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Entrepreneurial Passion as Mediator of the Self-Efficacy to Persistence Relationship

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What makes some entrepreneurs persist in their venture efforts while others quit? Self-efficacy has robustly been found to drive persistence, yet recent work suggests that affect, in particular entrepreneurial passion, may also enhance persistence. We empirically examine the possibility that the long-standing relationship between self-efficacy and persistence might be mediated by entrepreneurial passion. Using data from 129 entrepreneurs, we find that the self-efficacy to persistence relationship is mediated by passion for inventing and for founding but not by passion for developing firms. The passion of entrepreneurs appears to help explain the relationship between entrepreneurial self-efficacy and sustained entrepreneurial action.

> "To succeed you have to believe in something with such a passion that it becomes a reality."—Anita Roddick, BodyShop

Persistence is a key element in entrepreneurship, because the process of founding and growing a business is ambitious and difficult and numerous obstacles occur along the way (Markman, Baron, & Balkin, 2005; Wu, Matthews, & Dagher, 2007). Persistence has been shown to be particularly important in entrepreneurship (Shane, Locke, & Collins, 2003), and entrepreneurs who are tenacious in pursuit of their goals have a greater chance of success (Timmons & Spinelli, 2009). Thus, it is critical that we understand what factors influence such tenacious goal pursuit.

The literature has discussed several potential drivers of persistence in entrepreneurship, and perhaps one of the most researched is self-efficacy (Bandura, 1991). Self-efficacy refers to task-specific confidence, or a person's perception of their own capabilities to attain certain high-performance outcomes (Audia, Locke, & Smith, 2000), and is a natural consequence of "enactive mastery" (Bandura, 1986, 1997). Self-efficacy is a critical aspect of entrepreneurship (DeNoble, Jung, & Ehrlich, 1999), in part because

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self-efficacy drives a person to persist through the many obstacles and challenges involved in starting and running a business (Shane et al., 2003). When an entrepreneur is confident in their abilities to perform the tasks necessary to start and run a new venture, they are more likely to attempt those tasks and to continue attempting to succeed.

Interestingly, more recent research suggests that another factor impacting persistence may be positive affect (Baron, 2008) and in particular entrepreneurial passion (Cardon, Wincent, Singh, & Drnovsek, 2009). This is because such passion involves positive intense feelings and strong identification with the activities that engender such feelings (Cardon et al.), and both positive affect and identification have independently been demonstrated to lead to greater persistence (Houser-Marko & Sheldon, 2006; Pham, 2004). Houser-Marko and Sheldon found evidence that when individuals have identities as "doers" of a certain action, role, or goal, they are more likely to persist in their goal-directed behavior, even when it is difficult and not enjoyable, based on the self-concordance model (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001). Similarly, Foo, Uy, and Baron (2009) found that positive affect increases efforts toward future entrepreneurial goals, controlling for general self-efficacy. This research suggests that the combination of identification for a particular role and positive feelings toward that role, both components of entrepreneurial passion, might have an even greater impact on behavioral persistence for entrepreneurs. However, the integration of this work to determine the impact of entrepreneurial passion, which involves both identification with a meaningful role and intense positive affect, on persistence has not yet, to our knowledge, been examined.

Moreover, while others have found a relationship between self-efficacy and entrepreneurial passion (Cardon, Gregoire, Stevens, & Patel, 2013), to date we know little about how these constructs work in concert with one another as they influence behavioral persistence. In both Houser-Marko and Sheldon's study (2006) and Foo et al.'s study (2009), the effects they observed on persistence occurred over and above the effects of self-efficacy. However, in both studies, self-efficacy was used as a control rather than as an instrumental variable, and neither study incorporated both identity centrality and positive feelings. Thus, the potential mediating role of entrepreneurial passion in the relationship between self-efficacy and persistence was not examined in either study. If such a mediating role is found, this suggests an important explanation for why self-efficacy is so impactful on persistence in entrepreneurship due to the influence of self-efficacy on entrepreneurial passion.

We seek to contribute to the literature in several ways. First, prior research on passion in entrepreneurship has been primarily conceptual rather than empirical (see Murnieks, Mosakowski, & Cardon, 2012, for a notable exception). According to Foo et al. (2009, p. 1086), "Although there are some exceptions (e.g., Erez & Isen, 2002; Forgas & George, 2001), existing literature on this topic generally—and somewhat surprisingly—shows very little actual empirical research in work motivation that includes affect." Previous studies in entrepreneurship that do examine passion do not look at the relationship between passion and persistence, per se, and also focus on passion for work in general rather than passion associated with the entrepreneurial role (Murnieks, 2007; Murnieks & Mosakowski, 2006), or for specific entrepreneurial activities (Cardon et al., 2013; Perttula & Cardon, 2011). Cardon et al. found empirical evidence that entrepreneurial passion is distinct from more generalized passion for work (Baum & Locke, 2004) as well as from harmonious and obsessive passion (Vallerand et al., 2003). We seek to contribute to the literature on passion that is experienced by entrepreneurs, not that which is displayed or perceived by others (Breugst, Domurath, Patzelt, & Klaukien, 2012; Chen, Yao, & Kotha, 2009; Mitteness, Sudek, & Cardon, 2012), or passion that is more generalized. Further,

while Cardon et al. found the potential for a relationship between entrepreneurial passion and persistence (especially passion for founding and developing firms), their work was done to demonstrate criterion validity of a new scale rather than to test the hypothesized relationships. They called for research that answers the question of "the unique contribution of EP and its dimensions to such persistence, over and above that of other motivating factors and/or affective dimensions" (Cardon et al., p. 17). Given that other research has identified the importance of persistence as a key driver of entrepreneurial success, and has suggested that entrepreneurial passion is an important contributor to such persistence, perhaps uniquely so, it is essential that we empirically examine the theoretical claims made.

Second, we aim to contribute to the literature on self-efficacy. While the relationship between self-efficacy and persistence is well documented and robust (Bandura, 1991), the study of persistence in entrepreneurship is limited (Wu et al., 2007). The development of the construct of entrepreneurial self-efficacy (ESE) by Chen, Greene, and Crick (1998) has made an important contribution to the entrepreneurship literature (Forbes, 2005), and we strive to add to these bodies of work by examining the relationship between ESE and persistence in the entrepreneurship context. We suggest below that this relationship may be mediated by entrepreneurial passion, whereby the previously well-established relationship between self-efficacy and persistence may lose its significance or diminish with the inclusion of passion in the model. If supported, this would suggest that at least one of the reasons self-efficacy drives persistence is because self-efficacy makes entrepreneurs more passionate about their entrepreneurial pursuits.

