on how to set up a firm*, had to be reverse worded to *Don't read books on how to set up a firm* to ensure an even balance of three positively and three negatively keyed items, which, assuming the newly reverse-worded item retained a similar factor and item–total correlation, would produce an overall reliability of between .85 and .90. Derived items were again sent to the original focus-group participants from Study 1 for clarification and comment, which resulted in a few very minor rewordings of some items.

Study 3—Initial Validation

The scale of six substantive and four distracter items were incorporated as a block into a questionnaire containing a range of other, non-entrepreneurial intent-related questions (Table 2). This was sent to a different random sample of 450 drawn from the same larger international convenience sample used in Study 2. The total useable response was 106, of which 55% were female. Thirty-six percent were undergraduate students, 18% worked for private companies, 11% were senior high-school students, 10% worked for government bodies, 6% were self employed, with others classifying themselves as either retired, full-time homemakers, graduate students, unemployed, or working for charities. Forty-five percent were 18–25 years old, 33% were over 25, and 11% were 15–17 years old.

Table 2

Individual Entrepreneurial Intent Scale

Question: Thinking of yourself, how true or untrue is it that you:
Items:
1. Intend to set up a company in the future
2. Plan your future carefully*
3. Read business newspapers*
4. Never search for business start-up opportunities (R)
5. Read financial planning books*
6. Are saving money to start a business
7. Do not read books on how to set up a firm (R)
8. Plan your finances carefully*
9. Have no plans to launch your own business (R)
10. Spend time learning about starting a firm

Notes: Items appeared as a single block in the order given. Those marked with an asterisk are distracter items that act as red herrings and are not to be included in scale analyses. Items marked (R) are reverse coded in scale analyses. Interval measure runs 1 = very untrue, 2 = untrue, 3 = slightly untrue, 4 = slightly true, 5 = true, 6 = very true.

Some 32% were American, 12% were Thai, 10% were Indian, with the remainder coming from a mixture of Asian and European countries.

The scale's Cronbach's alpha coefficient of internal reliability proved to be .89; hence, the scale seemed to have acceptable internal reliability. The contribution of individual items to overall internal reliability was checked and found to be positive in each case, with the average corrected item–total correlation being .70 (see Table 3, international sample 1). The scale's unidimensionality was first assessed using exploratory principal component analysis. This produced a single component with an eiganvalue above unity and explaining 63.90% of variance, strongly supporting the scale's unidimensionality and demonstrating that it was free from the production of two distinct factors that Spector, VanKatwyk, Brannick, and Chen (1997) have pointed out can sometimes arise from the inclusion of both negative and positively worded items in poorly constructed scales. Confirmatory factor analysis further supported unidimensionality, with goodness of fit, adjusted goodness of fit, normed fit, and relative fit indices each well above .90, thereby indicating adequate model fit (Byrne, 2001; Hair, Anderson, Tatham, & Black, 1998). The scale's summated mean was 3.11 (SD 1.20), significantly below the hypothetical midpoint of 3.50 ($t = -3.36$; $p < .001$).

As the sample comprised nearly 50% students, and in view of Chen et al.'s (1998) imprecation of the reliance on student samples in entrepreneurship research, separate analyses of the student and nonstudent respondents were undertaken. For students, the alpha coefficient of internal reliability was .84, with the average corrected item–total correlation being .65, with the respective statistics for the nonstudent sample being .91 and .76. Exploratory principal component analyses again supported the scale's unidimensionality, with a single component found for each subsample, explaining 56.38% of variance for students and 69.85% for nonstudents (Table 3). Due to the small subsample sizes, confirmatory factor analyses were not feasible. The summated scale mean for students was 2.99 (SD 1.03), significantly below the hypothetical neutral midpoint ($t = -3.70$; $p < .01$), for nonstudents, the mean was 3.24 (SD 1.36), not significantly different from the neutral midpoint ($t = -1.37$; $p > .10$).

Study 4—Generalizability Validation

To examine the stability, unidimensionality, internal reliability, and criterion validity of the new scale, henceforth the Individual Entrepreneurial Intent Scale (IEIS), across discrete populations, it was incorporated into three different questionnaires completed by a further three separate samples. One sample comprised undergraduate students at an international, English-based university in East Asia who came from a diverse range of national backgrounds, a second sample comprised international postgraduate students at the same university, and a third sample comprised an additional international convenience sample.

