

# Timely Creation of New Organizations: The Imprinting Effects of Entrepreneurs' Initial Founding Decisions

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**Abstract.** In an attempt to explain why some new organizations are established faster than others, we have adopted the perspective that the timely emergence of an organization can be understood and predicted if it is viewed as being conditioned by the initial decisions of its entrepreneurs regarding their opportunities. Using a large dataset of individuals who are in the process of building their ventures in the United States, and who have been followed up on an annual basis as they go through this process, we have found empirical evidence to conclude that the characteristics of an initial opportunity have an effect on the time taken to create new organizations. Given the novelty of the relationships investigated in this study, coupled with the empirical support for some of our hypotheses, we believe our findings can shed new light on the understanding of imprinting forces for timely organization creation.

The nexus of enterprising individuals and valuable opportunities is central to entrepreneurship as a scholarly field (Venkataraman, 1997). This requires scholars to pay attention to nascent entrepreneurs – individuals who are in the process of starting up new ventures – and the role of opportunities in order to explain the emergence of new organizations (Eckhardt & Shane, 2003) and move entrepreneurship research forward (Busenitz et al., 2003). While these ideas were first put forward several years ago, Davidsson and Gordon (2012) observed that even today very few studies focus on opportunities or the individual-opportunity nexus. To address these issues, we investigate how the initial decisions of nascent entrepreneurs regarding the kinds of opportunities they are pursuing affect the speed at which new organizations are created, a process referred to as “organizational emergence” (e.g. Gartner, Bird, & Starr, 1992; Katz & Gartner, 1988). In this study, “opportunity” refers to the possibility of introducing a new product or service to the market (cf. Hansen, Shrader, & Monllor, 2011). Several theoretical and practical concerns make organizational emergence an important entrepreneurial event. At any one time in the United States, about one person in ten is involved in nascent entrepreneurial activities. Yet only some of these efforts culminate in the emergence of a viable, new business (Reynolds, 2007). According to Katz and Gartner (1988), organizations come to exist when they demonstrate intention, establish boundaries, acquire resources, and engage in exchanges. Therefore, the organizations that emerge are those that move successfully from gestation to infancy, becoming viable and self-sustaining (Reynolds, 1994).

Achieving these indicators of organizational emergence, however, takes time; the median time for a new firm birth in the United States is 19-24 months (Reynolds, 2007). Since opportunities have “windows”, which are open until competitors act on them (e.g. Shepherd & Levesque, 2002), economic value may

be lost if development times are too long (Gilman, 1982). Carter, Gartner, and Reynolds (1996) went as far as arguing that individuals that took longer than a year to set up their nascent ventures were unlikely to ever see them realized. By speeding up the organizational emergence process a nascent entrepreneur can gain, for example, financial independence and legitimacy (Schoonhoven, Eisenhardt, & Lyman, 1990), or competitive advantage (Lieberman & Montgomery, 1988; Sonnenberg, 1993). Therefore, the speed at which concepts move to market is a fundamental issue for emerging organizations (Utterback et al., 1992).

Despite the empirical observation that the time it takes to create a business varies from one effort to another (Reynolds, 2007), little is known about the factors that affect the speed of startup, once a nascent entrepreneur enters the firm creation process. Most literature on the processes of nascent entrepreneurship has simply studied outcomes, such as whether a new firm gets started or whether an entrepreneur quits the process (e.g. Delmar & Shane, 2004; Brush, Edelman & Manolova, 2008; Edelman & Yli-Renko, 2010; Van Gelderen, Thurik & Patel, 2011). Little attention has been paid to when these important milestones are achieved or what could accelerate the process of emergence.

Interestingly, initial founding decisions have significant consequences for the subsequent development of new ventures (e.g. Beckman & Burton, 2008; Colombo & Piva, 2012; Doutriaux, 1992; Nerkar & Shane, 2008). For example, a decision regarding the industry (competitive environment) that a new venture will enter will most likely have immediate, substantial performance implications (Bamford, Dean, & McDougall, 1999). Choices made at the point of inception have a significant impact on new venture development well beyond their formation (Bamford, Dean, & Douglas, 2004). Indeed, it has been suggested, and empirically shown, that initial founding conditions have imprinting effects on organizations in the long run (e.g. Boeker, 1988, 1989; Kimberly, 1975, 1979; Pennings, 1980; Tucker, Singh, & Meinhard, 1990).

In this study, we are interested in investigating the decisions of nascent entrepreneurs concerning the opportunities they decide to pursue, how these decisions imprint the subsequent firm creation processes, and how they influence the speed of organizational emergence. We define this as the time taken from the inception of a business idea to an organization existing as an independent entity (cf. Capelleras & Greene, 2008). Our study aims to make two contributions.

First, since nascent entrepreneurs and their ventures (Capelleras, Greene, Kantis, & Rabetino, 2010; Capelleras & Greene, 2008; Schoonhoven et al. 1990) as well as the overall economy (Birch 1987; Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2002) can benefit from a speeding up of the firm creation process, the central interest of our study is related to the speed of progress in organization creation. This is a novel approach among studies related to nascent entrepreneurial activities, which generally focus on performance criteria such as (expected) profits and sales (Brush et al., 2008; Cassar, 2010; Delmar & Shane, 2006) or the survival of startup efforts (Delmar & Shane, 2004; Parker & Belghitar, 2006; Van Gelderen et al., 2011). We expand this literature by focusing on the timing of the key indicators of organizational creation (how fast/slow nascent entrepreneurs succeed in creating operative organizations), aligning our study with previous research that suggests that time is an important dimension of the entrepreneurial process (Baron, 1998; Bird, 1992). We also answer the call of Busenitz and his colleagues (2003) to better understand why some entrepreneurs are able to act more quickly than others in the venture creation process.

Second, while the current trends in entrepreneurship literature promote the idea that the activities and behaviors of nascent entrepreneurs define the outcome of the organizational emergence process (cf. Carter, Gartner, & Reynolds, 1996; Delmar & Shane, 2004; Tornikoski & Newbert, 2007; Tornikoski

& Puhakka, 2009), we focus on the initial characteristics of opportunities and their role in explaining the emergence of operative organizations. The challenge we face is to know whether and to what extent the initial characteristics of opportunities have any universal (across industries and different types of ventures) role in explaining the pace of firm creation. Even if this role is small, understanding it would be of help to aspiring entrepreneurs making the initial decisions of what types of opportunity to pursue. Along this line of thinking, we focus on the initial characteristics of opportunities (and of the nascent ventures built in their pursuit) that are associated with “novelty”. New business opportunities vary in their degree of novelty in a subjective (new to the entrepreneur) as well as more objective (new to the market and technologically new) sense (Shepherd, Douglas, & Shanley, 2000). The level of impact that novelty has on new firm performance remains largely contested (e.g., Amason, Shrader, & Tompson, 2006; Jennings, Jennings, & Greenwood, 2009; Shepherd et al., 2000), and our empirical study sheds new light on this topic.