Third, we seek to contribute to the growing body of work on entrepreneurial affect and what occurs "in the middle" of the entrepreneurial process, after opportunity identification and firm founding and before firm exit. Specifically, we respond to a call by Cardon, Foo, Shepherd, and Wiklund (2012, p. 3) for answers to the questions of, "Which entrepreneurs hold their course and which are more prone to give up? Which entrepreneurs endure the roller-coaster journey and which fold under pressure, stress, and uncertainty? What individual traits, characteristics, behaviors, or experiences help entrepreneurs through this process, and how does the emotional journey of entrepreneurship unfold?" We specifically focus on how self-efficacy and/or entrepreneurial passion might help entrepreneurs hold their course and persist with their entrepreneurial efforts.

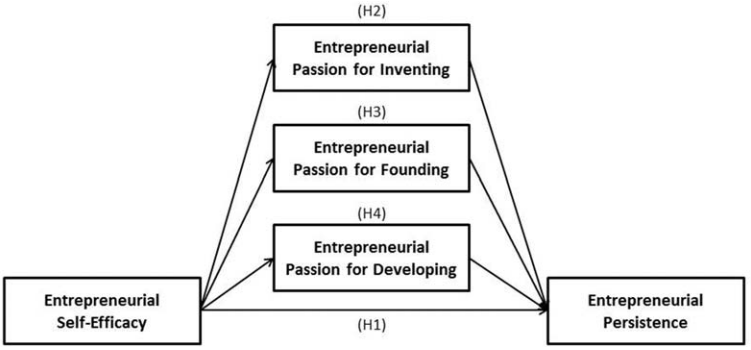
We proceed by reviewing literature on behavioral persistence of individuals. We then discuss the potential influence of entrepreneurial self-efficacy on entrepreneurial persistence, both directly and indirectly through entrepreneurial passion. We explore the potential for mediation of passion for inventing, passion for founding, and passion for developing firms, three specific domains of the overall construct of entrepreneurial passion (Cardon et al., 2009, 2013). We test our hypotheses with a sample of entrepreneurs and discuss the implications of our results.

Persistence in Entrepreneurship

Persistence involves the "continuation of effortful action despite failures, impediments, or threats, either real or imagined" (Gimeno, Folta, Cooper, & Woo, 1997). Conventional wisdom abounds admonishing us all to "try, try again" if at first we don't succeed. Persistence thus generally implies not only multiple attempts oriented toward a particular course of action but repeated efforts in the face of adversity, challenge, or difficulties (Markman et al., 2005; Wu et al., 2007). Entrepreneurial persistence is a

Figure 1

Conceptual Model



behavior that involves goal-directed energy sustained over time (Seo, Barrett, & Bartunek, 2004; Wu et al.) where the goal involved is success of the entrepreneurial venture.

Persistence is important to entrepreneurial success for a number of reasons. Not only does persistence help entrepreneurs succeed in navigating the complex challenges of the entrepreneurial process once a business is launched, it also helps sustain their efforts during the time required to start a business (Wu et al., 2007). Between the many activities involved including discovering an idea, financing the business, purchasing the assets required, establishing an office, recruiting personnel, promoting the company and products, and more, a typical entrepreneur needs a number of months to get a new company off the ground (Carter, Gartner, & Reynolds, 1996). Because of the huge investment of time, effort, and money into a new firm to get it started, and the ongoing investment of resources to sustain the business, persistence throughout this process is a critical aspect of entrepreneurship. Other scholars have focused on sustained action during the entrepreneurial process including factors that impact venture effort, both current and future oriented (Foo et al., 2009), including both traits (such as trait positive and negative affect), and states (such as one's current positive or negative affect). We integrate their findings into our discussion below of two key factors argued in the literature to be related to persistence: entrepreneurial self-efficacy (DeNoble et al., 1999) and entrepreneurial passion (Cardon et al., 2009). Our conceptual model is in Figure 1.

Entrepreneurial Self-Efficacy, Passion, and Persistence

Entrepreneurial Self-Efficacy and Persistence

Derived from Bandura's (1977) social learning theory, the concept of self-efficacy refers to a person's belief in his or her ability to perform a task (Bandura, 1991). Many studies have provided evidence that people who believe that they have the personal resources and fortitude to succeed in their efforts show greater goal persistence, as well as performance (Bandura, 1989). Self-efficacy has also been repeatedly shown to be a critical aspect of entrepreneurship (e.g., DeNoble et al., 1999), and one reason is because self-efficacy drives persistence of entrepreneurs through the often tumultuous process of starting a business. In order to persist in the face of obstacles, people need to have a

positive belief in their ability to achieve the results expected (Bandura, 1997). This confidence in one's ability to obtain a desired outcome is known as perceived self-efficacy and explains why people with similar abilities perform differently on a task (Wood & Bandura, 1989). According to Shane et al. (2003, p. 267), "an individual with high self-efficacy for a given task will exert more effort for a greater length of time, persist through setbacks, set and accept higher goals, and develop better plans and strategies for the task."

While the relationship between entrepreneurial self-efficacy and entrepreneurial persistence does not appear to have been studied extensively in the literature, the positive effect of more general self-efficacy on persistence is well documented (Multon, Brown, & Lent, 1991; Shane et al., 2003). This relationship may be due to the higher expectancies the person has that they are capable of performing the tasks at hand, and therefore that their actions will lead to desirable outcomes. This relationship has also been shown to remain regardless of prior performance of the individual on the task (Jacobs, Prentice-Dunn, & Rogers, 1984). The impact of self-efficacy on persistence is so pervasive and well supported that some scholars have suggested that other observed effects, such as those from an internal locus of control (the degree to which a person feels they can control an outcome themselves) on persistence reported in the entrepreneurship literature is a proxy for unobserved self-efficacy (Shane et al.). Consistent with prior research, we propose:

Hypothesis 1: Entrepreneurial self-efficacy predicts greater persistence.

While we anticipate confirming this relationship in our study, we add to the literature by proposing that entrepreneurial passion will mediate the relationship between entrepreneurial self-efficacy and persistence. For such mediation to occur, self-efficacy must influence passion, and entrepreneurial passion must in turn influence persistence. We address the former relationship first, then the latter.

