

Passionate Bricoleurs and New Venture Survival

Pekka Stenholm*
Turku School of Economics
Department of Management and Entrepreneurship
FI-20014 University of Turku
Email: pekka.stenholm@utu.fi
Tel. +358-2333-9479

Maija Renko
University of Illinois at Chicago
Department of Managerial Studies
Chicago, Illinois, USA
Email: maija@uic.edu

* Corresponding author

Keywords: Entrepreneurial Passion; Bricolage; Survival

Passionate Bricoleurs and New Venture Survival

ABSTRACT

The impression of entrepreneurship as an intentionally orchestrated activity has been challenged by more creative approaches. In this study we investigate the previously unexplored relationships between entrepreneurial passion, bricolage, and entrepreneurial survival. In a sample of 2,489 Finnish entrepreneurs who started new businesses between 2005–2010, we find higher levels of bricolage among those, whose businesses were still surviving in the end of 2011. Further, our analyses reveal that entrepreneurs passionate about inventing and developing their ventures are more likely to engage in bricolage and, combined, the affective state of passion and the “make-do” behaviors of bricolage help entrepreneurs keep their businesses going.

Keywords: Entrepreneurial Passion; Bricolage; Survival

JEL: L26; M13

1. Introduction

The idea that passionate individuals tirelessly pursue their entrepreneurial visions, “regardless of the resources they control” (Stevenson, 1983) is in the heart of the contemporary image of entrepreneurship. As such, it is not surprising that some of the more popular theoretical constructs that have emerged in entrepreneurship research over the past decade include entrepreneurial passion (Cardon et al., 2009) and resource bricolage (Baker and Nelson, 2005). Overall, the image of entrepreneurship has been changing such that creative approaches, such as passion and resource bricolage, are increasingly recognized to be important. Passion, in particular, can be an important driver of behavior in general (e.g.

Vallerand et al., 2003; Vallerand et al., 2007) and entrepreneurs may be especially susceptible to its influences (Cardon et al., 2009). Entrepreneurial passion (EP) refers to an individual's strong, positive inclination toward entrepreneurial activities (Cardon et al., 2009; Murnieks et al., 2014).

Even if passion has face value as a predictor of start-up success, empirical research is only starting to explore the various mechanisms through which the effects of passion are channeled to entrepreneurial outcomes (e.g. Baum and Locke, 2004, Murnieks et al., 2014). Existing empirical research has investigated the relationships between EP and investment outcomes (Chen et al., 2009), EP and employees' organizational commitment (Breugst et al., 2012), passion and entrepreneur's behaviors (Murnieks et al., 2014) and passion for work and firm growth (Baum et al., 2001; Baum and Locke, 2004). Different from these existing empirical studies, we focus on the relationship between passion and early venture survival—we call this entrepreneurial survival. Among new firms, the effects of entrepreneur's passion are manifested in firm survival before variations in other aspects of firm performance can even be observed. Early survival of new ventures is precarious and highly dependent on entrepreneurs' persistence in the face of challenges in the start-up process. The risk of firm failure increases after start-up, reaches its maximum after one or two years of operations and decreases afterwards (Strotmann, 2007). New firms are the engine of economic growth, yet they have a particularly high risk of death (Birch, 1987). Consequently, there is a need for research-based explanations that help us understand the factors that can contribute to the survival of promising new ventures.

Theoretically, our study contributes to the emerging line of research on the mechanisms of passion by suggesting that creative use of resources and, specifically, bricolage, are central to realizing the potential benefits of EP. In the context of entrepreneurship, bricolage refers to “making do by applying combinations of the resources

at hand to new problems and opportunities” (Baker and Nelson, 2005). It involves creative manipulation of ‘existing’ or ‘available’ resources, such as materials and financial resources, to solve a problem at hand or to create new opportunities. As an entrepreneurial approach to resource building and utilization, bricolage may be particularly widely used by those entrepreneurs who are highly passionate about their start-ups.

In addition to clarifying a novel pathway for the impact of EP via bricolage, our research also makes a contribution to the emerging understanding of the antecedents of bricolage. Where the focus has been on explaining the consequences of entrepreneurial bricolage, such as innovativeness (Senyard et al., 2014) and growth (Baker and Nelson, 2005), the origins of bricolage-behaviors have received little attention in the existing literature. Furthermore, while much of the previous research on bricolage has been conducted in high-technology, innovative contexts (e.g. Ciborra, 1996; Garud and Karnoe, 2003), in this study we look at the effects of passion and bricolage across all types of new firms and industries.

Our findings suggest that entrepreneurs who are highly passionate about inventing and developing their firms are more likely to engage in bricolage which will then, in turn, have implications for the survival of the new venture. Reflecting ideas from positive psychology, theory on EP (Cardon et al., 2009) suggests that passionate entrepreneurs are motivated to tackle encountered challenges or problems. Passionate entrepreneurs are more likely to identify solutions that could otherwise go unnoticed or unexploited. Hence, passion can facilitate the creation of unusual associations, such as novel combinations using existing resources, and it may enable entrepreneurs to engage in novel and creative paths of action.

Understanding the connections between passion, bricolage, and early firm survival has important implications for both theory and practice in entrepreneurship. Specifically, we would like to point out two such implications from our study. First, the nomological networks

of EP and bricolage have only been subject to a limited number of studies so far. Here, we expand previous research (e.g. Murnieks et al., 2014; Cardon and Kirk, 2013; Baum and Locke, 2004; Senyard et al., 2014) by introducing a novel outcome for passion and bricolage, namely early firm survival. Survival of entrepreneurial firms is not simply a matter of financial performance, yet those more subjective reasons that may contribute to early survival have remained poorly understood (Gimeno et al., 1997; DeTienne et al., 2008). This is an area where our study makes a contribution. Second, even if common elements of passion and bricolage—such as identity centrality, creativity and entrepreneurial judgment—have been identified before (Baron, 2008; Cardon et al., 2009; Stinchfield et al., 2013), we explicitly theorize and test direct linkages between entrepreneurial passion and bricolage. Indeed, maybe the most interesting finding to emerge from our analysis is the role that bricolage plays in mediating the relationship between entrepreneurial passion and early survival. Thus, from the perspective of bricolage, our findings suggest a novel antecedent in entrepreneurial passion. This is important since the individual-level mechanisms behind involvement in bricolage have remained poorly understood.

2. Theoretical background

Firms that entrepreneurs build and develop are reflections of the founders themselves. In this context, a “(f)ounder identity provides a concept that reflects individual’s agentic efforts to build and confirm a sense of who they are as they interact with and participate in building the social structures within which they work and live their lives” (Powell and Baker, 2014, 1429). When the organizations that entrepreneurs build and develop are aligned with “who they are”, their entrepreneurial efforts may become more passionate. As Vallerand et al. (2003) and Cardon et al. (2009) emphasize, passion comprises both an intensity of feelings as well as a deep identity connection to the object of those feelings.

In a study of entrepreneurs' responses to resource adversity, Powell and Baker (2014) theorize that the structure of the entrepreneur's identity shapes his/her firm's strategic response to adversity. As an extension of entrepreneurial identity, we suspect that EP may also have a role to play here. Indeed, Cardon and colleagues' (2009) model of the nature and experience of EP shows that cognitive and behavioral manifestations are outcomes of the affective experience of passion, not a part of the experience itself. One such behavioral outcome may be bricolage.

To sum up recent conceptual developments, Powell and Baker (2014) provide a theoretical basis for suggesting that entrepreneurs' strategic responses to adversity, such as bricolage behaviors, depend on their unique mixtures of social and role identities. At the same time, work on EP describes how the intense positive feelings of this construct concern activities associated with roles that are meaningful and central to the self-identity of the entrepreneur (Cardon et al., 2009, 2013; Murnieks et al., 2014). Hence, a logical next step is to study how the identity-relevant experience of EP may drive a certain type of entrepreneurial response (bricolage) in the typically resource-scarce context of building and running a new venture.

How one looks at passion depends on the phenomenon of interest. We are interested in understanding how an identity-relevant form of EP relates to behavioral (bricolage) and firm-level (survival) outcomes. In this context, the conceptualization of passion by Cardon and colleagues (2009) as a consciously accessible, intense positive feeling that results from engagement in activities with identity meaning and salience seems fitting. Furthermore, it is helpful to consider the building and running of a new business to be a combination of relevant tasks that an entrepreneur may (or may not) identify with and be passionate about. Also here we follow Cardon and colleagues' work (2009, 2013), which conceptualizes overall EP as consisting of passion for 1) inventing new products or services, 2) founding

new organizations, and 3) developing these organizations beyond their initial survival. Entrepreneurs who are passionate about inventing show positive affect when they can identify and explore new opportunities and develop new solutions. Those passionate for founding display positive affect during activities related to the creation of a new firm, and they are particularly attracted to their roles as owners. Entrepreneurs experiencing passion for developing a venture display positive affect when engaging in the strategic management of the business and optimizing organizational processes (Cardon et al., 2009; Breugst et al., 2012).

It will be helpful to know whether the particular combinations of passion and bricolage have any bearing on the persistence of the new venture. While organizational survival has been of particular interest to population ecologists, organizational theorists, and strategy researchers, the survival at the earliest stages of firm development is increasingly examined from an entrepreneurial perspective. Specifically, research recognizes the role of the entrepreneur and his resources (Gimeno et al., 1997), personality (Ciavarella et al., 2004), biases (Lowe & Ziedonis, 2006), and emotions (Shepherd et al., 2009) in understanding early venture survival. In other words, there is more to the understanding of entrepreneurial survival than the economic theories of firm behavior, which suggest that the decision of the entrepreneur to persist or exit the venture is based upon firm performance. EP and bricolage may have an important—yet previously unexplored—bearing on early survival.

3. Hypothesis development

3.1. Passion and entrepreneurial survival

Excitement and even love for the new business are important factors that may keep entrepreneurs going when they face early obstacles (Cardon et al., 2005). In line with Cardon and colleagues (2009), we define entrepreneurial passion as consciously accessible, intense

positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur (p. 517). Furthermore, Cardon and colleagues (2009) identify three roles relevant for EP: inventing, founding, and developing a business. As is clear from this definition, the kind of affect in question here is positive in nature. Both positive and negative affective states can influence entrepreneurship, but positive feelings especially, such as passion, may lead to progress in the entrepreneurial process (Baron, 2008).

