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The Impact of Environment and Entrepreneurial Perceptions on Venture-Creation Efforts: Bridging the Discovery and Creation Views of Entrepreneurship

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Recent literature has highlighted two conflicting theories of entrepreneurship. In the "discovery" perspective, objective environmental conditions are considered to be the source of entrepreneurial opportunities and thus drivers of subsequent entrepreneurial action. The "creation" view, in contrast, is based on entrepreneurial perceptions and socio-cognitive enactment processes. While empirical studies have separately utilized each of these perspectives, few attempts have been made to integrate insights from both theories to empirically examine the interrelationships among environmental conditions, entrepreneurial perceptions, entrepreneurial action, and outcomes. In this article, we explicate the roles that both objective environmental conditions and entrepreneurial perceptions of opportunity and resource availability play in the process of firm creation. Utilizing longitudinal data on nascent entrepreneurs, we find that as hypothesized, entrepreneurs' opportunity perceptions mediate between objective characteristics of the environment and the entrepreneurs' efforts to start a new venture. Contrary to our expectations, we do not find a similar mediating effect for perceived resource availability. These findings have important implications for further theory development in entrepreneurship as well as for practice and education in the field.

Introduction

Creating a new firm is a complex, idiosyncratic process that starts with an aspiration by the entrepreneur and involves bringing together resources that the entrepreneur does

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not necessarily control to pursue an opportunity (Sarasvathy, 2001; Stevenson & Jarillo, 1990). The entrepreneur needs to garner support, obtain the required resources, and generate enough commitment from organizational stakeholders to take the idea from vision to reality (Delmar & Shane, 2004; Hannan & Freeman, 1984; Hill & Levenhagen, 1995). A new firm emerges over a period of several months or even years through a series of organizing activities such as preparing a business plan, applying for funding, and hiring employees (Aldrich, 1999; Delmar & Shane; Gartner, 1985). These intentional organizing activities result in the accumulation of resources, the establishment of organizational boundaries, and the initiation of exchanges with other actors in the environment, thereby bringing forth the emergence of a new organization (Brush, Manolova, & Edelman, 2008; Katz & Gartner, 1988).

Little is still known, however, about the antecedents and processes underlying nascent entrepreneurs' efforts to establish a venture. What drives entrepreneurs to start and persevere in conducting organizing activities? Many traditional entrepreneurship studies have adopted structurally deterministic explanations based on opportunity discovery and resource mobilization. Utilizing a contingency theory framework, these studies attribute new venture emergence to a fit between the resource profiles of nascent entrepreneurs and the environmental requirements that they face (Carter, Stearns, Reynolds, & Miller, 1994; Sandberg & Hofer, 1987; Shane, 2003). In this perspective, entrepreneurial opportunities are viewed as existing in the environment as a result of changes in technology, consumer preferences, or other attributes of the market or industry context (Drucker, 1985; Kirzner, 1973; Shane & Venkataraman, 2000). Through search processes and a high level of "alertness" to opportunity (Kirzner), nascent entrepreneurs discover these objective phenomena and then take action to exploit them (Shane). Success in creating a venture has been considered to be determined by the attractiveness of the opportunity and the availability of the required resources to exploit the opportunity.

In contrast to this traditional "discovery" view, recent research has suggested a "creation theory" of entrepreneurship (Alvarez & Barney, 2007; Sarasvathy, 2001). Rather than focusing on the objective characteristics of the entrepreneur and the environment, the creation perspective views opportunities as actively constructed by organizational participants and their mental models (Penrose, 1959; Weick, 1979, 1995). The environment is not something that is taken as given but instead is "enacted" by entrepreneurs. From this viewpoint, the key task facing entrepreneurs is to interpret the equivocal environment and articulate a clear and compelling vision to organizational stakeholders in order to secure the necessary support and effort to enact the vision (Hill & Levenhagen, 1995). Opportunities are thus seen not as exogenous objective states that can be observed *ex ante* but rather as social constructions formed through the entrepreneurs' perceptions and effectuated through the interactions between the entrepreneurs and their environments (Aldrich & Kenworthy, 1999; Alvarez & Barney). An opportunity is "an image in the entrepreneur's mind" (Penrose, p. 42), and this image is what drives start-up behavior. New venture formation in this view results not from fulfilling a set of predetermined resource requirements but instead from an iterative "bricolage" process of action and reaction, in which the entrepreneur improvises to match perceived means and perceived ends (Baker & Nelson, 2005; Sarasvathy, 2001).

The discovery vs. creation debate in the extant literature has largely been conceptual in nature. This is understandable given that "it will always be possible after an opportunity is formed to describe the actions of a particular entrepreneur in both 'discovery' and 'creation terms'" (Alvarez & Barney, 2007, p. 12). Thus, when applied *post hoc*, these theories are without empirical content. The empirical relevance of the two perspectives arises from entrepreneurial action in the venture-creation process—when entrepreneurs

base their actions on these theories (Alvarez & Barney). The challenge in empirical research then is to capture the effects of objective environment and entrepreneurial perceptions as the venture-creation process unfolds.

Further, prior empirical studies have tended to adopt one or the other of the two perspectives. Studies have, on the one hand, looked at how the environment influences entrepreneurial actions and subsequent outcomes, showing that environmental change leads to increased entrepreneurial activity (e.g., Sine & David, 2003) and that initial founding conditions have a lasting impact on venture performance (Boeker, 1989; McDougall, Covin, Robinson, & Herron, 1994). Other studies have focused on entrepreneurs' cognitive processes, examining, for example, pattern recognition (Baron & Ensley, 2006), categorization (Palich & Bagby, 1995), and the attitudes underlying entrepreneurial intentions (Dutta & Thornhill, 2007; Krueger, Reilly, & Carsrud, 2000). However, little empirical research has explicitly linked entrepreneurial perceptions to venture-creation activities or to subsequent venture creation. Research has also not empirically examined the effects of objective versus perceived environmental conditions in venture creation.

In this article, we address these gaps in the entrepreneurship literature. By utilizing longitudinal data on nascent entrepreneurs, we attempt to empirically study the roles that both objective environmental conditions and entrepreneurial perceptions play in the start-up process. Specifically, our goal is to examine the objective existence of the business opportunity vs. the entrepreneur's subjective perception of the opportunity and the actual availability of resources vs. the entrepreneur's perception of resource availability as drivers of start-up efforts. Integrating insights from both the discovery and creation schools of thought, we suggest that it is not the objective opportunity and resource environment *per se* but the entrepreneur's perception and interpretation of these factors and the resulting entrepreneurial actions that determine whether or not a new venture is established.

