

Entrepreneurs' start-up versus persistence decisions: A critical evaluation of expectancy and value

Abstract

Research suggests that entrepreneurs tend to seek to maximize utility when considering whether to pursue a new venture opportunity. However, when choosing whether to persist with their current venture or not, utility maximization may not be of primary importance. Using a conjoint experiment, we examine the difference between policies in start-up decisions versus persistence decisions. The analysis of the decisions of 135 entrepreneurs indicates that the manner in which entrepreneurs use expectancy and value in persistence decision policies is significantly different than the way that they use expectancy and value in general opportunity pursuit decision policies. The results offer novel insights into the entrepreneurial decision-making process.

Keywords

Entrepreneurship, decision-making, persistence, expectancy

Introduction

Choice precedes action. Entrepreneurial action is a response to a choice under uncertainty regarding an opportunity to create new value (McMullen & Shepherd, 2006). Decisions of whether to act, or not, are at the heart of entrepreneurship. Consequently, scholars (Grilli, 2011; Douglas and Shepherd, 2002; Kolvereid, 1996) have put forth a great deal of effort to try to understand the underlying factors that influence such decision-making by entrepreneurs. Expectancy-based theories are particularly useful in the examination of *choice* between alternative actions; it is argued that individuals are more likely to select the alternative that is most likely to maximize attractive outcomes (Steel and Konig, 2006). In other words, the choice to commence a particular course of action is influenced by the *expectation* that the action will lead to *valued* outcomes (Vroom, 1964). Therefore, individuals make judgments about expectancy—the subjective probability that any given outcome will indeed follow the behavior; and value or valence—the desirability of the expected outcomes. Expectancy theory suggests that higher expectancy and higher value will independently increase the probability of acting. Furthermore, the theory suggests that there is a multiplicative effect between expectancy and value as individuals strive to maximize the utility of a choice (Shah & Higgins, 1997). This multiplicative

effect between expectancy and value means that the attractiveness of a decision alternative will increase as expectancy increases - but will do so at a faster rate when value is high as compared to when value is low.

In the entrepreneurship literature, expectancy theory has been well supported in studies of entrepreneurial decision-making (e.g. Douglas and Shepherd, 2000; Gatewood et al., 2002; Krueger et al. 2000). Yet, the research has focused largely on the decision to become an entrepreneur (Edelman et al., 2010); so for example, Campbell (1992) demonstrated that a potential entrepreneur considers the expected outcomes and probabilities of success between an entrepreneurial opportunity and wage labour and is likely to choose entrepreneurship if it provides higher rent. Krueger et al., (2000) however, suggested that desirability and feasibility were antecedents of the intention to start a new venture whilst Douglas and Shepherd (2002) examined entrepreneurs' perceptions of utility and found that valences correlated with the intention to become self-employed. Critically however, it emerges that entrepreneurs often seek to maximize utility when considering starting a new venture (Douglas and Shepherd, 2000).

While there has been a substantial body of work that has supported expectancy theory for decisions related to new venture start-up, there have been relatively few analyses that examine other important decisions in the entrepreneurial process. These decisions – such as whether to persist in the current business, to begin another new venture, or how to manage a venture, for instance – are often perceived to be not only *risky*, but *uncertain*. Risk exists when all possible future outcomes for a decision or action are known, and when the probability of each of those outcomes is also known (Wald, 1950). The outcomes are thus, governed by a well-defined probability distribution under the condition of *risk* (Alvarez and Barney, 2005). *Uncertainty*, on the other hand, exists when neither the set of possible outcomes nor the probability of those outcomes is known (Knight, 1921). An appropriate analogy proposed by Alvarez and Barney (2005) is that *risk* involves the use of a dice known to have six-sides and that is fair and balanced,

while *uncertainty* involves the use of dice where not even the number of sides it has is known, in addition, it may not be fair and balanced.

Persistence is generally considered one of the most important attributes of successful entrepreneurs (Kuratko and Hodgetts, 2007). Entrepreneurs make the decision to start a business a single time but they must make the decision to persist with the venture many times. Often individuals make the decision to persist, almost automatically, with little thought for alternative actions. However, when performance feedback is frequently and consistently more negative than expectations, individuals may make a more conscious cognitive assessment of the likelihood of a future successful outcome (Carver and Scheier, 1998). In so doing, the conditions that prompted a more serious evaluation will likely influence the way that expectancy and value are used in the decision policy (Grilli, 2011). Even more, the persistence decision is fundamentally different than the start-up decision in that the entrepreneur is choosing whether to continue with a decision that has been previously made. This simple difference may introduce potential biases into the decision-making process, such as self-justification or normative pressure to persist (DeTienne et al., 2008).

Regarding our previous discussion on risk vs. uncertainty, the persistence decision may also differ from the start-up decision as more is known about an existing business than a proposed new venture. So, while a business under consideration for a persistence decision may be either more or less *risky* than a new venture, a current business is almost assuredly perceived to be less *uncertain* than a newly proposed venture. This point may be highly salient to the persistence decision as previous scholarly work indicates that entrepreneurs do not necessarily see themselves as risk takers (Palich and Bagby, 1995), but are much more concerned in addressing and reducing sources of uncertainty (Cornelissen et al., 2012). In sum, the differences in how start-up and persistence decisions are perceived suggest that entrepreneurs may use heterogeneous decision policies in the

two contexts. In this study, we seek to compare the use of expectancy and value in start-up decisions versus persistence decisions.