Baron (2008) suggests two basic mechanisms through which an affective state, such as experience of EP, may influence thinking and behaviors. First, moods or feelings elicit specific memories and associations—ones linked to such feelings. For instance, when individuals experience passion for activities related to the founding of a business, positive entrepreneurial associations or memories are brought to mind. These positive associations may keep the entrepreneur going even in the face of obstacles, hence contributing to early business survival. Second, affect may serve as a heuristic cue—an efficient basis for inferring reactions to a specific person, event, or situation (Baron, 2008). According to this perspective, when making judgments about things such as appropriate future career directions for oneself or a friend, individuals examine their feelings and respond accordingly. When experiencing positive affect, they are likely to make favorable judgments or evaluations. When experiencing passion for founding and developing a business, they will tend to form positive evaluations or judgments about start-up related career-options, which further contributes to their persistence and the longevity of their ventures.

Another perspective into the effects of passion is provided by Cardon and colleagues (2009), who propose that EP will influence the goals entrepreneurs set (see also Baum and Locke, 2004), as well as their level of commitment to those goals. In accordance with self-regulation theory, individual agency and coping are viewed as goal-directed processes.

Entrepreneurs are thought to engage in exploration and exploitation activities in pursuit of their desired goals, which provide direction and clarity to their entrepreneurial efforts. The model developed by Cardon and colleagues (2009) suggests that the experience of passion (such as passion for inventing a solution to a customer problem, or for founding a business) mobilizes an entrepreneur's self-regulation processes that are directed toward effectiveness in the pursuit of the corresponding entrepreneurial goal (such as providing a solution to a customer problem, or an actual founding of a new venture). Supporting this theory, Baum and Locke (2004) find that among entrepreneur-CEOs, passion for one's work is an antecedent of firm growth goals, for instance. Similarly, we would expect that by keeping entrepreneurs committed to their enterprise goals, EP also contributes to the survival of the new firm (Klein et al., 1999).

Even in the absence of concrete goals, passion can affect entrepreneurial behavior through its impact on the persistence of entrepreneurs (Cardon and Kirk, 2013). Entrepreneurial role identity is central for passionate entrepreneurs in that they associate strongly with such an identity, which, in turn, makes their entrepreneurial actions more persistent (Cardon and Kirk, 2013; Houser-Marko and Sheldon, 2006). Passionate entrepreneurs persist with their start-up activities since they enjoy these very activities and get satisfaction from the way these activities reinforce their entrepreneurial identities as inventors, founders, and developers. Furthermore, the experience of positive affect—such as EP—suggests that things are going well, leading to positive judgments about the current entrepreneurial course of action, and subsequent persistence with these actions (Foo et al., 2009). When certain behaviors are both identity relevant and invoke positive feelings, as is the case with entrepreneurial passion for inventing solutions, founding a business, and developing if through the early stages, persistence will be particularly enhanced (Cardon and Kirk, 2013). At the firm level, entrepreneur's persistence translates into venture survival.

Entrepreneurship is often conceptualized as a stage-process, in which the stages may be more often cyclical rather than linear (e.g. Timmons, 2005). A logical question, then, follows: Where, exactly, in the entrepreneurial process does EP (and the related persistence) matter? If passion develops based on one's feelings about particular entrepreneurial activities, then passion can also influence the outcomes of such activities. Passion delivers fuel and intrinsic energy to persistently engage in entrepreneurial activity, and this engagement, in turn, validates and bolsters the entrepreneurial identity. Indeed, Murnieks and colleagues (2014) find that, at the individual level, entrepreneurs' passion drives increased entrepreneurial behavior. The early stages of starting up and owning a business are particularly prone to challenges. The markets are untested, resources limited, and since the entrepreneur's investments in the new venture have only just started, the likelihood of abandoning the business are highest at the very early months and years of development (Freeman et al., 1983, Singh et al., 1986). The role of passion in all three domains conceptualized by Cardon and colleagues (2009, 2013) (inventing, founding, and developing a business) may be particularly important at the early stages of business development in that the positive feelings and associations experienced by passionate entrepreneurs will keep them—and their businesses—going. Hence, we hypothesize that:

H1. Entrepreneurial passion for (a) inventing, (b) founding, and (c) developing a firm is positively associated with entrepreneurial survival.

3.2. Bricolage and entrepreneurial survival

Bricolage refers to “making do by applying combinations of resources at hand to new problems and opportunities” (Baker and Nelson, 2005: p. 33). While a manager would focus on gathering tools, knowledge, materials and other resources to address a specific issue, a bricoleur-entrepreneur makes do with whatever resources are at hand. For example, to design

a new product, an R&D manager might draw out an elaborate plan and budget for supplies needed to achieve the intended design. In a different approach, a bricoleur would choose to look at what is available at his or a friend's lab and design something that makes use of materials and resources that are otherwise being disregarded. By refusing to enact limitations on known existing resources, bricoleurs use resources in ways for which they were not originally designed.

The theory on bricolage suggests that the patterns of bricolage that an entrepreneur adopts will shape subsequent firm growth; bricolage activities can enable entrepreneurs to overcome resource constraints, which may contribute to early growth (Baker et al., 2003; Fisher, 2012). This bricolage-enabled growth is likely to be innovation driven (Senyard et al., 2014). Indeed, bricolage may be used as a design philosophy, with firms intentionally using discarded resources to develop new products and ideas. Idiosyncratic resource combinations that result from bricolage may sometimes lead to pioneering new capabilities (Desa and Basu, 2013). Such process of bricolage helps entrepreneurs mitigate conditions of resource constraint, but also occasionally enables them to recognize new opportunities for profit (Desa and Basu, 2013, Senyard et al., 2014).

Empirical tests of the effects of bricolage in an entrepreneurial context are scarce. Recent studies have focused on the categories through which firms enact bricolage (Rönkkö et al., 2013), or the role of a highly regulated environment in resource-constrained organizations' pursuit of competitive advantage (Baker et al., 2013), for instance. In terms of early entrepreneurial behaviors, Senyard and colleagues (2009) found that among nascent entrepreneurs, bricolage led to the completion of a higher number of gestation activities. Since entrepreneurs employing bricolage are able to achieve more with their limited resources, we suggest that bricoleur-entrepreneurs are also more likely to have surviving ventures early on.

All three mechanisms of bricolage refined by Baker and Nelson (2005) may have survival implications for new firms. First, ‘making do’ implies a bias toward action and active engagement with problems and opportunities. By ‘making do’, entrepreneurs refuse to enact resource limitations. Instead, they persist in trying to find ways to address challenges. Second, bricolage is about ‘the resources at hand’. Bricoleurs are masters of finding value in resources that others view as worthless. Because of this approach, high levels of bricolage in a startup can lead to cost savings. Since running out of funds early on is one of the most common reasons for entrepreneurs to abandon their businesses, cost savings through bricolage may help firms survive longer. Third, bricolage involves ‘the combination of resources for new purposes.’ This recombination may be a primary driver of innovativeness (Senyard et al., 2014), helping new companies access customers and markets. Since difficulties in finding customers is another important reason for entrepreneurs to abandon their startups early on (Van Gelderen, Thurik and Patel, 2011), the innovative approach enabled by bricolage may be a key to keeping the doors open. In sum, bricolage that combines the approaches of “making do”, relying on the resources at hand, and applying combinations of the resources to new problems and opportunities, leads to persistence and longevity of the entrepreneurial effort. Thus, we hypothesize that:

H2.: Bricolage is positively associated with entrepreneurial survival.

3.3. Bricolage as a mediator in the passion–survival relationship

Finally, we also think that entrepreneurial bricolage benefits from the passion that drives the entrepreneur. Origins of bricolage in entrepreneurship have remained poorly understood since most research on the topic has focused on the nature or consequences of entrepreneurial bricolage, rather than its antecedents. When the origins of bricolage have been discussed, the emphasis has been on the external, resource-constrained environment

(Baker and Nelson, 2005; Fisher, 2012; Welter and Xheneti, 2013). For example, Desa and Basu (2013) have studied the environmental determinants of entrepreneurial bricolage, finding that ventures engage in bricolage in environments of very low and very high resource munificence, and in situations of high and low prominence. Nevertheless, the individual-level (managerial) antecedents of bricolage behaviors have, to the best of our knowledge, not been previously studied.

When confronting environments that present new challenges without providing new resources, entrepreneurs have essentially three options: (1) to seek resources from domains external to the firm; (2) to avoid new challenges by remaining inert and downsizing; or (3) to enact bricolage by making do by applying combinations of the resources at hand to new problems and opportunities (Baker and Nelson, 2005; Fisher, 2012). Passionate entrepreneurs, in particular, experience that being an entrepreneur is central to their self-identity (Murnieks et al., 2014). Hence, limiting their entrepreneurial roles and activities would be detrimental to their perceived self-worth and happiness. Consequently, passionate entrepreneurs are unlikely to follow path number two outlined above. Since being an entrepreneur, in and of itself, is an identity-central source of satisfaction for these people, they are more likely to enjoy and get excited about entrepreneurial activities such as extending their existing resources to the maximum, satisfying customers with novel but even unfinished solutions, and relying on pre-existing contact networks as the means at hand (i.e. network bricolage, as defined by Baker et al., 2003). Rather than viewing such activities as burdensome or challenging, passionate entrepreneurs embrace them as opportunities to further reinforce their entrepreneurial identities (Cardon et al., 2009; Cardon and Kirk, 2013; Powell and Baker, 2014). In addition to entrepreneurial identity, passion and survival are linked through bricolage because the experience of EP has important implications for the judgment and decision making of entrepreneurs and, consequently, for their likelihood to

employ bricolage. Highly passionate individuals are less likely to give up, and empirical research across various areas confirms that domain-specific passion leads to sustained effort in that domain (Mageau et al., 2009; Vallerand et al., 2007). The use of bricolage implies sustained effort: instead of giving up in the face resource constraints, bricoleurs work persistently to find solutions with the limited resources they can access (*‘making do’*). Passionate entrepreneurs are less likely to give up and more likely to ‘make do’ when facing resource constraints.

