



The Determinants of Corporate Entrepreneurial Intention Within Small and Newly Established Firms

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In this article, we study the determinants of corporate entrepreneurial intention (CEI) within small and newly established firms. Given that in these ventures, entrepreneurial activities usually occur as a result of individuals' behaviors, the CEI of their founders is key to explaining these companies' ability to become engaged in entrepreneurial actions. Building on the theory of planned behavior, we conceptualize how individual characteristics and contextual variables influence CEI. Our theoretical model of the micro-foundation of CEI is tested on a sample of 200 entrepreneurs, founders of 133 new technology-based firms.

Results show that CEI is influenced by situationally specific motivation, individual skills, and perceived environmental dynamism. Managerial implications are discussed.

Introduction

Factors affecting firms' ability to engage in entrepreneurial behaviors have received great attention from management scholars, reflecting increasing interest in the creation of conditions triggering and supporting entrepreneurial actions within firms. Different streams of research have investigated this issue. Starting from the contribution of Burgelman (1983), the extant research has addressed corporate entrepreneurship as a potential means for revitalizing large established companies (Kelley, Peters, & Colarelli O'Connor, 2009; Phan, Wright, Ucbasaran, & Tan, 2009; Stopford & Baden-Fuller, 1994; Zahra & Covin, 1995). Other works have focused on the concept of entrepreneurial orientation (Miller, 1983), which suggests that an entrepreneurially oriented firm is one engaging in

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product-market innovation, undertaking risky ventures, and prone to come up with proactive innovations. A third set of works relevant for understanding firms' engagement in entrepreneurial behaviors is represented by those studies looking at ambidextrous organizations (Tushman & O'Reilly, 1996) having the "ability to pursue simultaneously both incremental and discontinuous innovation and change." They pointed out that ambidexterity entails not only separate structural subunits for exploration and exploitation, but also different competencies, systems, incentives, processes, and cultures—each internally aligned and structurally coherent.

Most of these studies, though using different perspectives, have focused on large established firms, where typically top management teams, through top-down processes, make decisions about when and how to get engaged in entrepreneurial actions, and design *ad hoc* organizational-level mechanisms and incentives to foster the enactment of entrepreneurial behaviors. The formalization of procedures supporting such behaviors, similar to many other activities in large and established organizations, results in their establishment as organizational routines (Phan et al., 2009; Zahra & Filatotchev, 2004).

However, when it comes to small or newly established firms (Lubatkin, Simsek, Ling, & Veiga, 2006), little is known on where the processes through which entrepreneurial behaviors come into existence differ, in many respects, from those studied with regard to large and established organizations. In the former, entrepreneurial activities are based on their founders and are usually informal and improvisational (Zahra & Filatotchev, 2004). These firms' entrepreneurial activities are often nurtured by their founders' skills, knowledge, creativity, imagination, and alertness to opportunities, and take place through bottom-up processes (Daily & Dalton, 1992), rather than resulting from planned and well-designed organizational support systems.

Therefore, managerial flexibility hinges on individuals' cognitive and mental models allowing them to envision new things, reconceptualize existing ongoing activities, and learn from prior experiences (Zahra, Filatotchev, & Wright, 2009). Consequently, individuals' intentions are fundamental for the implementation of entrepreneurial behaviors that are not yet incorporated into firm-level routines and procedures.

We advance that individuals' entrepreneurial intention is key to explaining small and newly established companies' ability to enact entrepreneurial behaviors. According to Bird (1988), entrepreneurial intention is a cognitive representation of the actions to be implemented by individuals, either to set up independent new ventures or to create new value within existing companies.

In this article, we intend to study the factors affecting the formation of entrepreneurial intention in corporate settings, e.g., the micro-foundation of corporate entrepreneurial intentions (CEI), within small and newly established companies. Given that these companies are less likely to spin off new independent ventures (Mangematin et al., 2003), the entrepreneurial actions that we consider are those aimed at creating new value within these companies, through the enactment of innovative, proactive, and risk-taking behaviors. Entrepreneurial actions are at the core of value creation, which is concerned with developing sustainable income, and are a "fundamental behavior of firms by which they move into new markets, seize new customers and/or combine (existing) resources in new ways" (Ireland, Hitt, Camp, & Sexton, 2001).

We study CEI through intention models, which offer a coherent, parsimonious, highly generalizable, and robust theoretical framework for understanding and predicting intentions (Krueger, Reilly, & Carsrud, 2000). Our study relies on the theory of planned behavior (Ajzen, 1991)—according to which intentions are determined by attitudes, subjective norms, and perceived behavioral control—to provide a set of antecedents for such dimensions. Our model of causal antecedents of CEI is built on a set of constructs

that have been used extensively in sociological and psychological studies, including individual variables (e.g., situationally specific motivation and individual skills) and contextual variables (e.g., perceived environmental support and perceived environmental dynamism). No previous attempts have jointly considered both individual and contextual variables, assessing their impact on CEI in small and newly established ventures.

We apply structural equation modeling techniques to a sample of 200 entrepreneurs, founders of 133 new technology-based firms (NTBFs), all small, young, and characterized by similar “flat” organizational structures. Our results show that attitude toward entrepreneurial behavior and perceived entrepreneurial behavior control directly predict CEI, while subjective norms do not. Situationally specific motivation, individual skills, and perceived environmental dynamism have an indirect impact, while perceived environmental support does not predict CEI.

This study makes a contribution to the literature on corporate entrepreneurship in small and newly established companies. Drawing on the literature on intention models and expanding the theory of planned behavior, the study unveils the micro-foundation of CEI, by exploring the indirect determinants of intentions, in terms of individual and contextual variables, and by bringing them jointly into a unique and testable model.

The rest of the article is structured as follows. In the second section, we discuss the role of CEI within small and newly established companies. In the third section, we lay out the theoretical foundation of CEI within newly established firms, putting forward three sets of hypotheses. In the fourth section, we characterize the research design and methodology. Then, we present our evidence, and in the final section, we conclude by discussing the results and their managerial implications, and by highlighting opportunities for future research.

CEIs Within Small and Newly Established Firms

Given our objective to look at the factors affecting the formation of entrepreneurial intention within small and newly established companies, a relevant question to be addressed becomes: “Do small and newly established firms differ from established large corporations when it comes to how they get engaged in entrepreneurial behaviors?”

Recent work by Zahra et al. (2009) suggests the idea that the nature of corporate entrepreneurship activities may change over the life cycle of the firm, as a result of the interaction between individual, organizational, and contextual characteristics. The interplay between these three dimensions, at different phases of a company’s life cycle, might result in different forms of corporate entrepreneurship. According to Zahra et al. (2009), commitment to entrepreneurship is the hallmark of newly established ventures, giving them a basis to develop and exploit new capabilities and achieve success. In these ventures, entrepreneurial activities are centered on their founders and are usually informal and very dynamic (Zahra & Filatotchev, 2004). Their entrepreneurial activities are often nurtured by their founders’ skills, knowledge, creativity, imagination, and alertness to opportunities, and are based on *ad hoc* intuitive, heuristic, informal managerial practices. Supporting this view, Wiklund (1999) argues that, when applied to newly established firms, the entrepreneurial orientation concept might be seen as a result of individual-level determinants rather than firm-level outcomes.

If, in line with the suggestion by Zahra et al. (2009), we acknowledge the existence of heterogeneity in both corporate entrepreneurship and behavior throughout a company’s life cycle, we would also expect some differences in their determinants. More specifically, compare small and newly established firms—or companies in an early phase of their life

cycles—where there are no organizational supports for entrepreneurship and the organizational structure is flat and fluid, with large established firms, where formal support mechanisms are in place. In the former case, we might expect that the enactment of corporate entrepreneurial behavior will be mostly influenced by a “bottom-up” process, where individuals play a central role, rather than by organizational routines already in place as is likely with large established firms (Lubatkin et al., 2006).

In such cases, the concept of individuals’ entrepreneurial intention becomes key for explaining entrepreneurial behavior, becoming the lens through which we can study corporate entrepreneurship. Therefore, in the following section, we will analyze the determinants of CEI and root the study of its micro-foundation in intentional models.

The Micro-Foundation of Corporate Entrepreneurial Intentions

According to cognitive approaches, intentions are central in studying human behavior (Tubbs & Ekeberg, 1991). As Ajzen and Fishbein (1980) argue in their seminal contribution, most behaviors of social relevance, such as health-related behaviors or the establishment of new organizations, are under volitional control. Several scholars, sharing this view and questing for theoretical and empirical evidence, proved that intentions are the best single predictor of such behaviors (Ajzen, 1991; Bagozzi, Baumgartner, & Yi, 1989; Sutton, 1998).