The undergraduate sample comprised 131 volunteers, 71 of which were female, 91 of which were studying management, with the rest studying a variety of other social science and arts subjects. The average age was 21. These were administered a questionnaire containing, as well as the IEIS, over 100 other questions on topics such as consumer products and international firms. Subjects were not told that the questionnaire contained items relating to entrepreneurial intent. The IEIS's reliability prove to be .83, and the average corrected item–total correlation was .60. Exploratory principal component analyses again supported the scale's unidimensionality, with a single component found that explained 55.19% of variance (see Table 3, undergraduate student sample). Confirmatory factor analysis once again supported unidimensionality, with fit indices each above .90.

Table 3

Individual Entrepreneurial Intent Scale Descriptives, Reliabilities, and Dimensionality

	International sample 1	International sample 1: students	International sample 1: nonstudents	Undergraduate students test	Postgraduate students	Under- and postgraduate students combined	International sample 2	Undergraduate students: same-day retest	Postrgaduate students: 1-month retest	International sample 2: 2-month retest	Undergraduate students: 6-month retest
n	106	55	51	131 (28)†	46 (21)†	177	250 (128)§	131 (28)†	21	128	28
Scale mean	3.11	2.99	3.24	3.69 (3.28)†	3.75 (3.56)†	3.70	3.84 (3.75)§	3.70 (3.39)†	3.37	3.70	3.33
SD	1.20	1.03	1.36	1.14 (0.92)†	1.04 (1.23)†	1.34	1.02 (1.07)§	1.13 (0.89)†	1.29	1.02	1.13
Scale alpha coefficient	.89	.84	.91	.83 (.82)†	.84 (.87)†	.83	.86 (.87)§	.87 (.85)†	.93	.88	.82
Test–retest Pearson product moment correlation								.91	.86	.84	.76
Corrected item-total correlations											
1. Intend to set up a company in the future	.70	.65	.76	.67	.66	.66	.68	.73	.76	.67	.65
4. Never search for business start-up opportunities (R)	.57	.45	.64	.48	.46	.47	.62	.60	.68	.60	.55
6. Are saving money to start a business	.72	.61	.78	.43	.58	.47	.66	.60	.77	.72	.33
7. Don't read books on how to set up a firm (R)	.71	.68	.72	.62	.58	.60	.55	.73	.89	.62	.72
9. Have no plans to launch your own business (R)	.75	.68	.80	.72	.69	.71	.67	.69	.86	.71	.59
10. Spend time learning about starting a firm	.76	.65	.83	.71	.77	.72	.67	.75	.85	.69	.66
Average corrected item-total correlations	.70	.65	.76	.60	.62	.61	.64	.68	.80	.67	.58
Principal component extraction item loadings¶											
1. Intend to set up a company in the future	.80	.78	.84	.81	.78	.80	.80	—	—	.79	—
4. Never search for business start-up opportunities (R)	.68	.58	.74	.63	.58	.61	.79	—	—	.72	—
6. Are saving money to start a business	.82	.74	.86	.57	.73	.60	.79	—	—	.82	—
7. Don't read books on how to set up a firm (R)	.80	.80	.80	.74	.71	.74	.78	—	—	.73	—
9. Have no plans to launch your own business (R)	.84	.80	.87	.84	.81	.83	.74	—	—	.86	—
1. Spend time learning about starting a firm	.85	.78	.89	.83	.87	.83	.68	—	—	.79	—
% of variance explained by one factor	63.90	56.38	69.85	55.19	56.75	55.20	58.21	—	—	61.77	—
Number of eigenvalues of unity or above	1	1	1	1	1	1	1	—	—	1	—
Confirmatory factor analysis fit indices††											
Goodness of fit index	.993	—	—	.992	—	.992	.991	—	—	.992	—
Adjusted fit index	.983			.982		.982	.979			.980	
Normed fit index	.988	—	—	.985	—	.985	.984	—	—	.986	—
Relative fit index	.980	—	—	.975	—	.975	.973	—	—	.977	—

† Figures in parentheses are for the subjects completing the 6-month retest.
‡ Figures in parentheses are for the subjects completing the 1-month retest.
§ Figures in parentheses are for the subjects completing the 2-month retest.
¶ Extraction method; principal component with varimax rotation, principal component analysis not performed where case to item ratio fell below 7 to 1.
†† Confirmatory factor analysis was only performed for samples exceeding 100 cases. Estimation method: unweighted least squares.