Feelings of passion have also been linked to creative problem solving (Cardon et al., 2009; Liu et al., 2011), a manifestation of which could be creative use of *‘resources at hand’*. Passion creates feelings of positive affect, excitement, and energy, which enable entrepreneurs to build connections between divergent ideas, utilize broader resources, and experiment with original designs and resource configurations (Liu et al., 2011) (*‘the combination of resources for new purposes’*). Indeed, excitement and energy drive individuals to pursue novel combinations as solutions (Shalley et al., 2004), such as those required for bricolage. Excitement and energy are integrated components of entrepreneurial passion (Cardon et al., 2009), and creative bricolage is their likely outcome.

In sum, findings from the studies on identity, persistence in effort, and creativity converge to suggest that those entrepreneurs who are more passionate about building and developing their businesses will be more likely to engage in all three forms of bricolage behaviors. Importantly, while passion itself can drive some of the persistence needed for early venture survival (see Hypothesis 1 above), behavioral outcomes of passion—such as resource bricolage—form an additional mechanism through which an entrepreneur’s affect can impact firm-level outcomes, such as survival. In other words, bricolage should partially mediate the relationship between passion and firm survival.

It is worth noting that the theory of entrepreneurial bricolage rests on the concept of the social construction of resources (Fisher, 2012). The idea that the resource environment is idiosyncratic to what entrepreneurs and companies make of it is not new (Penrose, 1959), but it is given heavy emphasis in the theory on bricolage. Clearly, entrepreneurs interpret their environment differently from others, and a passionate entrepreneur is likely to see more opportunities for resource usage where others see mainly limitations. Resource environments are socially constructed, and passionate entrepreneurs experiencing positive affect are likely to make favorable judgments or evaluations; when experiencing EP, they will tend to engage in bricolage by forming positive evaluations about the resources available (Baron, 2008).

All these mechanisms linking passion and bricolage converge to suggest that an entrepreneur who is passionate about inventing entrepreneurial solutions, founding a firm, and developing that firm through the early resource scarcity, is more likely to engage in bricolage than someone whose feelings about entrepreneurship are lukewarm (e.g. someone forced into business ownership because of the lack of other opportunities for work). Some direct implications of the affective state of passion can be observed in continued business survival as explained above in relation to our first hypothesis. However, a part of the impact that passion (individual affect) has on firm survival is channeled through bricolage behaviors that follow from those feelings of passion. Therefore, we hypothesize that:

H3. Bricolage partially and positively mediates the association between entrepreneurial passion for (a) inventing, (b) founding, and (c) developing a firm and entrepreneurial survival.

Our hypothesized conceptual model is presented in Figure 1.

-- Insert Figure 1 about here--

4. Data and variables

4.1. Data

We use survey data to test our hypotheses. The data were collected between November and December 2011 from Finnish entrepreneurs who had started new businesses between 2005–2010. The sampling frame ($n=17,885$) covered all individuals who had received a government-based start-up grant¹ during the specified period of time. This included individuals with a wide variety of demographic and financial backgrounds from all around the country, starting firms across all industries. The availability of this financial start-up assistance is widely known, and statistics show that about 40% of new Finnish entrepreneurs take advantage of the start-up grant while starting new ventures (Ministry of Labor, 2007). Typical ventures launched with this support are small, resource constrained businesses, in which the entrepreneurs directly take advantage of their own skills and professional education or experience. A key requirement for the receipt of the grant is the beginning of business operations at the start of the grant².

An internet-based survey was conducted in Finnish to collect data from those start-up grant recipients who had a working email address. Survey items and scales were translated into Finnish by using a committee approach (Sousa et al., 2011): the translations of three independent researchers with a background in entrepreneurship research and the related terminology were carefully compared in order to validate the correct translations.

The sample comprised 13,792 individuals who had updated their contact information to the grant administrator's data base. Of these individuals 3,380 responded, reflecting a response rate of 25%. After excluding those respondents who were still receiving the start-up

¹ The start-up grant in question, called "starttiraha," is between 865–1,385 USD per month (for a maximum of 10–18 months). The exact amount depends on the applicant's need and situation, but the majority receives the grant for 6 or 10 months. The grant is provided only after an individual has been accepted through an application process. In order to qualify, the candidate must, among other things, have a business plan and have no other current sources of income. Also, the start-up grant should not inadvertently distort local competition by, for example, supporting the start of a specialty store next to an existing, similar specialty store in a mall.

² Even if a firm is officially beginning its operations at the start of the start-up grant, it may still be considered at a nascent phase of venture development for some period after (and before) receiving the grant.

grant at the time of our survey³, our final sample size is 2,489. In order to assess the potential non-response bias, we analyzed the differences between first- and third wave respondents with Chi-square tests. The analysis covered the gender, age, and educational attainment of the individuals in the final sample. There were no significant differences related to the gender, but academically educated and older individuals were slightly more active during the first wave. Even if the differences were statistically significant, the distributions of age and educational attainment were alike between the two waves. Furthermore, we assessed the difference between the first and third wave of respondents in terms of our main constructs of entrepreneurial passion and bricolage. The results did not show any statistically significant differences which implies that non-response bias does not influence the results.

In the final sample, the average age of respondents was 42 years, 53% of them were women, and 24% were college educated. Out of all respondents, 14% had experiences in entrepreneurship before receiving start-up grant, and 52% of respondents had started their businesses in an industry in which they had previous working experience. The majority of respondents' businesses, 68%, were service providers (to either retail consumer or businesses customers), and 66% of all businesses were located in urban areas. By the time of the survey, 74% of respondents' businesses were still in operation. This was, however, related to the age of the business: 40% of the businesses started in 2005 were still operation, while the share among those started in 2010 was 90%. Respondents of terminated businesses were asked about reasons for quitting, and the majority of reported terminations were because "the business was not profitable". Only 1% of the terminated firms were sold to someone else.

4.2. Variables

4.2.1. Entrepreneurial survival

³ Our dependent variable, survival, would be confounded by the continued financial support from the grant.

Entrepreneurs who receive the start-up grant are expected to start operations as soon as they start receiving the monthly grant installments. The grant period varies between 4–18 months. In this study we investigated only those entrepreneurs whose grant period had already finished by the time of the data collection, and thus, their ventures were no longer at the “emerging” phase. In other words, our sample includes owner-managers of young, operational businesses. Our dependent variable, entrepreneurial survival, is based on the respondents’ answers to the following question: “*What is the current status of the enterprise you started with the start-up grant?*” Those who answered the option ‘*still in operation*’ were coded as, “1” for entrepreneurial survival (74% of the sample firms), otherwise “0” for those who had exited. It is worth noting that the firm-level operational status here is very closely related to the individual-level status of the entrepreneur (whether they persist as entrepreneurs, or not). The ventures that remain operational do so because the entrepreneur persists and continues to invest effort in the business. As an example, if an entrepreneur decides not to show up to work anymore to open doors, the business is as good as closed (non-survival). 79% of sample ventures had no other employees besides the owner(s) at the time of the survey, emphasizing the fact that the entrepreneur here often equals the venture.

4.2.2. Entrepreneurial passion

In order to measure entrepreneurial passion, we utilize an early version (Cardon 2008; Cardon and Stevens, 2009) of the entrepreneurial passion scale developed by Cardon and colleagues (2013). The scale comprises ten items capturing the three sub-dimensions of passion for inventing, founding, and developing. The items used in this scale are presented in Appendix A. We asked each respondent to answer statements using a 5-point Likert scale ranging from 1=*totally disagree* to 5=*totally agree*. The composite reliability (CR) of passion for inventing (0.83), passion for founding (0.80), and passion for developing (0.71), were all

above the acceptability threshold of 0.70 (Hair et al., 2010), indicating a high level of internal consistency. They are also close to the alphas reported for the same constructs in Cardon et al. (2013): 0.85, 0.72, and 0.77, respectively.

4.2.3. *Bricolage*

Bricolage was measured by eight items that capture behaviors related to acting based on scarce resources or resources at hand (see the items in Appendix A). The scale we used was introduced by Senyard and colleagues (2014) and validated by Davidsson and the others (In press), and it originates from Baker and Nelson's (2005) study on resource-constrained firms and their responses to external environment. The respondents were asked to assess the bricolage items in relation to their firm that was funded by the start-up grant, and resources when (and if) they face new challenges, as specified in the original bricolage scale (Davidsson et al., In press; Senyard et al., 2014). These items were measured on a Likert scale ranging from 1=*totally disagree* to 5=*totally agree*. The composite reliability for the bricolage scale was 0.81, which shows a high level of reliability (Hair et al., 2010), and is similar to the alpha (0.82) reported for the same scale by Senyard, Baker and Steffens (2010) and Davidsson, Baker and Senyard (In press).

4.2.4. *Control variables*

We controlled our analyses for respondent age, gender, educational attainment, previous experiences in entrepreneurship, managerial tasks or in industry, and perceived resource constraint (see Appendix A). Previous research shows that age has an influence on who starts new ventures and who does not (Shane, 2003), and thus, our analyses were adjusted for the age of the respondent. Similarly, due to possible gender differences in, for instance, financial success or innovativeness (Carter and Brush, 2004), gender was controlled

for in our analyses. Further, educational background has been shown to have a role in entrepreneurial activity (Bruderl et al., 1992; Shane, 2003), and we controlled for this in terms of self-reported educational attainment of the respondent. This was measured by means of a categorical item: 1=*primary education*, 2=*secondary education*, 3=*post-secondary education*, and 4=*college education*. Further, earlier experiences in entrepreneurship, in the industry as well as in managerial tasks were controlled for because they have been found to have an effect on new venture survival (Bruderl et al., 1992). All of these self-reported items were measured as dummy items (1=*yes*, 0=*no*). Moreover, previous research suggests that industry may also affect new venture survival (van Praag, 2003). Thus, the analyses were controlled for industry by using dummy items: 1=*services* and 0=*other industries*. In addition, we controlled our analyses for the age of the venture, the total amount of start-up grant the respondent had received, and if the respondent had actively exploited the business plan while running the venture. The age of the venture (in years) was measured as the difference between the positive decision of start-up grant (as a proxy for the start of operations) and the date of the survey (for surviving ventures) or the date that the respondents reported for closing their business (non-survivors). The total amount of start-up grant the respondent had received was retrieved from the grant administrator's registry which comprises all individuals who have received the start-up grant. The active use of business plan while running the venture was a dummy item in which 1=*yes* and 0=*no*. In addition, we adjusted the analyses for the perceived resource constraint. This was controlled for with a Likert-scale item "*The current amount of start-up grant is sufficient*" in which a lower value was defined as an indication of perceived resource constraint. The results show that 55% of the respondents perceived that the amount of start-up grant was not sufficient for their needs, answering 1 or 2 on a 5-point Likert scale.