With specific regard to the entrepreneurship domain, intention models assume that entrepreneurial behavior is planned, thus reflecting some degree of cognitive processing, in which intentions evolve as individuals elaborate their knowledge, beliefs, attitudes, and experiences (Krueger et al., 2000). While many models have been used to explain and predict entrepreneurial behavior efficiently (Guerrero, Rialp, & Urbano, 2008), only the theory of planned behavior (TPB) represents a general model of social behavior, developed in the broader mainstream of the social psychology literature. TPB has been proved to be general, robust, more parsimonious, and more easily falsifiable than more local and idiosyncratic models (Meeks, 2009). It encompasses five specific domains: attitude toward behavior, subjective norms, perceived behavioral control, intention to behave, and behavior. The basic tenet of this theory is that an individual’s intentions to perform a given behavior are the main direct predictor of such behavior. Intentions provide indications of the actions individuals plan to engage in. The TPB postulates three conceptually independent antecedents of intention. The first, attitude toward behavior, refers to the degree to which a person has a favorable or unfavorable appraisal of the behavior under scrutiny (i.e., the perceived personal desirability of performing the behavior). The second antecedent refers to subjective norms, which are defined as the approval (or disapproval) that important referent individuals (or groups) have in relation to the enactment of a given behavior (i.e., the perceived social pressure to perform or not to perform the behavior). The third predictor is the degree of perceived behavioral control, which can be seen as the person’s belief related to how easy (or difficult) the enactment of the behavior is likely to be. This third predictor is assumed to reflect past experience with the focal behavior as well as anticipated impediments or obstacles (Ajzen, 1991).

Direct Antecedents of CEI in Small and Newly Established Firms

For the specific case of small and newly established firms—given the low likelihood of their spinning off new independent ventures—CEI has been defined as the intention to

create value through the engagement in innovative, risky, and proactive actions. Consistent with the TPB, and drawing on the above-mentioned literature on entrepreneurship, we identify the following three theoretical constructs acting as causal antecedents of CEI.

The first antecedent is the *attitude toward entrepreneurial behavior*, or the individuals' desire to create value within existing firms, encompassing perceptions of the individual desirability of performing the entrepreneurial behavior (Krueger, 2000). Attitudes are what we feel about a concept (*object* of the attitude), which may be a person, a brand, an ideology, or any other entity about which we can attach feeling. In other words, attitudes are about the evaluation (measured along the bad–good continuum) that we tend to give to a specific concept. They should not be confused with mood, a generalized state of feeling with no specific target; nor are they mere cognitive structures with no feelings attached. Any object of the attitude can be seen as a set of beliefs. The overall concept can be broken down into these beliefs. Attitudes develop from the behavioral beliefs people hold about the object of the attitude. Generally speaking, we form beliefs about an object by associating it with certain attributes or characteristics. The most relevant category of attitudes is that about *actions*. In the case of attitudes toward an action or behavior (i.e., an entrepreneurial behavior), each belief links the behavior to a certain outcome, or to some other attribute such as the cost incurred by performing the behavior. Since the attributes linked to the behavior are already valued positively or negatively, we automatically and simultaneously acquire an attitude toward the behavior. We therefore learn to favor behaviors we believe have largely desirable consequences and we form unfavorable attitudes toward behaviors we associate with mostly undesirable consequences (Ajzen, 1991). This favorable attitude is translated into a stronger intention to carry out the intended behavior.

The second antecedent refers to *subjective norms*, as entrepreneurs' perception of approval by important referent individuals in relation to their involvement in the creation of new value through engagement in innovative, proactive, and risky actions within established firms. If attitudes embody the personal factors influencing an individual's likelihood of wanting to engage in a specific behavior, subjective norms embody the social factors influencing the individual. In other words, subjective norms are the perceived social pressure an individual (and a would-be entrepreneur) faces when deciding whether to behave in a certain way. Subjective norms are internally controlled; they do not operate through external social reinforcement or punishments such as congratulations or hostility of others. This internal nature helps to clarify the apparent oxymoron implicit in the construct. Subjective norms are “subjective” because they are what the *subject* of the decision process thinks; at the same time, subjective norms are “norms” because they are the subject's understanding of what his or her relevant others think he or she should do. Subjective norms develop from the normative beliefs people hold about their relevant others. Similarly to behavioral beliefs, normative beliefs are concerned with the likelihood that important referent individuals or groups approve or disapprove the performance of a given behavior. The strength of each normative belief is weighted by the person's motivation to comply with the referent in question, and the subjective norm is directly proportional to the sum of the resulting products across the salient referents (Ajzen, 1991).

The third and last antecedent is the *perceived entrepreneurial behavior control*, as individuals' beliefs relating to how easy it is for them to create value through the engagement in innovative, risky, and proactive actions within a corporate environment. To understand the role played by perceived control in explaining entrepreneurial intention, it has to be underscored that TPB is an extension of the theory of reasoned action made necessary by the original model's limitation in dealing with behaviors over which people

have incomplete volitional control. Many behaviors are not completely dependent upon motivation, but require some kind of perceived ability, i.e., a positive self-assessment of how well one can execute the tasks needed to deal with prospective situations. People's behavior in general, as well as entrepreneurs' behavior, is strongly influenced by their confidence in their ability to perform (i.e., their perceived behavioral control). Perceived behavioral control beliefs exert a significant influence on, among others, choice of activities, preparation for an activity, and effort expended during performance. Perceived behavioral control develops from the control beliefs people hold about the presence or absence of requisite resources and opportunities. Control beliefs may be based in part on past experience with the behavior, but they will also usually be influenced by second-hand information about the behavior, by the experiences of acquaintances and friends, and by other factors that increase or reduce the perceived difficulty of performing the behavior in question. The more support individuals get, and the fewer obstacles or impediments they anticipate, the greater their perceived control over the entrepreneurial behavior.

Theoretical and empirical results in psychology and sociology broadly confirm the ability of attitudes, subjective norms, and perceived behavioral control to predict intention (Armitage & Conner, 2001). The TPB has received the same robust support in the specific domain of management and entrepreneurship, when many contributions succeeded in showing the predictive validity of the theory in explaining intentions toward entrepreneurship (Kolvereid, 1996; Krueger, 2000; Luthje & Franke, 2003). Building on this, with specific regard to corporate entrepreneurial behaviors in small and newly established firms, we formulate the following three hypotheses:

Hypothesis 1a: Within small and newly established firms, the stronger the business founders' attitude toward entrepreneurial behavior, the greater their corporate entrepreneurial intention.

Hypothesis 1b: Within small and newly established firms, the stronger the business founders' subjective norms supporting entrepreneurial behavior, the greater their corporate entrepreneurial intention.

Hypothesis 1c: Within small and newly established firms, the greater the business founders' perceived entrepreneurial behavior control, the greater their corporate entrepreneurial intention.

Indirect Antecedents of CEI in Small and Newly Established Firms

In order to advance our knowledge of the foundation of CEI, we extend TPB by proposing a set of antecedents for the direct predictors of CEI. Agreeing with Bird's (1988) intuition that both individual cognitive factors and environmental domains play a role in the formation of entrepreneurial intentions, we root the direct antecedents of CEI in such macro-domains that we accordingly label "inner" and "outer" dimensions. Sharing Manstead and Van Eekelen's (1998) view, we see attitudes as influenced by "inner" dimensions, in terms of motivational forces and abilities. Conversely, we see perceived entrepreneurial behavior control rooted in "outer" domains, in terms of environmental support and environmental dynamism.

We decided not to investigate the direct predictors of subjective norms because a domain such as this is less predictive of intentions for subjects with a highly internal locus of control or a strong orientation toward taking action (i.e., entrepreneurs) (Krueger et al., 2000). Therefore, coherently with the shared view of entrepreneurs as individuals characterized by the tendency toward inner-directedness, we hold that entrepreneurs' normative pressures and beliefs (i.e., the dimensions in which the subjective norms are

rooted) are interiorized and reframed in both attitudes toward the act and perceived feasibility.