Though it appears that entrepreneurs seek to maximize utility when choosing whether or not to start a new venture (Douglas and Shepherd, 2000), it has been suggested that they may not seek utility maximization when making the decision to persist with a venture (Holland, 2011). Yet, we have not found a study that directly analyzes the decision policies of active entrepreneurs for start-up decisions *and* persistence decisions. An important contribution of this paper is the comparison of decision policies that are used by entrepreneurs as they consider the pursuit of new venture opportunities in the two contexts. In the first, entrepreneurs may choose to pursue the opportunity in addition to their current venture, while in the second they must choose to either pursue the new opportunity or persist with their current venture. We will next present the theory and hypotheses; this is followed by a description of the method, analysis, and results of the experiment and we conclude with a discussion of the findings.

Theory and hypotheses

Even though the contexts of start-up decisions versus persistence decisions differ, the two types of decisions are comparable because they generally include choices between two or more courses of action. In either case, individuals will typically compare the various employment or new venture opportunities that are available to them. For these types of decisions that consider alternatives, expectancy-value theory has been helpful in increasing our understanding as to why individuals may choose one particular option over another. Expectancy-value theory argues that an individual chooses the alternative that offers the greatest probability of generating valued outcomes (Vroom, 1964; Fishbein and Ajzen, 1975; e.g. Feather, 1982). Individuals analyze each alternative based on the likelihood and the desirability of the consequences and seek to maximize the net positive effects (Wiklund et al., 2003).

While decision-makers may not consider all of the possible outcomes with their associated probabilities and values for every decision (Haynie and Shepherd, 2009), expectancy-value models appear to work well for major decisions that warrant the time and energy required to sufficiently assess the options (Wanous et al., 1983). For this reason, expectancy theory is a suitable lens through which to view decision-making about start-ups (Edelman et al., 2010) as has been validated in a number of entrepreneurial studies (e.g. Gatewood et al., 2002; Krueger et al., 2000; McMullen and Shepherd, 2006; Shaver et al., 2001).

Expectancy is the subjective probability that an outcome will indeed follow behaviour (Vroom, 1964). An entrepreneur's perceptions of the probability of achieving desired outcomes when considering a new venture opportunity are fostered by several factors such as beliefs regarding personal skills and knowledge needed to take advantage of the entrepreneurial opportunity; experience with success or failure in similar activities; whether or not the person believes that they can collect the needed resources; beliefs about the competition, industry, and economy; and the individual's characteristics and moods (Feather, 1992). When an individual perceives that a particular course of action has a high likelihood of producing a desired outcome (e.g. high financial returns or high non-financial benefits), they are more likely to choose that course of action. On the other hand, when a particular alternative is perceived to have a low probability of positive consequences, then the decision-maker is less likely to select that alternative. For both start-up decisions and persistence decisions, the influence of expectancy on the selection of an alternative will be similar. Therefore, we hypothesize that

H1: A higher relative level of *expectancy* of obtaining (a) financial returns and (b) non-financial benefits from a new entrepreneurial opportunity will be positively related to the likelihood to pursue that opportunity.

H2: A higher relative level of *expectancy* of obtaining (a) financial returns and (b) non-financial benefits in the current entrepreneurial venture versus a new entrepreneurial opportunity will be positively related to the likelihood to persist with the current venture.

The value or valence of the behavioural outcomes refers to the expected benefit, satisfaction, or desirability that an individual associates with an outcome (Vroom, 1964). Of course, decision-makers may evaluate a wide variety of outcomes when mulling over alternative options. The value placed on the outcomes may range from very negative to extremely positive. For example, an entrepreneur may look at the number of hours that will be required, the financial commitment needed, or the impact on relationships of a new venture. Another entrepreneur may focus on the potential legacy that may be created, the risk of bankruptcy, or the autonomy associated with being an entrepreneurial actor. These outcomes will vary between individuals and the value placed on any given outcome may also vary. The ultimate decision to act is influenced by the collective of all contemplated outcome valences (Van Eerde and Thierry, 1996). In both start-up and persistence decisions, entrepreneurs will be more likely to choose to pursue opportunities with expected outcomes that they value highly.

Ventures are typically created to provide value to customers and to collect value (i.e. money) from customers. It is not surprising that one of the primary objectives of becoming an entrepreneur is to reap the financial rewards of the business (Morris et al., 2005). In start-up decisions, it is expected that entrepreneurs will be more motivated to act if the expected financial returns are high (Kolvereid, 1996). Campbell (1992) suggested that entrepreneurial decisions are based on a comparison of the net present economic value of working for somebody else versus the value that may result from new venture creation. The main effect of financial value will not be significantly different in persistence decisions. When an entrepreneur is choosing whether to continue a current business or to direct finite resources towards a new opportunity, the value of the anticipated future economic benefits will be a significant factor in the decision.

Even though financial returns are important, entrepreneurship is not stimulated exclusively by such extrinsic motivations (Amit and MacCrimmon, 2001). Many entrepreneurs are also motivated by outcomes that are more intrinsic in nature. Self-realization, the thrill of innovation, recognition, and independence were found to be significant contributors to the decision to become an entrepreneur by Carter and her colleagues (2003). The concern for the welfare of the new venture's employees has been shown to have an effect on decisions concerning ongoing venture management and growth (Wiklund et al., 2003). Others measured the factors that contribute to the desire to stay self-employed and found that intrinsic rewards, family security, and autonomy played a key role in the decision (Kuratko et al., 1997). Non-financial benefits can play a significant role in the decision to pursue a new venture opportunity; they also influence the continuing commitment with a venture (Sharma and Irving, 2005). Consistent with these findings regarding financial and non-financial benefits, we posit:

H3: A higher relative level of *value* of (a) financial returns and (b) non-financial benefits that may be obtained from a new entrepreneurial opportunity will be positively related to the likelihood to pursue that opportunity.