The rest of this paper is organized as follows. The second section reviews the imprinting literature to the point that we can identify the core propositions of the theory and present a model for empirical investigation. The third section lays out the methodology of our study. The fourth section presents the results, while in the fifth section we discuss the results and their implications for practice and for research into organizational emergence.

## **THEORY AND HYPOTHESES**

Katz and Gartner (1988) suggested four organizational markers as indicators that an organization is in the process of coming into existence: intention, resources, boundary, and exchanges. It has been argued that a rapid achievement of these organizational markers helps to achieve financial independence, gain external visibility and legitimacy, and increase survival chances (Schoonhoven, Eisenhardt, & Lyman, 1990). Some scholars go even further and suggest that nascent entrepreneurs should pursue opportunities aggressively in the short term to learn quickly whether they are worthy of start-ups or should be abandoned (Carter, Garner, & Reynolds, 1996). Even if an entrepreneur decides not to aggressively pursue an opportunity, he/she should be aware, at a minimum, that opportunity windows are only open until competitors decide to pursue them (Shepherd & Levesque, 2002). All this suggests that time is crucial for entrepreneurs in their quests to create new organizations.

Given that new enterprises are an important source of innovations and an engine of economic growth, speeding up the gestation and emergence of viable new organizations may be desirable from a macroeconomic perspective (Birch, 1987; Djankov et al., 2002). However, while the timing of strategic actions by existing firms has been widely studied in strategic management literature (e.g. Barr & Huff, 1997; Nadkarni & Barr, 2008), we know little about time in the context of organizational emergence. Observations from a panel study of nascent entrepreneurs in the US have demonstrated that by 36 months from the first start-up activity taking place, 75% of nascent entrepreneurs report an ongoing business (self-report). Ten percent of startups take over 60 months to create (Reynolds, 2007). Looking at the time elapsed between the first event and the last event in the gestation period (regardless of whether the entrepreneurs themselves considered their businesses as operating or not), Liao, Welsch, & Tan (2005) report that the median duration of a firm’s gestation period is 32 months, or 2 years and 8 months.

While existing literature has little to say about the factors specifically affecting startup speed, research on initial founding conditions has shown that these conditions, by and large, imprint the subsequent development and performance of new ventures and organizations in general (Boeker, 1988; Kelley & Rice, 2001; Kimberly, 1975; Lawrence, 1984). Milanov and Fernhaber (2009) trace the notion of imprinting back to Stinchcombe (1965), who argues that a new organization's subsequent performance is significantly affected by the conditions and events surrounding its founding. In essence, the decisions made by entrepreneurs at the formative stage of an organization have lasting effects that imprint the organization and impact its performance (Bamford et al., 1999). As a consequence, imprinting in new organizations can be understood as an agent-driven process (Johnson, 2007): It is through the efforts and decisions of nascent entrepreneurs that emerging organizations acquire the elements from their contexts that, should they persist, are often asserted to have been "imprinted" at founding (Johnson, 2007).

To understand the mechanisms behind the imprinting effects on the speed of organizational emergence, two accounts are worth considering. On the one hand, the conditions and events surrounding an organization's founding means that it is fixed to developmental trajectories (Boeker, 1989) from which it is difficult to deviate, due to the tendency to preserve rather than change initial strategies and configurations (Miller & Friesen, 1984; Quinn, 1980). While individuals face a number of possibilities in the beginning of organizational processes, once they start to make decisions and engage in actions, these initial choices trigger further actions, which accumulate in an organizational path (Sydow, Schreyögg, & Koch, 2009).

On the other hand, at the individual level, people have the propensity to persist with certain courses of action, even when they are uncertain about the plausibility of future success and are receiving negative feedback (Staw, 1976). Indeed, the tendency of entrepreneurs to believe that they can control their own destinies makes them overly optimistic, which contributes to heavy personal commitments, which in turn can lead to an inability to make adjustments during the venturing process (Cooper, Woo, & Dunkelberg, 1988). As such, nascent entrepreneurs have a tendency to stick with their initial convictions and plans rather than change them during the venturing process.

In order to understand how the initial founding decisions of nascent entrepreneurs impact the speed of organizational emergence, and echoing Shepherd, Douglas & Shanley (2000), we next focus our attention on three aspects of opportunities over which entrepreneurs have control at the formative stages of an organization: familiarity to the entrepreneur, novelty to the market, and novelty in technology. While an entrepreneur's familiarity with their opportunity domain is important for accurate and timely decision making, it is the technological novelty and the novelty in customers' eyes that can capture the domain's external boundaries.

## FAMILIARITY TO ENTREPRENEUR

Entrepreneurs' cognitive frameworks, through which they interpret their environment and their perceived opportunities (Baron, 1998), are likely to give rise to unique insights when entrepreneurs operate in domains that are familiar to them. There are multiple theoretical perspectives, reviewed next, that inform our understanding of why the decisions of nascent entrepreneurs to pursue familiar opportunities are important for the early development and imprinting of emerging organizations.

Human capital theory maintains that knowledge provides individuals with increases in their cognitive abilities, leading to more productive and efficient

activities (Becker, 1964). Overall, previous research tends to support the existence of a positive relationship between human capital and entrepreneurial activity (Davidsson & Honig, 2003). Once engaged in the entrepreneurial process, individuals with high levels of human capital should have a superior ability to successfully exploit opportunities. In recent studies of new ventures in Spain and South America, researchers have found that those entrepreneurs with previous experience in the same industry report (retrospectively) faster venture creation speed (Capelleras & Greene, 2008; Capelleras et al. 2010). Indeed, experiencing and observing a number of development projects in an industry leads to learning-curve effects, which in turn should shorten the development times in an individual's subsequent ventures (Schoonhoven et al., 1990).

In line with recent research on entrepreneurial cognition and opportunity recognition (Baron, 1998; Baron & Ensley, 2006; Shane, 2000), we believe that previous knowledge of an opportunity domain is important for a nascent entrepreneur's pursuit of an opportunity. Prior experience may be needed for the recognition of the opportunity itself (Shane, 2000), but it should also lead to faster decision-making and execution by enabling entrepreneurs to process information more efficiently and avoid mistakes that individuals without the same experience would make (Capelleras & Greene, 2008). Whether an entrepreneur's previous experience in the opportunity domain is from years ago, based on hobbies or academic research, or based on current employment, is not a trivial question. Even less-than-dynamic industries today are moving forward at a fast pace, to say nothing of the speed of developments in more technologically advanced industries. It may well be that the more current a nascent entrepreneur's experiences in an opportunity domain, the more the startup process will speed up as a result of their social network connections, knowledge of customers and markets, and knowledge of ways to serve markets.