Theory and Hypotheses

In their 2007 article, Alvarez and Barney describe the discovery and creation views as two conflicting theories of entrepreneurship. They note that both perspectives seek to explain the actions that entrepreneurs take to form and exploit opportunities but that the underlying conceptualizations of opportunities, entrepreneurs, and the decision-making context are fundamentally different. At a high level, the discovery view is predominantly about search—entrepreneurs systematically scanning the environment for competitive imperfections that have arisen exogenously because of environmental changes. Entrepreneurs must be different from non-entrepreneurs in order to discover and exploit these opportunities, and the decision-making context is risky—discovery entrepreneurs need to collect and analyze data to understand the possible outcomes associated with an opportunity. The creation theory, in contrast, views entrepreneurs' actions as the *source* of opportunities that "could not have been known without the actions taken by these entrepreneurs" (Alvarez & Barney, 2007, p. 15). Any potential differences between entrepreneurs and non-entrepreneurs rather than being the antecedents to entrepreneurial activity may actually arise as a result of entrepreneurial experiences. The decision-making context is viewed as uncertain—creation entrepreneurs cannot anticipate the possible outcomes of their actions because the information required to do so has not been created yet.

In the following, we apply this framework to discuss in more detail the roles that the objective environment and entrepreneurial perceptions play in the start-up process.

The Objective Environment

The approach to the environmental context differs significantly between the creation and discovery schools of thought. The creation view conceptualizes the environment as enacted and idiosyncratic, focusing on the interactions between nascent entrepreneurs and various stakeholders. In contrast, the environment plays a much more prominent role in the discovery perspective: the environment is conceptualized as a given set of conditions that are objective and definable. Empirical studies have shown that environmental factors significantly affect the entrepreneurial process, leading to differences in the rates of new firm formation, survival, and growth across industries (e.g., Kirchhoff, 1994; Reynolds, 1997; Reynolds & White, 1997) and countries (e.g., Bosma, Jones, Autio, & Levie, 2008).

Because the discovery perspective considers entrepreneurial opportunities as existing independent of the individuals who recognize them, opportunities are, in essence, a product of the environment. Opportunities arise in the environment under conditions of high uncertainty and turbulence (Dew, Velamuri, & Venkataraman, 2004; Knight, 1921; Sine & David, 2003). For example, changes in technologies or customer needs serve to create attractive "interstices" (Penrose, 1959) that new firms can exploit. Because of the turbulence that is introduced into the environmental selection mechanisms in dynamic environments (Beard & Dess, 1988), new firms also have a greater ability to successfully challenge industry incumbents. Following this logic, in order to examine the effects of the objective opportunity environment, we use the concept of *environmental dynamism*, defined as the level of uncertainty and change in the environment (Dess & Beard, 1984), to reflect the likely existence of opportunities in the nascent entrepreneur's environment.

The extent to which these objective opportunities are exploited is influenced by nascent entrepreneurs' access to resources (Brush, Greene, & Hart, 2001; Vesper, 1990). Much like opportunities, resources have traditionally been conceptualized as objective and definable. As Baker and Nelson (2005) point out, a variety of theoretical perspectives, such as population ecology (Hannan & Freeman, 1984), evolutionary perspectives (Campbell, 1969), neo-institutional approaches (Berger & Luckmann, 1966), and resource dependence theory (Pfeffer & Salancik, 1978), have all considered resource availability to have important effects on organizational behaviors and outcomes. Patterns of resource scarcity/availability are viewed as creating selection environments that impact organizational births and deaths, irrespective of whether or not the external resource conditions actually impact firm behavior (Baker & Nelson). Resource scarcity thus constitutes an objective constraint on entrepreneurial action and outcomes. To empirically examine this effect in our research model, we use the concept of *environmental munificence*, defined as the ability of the environment to support sustained growth (Dess & Beard, 1984), to reflect the objective availability of resources in the environment.

The Role of Perceptions

Perceptions and other cognitive factors play a role in both the discovery and creation views of entrepreneurship.[1] In the discovery perspective, cognition impacts the probability that particular people will identify and exploit an opportunity—opportunity identification depends upon an individual's prior knowledge and exploitation depends upon an

1. We follow Mitchell et al. (2002, p. 97) in defining entrepreneurial cognitions as "the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth." Cognitions are considered to broadly encompass individuals' perceptions, beliefs, attitudes, mental models, and other such knowledge structures.

individual having the required cognitive capabilities (Shane, 2000; Shane & Venkataraman, 2000). Research has focused, for example, on how pattern recognition leads nascent entrepreneurs to recognize opportunities (Baron & Ensley, 2006) and how differences in categorization processes between entrepreneurs and non-entrepreneurs can explain entrepreneurial risk taking (Palich & Bagby, 1995).

In the creation perspective, because "opportunities are . . . in the eye of the beholder" (Krueger, 2000, p. 6), perceptions and other cognitive factors play a critical role. Several researchers have developed "intention-based" models to elucidate the cognitive elements underlying the development of entrepreneurial intent in individuals (Bird, 1988; Shapero, 1982; for a review, see Shook, Priem, & McGee, 2003). In the model developed by Krueger (1993, 2000), attitudes toward entrepreneurship, subjective norms, and perceived feasibility predict individuals' entrepreneurial intentions. While empirical studies have linked various perceptual and attitudinal factors in these models with entrepreneurial intentions, the link with subsequent entrepreneurial actions or venture creation has yet to be empirically established (Shook et al.).

Our research model in this article utilizes a similar perceptions-based approach as the aforementioned intention models. However, while the intention models have focused on predicting entrepreneurial intentions based on general attitudes toward entrepreneurship at a point in time that precedes any entrepreneurial action, we focus on the role of perceptions in driving a nascent entrepreneur's behavior in the start-up process. Instead of general attitudes toward entrepreneurship, we focus on the entrepreneur's perceptions of the current venture opportunity and the current availability of resources. Our goal is to examine the objective existence of the business opportunity in the environment vs. the entrepreneur's subjective perception of the opportunity and the actual availability of resources vs. the entrepreneur's perception of resource availability as drivers of a nascent entrepreneur's actions in the new venture-creation process. While there would be no need to distinguish between objective and subjective environments if there were perfect correlation between the two, research suggests that this is not the case (Boyd, Dess, & Rasheed, 1993; Sutcliffe, 1994).

Now we turn to developing a testable model of venture creation that takes into account both the objective environment and the entrepreneur's perceptions. Table 1 summarizes our comparison between the discovery and creation theories with regard to the key concepts used.