The summated scale mean of 3.69 (SD 1.14), was significantly above the neutral midpoint ($t = -1.88$; $p > .05$).

The postgraduate sample comprised 46 individuals, 25 female, who voluntarily completed a questionnaire containing over 200 additional items unrelated to entrepreneurial intent. The average age was 28. Twenty of the postgraduates were studying for an MBA degree, 24 were studying for a master's degree in international relations, with the remainder studying for social science doctoral degrees. The scale's reliability for the sample was .84, the average corrected item–total correlation being .62. Exploratory principal component analyses supported once more the scale's unidimensionality, with a single component found that explained 56.75% of variance (see Table 3, postgraduate students). The scale mean was 3.75 (SD 1.04), not significantly different from the neutral midpoint ($t = -1.48$; $p > .10$). This postgraduate sample was combined with the undergraduate sample to produce a pooled sample of 177, large enough to undertake additional confirmatory factor analysis. A unidimensional structure was again confirmed, with fit indices each above .90 (see Table 3).

The additional international sample of 947 produced a response from 250 individuals, of which 138 were male. In terms of age, 42% were between 25 and 29 years old, 23% were aged 30–34, 20% were under 25, the remaining 15% were 35 or older. Forty-two percent worked for private companies, 19% worked for government organizations, 16% were postgraduate students, 7% were self-employed, and 5% were undergraduate students, with the rest describing themselves as either unemployed, homemakers, or retired. By nationality, the largest number of respondents from a single country was 51, from Thailand. Another 36 came from Burma, 32 were from the United States, 32 from Mexico, 22 from Vietnam, with 39 coming from other Southeast Asian countries, 19 from Northeast Asian countries, and 19 from other European and American countries. The scale's reliability for the sample was .86, the average corrected item–total correlation was .61. Exploratory principal component analyses substantiated the scale's unidimensionality once more, with a single component found that explained 58.21% of variance. The scale's unidimensional structure was also supported by confirmatory factor analysis, for which fit indices were each above .90 (Table 3). The scale mean of 3.84 (SD 1.02), was significantly above the neutral midpoint ($t = 5.24$; $p < .01$).

Study 5—Test–Retest Reliability

To examine same-sample stability of the IEIS across time, same-day, 1-month, 2-month, and 6-month retests were undertaken (see Table 3). The same-day retest was done with the undergraduate sample reported in Study 4. The time interval between individuals' completions ranged from 1 to 3 hours. The retest alpha was .87 compared with the test alpha of .83. The test and retest scale means were not significantly different ($t = -0.24$; $p > .80$), and their Pearson product moment correlation coefficient of reliability was .91 ($p < .01$), suggesting acceptable very short-run test–retest stability (Robinson et al., 1991).

The 1-month retest was performed using the postgraduate sample reported in Study 4. A total of 21 of the original 46 test respondents completed the retest, which had an alpha of .93 compared with the test alpha for those 21 respondents of .87. The test–retest coefficient of reliability was .86, and the mean score difference was insignificant. Hence, acceptable short-run stability was found.

The 2-month retest was performed using the additional international sample reported in Study 4. Some 128 respondents from that sample completed the retest, which had an alpha of .88 compared with the test alpha for those 128 respondents of .87. The test–retest

coefficient of reliability for the 128 respondents was .84 ($p < .01$), and the mean score difference was insignificant, thereby indicating adequate intermediate-run stability.

The 6-month retest was again done using the undergraduate sample reported in Study 4. Of the original 131 test sample, some 28 completed the retest, for which the alpha was .82, the same as the test alpha for those 28 respondents. The scale mean scores were not significantly different ($t = -0.09$; $p > .90$), and the test–retest coefficient of reliability was .76 ($p < .01$), indicating more than adequate longer-run temporal stability by the standards for scale development suggested by Robinson et al. (1991, p. 13).

Study 6—Convergent Validity

To test the extent of the IEIS's convergent validity, Davidsson's (1995) 3-item scale was used, plus Kennedy et al.'s (2003) modified version of this, with one or other version included in the instrument administered to the additional international sample of 250 reported in Study 4.