Entrepreneurial Self-Efficacy and Entrepreneurial Passion

Cardon and colleagues (2009, p. 517) propose that entrepreneurial passion involves "consciously accessible, positive feelings" that result from "engagement in activities that have identity meaning and salience to the entrepreneur." As such, there are two important components to entrepreneurial passion: a component related to affect, or intense positive feelings; and a component related to self-identity, which can be considered a "subjective concept of oneself as a person" (Vignoles, Jen, Regalia, Manzi, & Scabini, 2006). Cardon et al. argue that entrepreneurial passion will be comprised of potentially varying levels of passion for specific roles with associated activities that are common in entrepreneurship: passion for inventing opportunities, passion for founding new firms, and passion for developing the business. Although a detailed discussion of the conceptualization of entrepreneurial passion is outside the scope of this paper, we note here that both components are essential to the overall conceptualization and operationalization of entrepreneurial passion (Cardon et al., 2013). Thus, to understand the passion of entrepreneurs and its relationship with self-efficacy and persistence, we must consider both the positive intense feelings and the identity-meaningfulness components of the construct.

We anticipate a positive relationship between entrepreneurial self-efficacy and entrepreneurial passion for several reasons. First, individuals should enjoy engaging in activities where they have a strong belief in their ability to succeed (Baum & Locke, 2004). People like to succeed at things they engage in, and anticipated success born from high

self-efficacy for a particular activity should lead to great affective enjoyment of that activity. This suggests that greater self-efficacy for a particular activity should predict greater passion for that activity, since affective enjoyment is a key dimension of passion. Second, identity theory suggests that individuals are more likely to identify with things that they are confident in doing, so as to protect their feelings of self-efficacy (Vignoles et al., 2006). Thus, identification with an entrepreneurial role should be more likely to occur when entrepreneurs feel efficacious about tasks associated with that role. This identification is an important component of entrepreneurial passion, suggesting that self-efficacy should predict the identity component of passion. Third, people are happiest about the aspects of their identity that most satisfy their self-esteem and self-efficacy needs (Vignoles et al.). This suggests that both the positive affect and identification components of entrepreneurial passion are more likely to occur when self-efficacy is high.

Entrepreneurial Passion and Persistence

The second link in our proposed mediation is the relationship between entrepreneurial passion and persistence. Entrepreneurial passion, which involves positive and intense feelings directed toward entrepreneurially relevant identity-important activities and roles, may be an important driver of persistence (Cardon et al., 2009) based on both the identity and affective components of passion.

There are several reasons why the identity aspect of entrepreneurial passion might be related to persistence. First, people who associate more strongly with a certain identity (such as "runner," "dieter," or "entrepreneur") are more persistent and demonstrate greater attainment regarding associated goals (Houser-Marko & Sheldon, 2006). Such self-definition involves linking one's identity with a certain behavior or process of behaving, independent from the outcomes one achieves (Houser-Marko & Sheldon). This occurs based on the self-concordance model (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001), which is based on self-determination theory (Deci & Ryan, 1985, 2000). In the self-concordance model, individuals pursue goals longer (persist) when they enjoy the very process of pursuing the goal and/or when they identify with the values represented by the goal (Houser-Marko & Sheldon). They persist in such goal pursuit because of their identification with the engagement in certain types of actions, even if they do not have "high skills, abilities, or reasons to expect success" (Houser-Marko & Sheldon). They also persist when they are strongly identified with an activity even though they may not particularly enjoy the activity at the moment. Essentially, individuals strive for identity relevance and consonance in their behaviors (Hogg, Terry, & White, 1995; Stets & Burke, 2000), because "once identities are integrated into the self-concept, individuals are strongly motivated to act in a manner consistent with those identities (Burke & Reitzes, 1981; McCall & Simmons, 1966)" (Murnieks et al., 2012).

For example, an entrepreneur who experiences the founder identity as particularly central to their self-identity might not enjoy every conceivable action associated with founding a firm (filing paperwork may not be that exciting, for example), but because of their identification with the founder identity and the association between that identity and the particular action, they will still engage in the action so that they are acting consistently with the role of founder and to demonstrate their commitment to the identity of founder to themselves. Similarly, passion for the inventor role (Cardon et al., 2009) is associated with behavior relevant to that role, such as actively and systematically scanning the environment for venture ideas (Fiet, 2007), and also longer term goals supporting the values of an inventor, such as identifying gaps in the market and ways to capitalize on those gaps. When certain roles and values associated with them are identity important,

engaging in behaviors associated with those roles reinforces the individual's self-identity (Houser-Marko & Sheldon, 2006) and encourages further persistence in such behaviors.

In addition to the identity-related relationship between entrepreneurial passion and persistence, the affective component of entrepreneurial passion should also lead to greater persistence. The experience of positive affect suggests that things are going well, and there is no need to reassess or change one's current actions and direction (Seo et al., 2004; Sitkin, 1992). People experiencing positive affective states typically try to maintain their positive state and are thus more likely to persist with their current course of action (Pham, 2004). Moreover, positive affect in entrepreneurs has been linked to increased efforts toward future goals (Foo et al., 2009). When people's current goals are satisfied, they can turn their attention to other goals (Carver & Scheier, 1990, 2003) and continue to persist with actions that further reinforce their sense of positive well-being.

When certain activities or sets of activities are both identity relevant and invoke positive feelings, as is the case with entrepreneurial passion (Cardon et al., 2009), persistence should be particularly enhanced. Based on the above theoretical developments concerning the likely relationship between (1) entrepreneurial self-efficacy and entrepreneurial passion, and (2) entrepreneurial passion and persistence, we suggest the following hypotheses:

Hypothesis 2: The relationship between entrepreneurial self-efficacy and persistence is mediated by entrepreneurial passion for inventing.

Hypothesis 3: The relationship between entrepreneurial self-efficacy and persistence is mediated by entrepreneurial passion for founding.

Hypothesis 4: The relationship between entrepreneurial self-efficacy and persistence is mediated by entrepreneurial passion for developing.