Opportunity Perceptions, Entrepreneurial Efforts, and Environmental Dynamism

The creation theory's notion that entrepreneurial action requires merely the *perception* of opportunities is based on the idea that individuals make decisions based on subjective assessments rather than on objective environmental factors (Ajzen & Fishbein, 1980; Penrose, 1959). Studies utilizing the theory of planned behavior in social psychology have shown in a variety of settings that evaluative judgments—which are based on underlying attitudes, norms, and beliefs—are key predictors of the intentions and subsequent actions of individuals (Doll & Ajzen, 1992; Malhotra, 2005). Empirical evidence from organization studies supports this notion: while archival measures of objective environmental conditions are appropriate for examining the external constraints on organizations, perceptual measures of the environment are more appropriate for studying organizational action (Boyd et al., 1993).

Sarasvathy's (2001) work on the process of effectuation in new firm creation provides insight into the role that an entrepreneur's perceptions and beliefs may play in

Table 1

Comparison of the Discovery and Creation Views of Entrepreneurship

Concept	Discovery view	Creation view
Opportunities	Exist objectively in the environment, independent of the individuals who discover them	Are based on entrepreneurs' subjective perceptions and created through social interactions and learning processes
Environment	Comprises objective conditions that produce opportunities; entrepreneurs focus on predicting the future environment	Enacted through interactions between entrepreneurs and stakeholders; entrepreneurs focus on constructing the future environment
Resources	Required in order to meet the resource needs of exploiting a given opportunity	Matched with a perceived opportunity in an iterative improvisation process in which both the definition of opportunity and resource requirements evolve
Cognitions	Affect entrepreneurs' ability to recognize and exploit opportunities	Underlie the subjective notions of opportunity and environment

Sources: Alvarez and Barney (2007); Sarasvathy (2001).

organizational emergence. Whereas the traditional, causation-based discovery model assumes that the environment is largely linear and independent and focuses on the predictable aspects of the future, the creation/effectuation model assumes a dynamic, nonlinear environment and considers the future to be unpredictable. In effectuation, an entrepreneur takes actions seeking to control aspects of the unpredictable future and through these actions ends up *constructing* the future (Sarasvathy). Driven by an aspiration, the entrepreneur undertakes a set of actions to transform an idea—an opportunity perception—into a firm. Rather than assuming that an opportunity exists independently of the entrepreneur, the founder, along with others, creates the market by bringing together enough stakeholders to sustain the enterprise (Sarasvathy).

The actions of entrepreneurs are thus largely driven by subjective "productive opportunity," or "all the productive possibilities that entrepreneurs see" (Penrose, 1959, p. 31).[2] Opportunity therefore should be viewed as a set of subjective expectations of what the entrepreneur thinks can be accomplished, or "imagined ends" (Sarasvathy, 2001). These expectations are driven by "entrepreneurial ideas" and "images of the environment" (Penrose, 1959, pp. 41–42), and they determine an entrepreneur's behavior. Following this creation logic, nascent entrepreneurs' perceptions of market opportunity should drive their efforts to start a new venture—that is, the greater the perceived opportunity, the more actively an entrepreneur is likely to pursue that opportunity.

What role then does the objective environment play in this perceptual view of entrepreneurial opportunities? The creation view has not really addressed this topic other than to point out that entrepreneurs enact their environment through interactions with stakeholders (Alvarez & Barney, 2007; Sarasvathy, 2001) and that external factors may indirectly impact entrepreneurial intentions by influencing underlying attitudes (Krueger, 2000). In the discovery school, studies have suggested that changes in the environment (e.g., technological or regulatory changes) give rise to opportunities that nascent

2. Penrose's (1959) concept of productive opportunity also includes an objective component. The objective productive opportunity depends upon environmental factors and the firm's resources and capabilities, whereas the subjective opportunity is limited only by the perceptions of the firm's entrepreneurs.

entrepreneurs can then identify (Drucker, 1985; Kirzner, 1973; Shane, 2003). We draw on both of these perspectives to develop an interpretation of the relationship between the objective environment and perceived opportunities.

We propose that environmental uncertainty influences the attributional processes that lead to the perception of opportunities. That is, nascent entrepreneurs' perceptions of market opportunity arise from the dynamism in their environments. As nascent entrepreneurs interpret and make sense of their environments, the greater the level of environmental dynamism, the more likely they are to perceive that there is an unmet customer need and that it is possible to challenge industry incumbents. The stronger these perceptions, the stronger will be the intention to create a venture, and the more energy nascent entrepreneurs will put into starting a firm. Environmental dynamism thus creates the possibility for nascent entrepreneurs to construct images of potential market opportunities, and these perceptions will lead the entrepreneurs to initiate and persevere in conducting start-up activities. As individuals have heterogeneous expectations and assessments about the environment (Dew et al., 2004; Palich & Bagby, 1995), it is not actual environmental dynamism that is important in predicting efforts at venture creation but the *perception* that opportunities exist in the market. Thus,

> **Hypothesis 1:** Perceived market opportunity mediates the relationship between the dynamism of the environment and the nascent entrepreneur's level of effort to create a new venture.

Resource Perceptions, Entrepreneurial Efforts, and Environmental Munificence

While previous studies in the discovery school have shown environmental munificence to be associated with higher rates of venture formation (Dean, 1995), new venture growth (Miller & Camp, 1985), higher survival rates (Romanelli, 1989) and greater sales (Bamford, Dean, & McDougall, 2000), we focus here on how munificence influences venture creation *through the entrepreneur's resource perceptions*.

Merely being in a munificent environment is not enough to spur nascent entrepreneurs into action. As is the case with opportunities, individuals also have heterogeneous expectations and assessments about the existence and value of resources (Dew et al., 2004; Kirzner, 1997; Shane & Venkataraman, 2000). The presence of environmental munificence is not likely to impact decisions to engage in start-up activities unless nascent entrepreneurs perceive that the environment contains resources that they can utilize to make the opportunity a reality. When resources are perceived to be available, nascent entrepreneurs are less likely to be concerned about resource constraints and thus are apt to engage in venture-creation activities, regardless of the resources that they currently control (Stevenson & Jarillo, 1990).

This notion that perceived resource availability influences entrepreneurial action is consistent with the creation school's intention-based models, in which "perceived feasibility" has been shown to be a key driver of entrepreneurial intentions (Krueger et al., 2000) and perceived resource availability has been considered to be a key element of perceived feasibility (Krueger, 2000). Similarly, in Sarasvathy's (2001) effectuation model, an entrepreneur's "given means" form the basis for entrepreneurial action. These given means are highly perceptual in nature—they depend upon the entrepreneur's understanding of his or her personal identity, experience, and social networks. These factors result in a perceived set of possibilities for resource mobilization, which in turn spurs the entrepreneur to action.