Furthermore, when considering investing in emerging organizations, resource holders generally use experience and education as proxies for nascent entrepreneurs' different abilities, such as problem solving skills. It is assumed, for example, that earlier tacit knowledge derived from experience in a similar industry leads to more knowledgeable actions and decisions in the firm creation process (Gimmon & Levie, 2010; Hsu, 2007), which in turn speeds up the emergence process. Even when entrepreneurs are unable to create long-lasting firms, their efforts are rewarded by the acquisition of unique knowledge that can be used in subsequent founding attempts (Aldrich & Martinez, 2001). Therefore, external audiences tend to think that the experiential qualities of a nascent entrepreneur will help to overcome non-anticipated problems and capitalize on new windows of opportunities that can open during the firm emergence process and beyond. Acquiring external funding is an important element of organizational emergence for many firms (Reynolds & Miller, 1992; Tornikoski & Newbert, 2007), and "business angels" as well as venture capitalists may be willing to speed up funding decisions if an opportunity is presented by an experienced entrepreneur.

Finally, whether a nascent entrepreneur's familiarity with an opportunity domain is based on their current employment or a previous job may also have important implications for the opportunity costs of venturing. Individuals usually weigh their participation in a start-up venture against their present employment (Douglas & Shepherd, 2000). Those who are willing to make the leap from an existing job to starting up their own business in the same industry may be particularly committed to their business opportunities and particularly familiar with the industry. This is yet another reason to expect that nascent entrepreneurs intimately familiar with their opportunity domain would be likely to speed up the startup process and avoid wasting time (hence bringing their opportunity cost down). Combined, the arguments presented above lead us to the first hypothesis:

*Hypothesis 1: The better aligned a new business opportunity is with the current knowledge base of the nascent entrepreneur, the faster the speed of organizational emergence.*

## NOVELTY TO MARKET

Novelty to market concerns the degree to which customers are uncertain about the new venture and its offerings (Shepherd et al., 2000). While all new, independent ventures are novel to the market, their degree of market novelty varies (Shepherd et al. 2000; Stinchcombe, 1965). Most entrepreneurs decide to start new businesses based on imitative business ideas that introduce only incremental improvements over competitors' offerings (Reynolds, 2007); such ventures face only limited market novelty. However, those nascent entrepreneurs that decide to introduce products or services unlike those currently in the market are likely to face considerable demand uncertainty (Knight, 1921) and high levels of market novelty. Such uncertainty has the potential to slow down the pace of new venture creation for two interrelated reasons.

First, market knowledge is needed to exploit entrepreneurial opportunities (e.g. Chrisman & McMullan, 2000). However, the potential customers of a new venture have limited domains of expertise and may be unable to articulate their underlying needs (Hamel & Prahalad, 1991). When markets are hard to identify and research, and when potential customers are unfamiliar with the kind of offering that a nascent entrepreneur is pursuing, the entrepreneur may get discouraged in the absence of positive early market feedback. For example, based on data collected from high technology ventures, Choi and Shepherd (2004) found that entrepreneurs were more likely to exploit opportunities when they perceived greater customer demand for the product. In case of a new-to-the-market kind of offering, a nascent entrepreneur may have to spend more time researching the market, and may also receive unfavorable signals from the early market regarding the potential of the offering. Both of these processes can lead to delays in building an operative business.

Furthermore, an opportunity that is truly novel in the marketplace may require the nascent entrepreneur and their team to spend time on educating buyers as well as other key stakeholders (employees, funders) before organizational milestones, such as first sales or external funding, can be achieved. The troubles that Howard Schultz faced when trying to raise early funding for Starbucks, for example, can be attributed to the market novelty of the opportunity itself: the concept of premium coffee and a "third-place" experience were so unfamiliar to the investors that even if they believed in the skills of the passionate entrepreneur, they shied away from the investment opportunity (Schultz & Yang, 1999). Indeed, uncertain market and industry conditions can make it significantly more difficult for an entrepreneur to secure external funding (MacMillan, Siegel, & Subba Narasimba, 1985; Mason & Stark, 2004). For these reasons, our second hypothesis is as follows:

*Hypothesis 2: The more novel the solution created to address a business opportunity is to the markets, the slower the speed of organizational emergence.*

## NOVELTY IN TECHNOLOGY

Novelty in technology concerns the extent to which the technology used by a new venture is similar to the technologies that already exist in the market (cf. Shepherd et al., 2000). The nature of technology itself is important for its commercialization (Nerkar & Shane, 2008). Because technological novelty and

innovation in general are subject to rapid depreciation –the window of opportunity is constantly shrinking – time is a scarce resource (Lawrence & Anderson, 1996) and speed becomes essential (Abell, 1978; Markman, Gianiodis, Phan, & Balkin, 2005). Consequently, nascent entrepreneurs' decisions to pursue opportunities involving technological novelty may not only give their new organizations competitive advantages (Barney, 1991) but also impact the speed of organizational emergence.

Even though nascent entrepreneurs need to commercialize technological innovations faster than their competitors, the mere fact that an opportunity involves technological novelty may slow down the speed of emergence. This is because more sophisticated ventures may require more time and resources to complete the start-up process (Reynolds & Curtin, 2011). Generally, a new solution has to go through extensive testing before institutional approval, for example in medical and biotechnological fields. Furthermore, Schoonhoven, Eisenhardt and Lyman (1990) observed that substantial technological innovation lengthens development times and reduces the speed with which first solutions reach the marketplace. The authors argued that highly innovative solutions require nascent organizations to spend more time on creating new information through their R&D activities because of the uncertainty involved (cf. Nelson & Winter, 1977).

The literature on new product development is extensive and the speed at which an organization gets to market is one of the major outcomes studied in this literature. Importantly, this body of research has demonstrated that there can be a tradeoff between the objectives of minimizing time to market for a new solution and maximizing its performance (Bayus, 1997; Cohen, Eliashberg, & Ho, 1996; Millson, Raj, & Wilemon, 1992). New entrepreneurial firms already struggle to establish legitimacy (Stinchcombe, 1965), so poor early product/service performance may be detrimental for them. Because of this, the more the offering of a nascent venture relies on novelty in technology, the longer the time needed to introduce a reasonably developed first solution to the markets. Hence, our last hypothesis:

*Hypothesis 3: The more novel the solution created to address a business opportunity is in terms of technology, the slower the speed of organizational emergence.*

In the light of the above theoretical development, the central theoretical claim that we want to test empirically is that when a nascent entrepreneur makes the decision to pursue an opportunity, the initial characteristics of this opportunity – familiarity to the entrepreneur, novelty to market, and novelty in technology – become an identifiable, objective reality that will have imprinting effects on the speed of organizational emergence. The methodology we employ to test the hypotheses is introduced next.