H4: A higher relative level of *value* of (a) financial returns and (b) non-financial benefits that may be obtained from the current entrepreneurial venture versus a new entrepreneurial opportunity will be positively related to the likelihood to persist with the current venture.

Expectancy x Value

Scholars have argued that expectancy and value have a multiplicative effect on motivation (Vroom, 1964). In other words, the influence of high levels of expectancy on motivation is more prominent (steeper slope) when the value of the outcomes is perceived to be high than when it is perceived to be low. This positive interactive effect is derived from an individual's desire to choose an alternative that maximizes utility— i.e. as both value and expectancy increase, the

decision alternative becomes more appealing. When entrepreneurs consider the likelihood and desirability of the outcomes of a potential new venture, they are increasingly more likely to pursue the opportunity when both variables are high (Douglas and Shepherd, 2000; Douglas and Shepherd, 2002). Thus,

H5: The expectancy of the financial returns of a new opportunity is more positively related to the likelihood to pursue that new opportunity when the potential value of the financial returns from the new opportunity is high than when it is low.

Alternatively, there have been conflicting results in the literature regarding the independent interactive effect of expectancy and value. Whilst some have found that the interaction is not significant, others have found it to be significant but negative (Shah and Higgins, 1997). The inconsistency of the results may indicate that differences in the types of decisions that were tested may influence the interaction between expectancy and value. The contextual differences between decisions may lead to biases in decision-making that result in selecting an alternative that does not necessarily maximize utility. For example, Shah and Higgins (1997) argued that the interaction between expectancy and value may be negative when a decision alternative is perceived to be a duty or necessity. There are examples of non-significant or negative interactions for these types of decisions in the literature; Feather and O'Brien (1987) observed the unemployed finding that the expectancy of finding a job and the value of finding a job had independent main effects on job seeking behaviour but the interaction between expectancy and value was not positive. The unemployed would likely consider searching for a job to be a necessity and utility maximization may be less of a concern than if they were seeking for a new job while already employed in a satisfactory position. Another example relates to the duty or necessity of trying to save a person who is drowning; it was found that there was no positive interaction between the value and expectancy of saving the drowning person (Lynch and Cohen, 1978). High value (i.e. a personal relationship with the person drowning) had a substantial impact on the motivation to help, even if

the likelihood of saving the person was low. Alternatively, high expectancy (i.e. a high probability of being able to save the person) had a strong effect on the decision to assist even if the value was low (i.e. the person was unknown). The motivation significantly increased as the value or the expectancy increased but there was not a significant increase in the rate of rising motivation as both variables simultaneously increased. These studies suggest that individuals may not seek utility maximization when the choice concerns an obligation or a duty.

This type of decision is in accord with norm theory (Kahneman and Miller, 1986) that states decision-makers are likely to place greater emphasis on an alternative that is perceived to be the norm. The decision-makers cognitive reasoning is frequently biased by the tendency to exaggerate the potential loss or disutility that may result from choosing a non-normative alternative (Bar-Eli et al., 2007). An aversion towards potential loss gives rise to a preference for maintaining the status quo or the norm (Kahneman and Tversky, 1979). Individuals will still be motivated by value and expectancy but may not seek utility maximization. When there is strong normative pressure to select a particular alternative, that alternative need only feel like a relative necessity (high value) or a relative sure thing (high expectancy) to induce the choice (Shah & Higgins, 1997). In other words, if the alternative feels like a necessity then the concern with the likelihood may be diminished. Alternatively, if an option feels certain to be achieved, the value of that choice may play a reduced role in the decision process.

Entrepreneurship is seemingly a ripe environment for biases in decision-making (Busenitz and Barney, 1997; Baron, 1998; Burmeister and Schade, 2007). For example, Baron (1998) argued that entrepreneurs may be even more susceptible to counterfactual thinking, affect infusion, attribution errors, planning fallacy, and self-justification than non-entrepreneurs. Entrepreneurs also appear to be prone to overconfidence and representativeness biases (Busenitz & Barney, 1997). Additionally, Burmeister and Schade (2007) found that even though entrepreneurs are generally thought to be open to new alternatives, they are not immune to the status quo bias.

We would argue that the bias towards norms or the status quo will influence persistence decisions. The normative pressure to start a business is generally less prevalent than the pressure that one should persist with an existing venture. Persistence - even when the firm is failing or there are enticing alternatives, is often praised in the popular press as a sign of dedication and audacity, if not sheer heroism (Meeks and Sullivan, 1992; Hartman, 1983; Martin, 2006; Harper, 2007). Indeed, entrepreneurship students are frequently taught that persistence is one of the essential characteristics for success (e.g. Kuratko and Hodgetts, 2007). As such, an entrepreneur may feel significant normative pressure from family, friends, and colleagues to continue with an existing venture - even if a better option presents itself (Holland, 2011; Cardon et al., 2005). In other words, entrepreneurs may very well feel that persisting with a business is indeed, an obligation. Additionally, entrepreneurs may choose to persist in their ventures because they have already eliminated some of the uncertainty associated with the business, while initiating the pursuit of a brand-new venture would be attended by a great deal more uncertainty. As the idiom goes, "better the devil you know than the one you don't." As a result, maximization of both expectancy and value may not be the primary concern; as an entrepreneur considers whether to persist with an existing venture or to pursue a new opportunity, a higher value of persisting will have a more substantial impact on the decision when expectancy is low than when expectancy is high. Alternatively, a higher level of expectancy will affect the decision more dramatically when the value is low than when the value is high. Therefore, we expect that

H6: The expectancy of the financial returns of the current business is less positively related to the likelihood to persist with the current business when the potential value of the financial returns from the current business is high than when it is low.