To summarize, we posit that as nascent entrepreneurs interpret and make sense of their environments, the greater the level of munificence, the more likely they are to perceive that it will be possible to appropriate resources to successfully start a business, and the more likely they will be to engage in venture-creation efforts. Accordingly,

Hypothesis 2: Perceived resource availability mediates the relationship between the munificence of the environment and the nascent entrepreneur's level of effort to create a new venture.

Entrepreneurial Efforts and Venture Start-Up

In the first two hypotheses, we integrated the discovery theory's emphasis on the objective environment with the creation theory's perceptions-based approach and proposed that a nascent entrepreneur's perceptions of opportunity and resource availability will mediate the effects of objective environmental conditions on the entrepreneur's level of effort to start a firm.[3] Both the discovery and creation theories recognize that it is this entrepreneurial effort that transforms the opportunity into an actual venture. That is, through *organizing activities* that establish a set of routines and structures that support a goal-directed, boundary-maintaining organization (Aldrich, 1979; Delmar & Shane, 2004), an entrepreneur brings about the emergence of a new firm through the creation of legitimacy, the establishment of social ties, and the obtaining of resources (Delmar & Shane). This logic has received prior support in the entrepreneurship literature—several studies have shown that the higher the rate of organizing, the more likely it is that an organization will emerge (e.g., Carter, Gartner, & Reynolds, 1996; Lichtenstein, Carter, Dooley, & Gartner, 2007). Thus,

Hypothesis 3: The more a nascent entrepreneur engages in venture-creation activities, the greater the likelihood of venture start-up.

Methods

Sample

The data utilized for the current investigation were drawn from the National Panel Study of Entrepreneurial Dynamics (PSED), a longitudinal study of nascent entrepreneurs started in 1998. As part of a national survey, a total of 64,622 individuals in the United States were contacted through random-digit dialing by a marketing research firm. During these telephone interviews, two questions were used to identify individuals who were in the process of starting a new venture: "Are you alone, or with others, now trying to start a business?" and "Are you alone, or with others, now trying to start a new venture for your employer?" Respondents who answered yes to either of these questions were then asked two additional questions that determined whether they were actively involved in the start-up process and whether they would share in the ownership of the new venture. Positive answers to both of these questions qualified an individual as a nascent

3. While extant theory suggests the links we have included in our research model between dynamism and perceived opportunity on the one hand, and munificence and perceived resource availability on the other, it is also conceivable that munificence might influence perceived opportunity and that dynamism might influence perceived resource availability. In a supplementary analysis, we included these additional paths in our research model, but neither path was statistically significant.

entrepreneur to be requested to participate in the national panel study. Qualifying individuals were offered a small monetary inducement ($25) for their participation.

The PSED data were collected through a series of telephone interviews conducted at approximately 1-year intervals by researchers at the University of Wisconsin. In addition, a mail survey was also distributed after each wave of phone interviews.[4] To ensure that the entrepreneurs were "nascent," cases in which the business had had a positive cash flow for more than 30 days were classified as "infant" businesses and were excluded from the sample.[5] Because of a particular interest on the part of the PSED designers, funding was obtained for a national oversampling of women and minorities. This was performed to allow scholars interested in those specific populations access to sufficient numbers from which to generalize.

For the present study, we chose to focus on fully autonomous nascent entrepreneurs in the manufacturing and retail/wholesale sectors. Focusing on autonomous entrepreneurs ensures that the entrepreneur's perceptions and activities are not driven by the goals and resources of a corporate parent. Focusing only on manufacturing and retail/wholesale sectors allowed us to use comparable industry-level shipment data to measure the dynamism and munificence of the environments in which the nascent entrepreneurs operate. While we expect our theoretical model to also hold for other types of firms, such as service firms, different measures would have to be developed, perhaps on a regional rather than industry level, for the munificence and dynamism of the environment.

Of the 715 fully autonomous nascent entrepreneurs in the PSED data set, 232 were in the manufacturing or retail/wholesale sectors. From this starting point, we excluded 56 cases because the value-of-shipments data were unavailable at the four-digit SIC-code level for these cases. We also excluded 62 cases because they did not respond to the first wave mail survey, which resulted in a final data set of 114 nascent entrepreneurs. We tested for response bias in the mail survey and found no significant differences between the respondents and the nonrespondents in terms of household income, level of education, or gender of the entrepreneur.

Because the sample involved oversamples of women and minorities, we employed post-stratification weights for each respondent based on the U.S. Census Bureau's Current Population Survey following the weighting scheme developed by Shaver (2004). Additional information about the PSED data set and the women and minority oversample weighting scheme can be found in Gartner, Shaver, Carter, and Reynolds (2004).

Descriptive Statistics on the Nascent Entrepreneurs. In our sample, the age of the nascent entrepreneurs ranged from 19 to 73 years (mean 41 years). The majority of the sample was white (78%), male (60%), and married (57%). Of the nascent entrepreneurs, 28% had a college degree. Work experience ranged from no experience to 55 years (mean 11.5 years). Household income ranged from below $19,000 to over $75,000, with the largest category in the sample (31%) having a household income between $50,000 and

4. As with all longitudinal studies, the PSED experienced some attrition over the course of the data-collection process. In the PSED data set, attrition is reported to be 26% because of initial respondents who later could not be located, did not respond, or were deceased (Reynolds & Curtin, 2004, p. 470).

5. Many scholars make a distinction between "self-employment" leading to a one-person firm and "entrepreneurial" ventures that are more growth-oriented. However, the extent to which this dichotomy can be empirically observed *ex ante*, before the venture is formed, is limited. At the very early, nascent stage on which we are focusing, when nascent entrepreneurs are in the process of starting a new venture, the outcome of the process is still unknown. The PSED sample selection process thus includes both types of ventures.

$75,000. One-fourth of the respondents (25%) were in the process of starting a manufacturing firm, while the rest (75%) were in retail/wholesale. The majority of nascent entrepreneurs were looking to start imitative, small businesses: 63% of the respondents said that the products and services to be provided were already available in the marketplace 5 years ago, and 71% said that they wanted to keep the business to a size that could be managed alone or with a few key employees.

Data on the Objective Environment

For measuring the dynamism and munificence of the objective environment, we used the value of shipments by industry from the U.S. Census Bureau's Economic Census website (U.S. Census Bureau, 2004), Annual Benchmark Reports for Retail Trade (U.S. Census Bureau, 1999) and Wholesale Trade (U.S. Census Bureau, 2000), and the NBER-CES Manufacturing Industry Database (Bartelsman, Becker, & Gray, 2000). Following Dess and Beard (1984), we used the value of shipments for a 5-year time period (1993–1997). Dynamism and munificence variables derived from these data were then used to predict nascent entrepreneurs' perceptions and behavior measured in the PSED survey in 1998–2001. Using these different time periods allows for a time lag during which entrepreneurs come to understand and interpret objective environmental conditions and develop subjective perceptions.