Methodology

We tested our hypotheses with a sample of entrepreneurs from the Dun and Bradstreet Selectory database of single location nonsubsidiary firms in a particular county in the Northeastern United States. The sample includes for-profit firms that were founded in 1998 or later, were privately owned, and had fewer than 250 employees as of January 1, 2008. There is disagreement over what constitutes a new venture (Reynolds & Miller, 1992; Vesper, 1990) in our field. While the first six years of a new venture's existence are believed to be critical for its development (Shrader, Oviatt, & McDougall, 2000), we chose firms up to 10 years of age because we wanted to capture firms at various stages of development, including some still working on identifying new opportunities, some engaged in the start-up founding process, and some engaged in growing and developing their firms. Similarly, although definitions of what constitutes a "small" firm also vary greatly (Cardon & Tarique, 2008) and definitions of small and medium enterprises (SMEs) can include firms up to 500 employees (e.g., U.S. SBA, 2013), we limited our sample to firms with fewer than 250 employees, consistent with Taylor and Banks (1992). We specifically wanted to focus on small rather than large firms, as these firms should be more likely to still be actively engaged in the struggle to survive and thrive, and most likely will not yet have reached the point of true stability (Hanks, Watson, Jansen, & Chandler, 1994; Morse, Fowler, & Lawrence, 2007).

In the fall of 2008, 3,085 firms were contacted and the founder invited to participate in the study, using the Tailored Design Method (Dillman, 2007). Two follow-up reminders were sent 2 and 4 weeks after the initial survey. Four hundred and four surveys were undeliverable, 14 company representatives indicated that their businesses had closed down, and 169 surveys were returned, reflecting a 6.34% effective response rate. This response rate is low but also consistent with other studies using Dun and Bradstreet information, given that the company reports that 20% of the firms they track change locations every year (Hmieleski & Baron, 2009). In addition, response rates are generally lower when top management is the target (Bartholomew & Smith, 2006) since there is often a lack of slack time for small firm owners for such activities and slack time in the fall of 2008 was particularly problematic due to the downturn in the economy. Several returned surveys were incomplete and two were completed by nonfounders and were therefore removed from further analysis. The resulting sample included 129 entrepreneurs that were on average 48 years old with 12 years in their industry prior to starting the current venture, and 1.4 firms started prior to the current venture. Women accounted for 21% of the entrepreneurs in the sample. Respondents represented firms with an average of eight employees that had been in business for an average of 8.6 years.

Our sample was examined for nonresponse bias by comparing the characteristics of our sample, including age and number of prior businesses of the entrepreneur, and total sales, number of employees, and years in business of the firm, with those of the sampling frame of Dun & Bradstreet entrepreneurs in the county. No statistically significant differences were found suggesting that nonresponse bias may be less of a concern with our sample (Groves & Peytcheva, 2008).

Survey Design

In order to help mitigate the potential effects of common method bias, both procedural and statistical remedies were employed (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, measures of the control variables of company age, company sales, and number of employees were taken from the Dun & Bradstreet database, an external source, rather than from self-reported data. Second, predictor and criterion variables were separated proximally in the survey in order to reduce participants' ability and motivation to use responses to prior questions to motivate subsequent responses (Podsakoff et al.). Other techniques suggested by Podsakoff et al. and employed in our survey design include assuring respondents of anonymity, stressing that there were no "right" or "wrong" answers while encouraging honest responses, and using different scale endpoints where possible without affecting the scale validity.

Social desirability bias is always a potential concern in self-report survey research (Podsakoff et al., 2003). However, we tried to reduce social desirability bias on the scale item and construct levels by using scales that have been previously validated (Podsakoff et al.). Further, research suggests that paper and pencil and electronic surveys are less prone to social desirability bias than face to face interviews, especially when responses are anonymous (Richman, Kiesler, Weisband, & Drasgow, 1999).

Measures

All self-report survey items were completed on a 5-point scale from strongly disagree to strongly agree, unless otherwise noted.

Entrepreneurial Persistence. Consistent with a view of entrepreneurial persistence as a behavior resulting from an interaction of trait and situation (George, 1992), persistence was measured using six items from Baum and Locke (2004), including "I continue to work on hard projects even when others oppose me," "I can think of many times when I persisted with work when others quit" and "No matter how challenging my work is, I will not give up." In the context of the entire survey entrepreneurs were completing, these questions referred to work in the entrepreneurial venture. The Cronbach's alpha for entrepreneurial persistence in our data was .740.

Entrepreneurial Passion. Entrepreneurial passion was measured using items developed by Cardon et al. (2013). We included three separate measures of passion for inventing, passion for founding, and passion for developing firms. For each passion scale, two subscales were captured, including the intense positive feelings the entrepreneur had toward the particular activity, and the identity centrality of each entrepreneurial role (inventing, founding, and developing; Cardon et al.). The feelings items were measured as follows: Four passion for inventing items included "Searching for new ideas for products/services to offer is enjoyable to me" and "Scanning the environment for new opportunities really excites me" (Cronbach's alpha = .86); four passion for founding items included "Establishing a new company excites me" and "Owning my own company energizes me" (Cronbach's alpha = .77); and passion for developing included three items such as "Pushing my employees and myself to make our company better motivates me" and "I really like finding the right people to market my product/service to" (Cronbach's alpha = .73). The feelings items for each type of passion (inventing, founding, and developing) were averaged to form a single composite measure of the intense positive feelings of the entrepreneur for each entrepreneurial activity. The identity centrality of each set of activities was measured with one item for each passion scale such as "Being the founder of a business is an important part of who I am" for passion for founding. Following previous treatment of passion as a multiplicative interaction between intense positive feelings toward an activity and the identity centrality of the activity (Cardon et al.), a final score for each type of entrepreneurial passion was computed by multiplying the appropriate identity–centrality score by its corresponding composite intense positive feeling measure (e.g., founder identity centrality x intense positive feeling for founding), leading to a weighted score for each domain of passion.

Self-Efficacy. Entrepreneurial self-efficacy was measured using 15 items from Chen and colleagues (1998), as adapted by Forbes (2005). Respondents rated a series of items on a scale of how certain they are in their ability to perform each task in their role as an entrepreneur (1 = completely unsure of my ability to 5 = completely sure of my ability). Items included "develop new ideas," "establish a position in product markets," and "make decisions under risk and uncertainty" (Cronbach's alpha = .892). Chen et al. explain that the tight relationship between the self-efficacy construct and specific tasks poses a problem in measuring self-efficacy for a broad domain such as entrepreneurship. However, Bandura (1986) notes that self-efficacy with respect to one task can be generalized to another and Gist (1987) offers a methodology for addressing the issue, stressing that tasks comprising a measure of process self-efficacy should be generally interrelated. Although Chen and colleagues developed subscales of self-efficacy toward marketing, innovation, management, risk-taking, and financial control, they also advocate for an overall entrepreneurial self-efficacy scale, which has been used by Forbes, Baum and Bird (2010), Drnovsek and Glas (2002), and Urban (2006), and which was adopted in this study.