The Effect of the Size of the Existing Business

The size of an entrepreneur's existing business is likely to be an important factor in the decision process of whether to pursue new opportunities. Firm size is frequently an indicator of venture performance (Jayaraman et al., 2000). Firms that are performing well may be increasing in size and have access to expanding resources that could potentially be used to exploit new opportunities (Westhead et al., 2003). Furthermore, entrepreneurs that have experienced a measure of success in growing a new venture are more likely to have a higher level of entrepreneurial self-efficacy toward the pursuit of future opportunities (Bandura, 1997); this informs increased intention to act upon perceived new venture opportunities (Zhao et al., 2005). Thus, we argue that

H7: Entrepreneurs with larger existing firms will be more likely to pursue new start-up opportunities than entrepreneurs with smaller firms.

We would expect the size of the current business to affect the persistence decision in a different way. Entrepreneurs often develop a strong emotional and psychological bond with their new ventures (Cardon et al., 2005). As investment increases and business flourishes, the psychological ownership of the organization is likely to intensify making it more difficult to separate from the business (Pierce et al., 2001). DeTienne and her colleagues (2008) found that entrepreneurs are more likely to persist, even with under-performing firms, when personal investment is high. Moreover, in larger firms, the entrepreneur's decision about whether to persist with a firm affects a greater number of people; as the number of employees increases, so does the social pressure to continue with the business. Therefore, we hypothesize

H8: Entrepreneurs with larger existing firms will be more likely to persist with their current venture (rather than pursuing a new start-up opportunity) than entrepreneurs with smaller firms.

Method

Sample

The population selected for this study includes entrepreneurs in high-technology industries. The industries were selected using the 46 four-digit NAICS codes classified by the Bureau of Labor Statistics as high-technology (Hecker, 2005); our sample choice is consistent with the observation of Bhidé (2000) that the greatest number of fast-growth private firms comes from high-technology industries. Accordingly, our sample choice is framed by the importance of ideas that arise in high-technology industries. A key aspect of this sample is the ability of individuals within high-technology industries to evaluate the prospects of ideas and their inherent ability to develop them. The sampling frame consists of active owner-managers of businesses, as commonly set forth in entrepreneurial studies (McDougall et al., 1994).

A list of entrepreneurs was acquired from the Department of Commerce Business Entity List from a western state in the USA; this list includes all companies that have registered with the state for a business license. From a preliminary list of 2777 companies, a random sample of 860 potential participants were selected; 438 of the listings had incomplete or inaccurate data (e.g. out of business, sold the business, no telephone number, etc.), resulting in a total of 422 potential participants. The potential respondents were contacted by mail and were invited to participate in the study. Next, the researchers attempted to call each potential participant up to three times to set up a time to administer an internet-based survey. Of the 422 potential respondents, 204 (48%) could not be reached by telephone; 9 (2%) were unable to participate due to other commitments; 59 (14%) turned down the invitation to participate; and 150 (36%) elected to take part in the study.

Of the 150 participants, 11 did not fully complete the survey and four were not owners of the business and were consequently removed from the study. A sample size of 135 exceeds many other conjoint studies; for example, entrepreneurship studies examining the decision policies of venture capitalists had sample sizes of 51 (Franke et al., 2006) and 66 (Shepherd, 1999). It is important to note that because of the multiple observations for each participant, conjoint experiments can achieve greater statistical power with smaller sample sizes (Shepherd and Zacharakis, 1997). A summary of the sample's descriptive statistics is shown in Table 1.

In order to test for non-response bias, we followed the method of comparing early responders with late responders (Daniel et al., 2002). The sample was divided into two groups based on when they responded to the survey. No significant differences between the responses of the two groups were found, suggesting that non-response bias is not a major concern.

Insert Table 1 about here

Conjoint experiment design

In this study, we used a metric conjoint experiment to analyze the start-up and persistence decisions of entrepreneurs where respondents are asked to make a series of decisions that are presented using a specific set of decision attributes. In this case, the participants were asked to determine the likelihood of pursuing a new opportunity based on the attributes of expectancy and value of the alternative business opportunity as compared to the existing business. By analyzing many different decisions made by the participants, we are able to determine the underlying structure of their decision policies (Louviere, 1988). Conjoint analysis also allows for the examination of contingency relationships or two-way interactions between the decision attributes (Hitt and Barr, 1989); another advantage being that it is a real time method. The participants are

making real decisions based on realistic attributes and are not as susceptible to certain biases that are inherent in post hoc surveys (Fischhoff, 1982). Conjoint experiments have frequently been used in marketing to analyze consumer choices (Gofman et al., 2010) and in the last decade they have increasingly been reported in the entrepreneurship literature (Bruns et al., 2008; McKelvie et al., 2011; Lohrke et al., 2010).