## **METHODS**

### **SAMPLE**

The hypotheses are tested in a sample derived from the Panel Study of Entrepreneurial Dynamics II (PSED II) dataset. The distinctive feature of the PSED II is that it identifies and surveys nascent entrepreneurs (NEs) in the process of starting new ventures, thereby overcoming potential survivorship and recall biases typical of surveying entrepreneurs already in business (Gartner, Shaver, Carter, & Reynolds, 2004). At the time of the research, data from the

initial data collection round of PSED II (A) and four follow-up waves (B-E) with the same NEs – each completed approximately one year apart – were available. Hence, data for our independent variables come from “Wave A” of PSED II data collection, which took place in September 2005 – February 2006, and data for the dependent variable comes from up to four years later. The initial screening processes involved telephone interviews of 31,845 individuals, selected using random digit dial sampling procedures, throughout the USA. To be identified as a nascent entrepreneur during the screening process, the respondent had to exhibit the following characteristics: (1) they anticipated having some ownership in a new firm; (2) they had to have been actively trying to start a new firm in the previous 12 months; and (3) they could not have positive monthly cash flows covering all expenses and salaries for 6 of past 12 months. Of the NEs satisfying the screening criteria, further selection and volunteering criteria resulted in 1214 nascent entrepreneurs being subsequently interviewed by telephone in Wave A (Response rate 77%). The PSED II database is representative of the US adult population due to relatively high response rates and weights used to correct for differences in selection probabilities and non-response rates from random data collection. Applying these weights for analyses is essential for the generalizability of any studies related to the PSED II dataset (Reynolds & Curtin, 2004). In the following analyses, the weights are adjusted to reflect the reduction in the number of cases due to missing and not applicable responses; all analyses are run in a dataset where cases with missing data have been removed. The PSED II dataset and related codebooks are publicly available on the consortium’s website <sup>1</sup>.

## DEPENDENT VARIABLE

After the initial interviews, NEs in the PSED II sample were followed up at one-year intervals, and their progress was recorded. The PSED II database includes a time stamp (month and year, reported by the NE) for each activity that the NEs had completed following business opportunity recognition. Our primary dependent variable captures the length of time elapsed between (1) when an NE first came up with the business idea, and (2) when the same NE achieved two critical milestones of organizational formation: starting exchanges (i.e. making the first sale) and acquiring external resources (i.e. hiring employees or receiving external financing). These markers of organizational emergence echo prior research (e.g. Katz & Gartner, 1988; Reynolds & Miller, 1992; Tornikoski & Newbert, 2007). If the first sale took place at a different time (different month) than the first resource acquisition (hiring or funding), the time stamp of the activity that took place last was used to calculate the dependent variable. Higher values on the dependent variable mean that more time has elapsed between coming up with the idea and the completion of the critical milestones.

This coding of the primary dependent variable (DV4) resulted in a continuous measurement of time (in months) that elapsed between when the business idea was first conceived and when organizational markers (sales and hiring or financing) were achieved. We call this primary dependent variable “Time to emergence” (DV4). In addition, time (in months) from business idea conception to the first sales (DV1), first hiring (DV2), and obtaining first external financing (DV3) are employed as dependent variables in separate models.

## INDEPENDENT VARIABLES

**Familiarity to entrepreneur.** This variable captures the alignment between the opportunity domain and the current knowledge base of the NE. As a part of the PSED II protocol, the respondents were asked: “did this new business emerge from your current work activity, from previous work activity, from a separate business you now own and manage, from a hobby or recreational

1. <http://www.psed.isr.umich.edu/psed/home>

pastime, from academic, scientific, or applied research, or was it from an idea you or another member of the start-up team had?" (Item AA9). Respondents were asked to give a single answer to this question (e.g. "from my current work activity"). For the purposes of the current study, we recoded the answers to this question so that higher values on this variable stand for a more immediate connection between the NEs' knowledge bases and the business opportunity domain. In our judgment, and echoing previous research (e.g. Shane, 2000), individuals should be most familiar with opportunity domains that overlap with their current work or a business that they currently own and manage. Opportunities that are based on previously held jobs are still quite familiar, but not as familiar as those based on currently held jobs because of the time elapsed. Finally, opportunities may be familiar to individuals if they are related to their hobbies (lifestyle entrepreneurs) or research activities (academic entrepreneurs). However, neither hobbies nor research activities require as intense commitments of time and effort as primary employment. Hence, the final coding of the opportunity familiarity variable reflects the increasing alignment between the opportunity domain and the current knowledge base of the NE: (1) opportunity based on a hobby or recreational pastime, or on academic, scientific, or applied research; (2) opportunity based on previous work; (3) opportunity based on current work activity or on a separate business that the entrepreneur owns and manages.

**Novelty to market.** In describing the characteristics of entrepreneurial opportunities in general, researchers have emphasized the inherent novelty of these opportunities (Ardichvili, Cardozo, & Ray, 2003; Eckhardt & Shane, 2003; Shane & Venkataraman, 2000). The novelty of a recognized business opportunity manifests itself in the solution created to address it. Market novelty is operationalized as a continuous variable based on the NEs' answers to the following two questions in the first interview (Wave A): "will all, some, or none of your potential customers consider this product or service new and unfamiliar?" (variable AS1) and "right now, are there many, few, or no other businesses offering the same products or services to your potential customers?" (variable AS2). The values of the opportunity novelty variable vary between 2 and 6, 2 standing for an opportunity that none of the customers will consider novel and for which there are many competitors, and 6 representing an opportunity that is considered novel by all potential customers and for which there are currently "no other businesses offering the same products or services to potential customers<sup>2</sup>".

**Novelty in technology.** This is a dummy variable (0/1) based on NEs' answers to the following question: "were the technologies or procedures required for this product or service generally available more than five years ago?". An affirmative answer to this question is coded as a zero, a negative answer is coded as one.

## CONTROL VARIABLES

A number of alternative explanations may account for the hypothesized relationships. In the empirical models, we control for the effects of the NEs' genders, ages, levels of education, racial backgrounds, and previous start-ups (a dummy variable with a value of "1" if the NE has previous startup experience, otherwise "0"). Since larger and more active startup teams may progress faster in the startup process, we also control for the startup team size (if 10 or larger, recoded as 10), number of supporters<sup>3</sup> (natural logarithm), and effort (hours) invested in the startup by the team (natural logarithm)<sup>4</sup>.