Control Variables. Firm age, firm sales, and number of employees were included as control variables in the model in order to control for potential liabilities of newness or inertia associated with firm age or size, which might impact persistence. Founder age was included to control for potential decreases in cognitive resources affecting persistence that may be associated with age (Kanfer & Ackerman, 2004).

Results

While exploratory and confirmatory factor analyses are generally viewed as techniques preferable for large sample sizes due to reduced sampling error, researchers note that sample sizes greater than 50 can provide adequate reliability for exploratory factor analysis (De Winter, Dodou, & Wieringa, 2009). Further, optimal sample sizes for factor analysis depend not only on the sample size but also on the number of variables being tested, and in this case, our ratio of sample size (N) to number of variables (p) is approximately 25, well over the range suggested by most researchers (MacCallum, Widaman, Zhang, & Hong, 1999).

Exploratory factor analysis with direct oblimin rotation was conducted to examine the discriminant validity of the constructs, and 2 of 15 self-efficacy items were removed due to high cross-loadings with other factors. Use of an oblique rotation permits a particular item to load on multiple factors, thus demonstrating its true impact across all factors (Samiee & Chabowski, 2012). All remaining items were represented by unique factors with loadings greater than .40 and were retained, with results presented in Table 1. Following Hahn, Frese, Binnewies, and Schmitt (2012), confirmatory factor analyses (CFAs) were conducted using AMOS 18.0 (IBM, Armonk, NY, USA) to determine if the three intense positive feelings measures and the self-efficacy and persistence measures were best represented by a 5-factor model. Results from the CFAs suggest that the 5-factor model fits the data better than a 1-factor model ($\Delta\chi^2(10) = 428$, $p < .001$), all possible 2-factor models ($\Delta\chi^2(9) \geq 229$, $p < .001$), all possible 3-factor models ($\Delta\chi^2(7) \geq 119$, $p < .001$), and all possible 4-factor models ($\Delta\chi^2(4) \geq 40.52$, $p < .001$).

Before testing the hypotheses, we conducted statistical tests to assess common method variance (CMV). Following the marker variable technique suggested by Lindell and Whitney (2001) and employed by other researchers (e.g., Brady, Voorhees, & Brusco, 2012), a marker variable expected to have limited relevance to the theorized constructs, that of performance goal orientation (Button, Mathieu, & Zajac, 1996), was included in the survey. When the effect of this variable was partialled out of the remaining correlations of the theoretical variables, all previously significant correlations remained significant at $p < .05$, with the exception of the correlation between the identity centrality of founding and positive feelings for inventing, which was marginally significant at $p = .05$. Based on the results of this analysis, it can be concluded that the effects of CMV in this study are negligible.

Table 2 provides the means, standard deviations, reliabilities, and correlations for variables used in the study. All measures have Cronbach's alpha reliabilities greater than .7, which is considered acceptable (Crook, Shook, Morris, & Madden, 2010; Nunnally, 1978). The conceptual model and hypotheses were tested using hierarchical regression analysis using SPSS (18.0, IBM). Studies with smaller sample sizes are common in entrepreneurial research (Short, Ketchen, Combs, & Ireland, 2010), and use of regression analysis avoids issues of model fit that can become problematic with use of structural equation modeling in small data sets (Kline, 2005). In the first step, control variables were entered with persistence as the outcome variable, and none of the control variable coefficients was

Table 1

Pattern Matrix from Confirmatory Factor Analysis in SPSS

	1	2	3	4	5
ese1	.518				
ese2	.491				
ese3	.744				
ese4	.495				
ese5	.498				
ese6	.690				
ese7	.754				
ese8	.693				
ese9	.490				
ese10	.693				
ese11	.411				
ese12	.532				
ese13	.491				
persistence1		.657			
persistence2		.701			
persistence3		.423			
persistence4		.451			
persistence5		.611			
persistence6		.630			
Ipf_inv1				−.649	
Ipf_inv2				−.679	
Ipf_inv3				−.612	
Ipf_inv4				−.575	
Ipf_fnd1					−.577
Ipf_fnd2					−.627
Ipf_fnd3					−.593
Ipf_fnd4					−.410
Ipf_dev1			−.577		
Ipf_dev2			−.726		
Ipf_dev3			−.615		

Only factor loadings > .40 are shown.

significant. In the second step, entrepreneurial self-efficacy was entered. In the third step, each type of passion was entered individually, resulting in the three models to test hypothesis 2, hypothesis 3, and hypothesis 4. Results of these regressions are displayed in Table 3.

In hypothesis 1, we argued that greater entrepreneurial self-efficacy would lead to greater entrepreneurial persistence, which was supported ($\beta = .255$, $p < .01$). In the remaining hypotheses, we argued that entrepreneurial passion mediates the effect of entrepreneurial self-efficacy on entrepreneurial persistence, and these hypotheses were first tested following procedures recommended by Baron and Kenney (1986). If mediation is present, we would expect the effect of self-efficacy on each type of passion to be significant, and would expect the effect of self-efficacy on persistence to be reduced with the addition of passion in the model. In addition to the models described above, regression analyses were run to determine the effect of entrepreneurial self-efficacy on each type of passion—inventing, founding, and developing—and each effect was positive and significant at $p < .001$ (see Table 4). Subsequently, Sobel tests were used to confirm this test of mediation (Preacher & Leonardelli, 2012), and results are displayed in Table 5.

Table 2

Descriptive Statistics, Scale Reliabilities, and Correlation Table

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1	Firm age (years)	8.628	6.886	—											
2	Firm sales	$800,269.17	$1,705,550.90	−.055	—										
3	Number of employees	8.124	12.460	−.057	.627**	—									
4	Entrepreneur age	48.105	9.461	.342**	.197*	.182*	—								
5	Entrepreneurial self-efficacy	3.965	.626	.246**	.15	.104	.057	(.89)							
6	EP inventing—feelings	4.085	.704	.011	.058	.087	−.076	.521**	(.86)						
7	EP inventing—identity centrality	4.102	.730	.027	−.117	−.072	.142	.365**	.464**	—					
8	EP founding—feelings	4.331	.597	.086	.044	.026	−.017	.467**	.495**	.291**	(.77)				
9	EP founding—identity centrality	4.197	.946	.142	−.179*	−.133	.04	.187*	.220*	.269**	.560**	—			
10	EP developing—feelings	4.035	.703	.079	.084	.066	.061	.295**	.456**	.169	.459**	.188*	(.73)		
11	EP developing—identity centrality	4.066	.885	.196*	−.180*	−.075	.059	.314**	.331**	.229**	.498**	.538**	.302**	—	
12	Entrepreneurial persistence	3.911	.601	.025	−.017	−.051	−.082	.297**	.381**	.292**	.323**	.296**	.234**	.256**	(.74)

* $p \leq .05$; ** $p \leq .01$

Notes: Scale Reliabilities (Cronbach's alpha) are on the diagonal.