Antecedents of Attitude Toward Entrepreneurial Behavior: The “Inner” Domains

Situationally Specific Motivation. Human motivation influences attitude (Eagly & Chaiken, 1993). The idea that emotional and motivational forces impinge upon the cognitive system and influence attitudes is central to three broad theoretical traditions: the reinforcement perspective (Hovland, Janis, & Kelley, 1953), the cognitive consistency perspective (Heider, 1946), and the functional perspective (Katz, 1960). According to such theories, motivation arises from the cognitive appraisal of a depicted event, along with belief in the efficacy of a coping response. Thus, people cognitively process the likelihood of being exposed to a specific event, evaluate their ability to deal with such a stimulus, alter their attitudes accordingly (Rogers, 1975) and—coherently with the TPB—develop a favorable or unfavorable evaluation or appraisal of the focal behavior.

As for the entrepreneurship domain, scholars have identified two sets of motivational elements that play a role in predicting entrepreneurship: the “general entrepreneurial motivations” and the “task-specific entrepreneurial motivations” (Shane, Locke, & Collins, 2003). The former, if compared with task-specific motivations, is less contingent to the specific actions in which individuals are engaged. Need for achievement (McClelland, 1961), tolerance for ambiguity (Budner, 1982), and locus of control (Cromie & Johns, 1983; Evans & Leighton, 1989) are examples of such domains.

On the other hand, scholars have demonstrated that task-specific motivational factors are better predictors of entrepreneurship than general entrepreneurial motivations (Baum & Locke, 2004). Coherently with this stream of research, motivational aspects become relevant in determining entrepreneurial intentions and behaviors once they refer to the enactment of a specific, well-defined task (Chen, Greene, & Crick, 1998). Entrepreneurial self-efficacy, defined as the belief in one’s ability to muster and implement the necessary personal resource, skills, and competencies to attain a certain level of achievement on the implementation of entrepreneurial behavior (Baum, Locke, & Smith, 2001), and propensity toward entrepreneurial risk, defined as the willingness to take risks in a corporate environment (Gomez-Mejia & Balkin, 1989), represent two notable examples. Both concepts, as task-specific constructs rather than global dispositions, help to address the problem of lack of specificity in previous research on entrepreneurs’ personal characteristics (Gartner, 1989), supporting the idea that situationally specific motivation predicts attitude toward entrepreneurial behaviors, and leads to the following hypothesis:

Hypothesis 2a: Within small and newly established firms, the greater the business founders’ situationally specific motivation, the stronger their attitude toward entrepreneurial behavior.

Individual Skills. Other than motivational aspects, attitudes can also be predicted by other cognitive factors such as skills and abilities (Locke, 2000). This belief is coherent with the assumption of Ajzen and Fishbein (1980), who posit that developed competencies have only an indirect impact on specific intentions, by influencing some of the factors that are more closely linked to them (i.e., attitudes). Therefore, coherently with the TPB insight, individuals’ awareness of their developed skills and competencies do not directly determine intentions but exert an influence on the degree to which a person develops a

favorable appraisal of the behavior in question. Hence, greater awareness about acquired skills provides a better evaluation of the focal behavior, indirectly fostering the enactment of intentions.

With specific regard to the entrepreneurship domain, Wiklund and Shepherd (2003) argue that both entrepreneurial intentions and behaviors can be conceptualized as functions of entrepreneurs' personal abilities. Background and skills accumulated by each entrepreneur, such as technical skills (Baum et al., 2001), procedural skills (Gupta & Govindarajan, 2000), and managerial skills (Roberts & Fushfeld, 1981) are examples of such predictors of entrepreneurial activities. More specifically, some scholars hold that skills and competencies play a role in the determination of attitudes. Kolvereid (1996) shows that attitudes mediate the relationship between skills and entrepreneurial intention. Also, Shapero and Sokol (1982), as well as Souitaris, Zerbini, and Al-Laham (2007), reinforce this position, showing that individual skills impact directly on attitudes and indirectly on entrepreneurial intentions. We therefore formulate the following research hypothesis:

Hypothesis 2b: Within small and newly established firms, the greater the business founders' individual skills, the stronger their attitude toward entrepreneurial behavior.

Antecedents of Perceived Entrepreneurial Behavior Control: The "Outer" Domains

Perceived Environmental Support. Among the dimensions that ultimately determine intentions and actions, there is, according to TPB, a set that deals with the presence or absence of requisite resources. The more resources individuals believe they possess, and the fewer obstacles or impediments they anticipate, the greater should be their perceived control over the behavior. It then follows that the resources available to a person must—to some extent—dictate the likelihood of behavioral achievement (Ajzen, 1991).

When it comes to the entrepreneurship domain, the literature illustrates the importance of the external environment for supporting entrepreneurial activities (Fini, Grimaldi, & Sobrero, 2009). The status of the economy, venture capital availability, and government regulations are among those factors. Governments could intervene with funding schemes and tax policies aimed at mitigating market inefficiencies and promoting entrepreneurship (Lerner, 1999). Also, local contexts, with physical infrastructure (Niosi & Bas, 2001), financial support (Beck, Demirgüç-Kunt, & Maksimovic, 2005), and entrepreneurial support services (Foo, Wong, & Ong, 2005) have been shown to be fundamental in smoothing the entrepreneurial process. Moreover, scholars have also argued for the relevance of specific university-support mechanisms, such as technology transfer offices (Mian, 1996) and university incubators (Mian, 1997). The entire range of these supportive actions might provide individuals with specific sets of resources fostering the enactment of entrepreneurial behaviors. More specifically, the support measures are framed and interiorized by individuals, through both an interpretation and organization of such sensory information.

We hold therefore that the existence of a supportive environment and, accordingly, the perception of the support coming from external mechanisms, positively influence the control that individuals have over their ability to implement entrepreneurial behaviors. Individuals frame and interiorize the external support (when available) and this eventually affects their self-confidence about their potential to succeed when implementing entrepreneurial behaviors. On this basis, we expect the following:

Hypothesis 3a: Within small and newly established firms, the greater the business founders' perception of environmental support, the greater their perceived entrepreneurial behavior control.

Perceived Environmental Dynamism. Similar to the availability of resources, the presence of opportunities influences behavioral feasibility too, ultimately determining intentions and actions. The greater the amount of opportunities individuals perceive and believe they can exploit, the greater should be their perceived control over the focal behavior (Ajzen, 1991). To this extent, dynamic and mutable environments, more likely than others, allow individuals either to perceive, discover, or create opportunities.

With specific regard to the entrepreneurship literature, it has been highly emphasized that active and heterogeneous environments foster innovative, proactive, and risk-taking behaviors (Covin & Slevin, 1989; Miller & Friesen, 1982a, 1982b). In general, the more dynamic and competitive the environment, the greater the need for innovation and the more likely it is that firms will be innovative (Meyers & Marquis, 1969). Scholars have also argued that without market heterogeneity, there is no room for entrepreneurship and, as a consequence, there are fewer opportunities for individuals to influence and control their entrepreneurial behaviors (Sakarya, Eckman, & Hyllegard, 2007). Similarly, entrepreneurs operating in highly dynamic industries, characterized by high growth rates, with high innovation potential, and at the initial stages of their life cycles, will feel more confident in the enactment of entrepreneurial behaviors. These industry characteristics, in fact, enhance individuals' perceptions of the opportunity (current and future) and, as a consequence, of their potential to implement their entrepreneurial behaviors.

Therefore, consistent with the idea that environmental dynamism will facilitate the growth of entrepreneurial opportunities—making individuals feel more confident about their potential to succeed when implementing entrepreneurial behaviors—we formulate the following hypothesis:

Hypothesis 3b: Within small and newly established firms, the greater the business founders' perception of environmental dynamism, the greater their perceived entrepreneurial behavior control.

Figure 1 summarizes the proposed model of the micro-foundation of CEI developed so far.