The participants were asked to rate the likelihood that they would pursue a series of hypothetical entrepreneurial opportunities. Each hypothetical opportunity was presented as a comparison with the participant's current business across four criteria: value of financial returns, likelihood of financial returns, value of non-financial benefits, and likelihood of non-financial benefits (these attributes are discussed in greater detail in the next section). Specifically, the opportunity was presented as offering higher or lower value and likelihood of financial returns and non-financial benefits than their current business. The dependent variable is the likelihood to pursue the new entrepreneurial opportunity. An example of the presentation of one of the scenarios is included in Appendix 1.

It should be noted that it is important to control for unobservable situational effects by setting common assumptions for all of the decisions. Before choosing the likelihood of pursuing the hypothetical opportunities, the respondents were asked to use the following assumptions in their decisions: 1) You are making decisions about these opportunities in the current economic environment; 2) Other than the information provided in the scenarios, the hypothetical opportunities presented are similar in all respects to other entrepreneurial opportunities you might see; 3) We ask that you consider each scenario as a separate decision, independent of all the others.

An important part of this study is the examination of potential differences in decision-making depending on the context of the decision—i.e. start-up or persistence. Participants were required to make decisions about an identical set of start-up opportunities in the two different contexts.

The context was manipulated by providing one or two unique assumptions, in addition to the common assumptions listed in the preceding paragraph, before the two sets of decision scenarios were presented. In setting the start-up context, participants were asked to assume that “you have the resources (or access to the resources) to continue with your current business AND invest in the new opportunity, if you choose to do so.” In the persistence context, participants were asked to assume that “you have the resources (or access to the resources) to continue with your current business OR to change to the new opportunity. You do not have the resources to pursue both opportunities. In other words, if you choose to pursue the new opportunity, you will have to close or sell your current business.” The identical choice regarding the likelihood of pursuing the new opportunity is made by the participants in both contexts. However, in the persistence context, persistence is actually the opposite of pursuing the new opportunity since pursuit of the opportunity requires selling or shutting down the business. This difference is accounted for in the analysis with reverse coding.

The two contexts, and their associated decisions, were separated by a questionnaire that was not directly related to making decisions about pursuing entrepreneurial opportunities. This provided temporal and mental separation between the two contexts. A manipulation check was also performed to ensure that the manipulations were effective. Results of the check revealed that respondents did deem the two contexts to be different and the differences played a role in the decision process.

With four decision attributes and two levels per attribute, there are 16 (2^4) possible combinations of scenarios. Since we duplicate the scenarios in both contexts and we include a practice scenario and several replicated decisions to test for reliability, the total number of decisions could have become cumbersome for respondents. In order to minimize survey fatigue, the Hahn and Shapiro (1966) orthogonal fractional factorial design was utilized which reduced the number of possible profiles from 16 to 8. This design confounds the effects of most interest with

effects that are unlikely to be significant or to cause much bias in the estimated parameters (Green and Srinivasan, 1990). This design allowed for the testing of all main effects (Louviere, 1988). A limitation of this design is that only two-way interactions with a single variable can be tested (the financial returns variable was selected for the interaction in this study). Despite this limitation, we decided that it was more important to reduce the total number of decisions. The orthogonal fractional factorial design is commonly used in entrepreneurship conjoint studies (e.g. Holland and Shepherd, 2011; McKelvie et al., 2011).

In total, the conjoint element of the survey required that the participants make decisions based on 21 scenarios—1 practice, 10 in the first context (8 plus 2 replicated), and 10 in the second context (8 plus 2 replicated). In addition to these decisions, a questionnaire was used to collect data about the independent variables, control variables, and various other individual characteristics. As mentioned previously, part of the questionnaire was administered between the two conjoint contexts. The remaining portion was completed at the end of the survey. The instrument was pilot tested with 5 participants and minor changes resulted from the feedback. Discussions with the pilot participants suggested that the decisions and contexts were clear and the survey had face validity.

Variables and measures

Decision attributes. Four attributes representing the expectancy (probability of financial returns and probability of non-financial benefits) and value (financial returns, non-financial benefits) of the opportunity outcomes were used as the decision criteria. For each opportunity, the four attributes were presented at either a higher or lower level than the respondents' current business.

1. Value of Financial Returns: Higher (Lower) – the potential value of the financial returns from the new opportunity is substantially higher (lower) than the potential value of the financial returns from your current business.

2. Value of Non-financial Benefits: Higher (Lower) – the potential value of the non-financial benefits from the new opportunity is substantially higher (lower) than the potential value of the non-financial benefits from your current business.

3. Likelihood of Obtaining Potential Financial Returns: Higher (Lower) – the likelihood of obtaining the potential financial returns from the new opportunity is substantially higher (lower) than the likelihood of obtaining the potential financial returns from your current business.

4. Likelihood of Obtaining Potential Non-Financial Benefits: Higher (Lower) – the likelihood of obtaining the potential non-financial benefits from the new opportunity is substantially higher (lower) than the likelihood of obtaining the potential non-financial benefits from your current business.

It is important to note that for the analysis of the persistence context, the decision attribute levels were reverse coded. As noted, the decision attributes were presented as a comparison between the new opportunity and the entrepreneur's current business. Thus, a higher value of financial returns for the new opportunity means a lower value for the current business. The persistence hypotheses are relative to the value and expectancy of the current business so the reverse coding is required.