EP, entrepreneurial passion.

Table 3

The Effect of Entrepreneurial Self-Efficacy and Entrepreneurial Passion on Entrepreneurial Persistence

DV: entrepreneurial persistence	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm age	.047	−.037	.010	−.044	−.047	
Firm sales	−.004	−.031	.052	.005	.016	
Number of employees	−.016	−.049	−.074	−.031	−.069	
Founder age	−.071	−.053	−.079	−.068	−.062	
Entrepreneurial self-efficacy		.309***	.113	.213*	.237*	.078
Passion for inventing			.349***			.291**
Passion for founding				.265**		.215*
Passion for developing					.207*	−.028
Adj. R^2	−.027	.055	.136	.112	.084	.180
ΔR^2		.087***	.085***	.060**	.036*	.124***
F	.179	2.422*	4.220***	3.538**	2.843*	8.122***

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.
Regression results (standardized coefficients).

Table 4

The Effect of Entrepreneurial Self-Efficacy on Entrepreneurial Passion

	Passion for inventing	Passion for founding	Passion for developing
Firm age	−.136	.026	.045
Firm sales	−.238	−.127	−.208
# employees	.072	−.065	.069
Founder age	.076	.005	.075
Entrepreneurial self-efficacy	.562***	.369***	.359***
Adj. R^2	.275	.116	.123
F	10.333***	4.180**	4.400***

** $p \leq .01$; *** $p \leq .001$.
Regression results (standardized coefficients).

Hypothesis 2 states that entrepreneurial passion for inventing mediates the effect of entrepreneurial self-efficacy on entrepreneurial persistence, and it is supported ($p < .01$). Further, the coefficient for self-efficacy becomes insignificant when passion for inventing is entered into the regression analysis (see Table 3), indicating full mediation. Hypothesis 3, stating that passion for founding mediates the effect of entrepreneurial self-efficacy on persistence, is also supported ($p < .05$). However, the fact that the coefficient for entrepreneurial self-efficacy remains significant at $p < .05$ (see Table 3) suggests partial rather than full mediation. Hypothesis 4 states that passion for developing mediates the effect of entrepreneurial self-efficacy on persistence. While the effect of entrepreneurial self-

Table 5

Results of Sobel Tests for Mediation

Mediator:	Passion for inventing	Passion for founding	Passion for developing
Sobel test statistic	3.128	2.378	1.918
Standard error	.060	.040	.038
p-value	$p < .01$	$p < .05$	$p < .10$

Table 6

The Effect of Entrepreneurial Self-Efficacy on the Three Types of Entrepreneurial Passion Taken Simultaneously

Dependent Variable:	F	Significance	Adj. R-squared	Parameter	B	Standard error	*t*	Significance
Passion for inventing	42.768	.000	.243	Intercept	.370	2.493	.148	.882
				ESE	4.001	.612	6.540	.000
Passion for founding	16.702	.000	.108	Intercept	2.039	2.809	.726	.469
				ESE	3.351	.689	4.862	.000
Passion for growing	23.639	.000	.148	Intercept	5.574	3.160	1.764	.080
				ESE	3.169	.775	4.087	.000

Multivariate linear regression results (IV: Entrepreneurial self-efficacy [ESE]; unstandardized parameter estimates).

efficacy on passion for developing is positive and significant, the effect of passion for developing on persistence is positive and significant, the coefficient for entrepreneurial self-efficacy when passion for developing is introduced into the model declines (.309 to .237), and the Sobel test for mediation is only marginally significant ($p < .10$). Thus, hypothesis 4 is not supported.

As an additional test of the robustness of our findings, we examined whether the three types of passion mediate the effect of entrepreneurial self-efficacy on persistence when examined simultaneously. Removing the nonsignificant control variables for parsimony (Carlson & Wu, 2012), we first analyzed the data using multivariate linear regression with entrepreneurial self-efficacy as the independent variable and the three types of passion as simultaneous dependent variables. Results confirm that entrepreneurial self-efficacy significantly impacts each type of passion ($p < .001$; see Table 6). Second, using multiple hierarchical regression analysis with persistence as the dependent variable, we entered entrepreneurial self-efficacy alone in the first step, adding the three types of passion simultaneously in the second step. While the effects of passion for inventing and passion for founding on persistence are positive and significant ($p < .01$ and $p < .05$, respectively; see Table 3, Model 6), the effect of entrepreneurial self-efficacy on persistence becomes nonsignificant in the presence of the three passion items ($p > .40$), confirming support for hypothesis 2 and hypothesis 3. The effect of passion for growing on persistence is nonsignificant, reflecting lack of support for hypothesis 4.

Discussion

> "I think I overcame every single one of my personal shortcomings by the sheer passion I brought to my work. I don't know if you're born with this kind of passion, or if you can learn it. But I do know you need it."—Sam Walton, Founder of Wal-Mart Corporation

Entrepreneurs, especially those in early-stage ventures, need to persevere in order for their venture to have a reasonable chance of success (Foo, Sin, & Yiong, 2006). The purpose of our study was to examine two espoused drivers of persistence in entrepreneurship, specifically looking at the relationship between entrepreneurial self-efficacy and persistence, both directly and as mediated by entrepreneurial passion. Prior research has found evidence that self-efficacy has a strong relationship with persistence (Bandura, 1991; Latham & Locke, 2006; Shane et al., 2003; Wu et al., 2007), but given that entrepreneurial passion has also been suggested to have an influence on engaged goal pursuit (Cardon et al., 2009), and previous work that has suggested that passion rather than self-efficacy is a key driver of entrepreneurial action (Murnieks et al., 2012), we sought to examine how these variables work together in their influence on entrepreneurial persistence.