Research Design

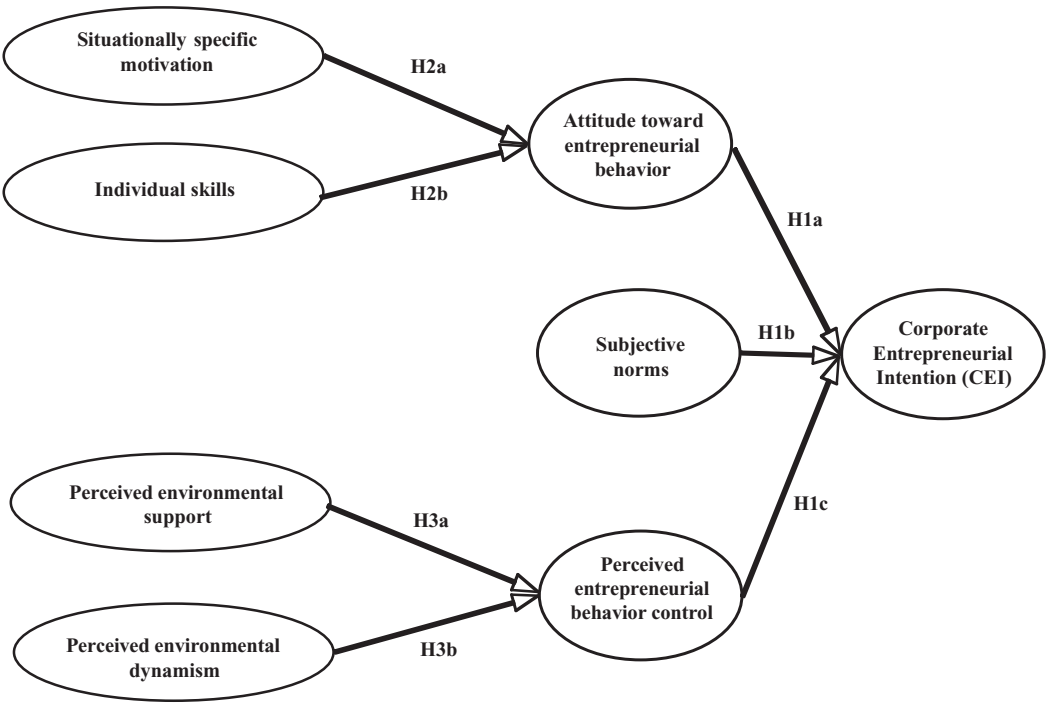
The Sample

Despite the increasing attention toward entrepreneurship from both managers and policy makers, there is scant availability of data sources on the foundation of entrepreneurship. First, outside the United States, other than census data, there are very few databases that target entrepreneurship at both firm and individual levels. Second, the identification of random samples of both companies and their founders, as well as the gathering of data concerning related evidence, represents an extremely challenging procedure. Several scholars, in order to mitigate this “non-randomization problem,” focus on specific samples of both firms and entrepreneurs, controlling for some dimensions, such as geography, localization, demographics, and industry (Autio, 1997).

Therefore, we collected new empirical evidence on a sample of NTBFs and their founders, controlling for environmental, institutional, and organizational factors. To limit the source of unobserved heterogeneity, following the NTBF definition by Colombo, Del

Figure 1

Conceptual Model of the Micro-Foundation of CEI



Mastro, and Grilli (2004), we targeted the founders of firms established during the last ten years (between 1997 and 2006), that at establishment were not controlled by another organization, and operate in high-tech sectors. Moreover, in order to control for inter-organizational and environmental biases due to the exposure to different sets of norms and laws, we included in our study a sample of NTBFs all localized in the same region. This research design allows us to control for several sources of unobserved heterogeneity in the determinants of CEI, targeting founders of similar firms, established in comparable contexts, and experiencing a very similar level of environmental complexity.

We locate our study in the Emilia Romagna region, in the north of Italy. Emilia Romagna is characterized by an extremely vivid entrepreneurial landscape and by clusters of small and medium enterprises operating in high-tech industries (Fini et al., 2009). Furthermore, Emilia Romagna has been identified by the European Commission as one of the leading regions in Europe for its proactiveness in supporting research-to-industry technology transfer (Eurostat, 2005), and it is the leading Italian region for NTBF generated within public research institutions¹ (PRIs) (Piccaluga & Balderi, 2007).

1. Public research institutions are institutions that receive public funds to conduct research and development activities; these can be universities, polytechnics, and non-university research organizations (Beise & Stahl, 1999; Lockett, Siegel, Wright, & Ensley, 2005).

Given the great relevance of technology transfer activities within Emilia Romagna, we first identified the regional population of NTBFs established as a result of technology-transfer activities from PRIs. From the websites of the regional PRIs and their technology transfer offices, as well as by relying on some existing contributions and databases (Fini et al., 2009), we identified the name and legal status of 89 firms. Subsequently, through the databases of the chamber of commerce of Bologna, we gathered information on the regional NTBF population. We then matched the 89 NTBFs—established as a result of technology-transfer activities—with a random sample of 89 high-tech firms not established as a result of technology-transfer activities, by: industry, year of establishment, and localization. We ended up with a sample of 178 NTBFs, not controlled by other organizations, established within the last decade, all localized in the same region, and currently operating in high-tech industries. We contacted all of them and, after four rounds of e-mails and phone calls, we set up face-to-face interviews with 200 entrepreneurs—among the 523 founders of 133 NTBFs. All interviews were conducted by the same interviewer on the basis of a structured questionnaire, and each lasted, on average, for 2 hours. The data collection started in November 2006 and was completed at the beginning of May 2007.

Questionnaire and Preliminary Analyses

We gathered data both at individual and at firm level. First, we developed a survey to collect primary data directly from entrepreneurs. We gathered information on demographic characteristics, personal traits, situationally specific motivation, individual skills and prior knowledge, social ties and network, organizational support, environmental support, environmental dynamism, corporate entrepreneurial intention, and the dimensions of the TPB. We also asked each entrepreneur for his/her curriculum vitae in order to gather information on previous career paths. We then collected firm-level information about shareholder compositions, market and innovative performances, and equity and debt financing.²

The dependent variable, CEI, is operationalized through an individual-level version of the strategic posture scale (Covin & Slevin, 1989). We characterize the CEI concept in terms of willingness to create new value within an existing organization, during the following year. This is accomplished through engagement in innovative, proactive, and risky actions. *Innovativeness* reflects an entrepreneur's intention to have his/her firm engaged in new experimentation and creative processes that may result in new products, services, or technological processes. *Proactiveness* suggests the entrepreneur's forward-looking perspective, which is supposed to be a characteristic of a marketplace leader who has the foresight to act in anticipation of future demand and shape the environment. *Riskiness* measures the entrepreneur's willingness to engage in risky projects and his/her preferences for bold versus cautious acts in pursuit of firm objectives.

For both the direct and indirect predictors of CEI, we used scales already tested in the existing literature. As for the former, in order to assess TPB exogenous dimensions, we employed the scales proposed by Ajzen (1991). As for the latter, instead, we relied on Baum et al. (2001) for entrepreneurial self-efficacy, Gomez-Mejia and Balkin (1989) for entrepreneurial risk-taking propensity, Gupta and Govindarajan (2000) for technical and procedural skills, and Roberts and Fusfeld (1981) for managerial skills. The perception of

2. Both questionnaires (individual and firm level) are available upon request from the authors (both in Italian and English).

environmental support was assessed using the scales proposed by Fini et al. (2009), while the perception of market heterogeneity and industry opportunities were operationalized using the scales suggested, respectively, by Miller and Friesen (1982b) and Miller (1987).

For all measures, in order to reduce the sources of common method bias, we avoided asking the respondents to provide retrospective accounts of their intentions, attitudes, and perceptions. We also used different scale formats such as Likert-style scales and semantic differential scales, as well as reverse-coded and negatively worded items (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We ran a small-scale field pretest to gather feedback on question phrasing and to find out if other relevant facets of the domains under study remained untapped. Subsequently, a panel of 10 experts (professors and technology transfer managers), and 10 entrepreneurs, validated the questionnaire. They provided very helpful insights with regard to the questionnaire's completeness and clarity, as well as an evaluation of the time needed to complete it. No major inconsistencies emerged from this pretest phase.

All measurement and structural models described in the next section were tested using the LISREL 8.80 program (Jöreskog & Sörbom, 2006). The choice of a structural equation modeling approach (SEM) has been made on several criteria. First, SEM is the elective analytical tool when the constructs composing the theoretical model are latent in nature and are operationalized through a vector of observed, error-laden, empirical variables. Second, SEM can trace causal paths to multiple dependent variables in the same model, estimating measurement and structural paths simultaneously rather than one at a time. Finally, SEM can map specific and error variance of the observed variables into the theoretical model. The goodness-of-fit of the models, as suggested by Bentler (1990), was assessed based on a common set of measures: chi-square tests, root mean square error of approximation, standardized root mean square residual, non-normed fit index, and the comparative fit index. All analyses were performed on covariance matrices.