There is always the possibility of survivor bias and sample selection generated by attrition in longitudinal data (Sutton, 1997). Even if the data are not purely longitudinal, there is a chance that surviving entrepreneurs have a higher likelihood of participating in the survey than those who have already exited. Thus, attrition may not have been completely random. Therefore, we applied Heckman-type correction to control for possible sample self-selection (Heckman, 1979). In the selection equation we used the employment status, age and education of the respondents. The employment status was retrieved from the Ministry's official database, and the age and education were self-reported items. In calculating the lambda we used SPSS software package with Probit procedure; the dependent variable in the Probit analysis is our dependent variable, entrepreneurial survival. Independent variables in the model are the items mentioned above. The focus is on the unmeasured characteristics of the respondents on the entrepreneurial survival. The residuals of the selection equation are used to construct a selection bias control factor, lambda, which is equivalent to the Inverse Mill's Ratio (Heckman, 1979).

The descriptive and correlation statistics for the variables used in the study are summarized in Table 1.

-- Insert Table 1 about here--

5. Results

5.1. Analysis of factor structure and common method variance

In order to test our proposed model, we started by conducting an exploratory factor analysis (EFA) to uncover the underlying factor structure and the distinctiveness of the latent variables. The results of our analysis using Varimax-rotation with Kaiser Normalization show a 4-factor solution ($KMO=.889$, $p<.001$, *cutoff point .40*). The analysis does not fully support the theoretical model. Instead, the results suggest that the latent factor of bricolage would be

divided in two latent variables, and that the passion for developing would belong under the passion for inventing. However, we chose to follow the theoretical model in order to match our results with the earlier findings on entrepreneurial passion (Cardon et al., 2013) and bricolage (Davidsson et al., In press; Senyard et al., 2010). Also, as mentioned earlier, the composite reliability estimates for the two scales were comforting (0.81 for the bricolage scale and between 0.71–0.83 for the passion scales).

The use of a cross-sectional self-reported survey with a single respondent may be subject to common method variance (Podsakoff et al., 2003). In order to assess this, we analyzed common method variance with Harman's single-factor test. In the analysis of common method variance, the focus is on the first factor and its effect in the factor model. In our case the first factor in the EFA accounted for 33.5% of the variance in the data, suggesting that common method variance should not have substantial effect on our results. In order to confirm the factor structure and to assess the possible common method variance, we tested the proposed and an alternative model by confirmatory factor analysis (CFA) using MPlus 6.0.

We compared a 1-factor and 2-factor model with our 4-factor model with CFA. The results show that a single latent variable model had poor overall fit to the data, and the fit indices ($\chi^2(135)=6061.19$, $\chi^2/df=44.90$, $p<0.001$; $CFI=.617$; $RMSEA=.133$) were below the recommended cutoff values (Hair et al., 2010)⁴. Another model containing a latent variable of bricolage and a latent variable for entrepreneurial passion had also poor fit to the data ($\chi^2(134)=3137.08$, $\chi^2/df=23.41$, $p<0.001$; $CFI=.806$; $RMSEA=.095$). The results indicated that our proposed model comprising four latent variables had a better and acceptable fit ($\chi^2(116)=438.01$, $p<0.001$, $\chi^2/df=3.78$, $CFI=.979$, $RMSEA=.033$). If the model fit was significantly better for the common method factor, common method variance would be an

⁴ Cutoff values in data with over 250 observations are for CFI values of $>.92$, and for $RMSEA$ values of $<.07$ (Hair et al., 2010).

issue (Williams et al., 1989). However, our CFA estimates suggest that common method variance has little effect on our results.

5.2. Assessing validity and reliability

Moreover, the convergent validity and discriminant validity assessment indicates that the model fits the data and our latent variables are reliable constructs (Table 2). Construct validity was assessed based on the composite reliability (CR), factor loadings, and average variance estimates (AVE). The CR estimates were all above the cutoff value of .70 (Hair et al., 2010). Similarly, all item loadings were significant at the $p < .001$ level. All the standardized factor loading estimates for each item were above the necessary threshold of .50 (Hair et al., 2010). The AVE values were: passion for inventing .54, passion for founding .57, passion for developing .46, and bricolage .36. Two are below the cutoff value of .50 (Fornell and Larcker, 1981). This implies that the assumed items for passion for developing and bricolage scales do not correlate well with each other within their parent factor.⁵ In order to test the passion for developing and bricolage constructs with right face validity, we accept these deficiencies. Moreover, the assessment of discriminant validity (squared AVE vs. construct correlations) shows that all latent constructs except bricolage explain more of the variance among their own items than they share common variance with each other. The results indicate good discriminant validity of latent variables and construct independence for all other constructs besides bricolage. It is possible that the bricolage scale could have sub-dimensions, which should be assessed in a future study.

⁵ While testing the CFA models, we also ran a model in which we excluded (from both passion for developing and bricolage scales) the items with low correlation values. These exclusions generated acceptable AVE values for both constructs, but at the same time the measurements lost their face validity, i.e. they were no longer measuring the proposed constructs. Furthermore, we tested a CFA model of the bricolage scale in the two samples (survivors vs. non-survivors) separately in order to see if the nature of the sample was driving the results. The goodness-of-fit statistics show that both models fit the data well, and that the scale is reliable in both samples (CR non-survivors 0.848 / survivors 0.828) but still the AVE values fall below the cut-off value of .50 in both samples (AVE non-survivors 0.42 / survivors 0.38). After consulting with experts on these scales, we decided to proceed with the full scales for hypothesis testing.

-- Insert Table 2 about here --

5.3. Testing the hypotheses

In testing the hypotheses, we used structural equation modeling (SEM) with weighted least squares method and WLSMV estimator, which enables us to analyze binary and categorical outcomes (Byrne, 2012; Muthen, 1984). This was chosen because our dependent variable is binary. In testing the model, the mediating effect should be tested with a path from the independent variable (e.g. Passion for inventing) to the mediator (Bricolage) and a path from the mediator (Bricolage) to the dependent variable (Entrepreneurial survival), and if a mediating effect exists, the direct effect between independent and dependent variable is not expected (full mediation) or is weakened (partial mediation) (e.g. MacKinnon et al., 2002). The goodness-of-fit indices for uncontrolled ($\chi^2(130)=679.49$, $\chi^2/df=5.23$, $p<0.001$; $CFI=.932$; $RMSEA=.041$) and fully-controlled models ($\chi^2(346)=999.95$, $\chi^2/df=2.89$, $p<0.001$; $CFI=.927$; $RMSEA=.032$) exceeded the recommended threshold values (Hair et al. 2010), and they indicated that the proposed model fits the data well.

The results of SEM are shown in the Table 3. Our model explains 13% of the variance in the dependent variable (survival). The tests of H1a-H1c show that none of the dimensions of entrepreneurial passion are directly associated with entrepreneurial survival. Thus, our hypotheses *H1a-H1c* are not supported. However, the results show that bricolage is positively associated with entrepreneurial survival ($p<.01$). This supports our hypothesis *H2*, and suggests that entrepreneurs who “make do” with the resources at hand build businesses that survive longer.

The results concerning the associations between the three dimensions of EP and bricolage suggest that bricolage positively mediates the association between passion for

inventing ($p<.05$) and passion for developing ($p<.05$) and entrepreneurial survival. A closer look shows that both passion for inventing ($p<.001$) and passion for developing ($p<.01$) are positively associated with bricolage. These results support hypotheses *H3a* and *H3c*. Sobel's tests for these associations show that the mediating effects were significant (*H3a*: $t=2.428$, $p<.01$ and *H3c*: $t=2.088$, $p<.05$). Because the direct effects between the dimensions of entrepreneurial passion and entrepreneurial survival were not significant in the full model, the results suggest that both associations are fully mediated. This implies that passion for inventing and developing enhances entrepreneurs' "make do" behavior and, consequently, indirectly increases the chances for entrepreneurial survival. However, passion for founding was not significantly associated with bricolage ($p=.985$) in the full model, and thus, our hypothesis *H3b* on the mediation effect of bricolage in the association between passion for founding and entrepreneurial survival is not supported.

-- Insert Table 3 about here --

In addition to the proposed hypotheses, the results show that operating in services is significantly and positively associated with entrepreneurial survival ($p<.10$). In all, the results regarding the hypotheses remain unchanged after the models were adjusted for control variables.

In addition to using control variables, we assessed the robustness of the results by testing two alternative SEM models and a Cox regression model. First, we tested a model in which EP was the mediator and bricolage was set as the exogenous variable. This model did not work as well as our proposed model: the goodness-of-fit statistics show that model does not fit the data ($\chi^2(331)=2020.78$, $\chi^2/df=6.11$, $p<0.001$; $CFI=.807$; $RMSEA=.052$). However, the results indicated that bricolage and all dimensions of the EP are positively associated

($p < .001$), but there was no statistically significant association between any construct and entrepreneurial survival. Second, we analyzed a model comprising only direct effects between EP and survival as well as bricolage and survival. The goodness-of-fit statistics were the same ($\chi^2(346)=999.95$, $\chi^2/df=2.89$, $p < 0.001$; $CFI=.927$; $RMSEA=.032$) as in our proposed model, and the results suggest that only bricolage is positively associated with entrepreneurial survival ($p < .01$). In testing the hazard model with Cox regression we used entrepreneurial survival as the measure for event (in which the reference category was 0=disengaged from the business). The time variable was the age of the venture. The results of the Cox regression model with direct effects of each sub-dimension of entrepreneurial passion and bricolage as well as all control variables on entrepreneurial survival showed that bricolage ($p < .05$) lowers the chances of disengaging from the business, and that none of the sub-dimension of passion are directly associated with disengagement. In sum, based on these assessments, we find support for our hypothesis H2. We also find support for hypotheses H3a and H3b, but in a fully mediated instead of a partially mediated form. Hypotheses 1a-1c and 3b are not supported.