Our results suggest that including entrepreneurial passion in a study of persistence may be an important contribution, as the quote from Sam Walton above suggests. Entrepreneurs need to be passionate in order to overcome the challenges inherent in starting and running a business. If we don't consider passion or other emotions in our research on persistence, then we may be missing a full understanding of drivers of this and other important outcomes in entrepreneurship. The most significant contribution of this study is that entrepreneurial passion (for inventing and founding) appears to mediate the relationship between entrepreneurial self-efficacy and persistence, providing some early empirical support to what has so far been primarily anecdotal evidence regarding the importance of entrepreneurship-specific passion (as opposed to passion for work).

We focused specifically on passion that is experienced by entrepreneurs. Other scholars (Mitteness et al., 2012) have noted that passion that is experienced by entrepreneurs is different from passion which is displayed to others through things such as facial expressions, vocal intonation, and expressive body movements (Chen et al., 2009), and passion that is perceived by third parties such as angel investors (Sudek, 2006). In our study, we focus on the first of these—passion that is felt or experienced by the entrepreneur, which only they can report on. Our definition of passion, and the resulting theory of how that passion fits into our model, hinges on the identity centrality of the object of that passion to a specific entrepreneur, and such identity centrality is difficult for others to know just by observing the entrepreneur.

Our results find significant relationships between two of the three domains of passion—inventing and founding—and behavioral persistence. This is in direct contrast to findings by Chen et al. (2009) that passion is not important to investors but consistent with findings from Mitteness et al. (2012) that passion is important to angel investors for live deals. We agree with the latter authors that future research that explores the nuanced differences between passion that is experienced by entrepreneurs, displayed, and perceived by others is needed to explain these disparate findings. Our results are also consistent with findings from Murnieks et al. (2012) that passion for the entrepreneurial role is an important driver of entrepreneurial behavior, which they operationalized as spending more time on entrepreneurial tasks.

A second contribution of this study concerns the impact of entrepreneurial self-efficacy on persistence. Support in the literature for the relationship between self-efficacy

and persistence is robust and extensive (Bandura, 1997; Shane et al., 2003), but our results indicate that when passion for inventing and founding are incorporated into the model, the influence of entrepreneurial self-efficacy is significantly diminished. This may initially appear somewhat surprising given the strong evidence in the literature concerning self-efficacy, but it is consistent with recent findings of Murnieks et al. (2012), that passion rather than self-efficacy drives entrepreneurial behavior. Our understanding of our result in this regard depends on distinguishing between entrepreneurial self-efficacy and entrepreneurial passion conceptually. When people have high levels of self-efficacy regarding a particular task (Bandura, 1991), they persist in the task because they believe they will be successful at the task, which satisfies individuals' needs for competence (Deci & Ryan, 1985). In contrast, when entrepreneurs are passionate about tasks or activities, they enjoy doing them and experience self-identity reinforcement from doing them regardless of the ultimate outcome or success of that task engagement. As Houser-Marko and Sheldon (2006) explain, individuals with "do-er" identities engage in activities due to their sheer enjoyment of that activity and the importance they place on it for themselves, regardless of the outcomes of their activity engagement and regardless of what others think about them engaging in that activity.

The conceptualization of entrepreneurial passion is based on an individual identifying with active "do-er" identities of inventor, founder, and developer, all associated with doing things, with engaging with activities (Cardon et al., 2009). Because of this, entrepreneurial passion may be more relevant to persistence especially in the face of negative performance feedback. While we did not study positive or negative performance feedback, our results suggest that the relationship between self-efficacy and persistence can at least in part be explained by the relationship between self-efficacy and passion, and the relationship between passion and persistence. Feelings of self-confidence in pursuing entrepreneurship may make entrepreneurs more passionate because people tend to identify with activities they are good at. When their self-efficacy leads to passion for an activity, their passion in turn appears to drive persistence in entrepreneurial pursuits, at least for passion for inventing and passion for founding firms.

Implications for Future Research

This study found support for a mediating impact of entrepreneurial passion in the relationship between self-efficacy and persistence, suggesting an important role for affective processes in entrepreneurship. Of note, however, is that persistence is not always a good thing, since irrational escalation of commitment is a known problem in entrepreneurship (Brockner, Grover, Reed, & Dewitt, 1992; DeTienne, Shepherd, & De Castro, 2008). Persistence can be functional when it drives entrepreneurs toward achieving their goals despite uncertainty and hardships along the way. It can also help entrepreneurs distance themselves emotionally from firms that are underperforming, allowing greater learning and recovery from the eventual failure of those firms (Shepherd, Wiklund, & Haynie, 2009). However, persistence toward a failing course of action also commits and uses up resources and involves opportunity costs for the entrepreneur and other resources of the firm, which is considerably less functional.

Similarly, too much passion (similar to too much positive affect; Baron, Hmieleski, & Henry, 2012) has been argued to be a bad thing, since it can blind one to disconfirming evidence and cost too much in terms of entrepreneurs' personal relationships (Cardon, Zietsma, Saparito, Matherne, & Davis, 2005). Interestingly, too much self-confidence can also be a bad thing leading to hubris (Hayward, Shepherd, & Griffin, 2006), overconfidence (Cooper, Woo, & Dunkelberg, 1988; Simon & Shrader, 2012), and

subsequently, escalation of commitment to a failing course of action (Bazerman, Giuliano, & Appelman, 1984). Further understanding of the relationships between entrepreneurial passion, self-efficacy, and persistence is needed that explicitly considers the outcomes of such persistence, both for the organization and for the individual entrepreneur, to determine if there is an optimal balance or a functional tipping point for self-efficacy, passion, and persistence, beyond which their effects are detrimental rather than beneficial for the entrepreneur and the organization.

Longitudinal study is also needed to examine the relative dissipation rates of self-efficacy and passion when entrepreneurs are faced with significant setbacks and challenges. Passion may be harder to dissipate than entrepreneurial self-efficacy in the face of repeated negative feedback or setback experiences. While identities may shift slowly over time, they tend to be enduring and long-lasting (Wincent, Cardon, Singh, & Drnovsek, 2008). In contrast, entrepreneurial self-efficacy may change more quickly as it is subject to environmental considerations (e.g., De Clercq, Menzies, Diochon, & Gasse, 2009; Gist & Mitchell, 1992), such as the financial crisis under way at the time of our study. As a result, entrepreneurs' beliefs in their ability to accomplish tasks (their entrepreneurial self-efficacy) may become less important as a predictor of their persistence than the extent of their entrepreneurial passion. Longitudinal work would also provide a stronger test of causality. For example, it is possible that when people engage in behaviors, their identity becomes stronger; and it is also possible that people feel strongly for a certain identity and therefore engage in relevant behavior. Further research is needed to determine which possibility is better supported by data.