Decision outcome (dependent variable). Based on the given scenarios, respondents were asked to rate the likelihood that they would pursue the potential opportunity. The decision outcome was measured on a 9 point Likert scale anchored by (1) Not at all likely to pursue, (5) Somewhat likely to pursue, and (9) Very likely to pursue. In the analysis of the persistence context, the outcome variable was reverse coded since a decision to pursue the new opportunity

(e.g. 9 is very likely) necessitated a decision to not persist with the current business (e.g. reverse coded as 1 for “not at all likely to persist with the current business”).

Size of the existing firm. Consistent with many other entrepreneurship studies (Baum and Locke, 2004), the number of full-time employees is used as a proxy for the size of the firm.

Control variable. Previous studies examining entrepreneurial persistence have use variables related to entrepreneurial experience (Gimeno, Folta, Cooper, & Wu, 1997). Entrepreneurs often develop important skills through previous start-up experience that can influence new venture performance (Chandler and Hanks, 1994; Westhead and Wright, 2011). Such experience may improve the entrepreneur’s ability to evaluate feedback from the market which may impact the decision to persist with a new venture. Therefore, participants were asked whether they had any previous start-up experience and we used this variable as a control variable.

Analysis and results

The design of the conjoint experiment resulted in 20 decisions per respondent, or 2700 total observations. The decision data was tested for reliability by replicating four of the decisions and performing a test-retest analysis for each individual’s decisions (Caruso et al., 2009). There were 82% of the respondents that were significantly reliable in their responses ($p < .05$) with a mean test-retest correlation of 0.96, which is favourable compared to other similar studies (e.g. Shepherd [1999] found a mean test-retest correlation of .69 with 92% of respondents providing significantly reliable responses). Further examination of the individual’s Pearson R correlations that were not significant showed that all respondents had test-retest correlations greater than 0.64, so all were kept in the study.

Due to the fact that in conjoint studies multiple decisions are nested in each individual’s responses, we employed hierarchical linear modelling (HLM) for the analysis of the data. HLM is particularly effective with nested data because it controls for autocorrelation and

heteroskedasticity that may arise (Choi and Shepherd, 2005). HLM accounts for variance both within and between individuals and, when used in conjunction with data from a conjoint analysis, results in the decomposition of the basic decision structure of the respondents (Bruns et al., 2008).

Before modelling the decision policies of the entrepreneurs, we used regression analysis to analyze each respondent's set of decisions to analyze the individual decision policies. Over 88 percent of the individual's decision policies explained a significant proportion of variance ($p < .01$) with a mean R^2 of 0.78.

Hypothesis testing

The results of import for the given hypotheses from the HLM analysis are reported in Table 2 (start-up context) and Table 3 (persistence context). Hypotheses 1 and 2 suggested that the expectancy of achieving valued outcomes would play a significant role in the entrepreneurs' decisions. The two expectancy coefficients for financial returns and non-financial returns were positive and significant (financial coefficient = 2.646, $p < .001$; non-financial coefficient = 0.942, $p < .001$) in the start-up context. Therefore, H1a and H1b were supported. Similarly, the coefficients for the effect of the expectancy variables in the persistence context were positive and significant (financial coefficient = 3.244, $p < .001$; non-financial coefficient = 0.723, $p < .001$). H2a and H2b were supported.

Insert Table 2 about here

Hypotheses 3 and 4 were concerned with the impact that the value attributes would have on the decisions towards start-up and persistence, respectively. In the start-up context, the coefficients for the value of financial returns and value of non-financial benefits were positive and significant (financial coefficient = 2.467, $p < .001$; non-financial coefficient = 1.104, $p < .001$). H3a and H3b were supported. The coefficients were also positive and significant in the persistence

context (financial coefficient = 3.063, $p < .001$; non-financial coefficient = 0.949, $p < .001$), providing support for H4a and H4b.

The next two hypotheses look at the interaction between value and expectancy. We argued that this interaction would be different between the two contexts. Specifically, in H5, we argued that there would be a positive interaction between expectancy and value in the start-up context. However, H5 was not supported as the results showed that there was not a significant interaction in this context (coefficient = -0.007, $p = 0.972$). This interaction between expectancy and value in the start-up context is plotted in Figure 1. As hypothesized, the interaction between expectancy and value was indeed negative in the persistence context (coefficient = -1.494, $p < .001$). This interaction is plotted in Figure 2. H6 was supported.

Insert Figures 1 and 2 about here

An important part of this study is the examination of whether the way entrepreneurs make decisions in the start-up context differs from the way they make decisions in the persistence context. The results show that one expectancy x value interaction was not significant and the other was significant. However, further analysis is needed to determine whether the two coefficients are significantly different from each other. The Chow test (Chow, 1960) can be used to analyze whether the effects in the two contexts are equal by comparing the sum of squared residuals of the regressions in the two contexts (Oppewal et al., 1994). The results indicate a significant F statistic ($p < .001$) so the null hypothesis is rejected, providing statistical evidence that the two interaction coefficients are not equal. Therefore, the interaction between expectancy and value in entrepreneurs' decision policies in the start-up context is significantly different than in the persistence context.

In order to determine the results for H7 and H8, we must look at the effect of current firm size on the start-up decisions. These data are reported in the right hand column of Table 2 and Table 3. In this model, the intercept and the decision attributes become the dependent variables and firm size is the independent variable. The relationship between size and the intercept is positive and significant (coefficient = 0.002, $p < .001$) in the start-up context, indicating that entrepreneurs with larger existing businesses are more likely to choose to pursue a new venture opportunity. Hence, H7 is supported. H8 suggested that entrepreneurs with larger businesses would be more likely to persist with the current business than entrepreneurs with smaller businesses. The relationship between size and decision to persist is not significant (coefficient = -0.001, $p = .179$). H8 is not supported.