Measures

Table 2 lists our measurement items, and Table 3 presents descriptive statistics and zero-order correlations for our variables.

Venture Start-Up. Our dependent variable, venture start-up, was drawn from a telephone survey question that asked the entrepreneurs to select the current status of their start-up process from a variety of descriptive statements. Venture start-up is a dichotomous variable that reflects whether or not the venture was described as "an operating business." Given the longitudinal nature of the PSED data, we were able to measure our independent and control variables using the first wave of telephone and mail survey data (period 1), and then our dependent variable in the three subsequent waves of telephone data collection. In constructing our variable, if in any of periods 2, 3, or 4 the venture was described as "an operating business," we considered a new firm to have been established.

Environmental Munificence and Dynamism. Following previous studies (Bamford et al., 2000; Dean, 1995; Dess & Beard, 1984), we measured environmental munificence as the regression slope coefficient divided by the mean value of shipments for the regression of time against the value of shipments for the firm's industry (based on four-digit SIC-codes), thus capturing industry growth trends. Environmental dynamism was operationalized as the standard error of the regression slope divided by the mean value of shipments using the same regression model that was used in calculating environmental munificence (Dean; Dess & Beard), thus capturing the volatility of industry growth.

Perceived Market Opportunity. Although there are numerous conceptualizations of market opportunity in the management and entrepreneurship literatures, most definitions focus on the central themes of customer demand and the ability to compete (Choi &

Table 2

Variables and Measurement Items

Variable	Measurement items
Environmental munificence	Regression slope coefficient divided by the mean value for the regression of time against the value of shipments in the firm's industry (Bamford et al., 2000; Dean, 1995; Dess & Beard, 1984).
Environmental dynamism	Standard error of the regression slope coefficient divided by the mean value of shipments in the firm's industry (Bamford et al., 2000; Dean, 1995; Dess & Beard, 1984).
Perceived market opportunity	"Considering the economic and community context for the new firm, how certain are you that the new business will be able to . . . (1) attract customers; (2) compete with other firms?" Likert-type scale ranging from 1 = very low certainty to 5 = very high certainty.
Perceived availability of resources	"Communities vary a great deal in their entrepreneurial activity. How much do you agree or disagree with the following statements? (1) Bankers and other investors go out of their way to help new firms get started. (2) State and local governments provide good support for those starting new firms. (3) Other community groups provide good support for those starting new firms." Likert-type scale ranging from 1 = completely disagree to 5 = completely agree.
Efforts to create a venture	The number of activities the entrepreneur has engaged in, of the following four potential activities: (a) Has a business plan been prepared for this start-up? (b) Has a start-up team been organized? (c) Have financial institutions or other people been asked for funds? (d) Have any employees or managers been hired for pay (workers that would not share ownership)?
Work experience	Natural logarithm of the total number of years of nascent entrepreneur's previous work experience.
Household income	Respondent annual household income (categorical variable composed of eight income categories).
Imitativeness	Dichotomous variable: "Were the products and services to be provided by your new business available in the marketplace 5 years ago?" 1 = yes, nascent venture is imitative in nature; 0 = no, nascent venture is innovative in nature.
Growth orientation	Dichotomous variable: "Which of the following two statements best describes your preference for the future size of the business: (1) I want the business to be as large as possible, (0) I want a size I can manage myself or with a few key employees." 1 = nascent entrepreneur is growth oriented, 0 = nascent entrepreneur is not growth oriented.
Venture start-up	Dichotomous variable: 1 = venture is an operating business, 0 = venture is not an operating business "How would you describe the current status of this start-up effort? Is it now . . . (a) an operating business, (b) in an active start-up phase, (c) still a start-up but currently inactive, (d) no longer being worked on by anyone, or (e) something else?"

Shepherd, 2004; Shane, 2000). An opportunity implies that there are customer needs that are not being adequately fulfilled by incumbent firms. Accordingly, we measured our perceived market opportunity variable using two items, drawn from the PSED mail survey, which examined the nascent entrepreneur's perception of the new firm's ability to attract customers and compete with other firms. Factor loadings for the items in the confirmatory factor analysis were .80 and .80, respectively, explaining 64% of the total variance, which is above the 50% threshold suggested by Fornell and Larcker (1981).

Perceived Resource Availability. We used three items drawn from the mail survey to measure the extent to which nascent entrepreneurs perceived that their environments would enable them to mobilize resources. These items examined the nascent entrepreneur's perception of the extent to which bankers and other investors, state and local governments, and other community groups provide support for those trying to start new firms. Factor loadings were .79, .76, and .77, respectively, which explained 60% of the total variance.

Efforts to Create a New Venture. The PSED data set includes information on whether or not the nascent entrepreneurs engaged in a variety of start-up activities. To obtain our

Table 3

Means, Standard Deviations, Ranges, and Correlations for the Variables in the Model (n = 114)

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Environmental dynamism	.01											
2. Environmental munificence	.06		.15									
3. Perceived market opportunity	2.99	1.24	–.26**	.05								
4. Perceived availability of resources	2.02	1.98	–.14	–.03	.16							
5. Efforts to create a venture	1.53	1.15	–.19*	–.15	.23*	.04						
6. Previous work experience (years)	11.52	9.59	.27**	–.17	–.35**	–.15	–.03					
7. Household income (categorical variable)	5.22	1.85	–.17	–.01	.18	.27**	–.01	–.30**				
8. Manufacturing industry indicator	.26	.44	.52**	.03	–.22*	–.03	.10	.27**	−19*			
9. Imitativeness	.63	.49	.09	–.11	.08	.03	.04	.07	.04	.03		
10. Growth orientation	.29	.46	.12	.28**	.10	–.18	.13	–.12	–.22*	.16	–.17	
11. Venture start-up indicator	.30	.40	–.14	–.26**	.01	.12	.24*	–.04	.21*	–.07	.05	–.25**

* $p < .05$, ** $p < .01$; two-tailed tests.

measure of the nascent entrepreneurs' level of effort to create a new venture, we summed the number of activities that a nascent entrepreneur had conducted. Though researchers have suggested that start-up activities differ in their relative importance and timing in the venture-creation process (Delmar & Shane, 2004), the type and timing of activities is beyond the scope of the current study. We are concerned with the *level of effort* nascent entrepreneurs expend in their quest to start a new venture, and therefore, we chose to use the number of activities as our measure.