Interestingly, although it may be an artifact of the specific time frame in which we collected data (more on this below), our models indicated that passion for inventing and founding were important mediators of the self-efficacy to persistence relationship, while passion for developing was not. This is somewhat surprising given that prior conceptual work suggested that passion for founding and developing would be most relevant for driving persistence (Cardon et al., 2009). Future studies are needed to help explain why these two types of passion in particular impacted persistence and were impacted by self-efficacy.

It is possible that the activities involved with identifying opportunities and founding ventures are those that most require persistence given the huge risk of failure during these stages, while activities involved with growing a firm after it is established require a lot of hard work, but do not put the entrepreneur's financial future or self-identity at risk if they are not immediately successful. For example, if an entrepreneur has a goal to grow their firm and is unsuccessful, they have not necessarily failed but instead may have to maintain their current size or grow more slowly than initially planned. In contrast, if an entrepreneur is not successful at identifying a viable opportunity or establishing the firm as a going concern, then the firm cannot continue to operate, at least not for very long. This potential for outright failure and loss of the identity-important activities for the entrepreneur may motivate entrepreneurs to persist even more when they are passionate for inventing or founding than if they are passionate for developing the firm. It is also possible that given the difficult economic challenges occurring at the time of our study, self-efficacy was just as important as passion for developing in determining whether or not the entrepreneurs would continue to persist. Although passion for developing was important for persistence, it did not significantly reduce the importance of self-efficacy in our study. Future work is needed to better understand the potentially distinct relationships among the three domains of passion (or others that may be identified), self-efficacy, and persistence or other key behaviors and outcomes for entrepreneurs. This may be especially interesting to explore over the life cycle of firms and in different economic climates.

The methodologies needed to pursue such topics include longitudinal analysis and a very promising methodology is that of experience sampling (Uy, Foo, & Aguinis, 2010). While the experience-sampling methodology has been used primarily in shorter term studies, such as over the course of several weeks (Foo et al., 2009), it might be interesting to utilize such a methodology over several months and/or years. This would enable researchers to obtain data from a broader and larger sample of entrepreneurs more cost effectively, and would also address issues of sample-selection bias (Short et al., 2010) because presumably over the course of a multiyear study, some entrepreneurs would be more successful than others. A combination of self-reported measures of self-efficacy and passion for different entrepreneurial roles and/or activities (including their identity centrality) with observational data concerning the specific nature of one's entrepreneurial persistence, and the individual and organizational outcomes of such persistence would provide rich data from which to test more robust theories.

Limitations

On September 15, 2008, just as our first study participants were receiving their surveys, Lehman Brothers filed for bankruptcy, creating the largest bankruptcy in U.S. history and plunging the United States into the depths of a global financial crisis. The U.S. economy had been in a recession for 9 months, and the final future of many firms and the economy itself was murky. It is possible that the dismal status of the economy, combined with the uncertainty of the global financial crisis, impacted our study participants' responses to our survey. In particular, they may have perceived their passion for development and growth activities much lower in this environment, as mere survival may have been much more salient than growth. Indeed, qualitative feedback from some of our study participants supports this possibility. One respondent said, "My solemn focus presently is finding ways to survive and overcome this horrific economic crisis. Nothing is moving. Nothing is shaking. Nothing is happening. I want for my company to make it through it." Another said, "I write this in very uncertain financial times 10/10/08, so owning your own business requires a steel stomach and a lot of courage." Others referred to the "catastrophic business climate" and stated that the economy had had a "major impact on our sales." Given that this study was conducted just at the time the U.S. economy was in the throes of a major recession and monumental financial crisis, it would be helpful to further examine the effect of entrepreneurial passion on persistence in a less problematic economic environment. That said, the entrepreneurs in our sample were persisting, despite the challenging economic climate, and understanding why they were doing so seems particularly relevant in this difficult economy.

A second related limitation is that our respondents were still operating their businesses at the time of our study, so it is possible that those with low behavioral persistence were not adequately represented in our study. In addition, our study was conducted at a single point in time and within a single county in the United States. While there is no specific reason to expect different results in other geographic areas in the United States, the generalizability of our results is limited. Similarly, we limited our sample to firms with less than 250 employees, and we cannot say whether the relationships we observe here would be found with a sample of larger firms. We hope future studies will respond to these shortcomings by examining the role of entrepreneurial passion in other geographic locations with larger samples of entrepreneurs. Finally, entrepreneurial persistence is driven by many factors, and the present study examines just two: self-efficacy and entrepreneurial passion. As a result, consistent with previous studies of affect in entrepreneurs (Hahn et al., 2012), the adjusted R-squared values for the regressions reported in

this study are low, ranging from .084 to .136. Nonetheless, the findings are significant and suggest further study is warranted.

Despite these limitations, this study remains one of the first to empirically test the largely assumed relationship between entrepreneurial passion and persistence. By examining the mediation effect of entrepreneurial passion on the self-efficacy to persistence relationship, we hopefully shed further light on what causes some entrepreneurs to persist while others do not.

Implications for Practice

While anecdotal evidence abounds concerning the importance of passion to the success of an entrepreneur, academic research explaining its antecedents and consequences has been scant. This study lends support to theory that considers entrepreneurial passion to be not simply an innate trait (Markman, Baron, & Balkin, 2003), but rather a unique affective experience related to the entrepreneur's self-identity and the type of role he or she is engaged in (Cardon et al., 2009). This is important because entrepreneurship is a driver of economic growth (David, 2007), and if entrepreneurial passion is not simply a personality trait but rather an affect that can be identified, harnessed, and nurtured, a result may be an increased ability to encourage and nurture entrepreneurial efforts. In addition, if entrepreneurs can begin to understand the nature of the passion that is driving them, they may also be able to help harness it and leverage it to further their goals (Cardon et al.). An understanding of the consequences of entrepreneurial passion, for example greater persistence, can also help ensure that entrepreneurial passion fuels positive persistence toward desired goals, rather than becoming obsessive or dysfunctional (Vallerand et al., 2003). Our results indicate that while individual skills and beliefs in their own skills are important, so too is the specific aspect of the entrepreneurial process that the entrepreneur identifies with and feels strongly about, because it is this focused entrepreneurial passion that most determines who will persist in their entrepreneurial pursuits.

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