Davidsson's original version was completed by 150 of the additional international sample, and proved to have an alpha of .66. The coefficient of concurrence between Davidsson's original scale and the IEIS was .62 ($p < .01$), suggesting convergent validity in the direction expected and of a strength that might be deemed reasonable within the internal reliability limitation found for the Davidsson scale. Kennedy et al.'s version of the Davidsson scale was completed by 100 of the additional international sample, and had an alpha of .74, with a coefficient of concurrence with the IEIS of .71 ($p < .01$), again suggestive of convergent validity (see Table 4).

Table 4

Validity Tests

Validity variables	Mean	SD	Correlation with Individual Entrepreneurial Intent Scale[†]	
Convergent validity				
International sample 2: Davidsson entrepreneurial intent measure[‡]	3.17	.89	.62	***
International sample 2: Kennedy et al.'s version of Davidsson's measure[§]	3.75	.93	.71	***
Criterion-related validity				
Undergraduates: management students coded 1, nonmanagement 0	.70	.46	.25	***
Postgraduates: MBA students coded 1, international relations student 0	.45	.50	.27	*
Undergraduates: self-efficacy	3.79	.55	.26	**
Undergraduates: internal locus of control	4.48	.63	.22	**
International sample 2: do not personally know someone running own firm 1	.13	.33	–.12	*
International sample 2: composite number of friends/relations running own firm 1[¶]	1.64	1.20	.14	**

[†] Validity correlation coefficients are Pearson product moment correlations, * $p < .10$, ** $p < .05$, *** $p < .01$, two tailed.
[‡] n = 150.
[§] n = 100.
[¶] Composite is the sum of the categories of relations—father/mother, brother/sister, aunt/uncle, other close relative, and/or close friends running their own firm and personally well known to respondents.

Study 7—Criterion-Related Validity

Establishing criterion-related validity is notoriously problematic because, in Nunnally and Bernstein's (1994) words, "obtaining a good criterion may actually be more difficult than obtaining a good predictor" (p. 96). As the objective of criterion-related validity is to establish whether or not a predictor correlates as anticipated with criterion variables external to the measurement of the predictor, the criterion-related validity of the IEIS was tested by examining its correlation with three types of criterion. First, a variable that intuitively might be thought likely to be significantly associated with entrepreneurial intent, in this case studying management, was selected. Second, two constructs demonstrated in prior research to be associated with entrepreneurial intent, namely internal locus of control and self-efficacy, were used. Third, variables for whether or not respondents personally knew any entrepreneurs were used as knowing entrepreneurs has been shown to correlate with entrepreneurial intent.

While Cox, Mueller, and Moss (2002) have found that those studying specifically entrepreneurship experience a decline in their entrepreneurial self-efficacy, there is no indication that studying business more generally diminishes entrepreneurial intent, and it seems eminently plausible that those opting to study management as opposed to other subjects will constitute a population that might be predicted to exhibit higher degrees of entrepreneurial intent. To test this supposition, the undergraduate and postgraduate samples detailed in Study 4 were divided into categories of management and nonmanagement students. The undergraduates who were not studying management were majoring in sociology, anthropology, or international relations. Management undergraduates were coded 1. The coefficient of criterion-related validity was .25, $p < .01$ (Table 4). The postgraduate sample was divided into MBA students, coded 1, and international relations students, reducing the sample by two PhD students whose fields of study were unknown. The coefficient of predictive validity was .27, $p < .10$ (Table 4); hence both the undergraduate and postgraduate samples demonstrated the criterion-related validity of the IEIS on the categorical criterion of degree program.

Chen et al. (1998) found evidence for Boyd and Vozikis' (1994) suggestion that self-efficacy is associated with entrepreneurial intent, as have Krueger et al. (2000). To test if the IEIS could replicate prediction of self-efficacy, the instrument administered to the undergraduate sample detailed in Study 4 contained Chen, Gully, and Eden's (2001) 8-item General Self-Efficacy Scale, which prove to have a reliability of .86. The coefficient of predictive validity was .26, $p < .05$ (Table 4), thus supporting the criterion-related validity of the IEIS for the continuous criterion of self-efficacy.

Entrepreneurship has long been associated with individuals' internal locus of control (Brockhaus, 1982). Indeed, so strong is this association thought to be that some researchers have used internal locus of control as a proxy for identifying those with entrepreneurial tendencies (Mueller & Thomas, 2001). To see if the IEIS predicted internal locus of control, Chen et al.'s (1998) 5-item internal locus of control scale, based on Levenson's (1973) full 24-item scale, was incorporated into the instrument administered to the undergraduate sample. The internal locus of control scale proved to have a reliability of .69, and had a coefficient of criterion-related validity with the IEIS of .22 ($p < .05$), again supporting the criterion-related validity of the IEIS with another continuous variable (Table 4).