Control Variables. Previous studies have shown that an entrepreneur's experience and resources have a significant impact on venture start-up and growth (Chandler & Hanks, 1998; Westhead, 1995). Therefore, we controlled for the nascent entrepreneurs' previous work experience, measured in years, and for household income. To capture variations in the nature of the nascent ventures, we also included two dichotomous control variables to assess the venture's imitativeness (vs. innovativeness) and the entrepreneur's growth orientation (see Table 2 for measurement items). Finally, we included a control variable for industry sector.

Analysis and Results

To capture the theoretical interdependencies among our constructs, we used structural equation modeling to test our hypotheses. This method allows for a fine-grained analysis of the hypothesized relationships within the context of the entire model—it is a particularly attractive choice when testing mediating variables as paths can be tested simultaneously and measurement error and feedback are directly incorporated into the model (Baron & Kenny, 1986).

We checked the data for violations of the normality assumption, for missing data, and for outliers. We used the natural logarithm to transform the skewed control variable "previous work experience" and mean substitution to eliminate missing data (Kline, 1998). We used the variance–covariance matrix as the input for the structural equation model and followed the two-stage modeling procedure recommended by Anderson and Gerbing (1988). In the first stage, the measurement model was estimated using confirmatory factor analysis in order to test whether the constructs exhibited sufficient reliability and validity. The second stage identified the structural model that best fit the data and tested the hypothesized relationships.

Measurement Model

The factor loadings in the confirmatory factor analysis indicate that the measurement model performed well. The standardized factor loadings are all above .64 (recommended minimum is usually .40 [Ford, McCallum, & Tait, 1986]), and the total variances extracted are all above 60% (recommended minimum is 50% [Fornell & Larcker, 1981]). Thus, the constructs demonstrate good internal consistency and hence, reliability.

Nested-Model Tests

We employed nested-model tests (Loehlin, 1987) to assess the fit of the hypothesized model. Nested-model tests are a means of internally validating a hypothesized model by comparing the chi-squares of models that differ in the number of paths hypothesized; nested models can be derived from one another by adding or deleting paths. We compared four models by using sequential chi-square difference tests to obtain successive fit assessments (Steiger, Shapiro, & Browne, 1985). The four nested models are: (1) a null model, in which no relationships are posited; (2) a partial mediation model, which includes both direct and mediated effects of the objective environment (dynamism and munificence) on start-up efforts; (3) the hypothesized full-mediation model, which includes only indirect effects of the dynamism and munificence constructs on start-up efforts; and (4) a direct model, which includes only direct effects of dynamism and munificence on start-up efforts.

The goodness-of-fit statistics in Table 4 and the chi-square difference tests in Table 5 indicate that the hypothesized model provides a better fit with the data than the null model

Table 4

Structural Equation Model Results: Model Statistics

Model	χ^2	df	χ^2/df	*p*	GFI	AGFI	NFI
1. Null model	173.49	55	3.15	.00	.77	.72	.00
2. Partial mediation model	23.94	22	1.09	.35	.96	.89	.86
3. Hypothesized mediation model	27.27	24	1.14	.29	.96	.90	.84
4. Direct effects model	29.92	24	1.25	.19	.96	.88	.83
Recommended value (Hair et al., 1995)			1.0–2.0	≥.05	≥.90	≥.90	≥.80

GFI, goodness-of-fit index; AGFI, adjusted GFI; NFI, normed fit index.

Table 5

Structural Equation Model Results: Nested-Model Tests

Comparison		χ^2 diff	df diff	Model preference
Model 2 vs. 1	Partial mediation vs. null	149.55**	33	2
Model 4 vs. 2	Direct vs. partial mediation	5.98	2	4
Model 3 vs. 2	Hypothesized vs. partial mediation	3.33	2	3

A significant difference in chi-square indicates that the more complex model provides a better fit with the data. Note that the hypothesized model cannot be compared with the direct-effects model because these models are not nested.
** $p < .01$.

or the partially mediated model. The hypothesized and the direct effects models both provide a good fit with the data, with very similar goodness-of-fit statistics. The chi-square of the hypothesized model is not significant ($\chi^2 = 27.27$, $p = .29$), indicating that the model fits the data. The chi-square divided by the degrees of freedom is 1.14, which is within the suggested range of 1.0–2.0 (Schumacker & Lomax, 1996). The model's goodness-of-fit index (GFI) is .96, and the adjusted GFI (AGFI) is .90, indicating a good fit with the data. Also, the normed fit index, a rescaling of the chi-square statistic into a 0 (no fit) to 1.0 (perfect fit) range, is above the .80 threshold considered indicative of good fit (Hair, Anderson, Tatham, & Black, 1995).

Hypothesis Tests

We hypothesized that perceived market opportunity mediates between environmental dynamism and entrepreneurial efforts to create a venture (hypothesis 1) and that perceived resource availability mediates between environmental munificence and entrepreneurial efforts (hypothesis 2). To test these hypotheses, we compare the path coefficients of the hypothesized, partially mediated, and direct effects models (see Table 6) to examine the three conditions necessary for mediation (Baron & Kenny, 1986). First, the predictors (environmental dynamism and munificence) must be related to the mediators (perceived market opportunity and perceived resource availability). Second, the mediators must be related to the dependent variable (entrepreneurial efforts). Third, the predictor variables must be related to the dependent variable, and these relationships should be eliminated or substantially reduced when the mediators are accounted for.

The first condition—that the predictor variables be related to the mediator—is satisfied for hypothesis 1: as Table 6 illustrates, environmental dynamism is significantly related to perceived market opportunity (path estimate = –40.28, $p < .01$), although we had expected this relationship to be positive, not negative. For hypothesis 2, the first condition is not satisfied: environmental munificence is not significantly related to perceived resource availability (path estimate = –4.78, $p > .05$). The second condition that the mediators be related to entrepreneurial efforts is also satisfied for hypothesis 1: the relationship between perceived market opportunity and entrepreneurial efforts is significant (path estimate = .26, $p < .01$). Finally, the third condition is satisfied for hypothesis 1: in the direct effects model, the relationship between environmental dynamism and