As far as the characteristics of the startup business itself are concerned,

2. We coded answers to the two questions as follows, and then summed up the two numbers for the final "novelty to market" variable:

"Will all, some, or none of your potential customers consider this product or service new and unfamiliar?" All=3; Some=2; None=1. "Right now, are there many, few, or no other businesses offering the same products or services to your potential customers?" No other businesses=3; Few other businesses=2; Many other businesses=1.

3. Supporters include people, who will not have an ownership share in the new business, but who have provided significant support, advice, or guidance on a regular basis to the (new) business, or have made a distinctive contribution to the founding of the new business through planning, development, financial resources, materials, training, or business services.

4. When first interviewed in the PSED II effort, the nascent entrepreneurs were asked "how many hours in total have you devoted to this (new) business?". For each additional team member (up to four additional team members, i.e. owners), the nascent entrepreneurs also answered the following question: "how many hours in total has [NAME] devoted to this (new) business?" To calculate the effort variable, we summed up the hours reported as answers to these questions (questions AH14\_1-AH14\_5 in the PSED II protocol).

we control for the nature of the venture: high technology ventures may take a long time to launch, so we include a dummy for high tech ventures. Also, if the nature of a business changes during the start-up process, it may take longer to establish. When first interviewed, the NEs were asked to describe the nature of their business activity. In the follow-up waves, the NEs were asked whether the original description of the business activity was still accurate or not; a dummy variable is included in the models to control for changes to the nature of the business activity over waves B-E.

At the same time, if the NE is starting a venture for his / her current employer, progress may be particularly fast, so we include a dummy that receives value "1" if the respondent answered affirmatively to the following: "you are, alone or with others, currently trying to start a new business or a new venture for your employer, an effort that is part of your normal work. Does this apply to you?" Fast progress in the startup process may also be attributable to NEs' preference for business size; we include a dummy for those who want their businesses to be as large as possible<sup>5</sup>.

Finally, general industry dummies were created to control for startup efforts in a service industry (restaurants, consumer services, health services, finance, insurance, real estate firms, and business consulting services), in retail, and in manufacturing. The table in Appendix 2 summarizes the variables used in the study.

As illustrated in Appendix 2, the number of cases available for analysis drops drastically from the original 1214 when it comes to our dependent variables. This is mostly due to the fact that a large proportion of nascent entrepreneurs originally interviewed at Wave A never achieved the organizational markers we based our dependent variables on (Reynolds, 2007). Instead, they exited the business gestation process, or lingered in the process without making progress in achieving critical organizational markers such as first sales. Also, many nascent entrepreneurs created new organizations without ever looking for external funding and with no intentions of hiring others. As demonstrated in Appendix 2, while 60 per cent of nascent entrepreneurs achieved first sale within the four-year follow-up period, less than twenty per cent achieved the organizational markers of first hiring or external funding within this same period.

## ANALYTIC METHODS

In order to test our hypotheses, we analyzed the data using weighted hierarchical ordinary least squares (OLS) regression. We tested for the main assumptions for using OLS regression, namely normality of the variables, homoscedasticity, and independence of the independent variables (VIF values). All VIF values were comfortably low (below 1.3), indicating no problems with multicollinearity. Correlations between variables are presented in Appendix 1.

## RESULTS

Table 1 presents the OLS regression results of our hypothesis tests, and also lists the final (no missing values) sample sizes for each model. Models 1a and 1b in Table 1 examine the speed of organizational emergence, that is, how long it took the nascent entrepreneurs to start exchanges (sales) and to acquire external resources (either employees or financing). As can be seen in Table 1, the F-statistic for the control model (model 1a) is not significant. In addition, the low adjusted R-squared value of 3% suggests that the control model does not explain significant variance in the dependent variable. The significant F-statistic and change in F-statistic, as well as the substantially higher adjusted R-

5. This dummy is coded as "1" for those who answered "I want this (new) business to be as large as possible" to the following question: "Which of the following two statements best describes your preference for the future size of this (new) business: I want this (new) business to be as large as possible, or I want a size I can manage myself or with a few key employees?"

squared value for the full model (model 1b) provide strong evidence supporting our conceptual model. Specifically, these statistics suggest that the full model is a good fit to the data, that the addition of the independent variables produces a model that fits the data significantly better than the control model, and that the full model explains significant variance in the dependent variable (12%), taking into account the phenomenon under investigation.

**Table 1.** Results of regression models

Model	DV4: Time to emergence (n=207)		DV1: Time to exchange - Sale (n=387)		DV2: Time to external resource - Hiring (n=146)		DV3: Time to external resource - Financing (n=139)	
	1a	1b	2a	2b	3a	3b	4a	4b
Gender (ref. 1=female)	-.09	-.10	-.09†	-.10†	-.14	-.08	-.11	-.15
Age	.00	-.07	.04	.05	.14	-.03	.07	-.02
Education	.00	.07	.02	.03	.02	.14	-.08	-.04
Race: Hispanic	.08	.03	-.04	-.03	.10	.03	.09	.06
Race: Black	.07	-.03	.00	.01	.20†	.08	.01	-.04
Race: White	-.14	-.16	-.12	-.11†	-.09	-.07	-.16	-.14
Startup team size (ln)	-.07	-.07	.01	.02	.04	.01	-.11	-.06
Number of supporters (ln)	-.03	-.04	-.01	-.01	-.02	-.05	.03	.07
High technology venture	.01	.04	.18***	.18**	-.03	.08	.06	.04
New business for employer	.08	.08	.05	.06	.08	.09	.03	.02
Nature of start-up changed	.08	.06	.10*	.10†	.04	-.02	.08	.05
Previous start-ups	-.06	-.10	-.06	-.06	-.14	-.18*	-.02	-.12
Preferred business size (large)	-.05	-.05	-.00	.00	-.15	-.14†	.00	.03
Effort by team (hours invested, LN)	.12	.11	.03	.03	.11	.14†	-.02	-.05
Industry: Service	.05	.01	-.04	-.04	-.14	-.16	.08	-.01
Industry: Manufacturing	-.03	-.01	-.06	-.06	-.14	-.10	.10	.11
Industry: Retail	.00	-.06	.00	-.01	-.17†	-.24*	.07	-.02
<b>Familiarity to Entrepreneur</b>		-.31**		-.09†		-.30**		-.23*
<b>Novelty to Market</b>		.11		-.01		.21*		.23*
<b>Novelty in Technology</b>		-.15*		.00		-.36***		-.10
R-square	.11	.21	.08	.09	.16	.31	.10	.18
<b>Adjusted R-square</b>	.03	.12	.04	.04	.05	.20	.00	.04
<b>Model change</b>	ns	***	*	ns	ns	***	ns	*
<b>F-value</b>	1.3	2.5**	1.9*	1.7*	1.5	2.9***	0.8	1.3

†p< .10, \*p< .05, \*\*p< .01, \*\*\*p< .001. Weighted data.