Data Description

Almost 50% of the 133 NTBFs included in our sample are localized in Bologna, the regional capital and the biggest city of Emilia Romagna. Firms operating in information and communication technologies, environment and energy, and advanced materials industries account for almost 50% of the sample. Coherently with our research design, all NTBFs are newly established with very flat organizations. As reported in Table 1, the average year of establishment is about 2003 (standard deviation [SD] 2.16) and none of the firms has a management team other than the shareholders (of which there are—on average—4.62 per firm). As for market performance, in 2006, the average turnover is €466,613 (SD 1,036,461) and the average number of employees is 6.77 (SD 7.66). Almost 60% of NTBFs' turnover results from the commercialization of services and consultancy, with a homogeneous and fairly low level of patenting activity. Firms are also comparable in terms of growth rates, showing similar patterns in turnover growth regardless of the year of founding.³

As Table 2 reports, more than 80% of the interviewed entrepreneurs are male and aged—on average—about 60 years. On average, a respondent holds .71 patents (counting the Italian, European and U.S. patent offices as one) and has established .47 firms (other than the one that is the object of this study). Each of them has completed—on average—10.54 years of higher education. During their careers more than 50% of the interviewed

3. More detailed information regarding firms' localization and industry, as well as firms' growth trends, is available upon request from the authors.

Table 1

NTBFs Operating Characteristics

| | N | Mean | SD | Median | Min | Max |
|-----------------------------|-----|---------|-----------|---------|------|------------|
| General information | | | | | | |
| Year of establishment | 133 | 2003.20 | 2.16 | 2004 | 1997 | 2006 |
| Shareholders | 133 | 4.62 | 2.95 | 4 | 1 | 18 |
| Market performance | | | | | | |
| Turnover (€) | 130 | 466,613 | 1,036,461 | 180,000 | 0 | 10,000,000 |
| Employees | 131 | 6.77 | 7.66 | 4 | 0 | 48 |
| % Turnover | | | | | | |
| Product | 133 | 33.60 | 37.88 | 20 | 0 | 100 |
| Services and consultancy | 133 | 59.02 | 39.75 | 66 | 0 | 100 |
| Royalties from technology | 133 | 7.22 | 20.78 | 0 | 0 | 100 |
| Patent assigned | | | | | | |
| Italian Patent Office | 133 | .29 | .99 | 0 | 0 | 7 |
| European Patent Office | 133 | .17 | .78 | 0 | 0 | 7 |
| United States Patent Office | 133 | .09 | .65 | 0 | 0 | 7 |

SD, standard deviation.

Table 2

Entrepreneurs' Characterization

| | N | Mean | SD | Median | Min | Max |
|-------------------------------------|-----|-------|-------|--------|-----|-----|
| Male | 200 | .83 | .38 | 1 | 0 | 1 |
| Age | 200 | 60.15 | 10.91 | 60 | 30 | 80 |
| Patent assigned | 195 | .71 | 2.24 | 0 | 0 | 20 |
| Number of firms (other) established | 200 | .47 | .97 | 0 | 0 | 8 |
| Years of higher education | 200 | 10.54 | 2.61 | 10 | 0 | 14 |

SD, standard deviation.

entrepreneurs have been employed as researchers in PRIs, 43% of them have served as consultants, while very few of them have been working as accounting, marketing, sales, financial or logistics specialists.

Results

Validity

First, we test for the convergent validity of our psychometric scales through the assessment of the composite reliability (CR). Estimates of CR above .60 and statistically significant concept-to-domain coefficients ($t > 2.0$; $p < .05$) are usually considered

Table 3

Predictor Measures

| Domain and predictor | Item | Scale format | Research reference | CR |
|--|------|----------------------|----------------------------|-----|
| Situational specific motivation | | | | |
| Entrepreneurial self-efficacy | 2 | 0 to 7 scale | Baum et al., 2001 | .83 |
| Entrepreneurial risk-taking propensity | 4 | 1 to 7 Likert-like | Gomez-Mejia & Balkin, 1989 | .75 |
| Individual skills | | | | |
| Technical skills | 3 | 1 to 7 scale | Gupta & Govindarajan, 2000 | .72 |
| Procedural skills | 5 | 1 to 7 scale | Gupta & Govindarajan, 2000 | .82 |
| Managerial skills | 5 | 1 to 7 Likert-like | Roberts & Fufeld, 1981 | .84 |
| Perceived environmental support | | | | |
| Governmental support | 2 | 1 to 7 Likert-like | Fini et al., 2009 | .69 |
| Context support | 4 | 1 to 7 Likert-like | Fini et al., 2009 | .78 |
| University support | 4 | 1 to 7 Likert-like | Fini et al., 2009 | .75 |
| Perceived environmental dynamism | | | | |
| Market heterogeneity | 3 | 1 to 7 forced choice | Miller & Friesen, 1982b | .87 |
| Industry opportunities | 4 | 1 to 7 forced choice | Miller, 1987 | .72 |
| Corporate entrepreneurial intention and theory of planned behavior | | | | |
| Corporate Entrepreneurial Intention (CEI) [†] | 9 | 1 to 7 forced choice | Covin & Slevin, 1989 | .75 |
| Attitude toward entrepreneurial behavior | 9 | 1 to 7 forced choice | Ajzen, 1991 | .88 |
| Perceived entrepreneurial behavior control | 2 | 1 to 7 forced choice | Ajzen, 1991 | .68 |
| Subjective norms | 1 | 1 to 7 forced choice | Ajzen, 1991 | — |

[†] The nine original questions (six phrased as “my firm has . . .” and three as “top managers of my firm have . . .”) have been modified in “during the next year, I want my firm . . .”, in order to assess individuals’ entrepreneurial intention. CR is calculated as the sum of the square roots of the item-squared multiple correlations squared and divided by the same quantity plus the sum of the error variance (Werts, Linn, & Jöreskog, 1974)
CR, composite reliability.

supportive of convergent validity (Bagozzi & Yi, 1988). All values had CR significantly higher than the stipulated criteria, and all items were statistically significant (see Table 3).

We also verified the discriminant validity of the constructs using a three-pronged approach. First, we computed the 95% confidence interval for each off-diagonal element of the phi matrix, showing that in no case does the interval include the value of 1.00. Second, we compared our model with a series of more restricted models with the correlation between each pair of latent constructs (or traits), for one pair of constructs at a time, constrained to unity. The significant differences in chi-square, between the null model and the more restricted ones, point to a rejection of the hypothesis that any two constructs are not mutually distinct. Finally, we determined that the average variance extracted by each latent variable’s measure was larger than its shared variance with any other latent variable, thus showing the absence of significant problems due to random measurement error (Fornell & Larcker, 1981).

Common Method Bias

We rely on entrepreneurs as a single source of data; therefore, spurious associations between some of the variables of interest may emerge due to common method bias. According to the vast literature devoted to the subject, the confounding influence of

common method bias on empirical results can be approached either procedurally or statistically (for a comprehensive review see Podsakoff et al., 2003).

From a procedural standpoint, great care was taken in the design of the questionnaire, by separating the measurement of the predictor and criterion variables, and in the execution of the interviews. Unfortunately, the “inner nature” of some dimensions, such as entrepreneurial risk-taking propensity, entrepreneurial self-efficacy, and CEI, made it impossible to collect data from different sources. However, where applicable, we assessed the correlations between the latent domains and a set of more objective measures (computational details are available upon request).

From a statistical standpoint, additional remedies were implemented to control for the method biases that might occur in this particular research setting. We assumed a conservative single-method bias, using a confirmatory factor analysis (CFA) to test four alternative hierarchically nested measurement models (Williams, Cote, & Buckley, 1989). Model 1 (Null) was a null measurement model assuming that no factors underlie the data, and that inter-correlations between measures could be explained by random error only. Model 2 (Trait) was the full measurement model used in this study, in which the 14 traits of interest, plus random error, were assumed to underlie the data. Model 3 (Method) posited that variation in measures could be explained by a single method factor plus random error. Finally, Model 4 (Trait-Method) assumed that the data could be accounted for by the 14 traits in Model 3, plus a single uncorrelated method factor, plus random error. We ran the CFA analyses on the measurement model built with 57 indicators, 14 traits, and a common method factor. In Table 4 we show the results for Models 1–4, while in Table 5 we report the comparisons between models needed to test for the significance of trait and method effects.

In order to assess the presence of a trait effect we compared the Trait and Null models ($\Delta\chi^2_{(176)} = 7767.97$; $p < .001$) and Trait-Method and Method models ($\Delta\chi^2_{(176)} = 4500.33$; $p < .001$), revealing significant trait effects. Then, we proceeded to evaluate the presence of common method bias (CMB), checking for possible method effects, through the assessment of the differences between Models 3 versus 1, and Models 4 versus 2. Both the comparisons between Method and Null models ($\Delta\chi^2_{(57)} = 3407.70$; $p < .001$) and Trait-Method and Trait models ($\Delta\chi^2_{(57)} = 140.06$; $p < .001$) reveal that the method effect is significant. Conclusively, it can be assumed that the variance in the entrepreneurs’ responses can be explained by the simultaneous effect of traits, method, and random error.