A limitation of our analytical approach is that we collected the survey data from the respondents only at one point of time, after some of them had given up on their ventures. Under such circumstances, it is possible that passion, bricolage, and how the two relate to one another could have been affected by firm failure, instead of bricolage mediating the effect of passion on survival, as our theory suggests. In order to address this possible reverse causality influence, we examined the relationships between the three forms of passion and bricolage in a smaller sample consisting of surviving firms only (74% of the total sample). The results from this analysis are presented in Appendix C. In these tests, passion's dimensions of "inventing" and "developing" remain positively associated with bricolage, corroborating our main model findings. While the relationship between passion for inventing and bricolage is

similar to our main model in this survivors-only sample, the relationship between passion for developing and bricolage has a reduced beta (effect size) compared to our main model, and also a lower level of statistical significance. Hence, some of the effect of passion for developing that we observe as channeled through bricolage in our main analyses may actually be attributable to the reverse effect that giving up on a business may have on this type of passion and bricolage. Finally, with regard to passion for founding among the survivors-only sample, the association with bricolage is non-significant suggesting that in our research setting this dimension of entrepreneurial passion does not enhance nor hinder bricolage among nascent entrepreneurs. This result is also non-significant among all observed entrepreneurs. In order to address these issues in detail, longitudinal designs could be employed in future research.

6. Discussion and conclusion

We set out to study the relationships between entrepreneurial passion, bricolage, and early entrepreneurial survival. Using data from a large sample of entrepreneurs in Finland, we have been able to establish an indirect empirical link between the entrepreneur's passion and the likelihood for them to continue as entrepreneurs. Out of the forms of EP, passion for developing a business and passion for inventing are related to firm survival and this relationship is fully mediated by bricolage. Combined, these findings have important implications for research on the pathways of passion on one hand, and the antecedents and consequences of bricolage on the other hand.

6.1. Main findings regarding passion, bricolage and survival

First, with regard to bricolage, we find that bricolage, on its own, is related to a higher likelihood of a firm surviving through its first years and months of existence. This result

provides important early evidence on the potential consequences of bricolage. Senyard and colleagues (2014) have recently established a link between bricolage and innovativeness in emerging firms. Our results add to their findings by showing that higher levels of bricolage behaviors by entrepreneurs are related to improved survival chances in the early years of new businesses. Our data are limited in that we cannot test whether these improved survival chances are due to increases in innovativeness, but given the non-high-tech nature of our sample (representative of average start-up efforts in the population, across industries), this is not likely to be the case. Hence, our findings suggest that entrepreneurs employing bricolage are able to simply achieve more with their limited resources, which improves their early survival chances. In other words, a resourceful approach to existing resources and creativity in the pursuit of access to new resources contribute to the longevity of the entrepreneurial effort during the highly hazardous early months and years (Freeman et al., 1983). However, it should be noted that our data do not allow us to draw conclusions on the “quality of life” among the surviving firms. It is possible that they are simply hobbling along without any prospect for long term sustainability and growth. Indeed, previous in-depth accounts of bricoleur companies suggest that bricolage may have both positive and negative effects on the firm level (Baker and Nelson, 2005; Desa and Basu, 2013). For example, Ciborra’s (1996) study of Olivetti suggested that bricolage helped this company to adapt, but also constrained firm effectiveness.

Maybe the most interesting finding to emerge from our analysis is the role that bricolage plays in fully mediating the relationship between entrepreneurial passion and early survival. Specifically, bricolage mediates the relationship between passion for developing a venture as well as passion for inventing and survival. These are important findings in that they specify a novel mechanism through which the effects of passion are channeled to firm-level outcomes: passionate entrepreneurs use bricolage to further reinforce their

entrepreneurial identities. Also, bricolage theory suggests that resource environments are socially constructed. At the same time, passionate entrepreneurs experiencing positive affect are likely to make favorable judgments and evaluations. Hence, when experiencing passion for developing a business or passion for inventing new solutions, they will tend to form positive evaluations about the resources available (Baron, 2008), leading to bricolage.

From the perspective of bricolage, our findings suggest a novel antecedent in EP (passion for developing and passion for inventing, to be precise). This is important since the individual-level mechanisms behind involvement in bricolage have been poorly understood. The discussion on antecedents has emphasized external factors, such as resource-constrained environments, which direct the way entrepreneurs operate and face novel challenges (Baker and Nelson, 2005; Fisher, 2012). Our findings bring forth the role of an internal factor, passion, in enacting bricolage. This expands recent research where entrepreneurs' strategic responses to adversity have been shown to depend on their unique mixtures of social and role identities (Powell and Baker, 2014). The intense positive feelings of EP concern activities associated with roles that are central to the self-identity of the entrepreneur, such as the role of early firm developer or an inventor (Cardon et al., 2009, 2013; Murnieks et al., 2014). This identity centrality of inventive and firm development activities, and the intense positive feelings associated with them, leads passionate entrepreneurs to engage in bricolage behaviors.

In addition to being closely tied with entrepreneurial identity, EP also has important implications for the judgment and decision making of entrepreneurs and, consequently, for their likelihood to employ bricolage. Highly passionate individuals are less likely to give up (Mageau et al., 2009; Vallerand et al., 2007), and the use of bricolage implies sustained effort: bricoleurs work persistently to find solutions with the limited resources they can access. Feelings of passion have also been linked to creative problem solving (Cardon et al.,

2009; Liu et al., 2011), a manifestation of which could be creative, bricolage-type use of resources at hand.

Besides these main outcomes, our findings on the entrepreneurial passion's positive, albeit indirect effects on entrepreneurial survival promote the need for its deeper understanding among resource providers and practitioners. When they assess the potential of various applicants, the attitudes reflecting a passionate approach to entrepreneurship may be later realized as new, successful ventures. In addition to this practical implication, the findings could encourage early-stage entrepreneurs to become bricoleurs in order to keep their businesses going: Some new ventures may even be better off under resource-constrained circumstances (Fisher, 2012).

Despite the promising results related to the EP and bricolage, we were surprised to find no direct relationship between EP and survival. This was particularly surprising because previous research has found passion to be positively linked to firm growth (Baum and Locke, 2004). Yet our results do align with more recent evidence suggesting that the effects of passion are channeled through entrepreneurial behaviors (Murnieks et al., 2014) and persistence (Cardon and Kirk, 2013): our results show that bricolage behaviors are necessary for passion to impact early venture survival. The pleasant emotions associated with passion are not alone enough for entrepreneurs to persist (Cardon and Kirk, 2013; Foo et al., 2009); resourceful behaviors are necessary as well.

It also came as a surprise to us that one of the three dimensions of passion (passion for founding) did not relate significantly to either bricolage or survival. In retrospect, we think this may be due to our study context and design. We surveyed respondents after they had initiated business operations, so passion related to the initial founding may have had weakened effects by this point of the start-up journey. This lack of significant results with regard to passion for founding also aligns with previous empirical research where this

dimension has been found to impact relevant outcomes differently than the two other types of passion (for inventing and developing) (Breugst et al., 2012). Future research on EP should account for the possibility that the various dimensions of passion can relate to relevant outcomes in dissimilar and even conflicting ways. For example, following the ideas presented by Cardon and colleagues (2009), if the inventor identity is the strongest basis for entrepreneurial passion, creativity may be the key to bricolage and survival. If founder identity is the strongest, persistence may be central for outcomes to emerge. And if developer identity is strongest, growth goals may be the key. While our data did not allow tests of such more nuanced mechanisms of influence between the various dimensions of passion and bricolage-driven survival, we certainly encourage future work on these topics.

6.2. Limitations and future research

An important limitation of our work is the use of self-report data and a single data collection method (surveys). Furthermore, inferences about the direction of relationships between constructs should be made cautiously as we used a cross-sectional design. For example, we argue that higher levels of EP and bricolage are antecedents of improved early venture survival. However, it is also possible that greater entrepreneurial success (survival) fosters higher levels of passion and bricolage. Since we measured these independent variables subsequent to disbanding, some of the correlations between them and survival might be driven by the reverse causal process of non-survival depressing reported passion and bricolage. While future longitudinal research is required to understand the dynamic relationships between passion, bricolage, and survival over time, a number of factors give us comfort that the relationships we observe are real and not driven by our research design. First, as a robustness check, we tested the associations between passion and bricolage using the data only from the surviving sample ventures, and the results held, as reported earlier in

our results section. Second, even if there is little research about the persistence of EP over time, the research that does exist suggests that passion is a rather persistent individual attribute. Cardon and colleagues (2013) have tested the enduring nature of EP among 122 entrepreneurs over an 18-month period. Their results indicate that “entrepreneurs' experience of passion was enduring. Paired t-tests of entrepreneurs' responses to each item across the two periods did not reveal any significant differences.” (Cardon et al., 2013, p. 387). Similar patterns were discovered in our own, separate data from non-entrepreneurs, reported in Appendix B. The more permanent the nature of passion, the less likely our model results are due to reverse causality, and the limited empirical evidence available gives us some comfort.

Third, the threat of reverse causality would be particularly troubling if non-survivors in our data experienced dramatic and life-altering business closures. Closing a business at the early start-up stage may happen for a variety of reasons, and the impact of business closure on the entrepreneur(s) is not uniform. The more dramatic exits for entrepreneurs are the ones where they have already hired employees that need to be fired, and much financial capital has already been invested and spent (Headd, 2003). In our sample, those who had disengaged from their ventures had less often employees and had invested less of their own money in the firm than those whose businesses were surviving. In this light, the typical business closures in our data are likely to be of a quiet disbanding nature rather than dramatic, life-changing events. Also, all exits in our data take place early in the life of the venture. Furthermore, the labor market in Finland provides job opportunities for many, and in case of unemployment, benefits are available. For these reasons we believe that a great majority of the non-survivors in our data do not experience significant negative effects—financial or emotional—from exiting their ventures. Thus, we believe it is unlikely that the negative emotional impact from venture termination would significantly impact their levels of EP or bricolage.