The full model (model 1b) shows the results of our hypotheses concerning the main effects of the three opportunity characteristics on the speed of organizational emergence (Hypotheses 1, 2, and 3). As can be seen, the parameter estimate for “familiarity to entrepreneur” is negative and significant as predicted. Thus, we conclude support for Hypothesis 1. The parameter estimate for “novelty to market”, however, is insignificant. Thus, we conclude no support for Hypothesis 2. Finally, the parameter estimate for “novelty in technology” is significant, however, negative in direction, which is contrary to our prediction. Thus, we conclude no support for Hypothesis 3, but the data suggest that

“novelty in technology” speeds up the progress to organizational emergence instead.

Furthermore, our empirical models also show that the three initial opportunity characteristics exercise different imprinting effects on the speed of individual emergence factors (see models 2b, 3b, and 4b). That is, the imprinting effects of initial opportunity characteristics vary significantly between a rapid first hire, rapid first sales, and rapid acquisition of external financing. More specifically, when “time to first sale” is the dependent variable (model 2b), the model *r*-squared value remains low, and the model does not fare well in explaining variance in the dependent variable. Yet all three independent variables provide significant contributions to model 3b explaining variance in the dependent variable of “time to first hiring”. Further, model 4b demonstrates that “familiarity to entrepreneur” leads to faster securing of external funding while “novelty to market” slows down this process.

## DISCUSSION

Given the novelty of the relationships investigated in this study, coupled with the empirical support for some of our hypotheses, we believe our findings can shed new light on the understanding of imprinting forces for timely organization creation.

Echoing Johnson (2007), this study profiles imprinting in new organizations as an agent-driven process. Our approach conforms to others, which consider that the decisions made by entrepreneurs at the formative stage of an organization have effects that imprint the organization and impact its performance (cf. Bamford et al., 1999). Our empirical observations provide evidence that the characteristics of emerging ventures at the intersection of pursued opportunities and individual entrepreneurs have an impact on the time it takes to establish a new organization. Our work should remind researchers looking into the processes of organizational emergence of the importance of considering the effects of entrepreneurial opportunities themselves (cf. Davidsson & Gordon, 2012), rather than only focusing on the efforts and behaviors of entrepreneurs. Indeed, while previous research in entrepreneurship offers empirical support for the argument that entrepreneurs’ actions influence start-up success and new firm performance (Delmar & Shane, 2004; Dimov, 2010; Tornikoski & Newbert, 2007; Tornikoski & Puhakka, 2009), this research often loses sight of the fact that entrepreneurial opportunities themselves are unique and influence the emergence process. We encourage scholars to pursue this avenue by conceptualizing the emergence of new organizations not only around entrepreneurial behavior, but also around environmental and organizational conditions at the time when the foundations of future organizations are decided upon.

Organizational emergence is a multidimensional construct. It is an intentional process on behalf of the key agents, and it culminates in a new organization’s acquisition of key resources (hiring employees, receiving external financing) and its engagement in exchanges (making the first sales) (Katz & Gartner, 1988; Reynolds & Miller, 1992). In predicting the time to these markers, our models fare better in estimating the time to resource acquisition than the time to first sale. This may be a reflection of the fact that resource assembly is typically required before the first sale can occur (Brush et al., 2008), and our data only span a four-year period. Firms that engage in extensive research and development for their products or services may take even longer to achieve sales. It should be noted that achieving first sale does not always mean that a firm will have a continuous flow of sales revenue from that point on. The startup

process does not typically progress in a linear manner, and a first sale can simply mean a modest purchase by a friend or a relative. Because of this, the timing of the first sale is likely to be a “noisy” data point, and is consequently harder to predict. Assembling financial and physical resources, however, is a more “involved” activity than achieving a first sale. In hiring a person or in accepting external funding the nascent entrepreneur commits to a relationship – often a long-term relationship – with an external resource holder. Our models explain more variance in the time it takes to hire someone for a new firm than in the time until a first sale or the time taken to receive external funding. This suggests that the opportunity characteristics in focus here are important predictors of this fundamental type of resource acquisition by entrepreneurs.

This study answers the call of Busenitz and his colleagues (2003) to better understand why some entrepreneurs are able to act more quickly than others in the venture creation process: by choosing to pursue opportunities which are close to their own areas of expertise and which are characterized by technological novelty. It is interesting to note that the most consistent empirical findings from our study concern the role of opportunity familiarity, that is, how well aligned the nascent entrepreneur’s current knowledge base is with the business opportunity they have identified. Throughout our empirical models, intimate familiarity with an opportunity domain shows a potential to speed up organizational emergence. Consequently, it is important to conceptualize opportunities not only as having some objective characteristics, which are independent from any individual intervention, but also to take into account the “individual-opportunity nexus” (e.g. Venkataraman, 1997): the successful, and in our case timely, exploitation of entrepreneurial opportunities is linked to the relationship nascent entrepreneurs have with the opportunities they choose to exploit. This relationship is characterized by the overlap between a nascent entrepreneur’s knowledge base and the opportunity domain. As a consequence, the imprinting effects of opportunities on the speed of organizational emergence are contingent upon entrepreneurs’ knowledge.

While previous research has demonstrated that substantial technological innovation lengthens development times and reduces the speed with which first solutions reach the marketplace (e.g. Griffin, 1997; Meyer & Utterback, 1995; Schoonhoven, et al., 1990), we found evidence to contradict the results of these previous scholarly inquiries. We observed that novelty in technology not only reduces the time until first hiring but also accelerates the whole process of organizational emergence. While our theoretical rationale was based on the fact that technological developments require more time and resources to complete the start-up process (Reynolds & Curtin, 2011), other factors might be more important in forcing the rapid development of technologically oriented projects. Since the window of opportunity for technological innovations is constantly shrinking, speed becomes essential in technological projects (Abell, 1978; Markman, et al., 2005). Indeed, nascent entrepreneurs exploiting opportunities based on technological innovations might be forced to adopt rapid exploitation strategies in response to the depreciation of technological novelty, quickly driving their emerging organizations into operational businesses. It is worth focusing on the following aspect in future studies: whether technological novelty encourages entrepreneurs to adopt speedy exploitation strategies, thereby contradicting the notion that the development of new technology delays the time to market. Previous research has suggested that market novelty can have a significant and negative relationship with a new venture’s chances of survival (Shepherd et al., 2000; Shepherd & Shanley, 1998). Building on this previous conceptual research, we provide empirical evidence that market novelty, while not influencing directly the speed of organizational emergence, slows down the speed at which a new venture is able to build its resource base (i.e. acquiring financing, hiring employees). Even though market novelty has the potential to slow down the

building of a new organization's resource base, it is worth remembering that those who succeed in their efforts may benefit from market novelty in the long run. Uncontested markets can provide significant early mover advantages for new ventures that can gain a loyal customer base early on. By preempting scarce assets in strategic factor markets and increasing buyers' switching costs, market pioneers are likely to benefit from advantageous positions in terms of resource space and the creation of entry barriers (Lieberman & Montgomery, 1988; Suarez & Lanzolla, 2007). However, empirical tests of these relationships among new ventures are scarce, and we encourage further research on the topic.