Table 4

Common Method Bias Nested Models:
Goodness-of-fit Statistics

| Model | χ^2 | df | RMSEA | CFI | NFI |
|------------------|------------|------|-------|-----|-----|
| M1: Null | 9809.58*** | 1596 | .160 | .47 | .39 |
| M2: Trait | 2041.61*** | 1420 | .047 | .90 | .77 |
| M3: Method | 6401.88*** | 1539 | .130 | .60 | .51 |
| M4: Trait-Method | 1901.55*** | 1363 | .045 | .92 | .79 |

*** $p < .001$.

df, degrees of freedom; RMSEA, root mean square error of approximation; CFI, comparative fit index; NFI, normed fit index.

Table 5

Common Method Bias Nested Models:
 χ^2 differences

| Effect | Δ Model | $\Delta\chi^2$ | Δdf | p -value |
|--------|----------------|----------------|-------------|------------|
| Trait | M2 – M1 | 7767.97 | 176 | <.001 |
| | M4 – M3 | 4500.33 | 176 | <.001 |
| Method | M3 – M1 | 3407.70 | 57 | <.001 |
| | M4 – M2 | 140.06 | 57 | <.001 |

The highly unsatisfactory fit of the Method model (M3) and the small (albeit significant) gain in fit achieved by adding the method factor to the Trait model (Method-Trait model, M4), support the idea that CMB accounts for a small variance in the data. Decomposing the total variance into traits, method, and error components, we find that the impact of method bias is quite low, accounting for just 5% of the overall variance, while the impact of traits and error are 46% and 49%, respectively. Such results are coherent with the benchmark provided by Williams et al. (1989), where traits impact 50%, method for 27%, and error for 23%.⁴

In sum, the results of the independence test, the assessment of the convergent and discriminant validities, the positive and significant correlations between primary and secondary data, the significant amount of variance among individuals' perceptions, and the satisfactory estimation of the common method bias enabled us to proceed to the estimation of the structural model.

Structural Model

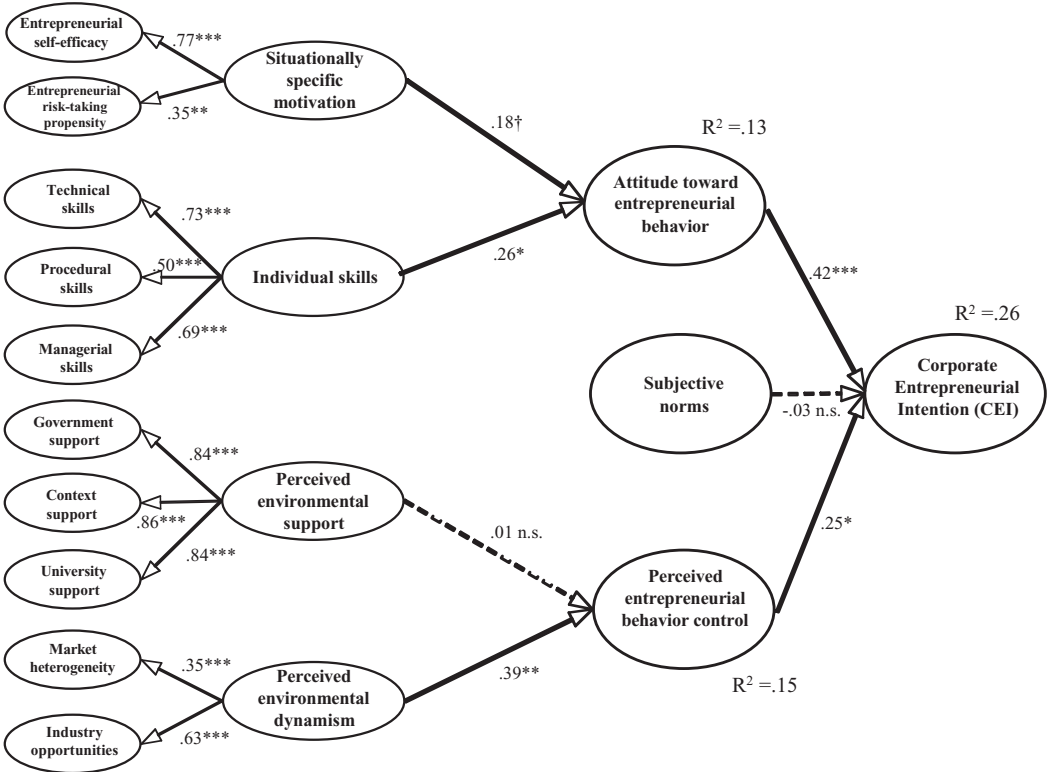
The structural model (Figure 2) exhibits satisfactory measures of goodness-of-fit. The empirical evidence partially supports the effectiveness of TPB in predicting CEI. Attitudes toward entrepreneurial behaviors ($\beta = .42, p < .001$) and perceived entrepreneurial behavior control ($\beta = .25, p < .05$) predict CEI, while the subjective norms path fails to reach statistical significance ($\beta = -.03$, not significant [n.s.]). Hypotheses H1a and H1c are then supported, while H1b is not.

As for the antecedents, all first-order factors load heavily on the second-order ones. The tested model partially supports the hypothesized paths: both situationally specific motivation ($\gamma = .18, p < .1$, marginally significant) and individual skills ($\gamma = .26, p < .05$) predict attitude toward entrepreneurial behavior, resulting in support for H2a and H2b. As for the antecedents of perceived entrepreneurial behavior control, perceived environmental support shows no impact ($\gamma = .01$, n.s.), resulting in no support of H3a, while the path from perceived environmental dynamism to perceived control is positive and significant ($\gamma = .39, p < .01$), showing support for H3b. Correlations are shown in Table 6.

4. Looking at individual measures (data are available upon request from the author), the method bias is uniformly low: the only exceptions are the indicators underlying entrepreneurial self-efficacy and industry opportunities, which exhibit a moderate amount of bias (.19 and .37, respectively).

Figure 2

Structural Model.



$\chi^2(1513) = 2321.68, p \approx .00, RMSEA = .052, SRMR = .091, NNFI = .90, CFI = .90$. Standardized coefficients, Two-sided significance tests; † $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$. RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual; NNFI, nonnormed fit index; CFI, comparative fit index

In order to assess the nomological validity of the hypothesized causal paths, we modeled and tested a set of rival specifications. First, we compared our baseline model with a different representation in which we did not include the second-order latent structure. The rival model showed a poor fit, with an increase of $\Delta\chi^2_{(10)} = 128.75$ ($p < .001$). These results prove that the second-order latent factor model is a better representation if compared with the fully disintermediated one. Second, we performed a formal test of mediation (Sobel, 1982) of the exogenous dimensions of the TPB, regressing CEI directly on the four second-order latent factors. Our results show that attitudes toward entrepreneurial behavior partially mediate the impact of situationally specific motivation on CEI ($Z = 1.87; p = .06$), whereas they fully mediate the impact of individual skills ($Z = 1.75; p = .08$). Moreover, coherently with the results obtained in the baseline model, perceived control does not mediate the impact of perceived environmental support on CEI ($Z = .25; p = .84$), while it fully mediates the impact of perceived environmental dynamism ($Z = 1.66; p = .1$). In Tables 7a and 7b we provide a summary of the test of mediation.