Discussion

Start-up versus persistence

This is one of the first studies that directly compare start-up decisions with persistence decisions amongst existing entrepreneurs. The context for these decisions is notably different; it is important that we gain a greater understanding of the distinctions between them. It has been suggested that decision-makers will rationally choose the alternative with the greatest expected utility, no matter the context (Manzini and Mariotti, 2009). We found that, as predicted by the theory, entrepreneurs were generally influenced by the main effects of the expectancy and value attributes of the opportunities presented in each context. In both contexts, if the new opportunity had higher financial or non-financial value and a higher expectancy of attaining that value, then the entrepreneurs were more likely to pursue the opportunity. However, entrepreneurs were not consistent in their desire to maximize utility through opportunity pursuit. The results showed that the manner in which entrepreneurs made decisions in the persistence context were indeed different than how they made the same basic opportunity pursuit decisions that did not require exiting the current business. The persistence decisions resulted in a negative interaction between expectancy

and value - as opposed to no significant interaction between expectancy and value in the basic start-up context; statistical analyses determined that the interactions were significantly different within the two contexts.

This is an important finding as it shows that persistence decisions are fundamentally different; as such, decision-makers do not necessarily always seek utility maximization. There seems to be a bias towards persistence but entrepreneurs do not become significantly more motivated when both value *and* expectancy are high as compared to when either value *or* expectancy are high. In other words, the negative interaction suggests that if the potential value of the current business is higher than the alternative, then the probability of success has a muted influence on the decision. Or, if the probability for a successful outcome in the current business is higher than the alternative, then the impact of the value factor is not as pronounced. The maximization approach would imply that high value would have a greater impact on the likelihood of persistence when the probability is also high (i.e. positive interaction), and vice versa.

We believe that there are numerous future research opportunities that will help to further elucidate the reasons why start-up and persistence decision processes differ. We argued that normative pressure towards persistence may be one of the reasons that decision-makers do not always seek utility maximization when deciding whether or not to persist. In general, society does not expect people to pursue every opportunity they see, even promising ones, but there is often an expectation that a person should persist with something they have started. Social networks are vital to entrepreneurship (Cope et al., 2007), and we contend that entrepreneur sensitivity towards social network attitudes towards persistence may influence the way they make decisions related to persistence. This study perhaps indicates that entrepreneurs are more likely to maximize value when they can also maintain their current business initiatives, but the societal pressures and norms of persistence render less important the entrepreneurial drive for value maximization.

Another potential explanation for the heterogeneity of decision policies between the start-up context and the persistence context may be the switching costs associated with changing from one business to another. In the start-up context, the participants would not have needed to switch from their current venture to pursue the new opportunity; they could choose to pursue the new opportunity in addition to current pursuits. However, in the persistence context, they had to choose between the current venture and the new opportunity—i.e. they could either persist with their business or switch to a new opportunity. There are costs, financial and non-financial, that are unique to switching that may affect the decision process (Gimeno et al., 1997). Entrepreneurs make financial, social, and psychological investments in the businesses that they start (Holland & Shepherd, 2011). Exiting that business and starting a new one may leave a sense of loss regarding those previous investments (Sharma and Irving, 2005); the entrepreneur may feel the need to justify a previous decision related to starting the new venture by seeing the decision through to a successful conclusion (Staw, 1997). They may also feel constrained by the economic costs of pursuing a new opportunity, even if it has great promise (Drummond, 2004). Furthermore, entrepreneurs may exhibit aversion to uncertainty when persisting with a venture perceived as less uncertain than the new opportunity given familiarity with the current business. It may be that the consideration of switching costs places greater value on persistence which lessens the demand for utility maximization when comparing alternatives. Future research about switching costs and related constructs may help to clarify the thought processes used by entrepreneurs as they consider persistence decisions and new start-up decisions.

Firm level characteristics

A second important contribution of this study relates to the relationship between firm level characteristics and decision policies. The results suggest that entrepreneurs with larger firms are more likely to choose to pursue new venture start-up opportunities than those with smaller firms. This finding is consistent with the literature on portfolio entrepreneurs; Westhead et al.,(2005b)

found they have more resources (financial, human capital, etc.) than serial or novice entrepreneurs. Entrepreneurs with growing firms, and consequently growing resources, will frequently monitor the environment in search of opportunities in which to allocate resources that will increase growth prospects. The experience of growing a firm helps to develop a cognitive mindset that provides the understanding of the benefits of pursuing additional entrepreneurial opportunities (Robson et al., 2012; Westhead et al., 2005a).

However, firm size was not a significant determinant of the decision to persist; it is plausible it is correlated with psychological ownership of the firm from the standpoint of the self-investment of energy, time and resources required to create growing ventures. However, Pierce et al., (2001) suggest that psychological ownership is not exclusive to self-investment but also encompasses control and intimacy. Control refers to the extent to which an individual controls a given aspect of the new venture whilst intimacy denotes an individual's intimate familiarity with the various facets of the venture. In larger organizations, the entrepreneur may feel that it is no longer possible to control all aspects of the business; similarly, they may lose that intimate knowledge of many parts of the business as responsibilities are delegated to new team members. It has been argued that as firms grow, entrepreneurs are more likely to feel uncomfortable with the new role requirements that are often associated with leading an expanding organization (Dobrev and Barnett, 2005). Some may struggle with the transition from venture creator to that of a manager that must impose systems and processes to develop efficiencies to satisfy external stakeholders. These types of individuals are more likely to have a reduction in psychological attachment and may choose to exit the firm, becoming serial entrepreneurs because they identify more with the role of venture founder than the actual venture itself (Hoang and Gimeno, 2010). It may be that our sample included a mix of such entrepreneurs and thus, the relationship between firm size and persistence was not significant. Future research could explore the nuances of the personal characteristics that may interact with firm characteristics in entrepreneurial persistence decisions.