## CONCLUSIONS

In an attempt to explain why some new organizations are established faster than others we adopted a perspective according to which a timely organizational emergence can be understood and predicted by viewing it as conditioned by the initial decisions of entrepreneurs regarding the opportunities they are to pursue. Using a large dataset of individuals who are in the process of building their ventures, and who have been followed up on an annual basis as they go through this process, we have found empirical evidence to conclude that initial opportunity characteristics exercise imprinting effects on the time it takes to create new organizations. More specifically, a technologically advanced business opportunity that is close to the knowledge domain of a nascent entrepreneur is likely to be able to move quickly towards organizational emergence. Furthermore, interesting nuances emerged when we investigated the speed of achieving individual emergence factors (i.e. first sales, first hire, external financing). While none of the three opportunity characteristics seem to imprint the speed at which first sales are made, they all imprint the time taken before first hiring. With regard to acquiring outside financing, two opportunity characteristics ("familiarity to entrepreneur" and "novelty to market") imprint this process.

## IMPLICATIONS FOR PRACTICE

The results of this study have several implications for practitioners. In today's dynamic markets, where new offerings can sometimes be rendered obsolete within months of introduction, the time it takes to establish a business is a critical issue for nascent entrepreneurs. Based on our results, aspiring entrepreneurs would be well advised to focus on opportunities in industries where they currently work, on opportunities that provide a specific technological edge, and on opportunities that do not require the creation of totally new markets. Entrepreneurs starting up businesses in the industry in which they currently work are likely to face high opportunity costs; the leap to entrepreneurship from being employees in the same industry should motivate them to build their new organizations swiftly in order to start making money. Furthermore, aspiring entrepreneurs should take advantage of the fact that current employment in the same industry is likely to allow them access to important industry networks and resources (Agarwal, Echambadi, Franco, & Sarkar, 2004), leading to faster hiring and the securing of external funding. In terms of cognitive capabilities, aspiring entrepreneurs should also acknowledge the importance of previous knowledge of their opportunity domain (Baron, 1998; Baron & Ensley, 2006; Shane, 2000). The effects of up-to-date knowledge of industries and markets on opportunity recognition have already been studied (Shane, 2000). Beyond this, however, as demonstrated by our empirical data, up-to-date knowledge can lead to faster processes of decision-making and execution by nascent entrepreneurs at the opportunity exploitation stage. It is also beneficial for aspiring entrepreneurs to

know that cutting edge knowledge of industries and markets is viewed favorably by resource holders such as investors and potential employees, who can help to quickly secure external funding and human resources.

Furthermore, our study has interesting insights for those nascent entrepreneurs who do not have to achieve all the three emergence factors in their quest to exploit opportunities. Since all three opportunity characteristics seem to imprint the speed of first hiring, nascent entrepreneurs should pay attention to each opportunity characteristic if they are dependent on hiring external people. In addition, because “familiarity to entrepreneur” and “novelty to market” imprint the speed of acquiring outside financing, nascent entrepreneurs should consider these aspects when approaching external financial parties. Potential employees and funders are likely to be risk averse and to shy away from committing their resources to an emerging venture characterized by high levels of market novelty. When markets are novel they are also hard to understand and research, which may turn away early employees and funders looking for signs of positive early market feedback. In such cases, nascent entrepreneurs are advised to spend time on educating key stakeholders (employees, funders) before early hiring and funding milestones can be achieved.

#### LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

While we believe that the results presented herein add to our understanding of the role nascent entrepreneurs’ initial founding decisions play in the creation of new organizations, we acknowledge that the present research is not entirely beyond reproach.

The dataset available to us (PSED II) presents some limitations that should be taken into account when evaluating these findings. In order to investigate variation in the time it takes to achieve certain milestones in the start-up process, we had to rely on data from those cases that actually reported having achieved these milestones during the follow-up period. Since the PSED data reflects average startup efforts in the population it contains a large amount of data from nascent entrepreneurs who set out to be self-employed without ever looking for external funding and with no intentions of hiring others (Reynolds, 2007). Less than twenty per cent of nascent entrepreneurs achieve the milestones of first hiring or external funding within the four-year follow-up. Because of this feature of the dataset, as well as the overall attrition, the sample sizes available for our empirical models were limited (See Table 1 for the number of cases in each model).

Regarding the operationalization of “novelty of technology” we used a simple dummy variable. We acknowledge that this operationalization is not optimal; technological novelty is far more nuanced than a simple yes / no answer. Unfortunately our empirical data is limited to what was available in the PSED II dataset. As such, we advise readers to accept our results guardedly, and, if possible, replicate them with alternative operationalizations.

It should also be noted that our results are not representative of nascent entrepreneurs who do not achieve our selected milestones within the four-year follow up. We realize that a failure to achieve the milestones may be of the entrepreneurs’ choosing (i.e. wanting to be self-employed and not looking for external funding) or due to their lack of success in achieving the milestones despite trying. However, this issue is beyond the scope of our study, and our findings simply reflect variation among those who achieve the selected milestones as reported. Notwithstanding these limitations with PSED, it is arguably the best large-scale collection of data on nascent entrepreneurs that we have (e.g. Newbert & Tornikoski, 2013).

Our theorizing regarding the characteristics of opportunities was inspired by earlier works (i.e. Shepherd et al., 2000). By adopting a similar approach, we

restricted our investigation to three characteristics of entrepreneurial opportunities. As a result of our choice to investigate the effects of only three variables on the speed of organizational emergence, our models explained a relatively small share of the total variance. While we acknowledge the presence of other characteristics of opportunities, and other possible variables coming from other theoretical approaches, we believe this study provides an important early step in efforts to explain the time it takes to establish new organizations. We encourage others to continue on this research path to identify other important imprinting forces.