Finally, in order to control for unobserved heterogeneity, we also tested the predictive power of attitudes, subjective norms, and perceived control on CEI, controlling for some

Table 6

Correlation Table

| | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|------|------|------|------|------|-----|------|-----|-----|------|-----|-----|-----|-----|-----|
| 1. Corporate entrepreneurial intention (CEI) | 5.06 | .76 | | | | | | | | | | | | | |
| 2. Attitude toward entrepreneurial behavior | 4.73 | .62 | .37 | | | | | | | | | | | | |
| 3. Subjective norms | 5.70 | 1.10 | .08 | .21 | | | | | | | | | | | |
| 4. Perceived entrepreneurial behavior control | 3.67 | 1.31 | .17 | .12 | .18 | | | | | | | | | | |
| 5. Entrepreneurial risk-taking propensity | 4.46 | 1.13 | .26 | .20 | .02 | .06 | | | | | | | | | |
| 6. Entrepreneurial self-efficacy | 4.87 | 1.73 | .39 | .23 | .07 | .18 | .15 | | | | | | | | |
| 7. Technical skills | 4.24 | 1.46 | .05 | .12 | .14 | .12 | .08 | .17 | | | | | | | |
| 8. Procedural skills | 3.35 | 1.27 | .17 | .18 | .06 | .11 | .32 | .19 | .27 | | | | | | |
| 9. Managerial skills | 5.44 | .93 | .12 | .20 | .16 | .22 | .14 | .16 | .38 | .23 | | | | | |
| 10. Government support | 1.99 | 1.55 | .10 | -.01 | .11 | .20 | -.09 | .07 | .07 | -.08 | .09 | | | | |
| 11. Context support | 1.73 | 1.16 | .05 | .10 | -.03 | .10 | -.08 | .16 | .15 | .01 | .13 | .49 | | | |
| 12. University support | 1.89 | 1.73 | -.04 | .11 | .00 | .07 | -.16 | .14 | .10 | -.12 | .20 | .32 | .59 | | |
| 13. Market heterogeneity | 5.18 | 1.71 | .07 | .01 | .14 | .09 | .01 | .11 | .09 | .01 | .17 | .05 | .15 | .14 | |
| 14. Industry opportunity | 4.96 | 1.08 | .20 | .06 | .18 | .23 | .01 | .37 | .23 | .18 | .22 | .21 | .14 | .11 | .26 |

Note: Correlation table is computed on normalized values; N = 200.
SD, standard deviation.

firm-level covariates. We specified a set of linear probability hierarchical regression models. For each scale we averaged the items loading on the latent factor. We assessed the impact of the three TPB exogenous variables on CEI, controlling for the year of establishment, industry, type of firm (if the firm was established as a result of a technology transfer activity or not), presence of a private firm among the shareholders (in 2006), number of shareholders (in 2006), and turnover growth (2006 turnover minus 2005 turnover). Our results are confirmed, showing that the only predictors of CEI are attitudes and perceived control. The results are robust throughout all the different specifications as well as if we adjust the standard errors accounting for intra-firm correlations.

We can therefore conclude that the three exogenous dimensions of the TPB (attitude, subjective norms, and perceived control) represent the best direct predictors of CEI, both theoretically and empirically, mediating—either fully or partially—the impact of the proposed indirect antecedents (with the only exception being environmental support).

Discussion

Contribution to Theory

In this article, we started by recognizing the limited understanding of corporate entrepreneurial behavior within small and newly established firms. Considering that in such companies the mechanisms supporting entrepreneurial activities are not formally

Table 7a

Test of Mediation

| | Attitude toward entrepreneurial behavior | Corporate Entrepreneurial Intention (CEI) |
|--|---|--|
| Situationally specific motivation | .23* | .44** |
| Individual skills | .23* | -.04 n.s. |
| Attitude toward entrepreneurial behavior | | .32** |

| | Indirect Effect | Z test | P-value | Mediation |
|-----------------------------------|-----------------|--------|---------|-----------|
| Situationally specific motivation | .07 | 1.87 | .06 | partial |
| Individual skills | .07 | 1.75 | .08 | full |

Full mediation occurs when z is significant and the direct path Antecedent-Consequence is not;
Partial mediation occurs when both z and the direct path antecedent-consequence are significant (Iacobucci, 2008).
† = p < .1; * = p < .05; ** = p < .01; *** = p < .001

Table 7b

Test of Mediation

| | Perceived entrepreneurial behavior control | Corporate Entrepreneurial Intention (CEI) |
|--|---|--|
| Perceived environmental support | .05 n.s. | .06 n.s. |
| Perceived environmental dynamism | .24† | .19 n.s. |
| Perceived entrepreneurial behavior control | | .24* |

| | Indirect Effect | Z test | P-value | Mediation |
|----------------------------------|-----------------|--------|---------|-----------|
| Perceived environmental support | .01 | .25 | .84 | no |
| Perceived environmental dynamism | .06 | 1.66 | .1 | full |

Full mediation occurs when z is significant and the direct path Antecedent-Consequence is not;
Partial mediation occurs when both z and the direct path antecedent-consequence are significant (Iacobucci, 2008).
† = p < .1; * = p < .05; ** = p < .01; *** = p < .001

planned and designed at inception and are not part of existing routines, individuals’ entrepreneurial intentions are key to explaining entrepreneurial behaviors. Therefore, to advance our understanding of how to promote entrepreneurial behavior within these companies, we need to investigate the processes (and the underlying factors) through which CEI develops. This article, with its focus on the micro-foundation of entrepreneurial intention, is a first contribution in this direction.

We brought into a unique multidimensional model variables addressed by previous studies in isolated ways, assessing their joint impact on CEI. We relied on, and extended, the TPB and investigated the antecedents of attitudes and behavioral control, rooting them in both inner and outer dimensions. Our results show that CEI is predicted by attitude toward entrepreneurial behavior and perceived entrepreneurial behavior control. Conversely, subjective norms fail to reach statistical significance in predicting intention. We also assess the nomological validity of the causal path between CEI and its set of antecedents, showing that intention is micro-founded and primarily explained by situationally specific motivations, individual skills, and perceived environmental dynamism.

The positive impact that situationally specific motivations and skills have on attitudes toward entrepreneurial intention is in line with previous studies showing that cognitive factors are critical in predicting entrepreneurial actions, and exerting a role on the degree to which a person develops a favorable appraisal of the entrepreneurial behavior (Shane et al., 2003). The positive impact of perceived environmental dynamism on perceived behavioral control suggests that there are industries with characteristics (such as being in the initial stages of the technology life cycle, high appropriability regime, high growth rates, and high degree of innovativeness of products/services) better suited to trigger the enactment of entrepreneurial behaviors. We also find that the perception of market heterogeneity positively influences entrepreneurial intention, reinforcing the idea that the greater the diversity and breadth of markets, the greater the proactiveness in conceiving new innovative ideas and, as a consequence, in creating value. Our results show that intentionality is triggered by environmental dynamics that, once perceived and framed by individuals, account for entrepreneurial intention formation. Since entrepreneurs are individuals characterized by the tendency toward inner-directedness, we can hold that the key dimension for triggering their entrepreneurial actions is a favorable perception of both market heterogeneity and industry opportunities.

Our results also show that the perceived environmental support fails to predict CEI. This suggests we should look with greater care at the real effectiveness of support coming from the government, local context, and universities in shaping entrepreneurial intentions. Indeed, while widely diffused around the world, such policies are seldom evaluated and monitored. We should also keep in mind that entrepreneurial intention reflects a state of mind directing a person's attention and action toward the enactment of entrepreneurial behavior. In other words, this dimension is a cognitive representation of the actions to be implemented to achieve entrepreneurial behavior. Therefore, it may be possible that the awareness of external support comes into play at later stages, when individuals are concretely implementing entrepreneurial actions and, in order to implement these actions better and to make them succeed, they look for (and are more sensitive to) external support. It may as well be possible that different entrepreneurs value different types of support mechanisms in different ways, or that the low variance in the typology of support available to companies settled within the same geographical area results in a nonsignificant impact on CEI.

In addition to this, we should not forget that, for the purpose of this study, we take entrepreneurial intention as a cognitive representation of actions to be implemented in order to create value within newly established companies. It may be that the perception of external support turns out to be relevant in the case of new venture creation. Future research should address this specific issue and assess the differences (if any) between drivers of entrepreneurial intentions within small and newly established firms (CEI), and drivers of entrepreneurial intention within new independent venture creation processes. From a theoretical point of view, and in line with the arguments underlying our model (individual characteristics as key determinants of corporate entrepreneurial

intention in small and newly established firms), we should expect no differences. From an empirical point of view, differences might emerge with regard to the perception of external support (more relevant for independent entrepreneurs involved in new independent venture creation processes). While this exceeds the objective of the current contribution, we see this issue as an interesting one to be explored in future research.