Table 6

Structural Equation Model Results: Path Estimates

Path	Hypothesized fully mediated model	Direct effects model	Partially mediated model
Environmental dynamism → perceived market opportunity	−40.28**	−46.85**	−37.22**
Environmental munificence → perceived resource availability	−4.78	1.08	1.19
Perceived market opportunity → efforts to create a venture	.26**		.23*
Perceived resource availability → efforts to create a venture	–.02		.01
H3: Efforts to create a venture → venture start-up	.09**	.09**	.09**
Environmental dynamism → efforts to create a venture		H1 –23.32*	–14.76
Environmental munificence → efforts to create a venture		H2 –4.32	–4.93
Work experience → venture start-up	.00	.00	.00
Household income → venture start-up	.03*	.03*	.03*
Household income → efforts to create a venture	–.02	–.02	–.03
Imitativeness → venture start-up	–.02	–.02	–.02
Imitativeness → perceived market opportunity	.20	.38	.21
Imitativeness → perceived resource availability	.16	–.04	–.05
Growth orientation → venture start-up	–.21**	–.21**	–.21**
Growth orientation → perceived market opportunity	–.52	.54	–.43
Growth orientation → perceived resource availability	–.91	–.76*	–.79*
Manufacturing industry indicator → venture start-up	–.02	–.02	–.02

* $p < .05$, ** $p < .01$; one-tailed tests.

entrepreneurial effort is significant (path estimate = −23.32, $p < .05$), but when the mediated path is added into the partially mediated model, this significance disappears (path estimate = −14.76, $p > .05$). Based on this analysis, we can conclude that hypothesis 1 is supported: perceived market opportunity mediates between environmental dynamism and the entrepreneur's efforts to create a venture. We do not find support for a similar mediating role for perceived resource availability (hypothesis 2).

In hypothesis 3, we argued that the more venture-creation activities in which a nascent entrepreneur is engaged, the greater is the likelihood of venture start-up. Our model provides support for this hypothesis (path estimate = .09, $p < .01$). Control variable effects indicate that higher household income increases the likelihood of venture start-up, and growth orientation decreases the likelihood of start-up, indicating that growth-oriented entrepreneurs may be more likely to abandon a venture if its growth potential does not meet the entrepreneur's goals.

Discussion

New ventures do not emerge as random, passive by-products of environmental conditions, but instead, they are created through the purposeful organizing activities of nascent entrepreneurs (Katz & Gartner, 1988; Shook et al., 2003). Recent research has paid much attention to the cognitions underlying these organizing activities, focusing on the attitudes, perceptions, intentions, and thought processes that precede entrepreneurial action (Mitchell et al., 2002). This research has implied that entrepreneurs' perceptions

and interpretations of opportunities and resources in their environments are crucial in the process of organizational emergence. However, little empirical research has explicitly linked entrepreneurial perceptions to venture-creation activities or to subsequent venture creation. Neither has research empirically examined the effects of objective vs. perceived environmental conditions in venture creation.

In this article, we drew insights from both the discovery and creation views of entrepreneurship to develop and empirically test a research model in which nascent entrepreneurs' perceptions about opportunities and resource availability mediate between objective environmental conditions and entrepreneurial actions. In so doing, we have begun to explicate the interrelationships among environmental characteristics, perceptions, entrepreneurial efforts, and venture start-up, thereby contributing to theory development in the area of firm emergence.

Theoretical Implications

Opportunity Perception as a Driver of Entrepreneurial Action. Consistent with prior work on entrepreneurial cognitions (Baron, 2004; Forbes, 1999; Keh, Foo, & Lim, 2002; Krueger et al., 2000; Mitchell et al., 2002, 2004), our findings emphasize the importance of perception in the venture-creation process. We found that entrepreneurial perception of market opportunity was significantly related to entrepreneurs' efforts to create a venture and that these efforts, in turn, were significantly related to venture start-up. Thus, our study supports the view that entrepreneurs are cognitive agents operating in enacted environments (Weick, 1979, 1995) in which the entrepreneur's key tasks are interpretation, sense-making, and the reduction of subjective uncertainty (Hill & Levenhagen, 1995; Levenhagen, Porac, & Thomas, 1993; Sarasvathy, 2001). In line with this creation view of entrepreneurship, our empirical result supports a different conceptualization of opportunity than the traditional structuralist discovery view. Rather than assuming that an opportunity is an objective state that exists in the environment and that the entrepreneur discovers and then exploits (Kirzner, 1997; Shane & Venkataraman, 2000), we find support for the view of opportunities as subjective perceptions. These perceptions are what spur entrepreneurs into action—through cognitive processes, social interaction, and the mobilization of resources, entrepreneurs *enact* these images and thereby *create* opportunities.

Indirect Effect of Environmental Dynamism. The environmental context has long been considered an important factor in the organizational and entrepreneurship literatures. Environmental change has been considered to be the source of opportunities in the discovery view of entrepreneurship, and environmental dynamism has been empirically linked with increased entrepreneurial activity (Sine & David, 2003) as well as success of entry (Sandberg & Hofer, 1987) and higher performance (Eisenhardt & Schoonhoven, 1990) of new firms. Yet, the role of the objective environment in the creation view of entrepreneurship has remained somewhat ambiguous and empirically untested. We proposed that entrepreneurial perceptions are the key mechanisms through which environmental characteristics influence outcomes such as firm creation. Our results show that entrepreneurs' perceptions of opportunity were influenced by the actual dynamism of the environment and that it was *through* these interpretations that the environment influenced behavior. While prior studies on environments, as typified by contingency theory (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Thompson, 1967), have suggested that environments provide objective constraints to managerial action, our results are consistent

with intention-based models (Krueger et al., 2000) and Penrose's (1959) concept of subjective productive opportunity—entrepreneurs' actions are driven primarily by perceptions, but perceptions are influenced by objective external factors.

Although we found a significant mediating effect for perceived market opportunity between environmental dynamism and entrepreneurial efforts, contrary to our expectations, dynamism had a negative relationship with perception of opportunity.[6] Prior researchers have suggested that entrepreneurial opportunities arise under conditions of high uncertainty and turbulence (Dew et al., 2004; Knight, 1921) by creating interstices that new firms may be able to exploit (Penrose, 1959) and by altering environmental selection mechanisms that may otherwise favor industry incumbents (Beard & Dess, 1988; Hannan & Freeman, 1984). However, the negative relationship between dynamism and perceptions of opportunity implies that nascent entrepreneurs paradoxically perceive *less* opportunity in precisely those situations in which structural conditions may be likely to give rise to greater opportunities. Research on issue interpretation has found that organizational decision makers tended to categorize as opportunities those situations characterized by controllability (Jackson & Dutton, 1988) so it may be that increased environmental dynamism creates too much causal ambiguity for nascent entrepreneurs to draw clear means–ends linkages and that they will thus not perceive opportunities, even if dynamism may help lessen the advantages that incumbents might possess under more stable conditions. This is likely to be especially true for nascent entrepreneurs who are looking to start small, imitative businesses similar to the majority of the respondents in our sample.