In sum, we believe that our findings add to what we, as a scholarly community, know about the organizational emergence process, and hope that both academics and practitioners may benefit from them. The opportunity-individual nexus is particularly important for the entrepreneurial process, yet it has been largely ignored in the literature. By investigating the imprinting role of initial opportunity characteristics, our study is the first to provide empirical evidence about their influence on the speed of organizational emergence. Ultimately, we hope to have added to the ongoing discussion among academics and practitioners alike regarding the importance of opportunities in the entrepreneurial context.

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**APPENDIX A. UNWEIGHTED CORRELATIONS**

Variable	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1. Time to exchange: Sale	733	1																								
2. Time to external resource: Hiring	233	.68**	1																							
3. Time to external resource: Financing	215	.70**	.71**	1																						
4. Time to emergence	325	.85**	.86**	.89**	1																					
5. Familiarity to entrepreneur	874	-.07	-.26**	-.31**	-.31**	1																				
6. Novelty to market	1197	.09*	.08	.23**	.15**	-.12**	1																			
7. Novelty in technology	1201	.10**	-.02	.06	.07	-.04	.26**	1																		
8. Gender	1214	-.08*	-.11	-.04	-.09	-.06	-.04	-.06*	1																	
9. Age	1202	.09*	.06	.04	.03	.07	.04	-.01	.02	1																
10. Education	1212	.09*	.07	.05	.08	.09**	.02	.05	.05	.24**	1															
11. Race: Hispanic	1208	-.00	.09	.09	.08	-.07	.06	-.02	-.03	-.10**	-.08**	1														
12. Race: Black	1171	.11**	.14*	.14*	.13*	-.05	.10**	.06*	.02	-.16**	-.05	-.01	1													
13. Race: White	1196	.12**	-.11	-.17*	-.18**	.07*	-.09**	-.06	.00	.19**	.11**	-.26**	-.74**	1												
14. Startup team size	1214	.03	-.13	-.14*	-.11*	.08*	.04	.04	-.06*	.01	.08**	-.01	-.03	.02	1											
15. Number of supporters	1179	.00	-.03	.09	-.03	.00	-.03	.01	.01	-.10**	-.01	.01	.03	-.05	-.09**	1										
16. High tech venture	1212	.06	-.01	.06	.03	.01	.14**	.28**	-.09**	-.01	.01	-.03	.04	-.05	.03	.03	1									
17. New business for employer	1202	.03	.03	.09	.03	.05	.04	.00	-.10**	-.08**	-.07*	.02	.10**	-.11**	.02	.01	.03	1								
18. Nature of start-up changed	1099	.12**	.09	.10	.13*	-.03	.01	.00	.01	.09**	.06*	-.00	-.02	.02	-.03	.00	-.03	-.02	1							
19. Previous start-ups	1213	.02	-.06	.06	.02	.06	.09**	.05	-.04	.29**	.18**	-.05	-.07*	.05	.06*	.05	-.01	-.08**	.01	1						
20. Preferred business size (large)	1206	-.00	-.16*	.01	-.06	.02	.13**	.05	-.05	-.10**	.02	.05	.12**	-.08**	.10**	.04	.11**	.07*	.02	.04	1					
21. Effort by team (hours invested)	1113	.14**	.14*	.04	.10	-.02	-.05	.03	-.07*	.04	.09**	-.05	-.05	.06*	.15**	.10**	.05	.04	.01	.03	.02	1				
22. Industry: Service	1212	-.00	.00	-.01	.00	.03	.00	-.00	.07*	.01	.09**	-.02	.06	-.01	-.03	.03	.03	.03	-.00	-.05	-.04	.01	-.06	1		
23. Industry: Manuf.	1212	.00	-.07	.06	.01	-.04	.09**	-.01	-.04	.11**	.02	-.01	-.10**	.07*	.05	-.06	.03	-.04	.05	.11**	-.01	.08*	-.30**	1		
24. Industry: Retail	1212	-.03	-.12	.02	.00	-.11**	.06**	.00	.10**	-.05	-.04	.02	-.01	-.02	-.03	.00	-.06*	-.04	.01	-.01	.02	-.48**	-.09**	1		

Sour\*\* p<.01; \*p<.05

**APPENDIX B.**  
**VARIABLE MEANS AND STANDARD DEVIATIONS (UNWEIGHTED)**

Construct	Variable	Type	Missing % (n=1214)	Transfor- -mation	Mean	S.D.	Relevant PSED II variables
Organizational emergence	Time to exchange: Sale	Continuous	40%	Ln	.12	1.38	AA8a, AA8b, AE14a/b - EE14a/b
	Time to external resource: Hiring	Continuous	81%	Ln	.41	1.25	AA8a, AA8b, AE8a/b - EE8a/b
	Time to external resource: Financing	Continuous	82%	Ln	.41	1.26	AA8a, AA8b, AE4a/b - EE4a/b
	Time to emergence	Continuous	73%	Ln	.44	1.26	Based on three variables listed above
Opportunity familiarity	Familiarity to entrepreneur	Ordinal	28%	--	1.83	.80	AA9
Opportunity novelty: Market	Novelty to market	Continuous	1%	--	3.51	1.17	AS1, AS2
Opportunity novelty: Technology	Novelty in technology	Dummy	1%	--	.22	.42	AS4
Controls	Gender (ref. 1=female)	Dummy	0%	--	.37	.48	AH1_1
	Age	Continuous	1%	--	43.6	12.9	AH2_1
	Education	Continuous	0%	--	5.53	2.13	AH6_1
	Race: Hispanic	Dummy	0%	--	.05	.22	AH3_1
	Race: Black	Dummy	4%	--	.14	.35	AH4b_1
	Race: White	Dummy	1%	--	.77	.42	AH4a_1
	Startup team size	Continuous	0%	Ln	.42	.50	AG2
	Number of supporters	Continuous	3%	Ln	-.40	1.60	AG13+AG18
	High technology venture	Dummy	0%	--	.24	.43	AS6
	New business for employer	Dummy	1%	--	.31	.46	QFF1b
	Nature of start-up changed	Dummy	9%	--	.20	.47	BA12-EA12
	Previous start-ups	Dummy	0%	--	.45	.50	AH12_1
	Preferred business size (large)	Dummy	1%	--	.20	.40	AT1
	Effort by team (hours invested)	Continuous	8%	Ln	6.15	1.78	AH14_1-AH14_5
	Industry: Service	Dummy	0%	--	.61	.49	AB1
Industry: Manufacturing	Dummy	0%	--	.06	.23	AB1	
Industry: Retail	Dummy	0%	--	.13	.34	AB1	

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