The IEIS's criterion-related validity was further tested to see if it predicted close personal acquaintance with existing entrepreneurs, an association with entrepreneurship that has been long established (Collins & Moore, 1970). The instrument administered to the second international sample described in Study 4 contained a question asking

respondents whether or not they personally and closely knew someone in various categories of relationships running their own firm. These categories included mother/father, sister/brother, aunt/uncle, other close family relative, and close friend. The IEIS had a criterion-related validity coefficient of −.12 ($p < .10$), with a categorical variable for those reporting no personal acquaintance with entrepreneurs (Table 4). To construct a continuous variable for extent of personal acquaintance with entrepreneurs, the number of categories in which respondents reported knowing someone running their own business was totaled. The IEIS had, as it theoretically should, a positive criterion-related validity coefficient of .14 ($p < .05$), with extent of personal acquaintance with those running their own business.

Study 8—Cross-National and Cross-Population Stability and Nonresponse Bias

To test the IEIS for factorial stability across populations by nationality and occupation, and to examine possible unit nonresponse bias, it was incorporated in an online instrument sent to an international convenience sample of 1,697. A first administration produced 611 responses after 8 days, by which time daily responses had dwindled to less than 20. A reminder and duplicate instrument was then sent, producing a further 406 responses. Tests for unit nonresponse bias following Armstrong and Overton (1977) found no differences between first- and second-administration respondents by either gender ($\chi^2 = 1.61$; $p = .21$), by language (native or non-native English-speaker, $\chi^2 = 1.88$; $p = .17$), or by occupation (student or non-student, $\chi^2 = 0.06$; $p = .80$), or in terms of summated mean score of the IEIS ($t = 0.67$; $p = .50$), suggesting unit nonresponse bias not to be an immediately apparent concern for the scale. Perhaps more important in testing for nonresponse bias in a new scale than respondent profile and mean score consistency is to establish factorial stability between first- and second-wave respondents. This was checked using the cross-group structural model factorial invariance procedure suggested by Byrne (2001). The change in model chi-square across first- and second-wave respondents between the unconstrained and constrained models' measurement weights was insignificant ($\Delta\chi^2 = 10.20$; $p > .05$), and model fit remained acceptable, suggesting no nonresponse bias effects.

The IEIS's factorial invariance across student and nonstudent samples was also tested. The change in model chi-square across these two groups of respondents between the unconstrained and constrained models' measurement weights was also insignificant ($\Delta\chi^2 = 10.20$; $p > .05$), with fit remaining acceptable, suggesting the use of some student samples in the scale's development does not undermine the integrity of its psychometric properties in nonstudent populations.

To help establish cross-cultural measurement stability of the IEIS, its factorial invariance was examined across groups divided into native and non-native English speakers. The change in model chi-square across these two groups between the unconstrained and constrained models' measurement weights was insignificant ($\Delta\chi^2 = 8.17$; $p > .10$), and model fit remained acceptable, lending support to the IEIS's cross-cultural applicability.

Discussion and Conclusions

No consistent use of the term individual entrepreneurial intent has yet emerged in research on entrepreneurship. Indeed, a review of existing literature demonstrates that the

construct of individual entrepreneurial intent has meant a variety of things to different researchers, and has been measured using a commensurately diverse range of approaches and metrics. The lack of a clearly delineated, conceptually satisfactory, and practically tractable definition of individual entrepreneurial intent has retarded research on individuals who consciously plan to start firms, why they do so, and under what conditions do they do or do not go on to become nascent entrepreneurs or to set up new business ventures. Moreover, the lack of a consistent definition of individual entrepreneurial intent has also rendered impossible the development of a uniform measurement of the construct on which replicable and comparable research, and thus, advances in entrepreneurship theory and research that use entrepreneurial intent as either a dependent or independent variable, can be built.