Nonsignificant Finding on the Mediating Role of Perceived Resource Availability. We hypothesized that the perceived availability of resources would mediate between objective environmental munificence and entrepreneurial efforts, but we did not obtain the results we expected. We did not find support for the link between environmental munificence and the perceived availability of resources, nor did we find a link between the perceived availability of resources and entrepreneurial efforts. This is surprising given that in prior studies, munificence has been shown to be associated with higher rates of venture formation (Dean, 1995), new venture growth (Miller & Camp, 1985), greater sales (Bamford et al., 2000), and higher survival rates (Romanelli, 1989). These empirical results might be reconciled with our finding if munificence were to act as a moderator between entrepreneurial action and outcomes; such moderating influences by external factors have been proposed in the theory of planned behavior (Ajzen, 1987). In essence, our insignificant finding suggests that neither the objective existence nor the perception of resources may be prerequisites to the pursuit of entrepreneurial opportunity, providing empirical validation for the view that entrepreneurs act as "bricoleurs" (Baker, Miner, & Eesley, 2003; Baker & Nelson, 2005; Garud & Karnøe, 2003), coming up with novel solutions to their resource constraints and making do with whatever resources are at hand.

Entrepreneurial Start-Up Efforts. Finally, we found support for the relationship between the entrepreneur's level of effort at starting a venture and firm emergence. This is consistent with both the discovery and creation theories of entrepreneurship as well as with previous empirical work that suggests that nascent entrepreneurs who engage in more activities to make their venture more tangible tend to be more successful (Carter et al.,

6. In a supplementary analysis, we tested for a curvilinear relationship; the results did not support such a model.

1996)—start-up activities result in the creation of a new organization by increasing legitimacy, establishing social relationships, and obtaining control of and recombining resources (Delmar & Shane, 2004). Our study has demonstrated that while nascent entrepreneurs might not need to perceive resource availability in order to pursue an opportunity, a firm will not emerge unless sufficient venture-creation activities are undertaken. It is through these efforts that entrepreneurs reduce subjective uncertainty regarding opportunities and mobilize resources to start a venture.

Taken together, the findings of this study contribute to the literature on organizational emergence by empirically examining the interrelationships among objective environments, perceptions of opportunity and resource availability, entrepreneurial action, and new venture start-up. By utilizing longitudinal data on nascent entrepreneurs, we have captured empirical effects as the new venture-creation process unfolds. Our results highlight the relevance of both the objective and subjective opportunity sets (Penrose, 1959) and shed light on the relationship between the two conceptualizations. In so doing, we help to bridge the divide between the discovery and creation schools of thought in entrepreneurship. While these perspectives are useful as theoretical lenses, the dichotomy between them may not, in fact, represent the true nature of entrepreneurship. In reality, entrepreneurs seem to use the subjective to interpret and influence the objective—that is, the processes of discovery and creation are likely to operate in a fundamentally interlinked manner.

Normative Implications

While current policy initiatives often focus on providing resources for entrepreneurs and easing structural environmental constraints, our findings indicate that a complementary approach might be to encourage the perception of opportunities and thereby spur venture-formation efforts. This could be achieved through an increased emphasis on creativity and problem-solving skills in entrepreneurship education. Further, greater emphasis could be placed on training entrepreneurs to "bootstrap" or make do with whatever resources are available as opposed to the current excessive focus on business planning and the raising of external funding (Honig, 2004). By shifting the nature of entrepreneurship education and programs, nascent entrepreneurs of the future could be better prepared to integrate their different roles as cognitive agents interpreting their environments, resource mobilizers attempting to gain access to external resources, and bricoleurs making do with whatever resources are at hand.

Limitations and Future Directions

The findings of this article also provide a number of directions for future study. The PSED data set overcomes common methodological problems such as static analysis and selection bias by using longitudinal methodology and broad sampling, but the trade-off is that the measures used tend to be more course-grained than in many cross-sectional studies. In measuring the entrepreneurs' level of effort to create a venture, for example, we were limited to counting the number of activities as the data set does not ask the respondents *how much* of each activity they are doing. Although previous studies (Carter et al., 1996) have shown that using the number of activities is appropriate, future studies could develop more fine-grained measures to also look at the extent, sequencing, and effectiveness of start-up activities. Similarly, data availability limited our examination of perceptions of resource availability to three types—support from bankers and investors,

state and local governments, and other community groups. Prior studies have suggested that different resources may have different implications for organizational growth (Mishina, Pollock, & Porac, 2004) so an interesting extension would be to explore the roles that different types of resources play in the formation of a new venture. Additionally, although most conceptualizations of opportunity in the literature are consistent with our focus on customer demand and the ability to compete (Choi & Shepherd, 2004; Shane, 2000), the operationalization of perceived market opportunity could also be expanded in future studies.

Second, our data were limited by the availability of comparable information on external environmental munificence and dynamism across industry sectors. We solved this issue by focusing specifically on manufacturing and retail/wholesale industries. Thus, the findings from this study, while suggestive of nascent entrepreneurs in general, are only generalizable to the sectors represented in our SIC-code sampling frame. Future research could examine nascent entrepreneurs in other sectors. Researchers may also wish to study the objective environment on a different level of analysis. In this study, we used industry-level measures that were consistent with prior research (Bamford et al., 2000; Dean, 1995; Dess & Beard, 1984). For nascent entrepreneurial ventures, however, the characteristics of the entrepreneur's local or regional environment may be highly relevant as well.

Third, while we have provided a first step toward understanding the complex relationships among the objective environment, entrepreneurial perceptions, entrepreneurial efforts, and firm emergence, future studies should strive to engage in more in-depth analysis of these relationships. For example, even though our supplementary analysis (see footnote 3) did not find statistically significant linear cross-relationships between dynamism and perceived resource availability or between munificence and perceived market opportunity, future studies could examine potential moderated or curvilinear relationships that would capture contingencies based on industry stage, type of venture, or other situational variables. Research could also expand the set of perceptions and other cognitive factors that are studied—for example, certain types of cognitive processes may be associated with particular start-up activities. In order to do so, methodologies that would enable a richer examination of entrepreneurial cognitions and behavior may be appropriate. While remarkable in its scope and longitudinal nature, the PSED database is limited by its structured approach. The use of entrepreneurial narratives (e.g., Pitt, 1998), for example, may be one way to examine entrepreneurial perceptions, cognitive processes, and their links to start-up efforts.

Clearly, there is much more to learn in the area of firm emergence. In this article, we have shed light on some of the contextual, perceptual, and behavioral factors that influence firm creation. We have contributed to the development of a more integrative model of the start-up process that draws on both the objective and subjective notions of opportunity and resources and thus helps to bridge the debate between the discovery and creation views of entrepreneurship.

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