As another limitation, in following closely the recommended cut-off values in the CFA analyses, our results for bricolage show that a reduced set of items produces better validity than using the full scale of items, or that the bricolage scale could have sub-dimensions. Thus, as our empirical analyses demonstrated, the measurement scale for bricolage may need further development (see Davidsson et al. in press for discussion of the scale). Similarly, even if the CFA analyses show that EP's dimensions explain more of the variance among their own items than they share common variance with each other, the EFA results did indicate some cross-loadings across dimensions. Thus, further development may also benefit the EP scale.

With regard to bricolage, our empirical approach did not provide further details about the types of bricolage behaviors that the entrepreneurs are engaged in. For instance, a bricolour entrepreneur operating in services most likely has a different approach to bricolage than an entrepreneur operating in manufacturing. Thus, digging deeper into the different types of bricolage the entrepreneurs employ would be a fruitful opportunity for future research. For the time being, we can speculate that some examples of bricolage in our service-heavy start-up sample probably include finding workable solutions to building the firm's brand and online presence with free help from family and friends, filling unused capacity of a brick-and-mortar business by pursuing opportunities in non-core markets, building workable solutions for early equipment needs from existing resources sitting in one's garage or available from friends, or finding a niche market of customers that can be satisfied with the company's current human resources instead of going after more demanding customers by hiring top talent.

Another limitation—as well as an opportunity for future research—stems from our conceptualization of passion. Aligned with previous research, we treat entrepreneurial passion as an intense positive emotion (e.g. Cardon et al., 2009) with positive consequences.

However, there may also be a darker side to passion in the entrepreneurship context (Ho and Pollack, 2014). Future studies should consider the possible negative aspects of the construct itself as well as its negative consequences. The methods available for the measurement of passion have developed significantly over the past years, and the scales we used in this study (Cardon, 2008; Cardon and Stevens, 2009) have been further refined to emphasize identity centrality statements (Cardon et al., 2013), in addition to the positive intense feelings items we used. Also, scholars should triangulate their measurements of passion as reported and experienced by entrepreneurs with measures of how passion is displayed to others through communication (Chen et al., 2009).

Furthermore, while there are no reasons to expect that our hypothesized effects would be specific to the Nordic context, we cannot be certain of their generalizability across cultures and regions before additional, international tests have been conducted. Finally, having a business plan was a requirement for receiving the start-up grant and, hence, a requirement for inclusion in our data set. Some previous research suggests that planning may preclude bricolage (Garud & Karnoe, 2003), raising the question whether this might also be the case in our study. Despite having written a business plan, our sample entrepreneurs, on average, reported relatively high levels of bricolage (mean of 3.86 on a five-point scale)⁶. Interestingly, a more careful look at the bricolage–business planning relationship revealed that the average engagement in bricolage is higher among those who actively use the business plan they have written (3.90) than among those who do not (3.81, *t*-test $p < 0.01$). This suggests that at the early stages of business ownership, bricolage and business planning may actually be complementary rather than competing approaches. Regardless, the fact that our sample only includes entrepreneurs with business plans should be considered when generalizing these results to other populations of entrepreneurs.

⁶ In a sample of Australian nascent entrepreneurs, some of whom had business plans and others who did not, this same bricolage scale had a mean value of 3.97 (Senyard et al., 2014).

6.3. Conclusion

In conclusion, this study has shed light on the previously unexplored relationships between entrepreneurial passion, bricolage, and entrepreneurial survival. Our findings contribute to the literature by underscoring the mechanism between entrepreneurial passion and bricolage. Our results show that entrepreneurs passionate about developing their firms and inventing new solutions are more likely to engage in bricolage-behaviors and, combined, the affective state of passion and the “make-do” attitude of bricolage help entrepreneurs keep their businesses going. This finding highlights the essential role of resourceful and emotional approaches in assessing entrepreneurial survival. In addition to more rational determinants of new venture survival, such as business planning and resource-seeking, bricolage may direct the entrepreneur and her business onto an enduring path; a passionate bricoleur-entrepreneur is more likely to avoid the hazards embedded in the critical early stages of a new firm.

References

- Baker, T., Miner, A., Eesley, D., 2003. Improvising firms: bricolage, retrospective interpretation and improvisational competencies in the founding process. *Research Policy* 32 (2), 255–276.
- Baker, T. and Nelson, R.E., 2005. Creating something from nothing: resource construction through entrepreneurial bricolage. *Administrative Science Quarterly* 50 (3), 329–366.
- Baker, T., Pollock, T.G., Sapienza, H.J., 2013. Winning an unfair game: how a resource-constrained player uses bricolage to maneuver for advantage in a highly institutionalized field. In: Corbett, A.C., Katz, J.A. (Eds.) *Advances in Entrepreneurship, Firm Emergence and Growth, Vol 15: Entrepreneurial Resourcefulness: Competing with Constraints*. Emerald Group Publishing Ltd, pp. 1–41.
- Baron, R., 2008. The role of affect in the entrepreneurial process. *Academy of Management Review* 33 (2), 328–340.
- Baum, J.R., Locke, E.A., 2004. The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology* 89 (4), 587–598.
- Baum, J.R., Locke, E.A., Smith, K.G., 2001. A multidimensional model of venture growth. *Academy of Management Journal* 44 (2), 292–303.
- Birch, D., 1987. *Job Creation in America: How our Smallest Companies Put the Most People to Work*. New York: Free Press, USA.

- Breugst, N., Domurath, A., Patzelt, H., Klaukien, A., 2012. Perceptions of entrepreneurial passion and employees' commitment to entrepreneurial ventures. *Entrepreneurship Theory and Practice* 36 (1), 171–192.
- Bruderl, J., Preisendorfer, P., Ziegler, R., 1992. Survival chances of newly founded business organizations. *American Sociological Review* 57 (2), 227–242.
- Byrne, B.M., 2012. *Structural Equation Modelin With MPlus. Basic Concepts, Applications, and Programming*. Routledge: New York: NY.
- Cardon, M.S., 2008. The discriminant validity of entrepreneurial passion. In Babson College Entrepreneurship Research Conference. Chapel Hill, NC.
- Cardon, M.S., Gregoire, D.A., Stevens, C.E., Patel, P.C., 2013. Measuring entrepreneurial passion: conceptual foundations and scale validation. *Journal of Business Venturing* 28 (3), 373–396.
- Cardon, M.S., Kirk, C.P., 2013. Entrepreneurial passion as mediator of the self-efficacy to persistence relationship. *Entrepreneurship Theory and Practice* DOI: 10.1111/etap.12089
- Cardon, M.S., Stevens, C.E., 2009. The discriminant validity of entrepreneurial passion. In Academy of Management Annual Conference Best Paper Proceedings. Chicago, IL.
- Cardon, M.S., Wincent, J., Singh, J., Drnovsek, M., 2009. The nature and experience of entrepreneurial passion. *Academy of Management Review* 34 (3), 511–532.
- Cardon, M.S., Zietsma, C., Saparito, P., Matherne, B.P., Davis, C., 2005. A tale of passion: new insights into entrepreneurship from a parenthood metaphor. *Journal of Business Venturing* 20 (1), 23–45.
- Carter, N.M., Brush, C.G., 2004. Gender Handbook of Entrepreneurial Dynamics: The Process of Business Creation. In: Gartner, W.B., Shaver, K.G., Carter, N.M., Reynolds, P.D. (Eds.). *Handbook of Entrepreneurial Dynamics: The Process of Business Creation*. Thousand Oaks, CA, SAGE, pp. 12–25.
- Chen, X.-P., Yao, X., Kotha, S., 2009. Entrepreneur passion and preparedness in business plan presentations: a persuasion analysis of venture capitalists' funding decisions. *Academy of Management Journal* 52 (1), 199–214.
- Ciavarella, M.A., Buchholtz, A.K., Riordan, C.M., Gatewood, R.D., & Stokes, G.S. 2004. The Big Five and venture survival: Is there a linkage? *Journal of Business Venturing* 19 (4), 465–483.
- Ciborra, C.U., 1996. The platform organization: recombining strategies, structures and surprises. *Organization Science* 7 (2), 103–118.
- Davidsson, P., Baker, T., Senyard, J. In Press. A measure of entrepreneurial bricolage behavior. *International Journal of Entrepreneurial Behavior and Research*.
- Desa, G., Basu, S., 2013. Optimization or bricolage? Overcoming resource constraints in global social entrepreneurship. *Strategic Entrepreneurship Journal* 7 (1), 26–49.
- DeTienne, D.R., Shepherd, D.A., De Castro, J.O., 2008. The fallacy of “only the strong survive”: the effects of extrinsic motivation on the persistence decisions for underperforming firms. *Journal of Business Venturing* 23 (5), 528–546.
- Fisher, G., 2012. Effectuation, causation, and bricolage: a behavioral comparison of emerging theories in entrepreneurship research. *Entrepreneurship Theory and Practice* 36 (5), 1019–1051.
- Foo, M.-D., Uy, M.A., Baron, R.A., 2009. How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology* 94 (4), 1086–1094.
- Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18 (1), 39–50.
- Freeman, J., Carroll, G.R., Hannan, M.T., 1983. The liability of newness: age dependence in organizational death rates. *American Sociological Review* 48 (5), 692–710.