This paper has sought to clarify and to delineate the construct of individual entrepreneurial intent as a self-acknowledged conviction by a person that they will set up a new business venture and consciously plan to do so at some point in the future. Such a definition not only incorporates the commonsense but implicit use of the term that has underpinned much previous research, but distinguishes individual entrepreneurial intent from other constructs, such as entrepreneurial orientation or desire to be self-employed, which have sometimes been used with explicit and confusing synonymity, even if researchers may have implicitly meant something quite different to individual entrepreneurial intent itself. By defining the individual entrepreneurial intent construct and its parameters, it has been possible successfully to develop and validate a reliable and practically efficient metric of the multi-item nature that Krueger et al. (2000) have specifically stated is needed to "increase confidence of researchers" of entrepreneurship (p. 425).

The IEIS has been developed to incorporate high content validity, plus broad applicability across populations by nationality, age, and occupation. Moreover, the items have been selected to help maximize general applicability to the majority of individuals with entrepreneurial intent regardless of the stage to which they might have advanced in terms of setting up a firm. The scale has also been designed to help reduce measurement error and bias by including properties that reduce method variance and attenuate response set. A rigorous development and validation procedure has ensured that the IEIS is demonstrably internally reliable, unidimensional, and stable, both within the same sample over time and across populations, this latter giving considerable support for the scale's wider generalizability. The scale has also been shown to have both adequate convergent validity and acceptable criterion-related validity using a range of both categorical and continuous criterion variables suggested by prior entrepreneurship research.

Limitations and Further Research

While the IEIS has proven to have good psychometric properties for the different validation samples of this study, which provides a good basis for generalization to other populations, further validation in more specific and larger samples, perhaps discretely by nationality, age, and occupation, would be beneficial to confirming generalizability. For example, the scale has only been validated in samples comprising or deriving from reasonably well-educated, cosmopolitan, and affluent individuals. How the scale performs in samples from differing socioeconomic and less internationally oriented populations is something that will need to be examined. More generally, the scale requires further research to establish population norms and to examine its psychometric properties in relation to other constructs. For measurement reliability purposes, for example, the relationship of the scale with social desirability response could usefully be investigated.

Although the IEIS has proven to possess criterion-related validity using a series of criterion variables suggested by prior research, over the longer run the best test of criterion-related validity is whether or not the scale predicts the setting up of new business ventures because those exhibiting a high degree of entrepreneurial intent might be expected to be more likely to set up new firms than those who do not. Examining this will require further research comprising longitudinal studies.

As with most measures developed to be as broadly applicable as possible, researchers need to keep in mind the inherent limitations of the IEIS as a general metric and exercise appropriate prudence. For instance, while the IEIS has been designed to be broadly applicable to individuals of any occupation, researchers might seek to use it in conjunction with categorical measures to identify and exclude from analyses individuals who are serial entrepreneurs. Similarly, scholars wishing to investigate entrepreneurial intent among individuals at different stages of setting up a firm may still need to use or develop additional measures or make adaptations to the IEIS. For example, research on those who are at the very final or advanced stages of possibly setting up a new firm, nascent entrepreneurs, would require specific additional categorical variables to identify such individuals by their actions, perhaps those used by the PSED and GEM. Moreover, investigations of entrepreneurial intent relating to specific industries or other categories of individuals would need the use of supplementary measures, or, possibly, alterations to the IEIS.

Conclusions

Limitations and requirements for further research aside, the IEIS, being based on a clear and parsimonious definition, having been designed to be practical in general research use, and having proven to be valid and reliable in the development studies reported here, should assist the empirical and theoretical advance of research on certain aspects of entrepreneurship. Analyzing why some individuals set up firms while others do not has been characterized as "one of the most persistent and largely fruitless endeavors we have engaged in as entrepreneurship scholars" (Sarasvathy, 2004, p. 708). However, to the extent that this is unfortunately true, it is not because the underlying question lacks theoretical or practical merit. The entrepreneurial individual remains, as Baumol (1968) noted some decades ago, "one of the most intriguing and one of the most elusive characters in the cast that constitutes the subject of economic analysis" (p. 64). If entrepreneurship research has largely failed accurately to identify these elusive characters prior to their emergence as the founders of new firms, it has in some part been due to the absence of a clearly delineated definition of the construct of individual entrepreneurial intent and the consequent absence of a consistent, reliable, and replicable way of measuring that construct. This paper and the IEIS are an attempt to fill these definitional and measurement gaps, and, hopefully, thereby help to render entrepreneurial individuals slightly less elusive and to make research more fruitful on what distinguishes such people from others, plus why only some, but not others, with individual entrepreneurial intent go on to start new firms.

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