Overall, we shed light on individuals' intentions as initial triggers of entrepreneurial behaviors. They may play a role in influencing and shaping the routines of nascent organizations. Our findings are in line with recent works on the micro-foundation of strategy (Abell, Felin, & Foss, 2008). While looking at a different concept (the origins of routines and capabilities), the authors pinpoint the importance for both organizational scholars and managers to impute actions to individuals rather than to macro-order variables. If we adhere to their view, we may hold that the ability to implement entrepreneurial behaviors, which is ultimately relevant to explain firm-level outcomes, needs to be micro-founded, e.g., studied through individual intentions. Performance improvement at firm level (in our specific case, those outcomes following the implementation of entrepreneurial behaviors) may come about not just through managerial selection of behaviors, but also through changing or influencing the micro-mechanisms through which routines affect the implementation of entrepreneurial behaviors. This last consideration, from a theoretical point of view, may be extended also to firms other than nascent organizations. Individuals are the core of thinking, acting, and implementing even within large and established organizations. Since the early contribution of Burgelman (1983), literature shows that new managerial and organizational approaches, as well as innovative administrative arrangements, are required to facilitate the collaboration between entrepreneurial participants and the organizations in which they are active. In studying corporate entrepreneurship in large established organizations these factors are likely to impact, but at the same time also to be influenced by, individual entrepreneurial intentions, which may have a role in influencing and changing the existing routines implemented by CEOs and middle managers.

Implications for Managers and Entrepreneurs

A better understanding of the factors fostering individuals to behave entrepreneurially is a central issue for both managers and entrepreneurs. As the extant managerial literature points out, especially in small and young NTBFs, the role of intentional dimensions is critical for explaining organizational behaviors. In small entrepreneurial firms, organizational behaviors (and performance) can be seen as a result of the enactment of individual behaviors (Baum & Wally, 2003).

Specifically dealing with factors related to the individual domain, we know that personality traits (such as passion and tenacity) are out of both managers' and entrepreneurs' control. Situationally specific motivations are not. As long as these latter may be influenced and shaped by the specific entrepreneurial context, as already argued by Baum et al. (2001), they become of interest for managers and entrepreneurs intending to promote the development of CEI within their companies. Great attention therefore should be devoted to creating the conditions for raising entrepreneurial risk-taking propensity and entrepreneurial self-efficacy within small and newly established firms, to make individuals cognitively aware on a continuous basis of the process (and its steps) through which entrepreneurial behaviors are enacted. This is relevant for recently established, as well as for more established new ventures for which the continuous enactment of entrepreneurial behavior, besides the start-up phase, might be key. This can be done through training aimed at increasing the specific motivations of individuals, by making them cognitively aware of what it takes to behave in entrepreneurial ways within corporate settings. As has

been correctly pointed out, it is in fact true that “the imagining of what business is to do, the available knowledge on how to do it, and newly gained experience are based on interpretations that emerge from a cognitive frame provided by the business conception” (Witt, 2000).

Individual skills and competencies are also relevant triggers of entrepreneurial intention within corporate settings. Managers and entrepreneurs, other than hiring individuals or teams with an already developed set of technical, procedural, and managerial skills, should also pay attention to nurturing these competencies (as a whole) along the way, investing in training at different levels. In terms of the knowledge concerning a technology, managers should ensure their people keep pace with technology development and advancement, and their potential impacts on the organization.

More generally, managers should create the conditions within their companies for individuals to perceive entrepreneurial-related actions as desirable and feasible. The Ajzen model assumes that perceptions are learned (Krueger, 2000); hence, organizations can often influence them indirectly and unintentionally. The cognitive infrastructure should enhance perceptions in organization members that opportunity-seeking is personally and socially desirable and that members are personally and collectively competent to behave in an entrepreneurial way. To this regard, providing “mastery experiences” that increase perceptions of personal (and collective) efficacy are invaluable. Shapero (1985) proposed that organizations should create a “seedbed” providing nutrients such as credible information, credible role models, and emotional support.

Finally, the micro-foundations of CEI assessed in our research can also be important in understanding the limits connected with the oftentimes-profound association between the entrepreneur and his/her firm. Studies on the shift from an entrepreneur-centered to a more management-centered governance mode showed how the identification of the founder with the enterprise could turn an asset into a liability if not properly managed (Boeker & Wiltbank, 2005). Scholars studying family succession and second-generation entrepreneurs reach similar conclusions (Handler, 1990; Lee, Lim, & Lim, 2003). Our results support the idea that not only the nature of corporate entrepreneurship activities may change over the life cycle of the firm, as a result of the interaction between individual, organizational, and contextual characteristics, but also that the interplay between these three dimensions, at different phases of a company’s life cycle, should be managed upfront to maximize the likelihood of company success.

Limitations and Future Research

This article lays out the micro-foundation of entrepreneurial intentions within corporate settings of recently established firms, where the role of individuals in ideating and implementing entrepreneurial actions is crucial.

Our model cannot be transferred to established companies without taking into account mechanisms formally designed and implemented by firms to support corporate entrepreneurship. The extant literature suggests that in large established companies, the organizational characteristics can indeed play an important role in driving individual entrepreneurial intentions. In addition to organizational structure *strictu sensu*, there are also other organizational factors that may be specifically supportive to entrepreneurship, such as corporate incentive systems, organizational solutions, corporate venture capital funds, or corporate incubators (Burgelman, 1983).

Furthermore, we are also aware that our model deliberately leaves out factors that have been studied by previous scholars as likely determinants of entrepreneurial activities. First of all, since the early contribution of Roberts (1991) on individual characteristics of

high-tech entrepreneurs, several articles have looked at demographics and personality traits as being among the determinants of entrepreneurial intentions. Nevertheless, the current empirical analyses of the relationship between personality traits and entrepreneurial intentions have conveyed contrasting results (Gartner, 1989; Zhao, Seibert, & Lumpkin, 2010).

The literature has also highlighted the importance of personal ties. By structuring the context in which entrepreneurs must act, social networks affect entrepreneurial intentions (Aldrich, 1999). Network analysts argue that entrepreneurship is a consequence of taking the opportunity to be between others (Burt, 1992). Yet, we do not include social ties and network, as we see social relations as both antecedents and underlying dimensions of the four identified micro-domains. In other words, we hold that social ties affect both individual and environment-related factors: individuals' networks (number of relations, centrality, frequency of interactions, etc.) influence their motivation, the competencies that they develop, the way they perceive external support, and their perceptions of the environmental dynamism.

Notwithstanding the effort we put into carefully designing our research, this study suffers from some limitations. First, we recognize the exploratory and cross-sectional nature of this study. The specific sampling strategy on which this research is based is robust enough to grant the internal consistency of the obtained results, while greater care (and more research) is needed in order to generalize the results to a broader population. The cross-sectional nature of the study has a second, and not insignificant, consequence. Although our conceptual model rests upon a solid theoretical foundation, it is the expression of a complex causal design. But any argument for causality presupposes temporal precedence and this is difficult to establish in a cross-sectional setting. Specifically, a problem potentially occurring in our study is that of reverse (or reciprocal) causality. While we postulate that entrepreneurial attitudes, perceived behavioral control, motivation, skills, and perception of the environment all affect entrepreneurial intentions, it is very plausible, given the diversity among the founders (age or career-paths), that their ambitions (i.e., entrepreneurial intention) can affect all of these characteristics, including even their situationally specific motivation and perceptions of the environment. A future longitudinal study will help to disentangle this logical issue further.

Second, we accounted for organizational dimensions, only as control variables. This is consistent with our focus on a sample of small and newly established firms, founded in the last 10 years, operating in high-tech industries, with similar and very "entrepreneurial" types of organization. If we had to replicate this model to large companies, characterized by more formal and mechanistic organizational structures, it would be appropriate to include organizational factors within the model. Large companies might implement specific organizational mechanisms within their settings and this would influence individual entrepreneurial intention.

Third, in this contribution, we see entrepreneurial self-efficacy as being more similar to a psychological characteristic (i.e., situationally specific motivation), as argued by Manstead and Van Eekelen (1998) and by Chen et al. (1998), rather than to an action-oriented construct (such as perceived entrepreneurial behavior control). As a consequence, we separate the two dimensions, modeling entrepreneurial self-efficacy as a direct predictor of attitudes toward entrepreneurial behavior, and perceived entrepreneurial behavior control as a direct antecedent of CEI. We acknowledge that these two concepts are closely related (Ajzen, 1987) and that several other contributions are based on the assumption of this similarity (Fishbein, Hennessy, Yzer, & Douglas, 2003; Kolvereid & Isaksen, 2006).

Finally, we should not forget that we have focused on entrepreneurial intention as the creation of new value within existing organizations (CEI). Future research should be

devoted to assessing the model's validity in addressing the study of entrepreneurial intention in new independent venture creation as well. More attention should also be devoted to assessing the existence of different types of entrepreneurs, who might have developed different values, missions, and culture (for example, as a result of their affiliation to different organizations) that might result in different entrepreneurial processes.

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