- Garud, R., Karnoe, P., 2003. Bricolage versus breakthrough: distributed and embedded agency in technology entrepreneurship. *Research Policy* 32 (2), 277–300.
- Gitman, J., Folta, T.B., Cooper, A.C., Woo, C.Y., 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly* 42 (4), 750–783.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., 2010. *Multivariate Data Analysis: A Global Perspective*. Upper Saddle River: NJ, Prentice Hall.
- Headd, B., 2003. Redefining business success: distinguishing between closure and failure. *Small Business Economics* 21 (1), 51–61.
- Heckman, J.J., 1979. Sample selection bias as a specification error. *Econometrica* 47 (1), 153–161.
- Ho, V.T., Pollack, J.M., 2014. Passion isn't always a good thing: examining entrepreneurs' network centrality and financial performance with a dualistic model of passion. *Journal of Management Studies* 51 (3), 433–459.
- Houser-Marko, L., Sheldon, K.M., 2006. Motivating behavioral persistence: the self-as-doer construct. *Personality and Social Psychology Bulletin* 32 (8), 1037–1049.
- Klein, H.J., Wesson, M.J., Hollenbeck, J.R., Alge, B.J., 1999. Goal commitment and the goal-setting process: conceptual clarification and empirical synthesis. *Journal of Applied Psychology* 84 (6), 885–896.
- Liu, D., Chen, X.-P., Yao, X. 2011. From autonomy to creativity: a multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology* 96 (2), 294–309.
- Lowe, R.A., Ziedonis, A.A., 2006. Overoptimism and the performance of entrepreneurial firms. *Management Science* 52 (2), 173–186.
- Mageau, G.A., Vallerand, R.J., Charest, J., Salvy, S.J., Lacaille, N., Bouffard, T., Koestner, R., 2009. On the development of harmonious and obsessive passion: the role of autonomy support, activity specialization, and identification with the activity. *Journal of Personality* 77 (3), 601–645.
- MacKinnon, D.P., Lockwood, C.M., Hoffman, J.M., West, S.G., Sheets, V., 2002. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods* 7 (1), 83–104.
- Ministry of Labor, 2007. *Start-up Grant as a Key for Entrepreneurship – More Experiences from the Start-up Grant Trial 2005–2007 [in Finnish with English Abstract]*. Publications of Ministry of Employment 332, Edita Ltd.: Helsinki, Finland.
- Murnieks, C., Mosakowski, E., Cardon, M.S., 2014. Pathways of passion: identity centrality, passion, and behavior among entrepreneurs. *Journal of Management* 40 (6), 1583–1606.
- Muthen, B., 1984. A general structural equation model with dichotomous, ordered categorical, and continuous latent variable indicators. *Psychometrika* 49 (1), 115–132.
- Penrose, E.T., 1959. *The Theory of the Growth of the Firm*. Oxford, Basil Blackwell.
- Podsakoff, P.M., MacKenzie, S.B., Jeong-Yeon, L., Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology Today* 88 (5), 879–903.
- Powell, E.E., Baker, T., 2014. It's what you make of it: founder identity and enacting strategic responses to adversity. *Academy of Management Journal* 57 (5), 1406–1433.
- Rönkkö, M., Peltonen, J., Arenius, P., 2013. Selective or parallel? Toward measuring the domains of entrepreneurial bricolage. In: Corbett, A.C., Katz, J.A. (Eds.) *Advances in Entrepreneurship, Firm Emergence and Growth, Vol 15: Entrepreneurial Resourcefulness: Competing with Constraints*. Emerald Group Publishing Ltd, pp. 43–61.

- Senyard, J.M., Baker, T., Davidsson, P., 2009. Entrepreneurial bricolage: towards systematic empirical testing. *Frontiers of Entrepreneurship Research* 29 (5): article 5.
- Senyard, J.M., Baker, T., Steffens, P., Davidsson, P., 2014. Bricolage as a path to innovativeness for resource-constrained new firms. *Journal of Product Innovation Management* 31 (2), 211–230.
- Senyard, J.M., Baker, T., Steffens, P.R., 2010. Entrepreneurial bricolage and firm performance: moderating effects of firm change and innovativeness. A paper presented at the 2010 Annual Meeting of the Academy of Management, 6–10 August, Montreal, Canada.
Retrieved on March 4th, 2013, from <http://eprints.qut.edu.au/39755/1/39755.pdf>.
- Shalley, C.E., Zhou, J., Oldham, G.R., 2004. The effects of personal and contextual characteristics on creativity: where should we go from here? *Journal of Management* 30 (6), 933–958.
- Shane, S., 2003. *A General Theory of Entrepreneurship. The Individual-Opportunity Nexus*. Cheltenham, UK, Edward Elgar.
- Shepherd, D.A., Wiklund, J., Haynie, J.M., 2009. Moving forward: balancing the financial and emotional costs of business failure. *Journal of Business Venturing* 24 (2), 134–148.
- Singh, V.J., Tucker, D.J., House, R.J., 1986. Organizational legitimacy and the liability of newness. *Administrative Science Quarterly* 31 (2), 171–193.
- Sousa, V.D., Rojjanasritat, W., 2011. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice* 17 (2), 268–274.
- Stevenson, H.H., 1983. A perspective on entrepreneurship. Harvard Business School Working Paper 9-384-131.
- Stinchfield, B.T., Nelson, R.E., Wood, M.S., 2013. Learning from Levi-Strauss' legacy: art, craft, engineering, bricolage, and brokerage in entrepreneurship. *Entrepreneurship Theory and Practice* 37 (4), 889–921.
- Strotmann, H., 2007. Entrepreneurial survival. *Small Business Economics* 28 (1), 87–104.
- Sutton, J., 1997. Gibrat's Legacy. *Journal of Economic Literature* 35 (1), 40–59.
- Timmons, J.A., 2005. *New Venture Creation*. Boston, Irwin McGraw-Hill.
- Vallerand, R.J., Mageau, G.A., Ratelle, C., Leonard, M., Blanchard, C., Koestner, R., Gagne, M., 2003. Les passions de l'Âme: on obsessive and harmonious passion. *Journal of Personality and Social Psychology* 85 (4), 756–767.
- Vallerand, R.J., Salvy, S.J., Mageau, G.A., Elliot, A.J., Denis, P.L., Grouzet, F.M.E., Blanchard, C., 2007. On the role of passion in performance. *Journal of Personality* 75 (3), 505–533.
- Van Gelderen, M., Thurik, R., Patel, P., 2011. Encountered problems and outcome status in nascent entrepreneurship. *Journal of Small Business Management*, 49(1), 71-91.
- van Praag, C.M., 2003. Business survival and success of young small business owners. *Small Business Economics* 21 (1), 1–17.
- Welter, F., Xheneti, M., 2013. Reenacting contextual boundaries – entrepreneurial resourcefulness in challenging environments. In: Corbett, A.C., Katz, J.A. (Eds.) *Advances in Entrepreneurship, Firm Emergence and Growth, Vol 15: Entrepreneurial Resourcefulness: Competing with Constraints*. Emerald Group Publishing Ltd, pp. 149–183.
- Williams, L.J., Cote, J.A., Buckley, M.R., 1989. Lack of method variance in self-reported affect and perceptions at work: reality or artifact? *Journal of Applied Psychology* 74 (3), 462–468.

Figures and tables

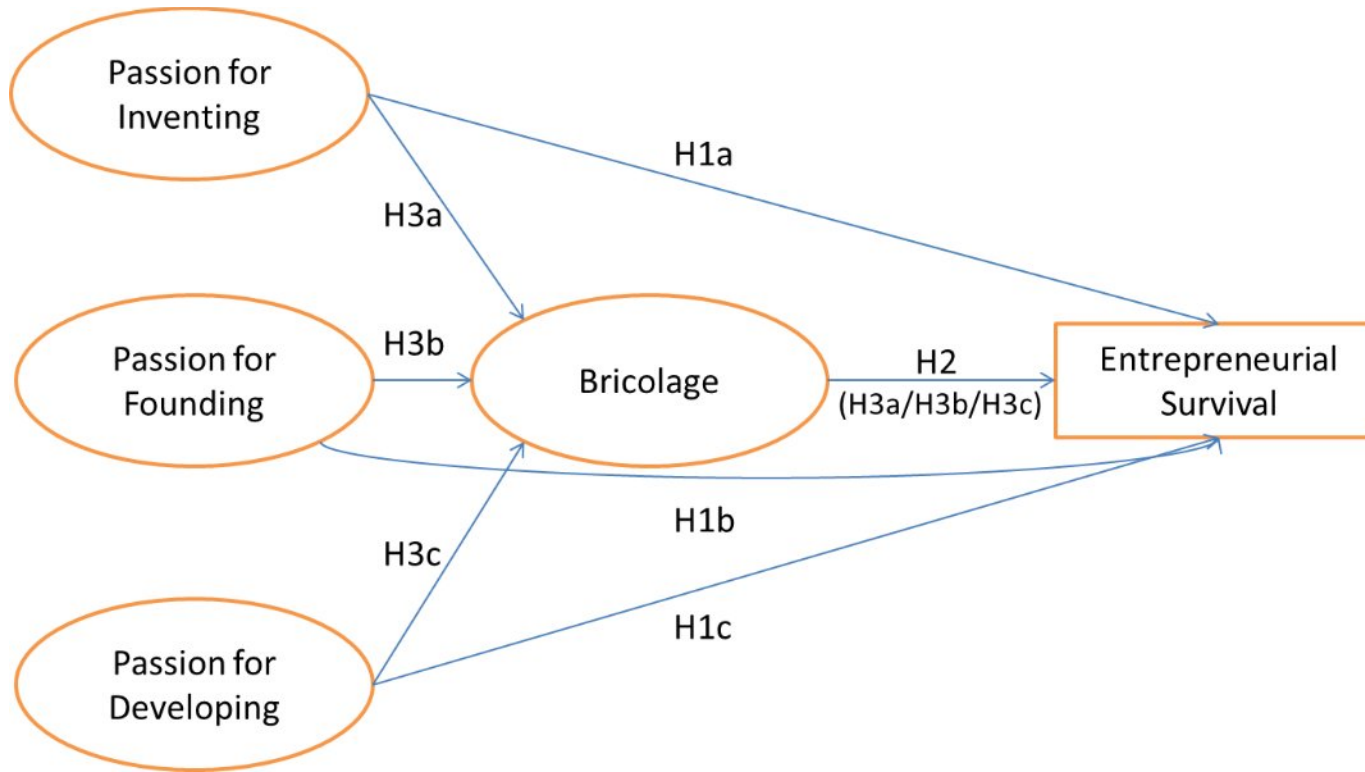


Figure 1: The conceptual model

Table 1: Descriptive and correlation statistics

Variable	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Entrepreneurial survival	0.74	0.44											
2. Passion for inventing	3.98	0.81	.09**										
3. Passion for founding	4.15	0.81	.11**	.46**									
4. Passion for developing	3.80	0.79	.06*	.61**	.49**								
5. Bricolage	3.86	0.63	.11**	.34*	.24**	.34**							
6. Age of respondent	42.2	9.78	-.05*	.10	.01	.06*	-.00						
7. Educational attainment (1=primary...4=college)	2.84	0.85	.06**	.03	-.06**	-.07**	-.03	.06**					
8. Gender (1=female)	0.53	0.50	-.02	-.04*	.07*	-.01	-.01	-.04	.09**				
9. Experience in ent. (1=yes)	0.14	0.34	-.04	.07**	-.02	.08**	.03	.18**	-.01	-.08**			
10. Experience in mgmt. (1=yes)	0.08	0.27	.03	.09*	.04	.09**	.04	.20**	.08*	-.10**	.26**		
11. Experience in industry (1=yes)	0.52	0.50	.10**	-.03	.02	.02	.05	-.01	.02	-.10**	-.04*	-.01	
12. Industry (1=services)	0.68	0.47	.03	-.04	-.02	-.02	.04	-.04*	.17**	.11**	.01	-.03	.08**
13. Venture age	2.81	1.32	.17**	.01	.04	-.02	-.03	.08**	-.00	.06**	-.00	.02	-.03
14. Sum of received start-up grant	6374.6	2130.2	.19**	.02	.05*	.01	.02	.06**	-.00	.05*	.03	.01	-.03
15. Business plan in use (1=yes)	0.40	0.49	.39**	.20**	.16**	.18**	.07**	.08**	.07**	.01	.01	.08**	.04
16. Resource constraint	2.58	1.24	.05**	-.00	.05*	-.02	.09**	-.13**	-.02	.01	-.11*	-.03	.07**
17. Heckman's Lambda	0.41	0.05	-.09**	-.02	.06*	.07**	.02	.69**	-.54**	.16**	.11**	.08**	-.04*

n=2,489; * *p*<.05, ** *p*<.01

Table 2: Measurement model summary

Latent Variables*	Composite reliability (CR)	Average variance explained (AVE)	Discriminant validity			
			1.	2.	3.	4.
1. Passion for inventing	.83	.54	<i>.74</i>			
2. Passion for founding	.80	.57	.50	<i>.75</i>		
3. Passion for developing	.71	.46	.33	.59	<i>.68</i>	
4. Bricolage	.81	.36	.46	.79	.66	<i>.60</i>

$n=2,489$ $\chi^2(116)=438.01$, $p<0.001$, $\chi^2/df=3.78$, $CFI=.979$, $RMSEA=.033$
 * see the listing of items in Appendix A.

Off-diagonal: construct correlation; Along-diagonal (*italic*): square root of average variance extracted (AVE).

Table 3: Tests of hypotheses

Hypothesized association	Effect (std. β)	Hypothesis
Direct effects		
Passion for inventing→Entrepreneurial Survival	.21	H1a: not supported
Passion for founding→Entrepreneurial Survival	-.00	H1b: not supported
Passion for developing→Entrepreneurial Survival	-.06	H1c: not supported
Passion for inventing→Bricolage	.30***	
Passion for founding→Bricolage	.00	
Passion for developing→Bricolage	.22**	
Bricolage→Entrepreneurial Survival	.19**	H2: supported
Mediated effects		
Passion for inventing→Bricolage→Entrepreneurial Survival	.06*	H3a: supported
Passion for founding→Bricolage→Entrepreneurial Survival	.00	H3b: not supported
Passion for developing→Bricolage→Entrepreneurial Survival	.04*	H3c: supported
Controls		
Entrepreneur's age→Entrepreneurial Survival	.16	
Education→Entrepreneurial Survival	-.17	
Gender→Entrepreneurial Survival	.01	
Experience in entrepreneurship→Entrepreneurial Survival	-.03	
Experience in industry→Entrepreneurial Survival	.09	
Experience in management→Entrepreneurial Survival	.04	
Industry→Entrepreneurial Survival	.11†	
Start-up grant→Entrepreneurial Survival	.05	
Age of the venture→Entrepreneurial Survival	-.01	
Business plan in active use→Entrepreneurial Survival	-.08	
Resource constraint→Entrepreneurial Survival	-.02	
Lambda→Entrepreneurial Survival	-.21	
	R^2	.13

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
 $n=2,489$ $\chi^2(346)=999.95$, $\chi^2/df=2.89$, $p < 0.001$, $CFI=.927$, $RMSEA=.032$

Appendix A – Latent variables and items used in the analyses

Passion for inventing*

It is exciting to figure out new ways to solve unmet market needs that can be commercialized.
 Searching for new ideas for products/services to offer is enjoyable to me.
 I am motivated to figure out how to make existing products/services better.
 Scanning the environment for new opportunities really excites me.

Passion for founding*

Establishing a new company excites me.
 Owning my own company energizes me.
 Nurturing a new business through its emerging success is enjoyable.

Passion for developing*

I really like finding the right people to market my product/service to.
 Assembling the right people to (possibly) work for my business is exciting.
 Pushing my employees and myself to make our company better motivates me.

Bricolage*

I am confident of my ability to find workable solutions to new challenges by using my existing resources.
 I gladly take on a broader range of challenges than others with my resources would be able to.
 I use any existing resource that seems useful to responding to a new problem or opportunity.
 I deal with new challenges by applying a combination of my existing resources and other resources inexpensively available to me.
 When dealing with new problems or opportunities I take action by assuming that I will find a workable solution.
 By combining my existing resources, I take on a surprising variety of new challenges.
 When I face new challenges I put together workable solutions from my existing resources.
 I combine resources to accomplish new challenges that the resources weren't originally intended to accomplish.

Control variables

Age	Age of the respondent
Education	The level of educational attainment of the respondent
Gender	Gender of the respondent
Experience ent	Earlier experiences in entrepreneurship
Experience ind	Earlier experiences in industry
Experience mgmt	Earlier experiences in managerial tasks
Industry	Industry dummy in which 1=services
Start-up grant	The total sum of start-up grant which the respondent had received
Age of venture	Age of the venture
Business plan	Business plan in use or not
Resource constraint	Perceived resource constraint
Lambda	Heckman-type correction

* All the statements were measured on a 5-point Likert scale ranging from 1=totally disagree to 5=totally agree.

Appendix B – The persistence of passion over time

The main limitation of our research design is the potential of reverse causality. Little research exists on the persistence of entrepreneurial passion over time (for an exception, see Cardon et al., 2013, which shows that passion levels remain relatively stable over an 18-month period). It is possible that instead of passion driving the effects on firm survival, as we hypothesize, the outcome of venture (non) survival is influencing the respondents' reports of how passionate they are about their businesses. Future research should use longitudinal designs to further examine this possibility. For the time being, the threat of reverse causality could be mitigated if we had evidence that the levels of entrepreneurial passion are relatively stable over time.

We studied the levels of entrepreneurial passion in separate data collected from a diverse MBA student population at a public university in a major city in the United States. The paper-and-pencil surveys were administered in a classroom setting. Data were collected over three different semesters: Fall 2008, Spring 2009, and Fall 2009. A total of 272 surveys were collected from students in the beginning of these semesters. The response rates varied between classes, with an overall average response rate of 86%. Of these 272 students, 191 completed the end-of-semester survey sixteen weeks later. Passion was measured both at the beginning and in the end of semester. Sixty-two per cent of the respondents were male and the age of the participants ranged from 22 to 49 ($M=28.17$, $SD=4.69$). Respondents were from various majors and had a broad range of experience, intentions and attitudes toward entrepreneurship. Most of them worked while pursuing their studies: only 13% were not currently employed.

The early versions of Cardon (2008) and Cardon and Stevens (2009) entrepreneurial passion measures were included in the surveys to gauge (1) passion for inventing, (2) passion for founding a business, and (3) passion for developing a business. Each scale contained five items (later reduced to shorter scales in Cardon et al., 2013), and responses were measured on a 5-point Likert scale from “1=Strongly disagree” to “5=Strongly agree.”

Results of the paired-samples t-tests, reported in the table below, show that means on the respondents' reports of entrepreneurial passion do not significantly differ in the beginning and end of semester. Combined with similar findings regarding the enduring nature of passion reported in Cardon et al. (2013), we are fairly confident that passion is relatively stable within-individuals over time, easing—albeit not eliminating—the threat of reverse causality in our main study.

Descriptive Statistics and t-test Results for Passion for Inventing, Founding, and Developing

	Beginning of semester		End of semester		n	t	df	p
	M	SD	M	SD				
P Inventing	3.66	.62	3.62	.63	191	.912	190	.36
P Founding	3.94	.76	3.97	.76	190	-.576	189	.57
P Developing	3.98	.64	3.91	.69	190	1.598	189	.11

Appendix C – Relationship between entrepreneurial passion and bricolage among survivors

In order to address whether firm failure affects the studied associations between entrepreneurial passion's dimensions and bricolage, we examined the relationships between the three dimensions of passion and bricolage in a smaller sample consisting of surviving firms only (74% of the total sample). The results show that the passion dimensions explain 24% of the variance in bricolage ($\chi^2(116)=411.98$, $\chi^2/df=3.55$, $p<0.001$; $CFI=.975$; $RMSEA=.037$). Moreover, the results indicate that passion for inventing ($p<.001$) and developing ($p<.10$) are associated with bricolage also in the sub-sample of only surviving firms. In all, these results are similar to our main model findings and thus they support our findings. However, as the results imply some of the effect of passion for developing that we observe as channeled through bricolage in our main analyses may actually be attributable to the reverse effect that giving up on a business may have on this type of passion and bricolage.

SEM Results for Passion for Inventing, Founding, and Developing on Bricolage among Surviving and All Firms

	<i>Survivors-only</i>		<i>All</i>	
	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>
Passion for Inventing	.34	<.001	.35	<.001
Passion for Founding	.03	.550	.00	.988
Passion for Developing	.16	.054	.18	.011