Post-hoc analysis of the influence of the firm size on the weight placed on decision attributes showed some interesting results. Entrepreneurs with larger firms were significantly more likely ($p < .01$) to place greater weight on the probability of the financial returns of the new venture opportunity. This finding appears to be consistent with prospect theory (Kahneman & Tversky, 1979) that argues decisions are changed depending on the framing; for example, losses loom larger than gains and therefore, an individual will tend to be more risk-seeking if an opportunity is viewed as a chance to avoid losses and more risk-averse if the opportunity is viewed as a chance to increase gains. Entrepreneurs with more sizable businesses are more likely to view future opportunities from the perspective of having made significant gains in their current venture and looking to increase future gains. This perspective will result in a tendency towards risk-aversion, meaning that they will place increased emphasis on the expectancy attribute of the potential opportunities. Interestingly, the size of the firm was not related to a significant change in weight of the expectancy attributes in the persistence context. Perhaps the change in context shifts the framing of the decision for some of the entrepreneurs from a gains perspective to a loss perspective because the persistence context required that they exit their current business in order to pursue the new opportunity. In that case, some decision-makers may be inclined to discount probability (i.e. risk-seeking behaviour) and focus on the value of the new opportunities. We encourage further research that will tease out the nuances in the weights placed on the various decision attributes due to varying firm characteristics in the two contexts.

Practical Contributions

This study also offers some practical contributions that may help entrepreneurs better understand decision-making processes. Persistence is vital to entrepreneurial success; yet, persistence can be disadvantageous if entrepreneurs become overly attached to their current firms and biases lead them to reject opportunities that could have resulted in greater returns on investment. Time and resources are sometimes better spent elsewhere, even if the current venture

has value (DeTienne et al., 2008; Gimeno et al., 1997; McGrath, 1999). As entrepreneurs increase their knowledge of how they make decisions, awareness of potential biases in decision-making may be avoided. They may be more willing to place greater emphasis on impartial data that will increase the prospect of making good decisions or they may seek guidance from individuals who are not emotionally invested in the venture to objectively consider the alternatives. Knowing when to make the decision to abandon versus when to persist is of high practical significance to decision-makers in new ventures.

Limitations

While conjoint experiments have been used in numerous settings and are recognized as valid methods of study, they are not without limitations. The objective of such experiments is to approximate the “real world” by presenting decisions that similar to those that might be made in a representative business setting. Obviously, this attempt is imperfect in that it is difficult to capture and simulate all of the factors involved in decision-making. This experiment forced the respondents to make decisions based on the four opportunity attributes provided. In reality, the entrepreneur would have access to more detailed information and would have a greater amount of time to ponder and process decision criteria. We attempted to minimize the limitation by controlling for the potential use of other information and by minimizing the decision criteria of interest. Participants were asked to consider each decision in the same context given and to treat them independently. Though it is not a perfect approximation, Louviere (1988) and others have argued that conjoint studies have strong validity and can be useful in capturing the decision policies of individuals. Conjoint and policy capturing experiments have been used in scores of decision-making studies (Green et al., 2001) and we have followed the model of others (e.g. Bruns et al., 2008; Haynie et al., 2009).

Another challenge associated with conjoint experiments is determining the appropriate number of decision attributes. It is necessary to have meaningful detail but it can quickly become

cumbersome for the participants if there are too many decision attributes. In this study, we determined that four decision attributes would be most appropriate. We determined to use an orthogonal fractional factorial design to further reduce the total number of decisions. This is a widely accepted practice (e.g. McKelvie et al., 2011) but it did limit our ability to measure the interaction between both financial value and probability *and* non-financial value and probability. We decided to make this tradeoff to reduce the likelihood of respondent fatigue. We believe that this was an important factor in obtaining quality data and in generating a higher participation rate.

The participants in this experiment were active entrepreneurs and the results should be generalizable to other entrepreneurs. However, it is important to note that the sample was restricted to entrepreneurs in the high-technology sector in the western United States. Thus, the external validity is limited to this context. In addition, we recognize that new venture start-ups often consist of entrepreneurial teams that participate in decision-making. The results of this study are only generalizable to firms with a lead entrepreneur that makes the primary decisions for the firm. Future research could target samples of entrepreneurs and entrepreneurial teams in other industries and locations.

Conclusion

Decisions to act stem from a complex process that is a function of the person and the environment (Lewin, 1938). Individual and environmental factors frequently result in choices with bounded rationality (Manzini & Mariotti, 2009). In this paper, we have found that entrepreneurs may not always be motivated to maximize utility when considering entrepreneurial opportunities if pursuing the opportunity that has the greatest utility would require that they give up on their current business venture. Decisions to pursue new opportunities are not based solely on the expected value and probability of success. The context of the opportunity, the characteristics of the existing business and individual differences all play a role in this complex decision process. Such findings create significant opportunities for future research exploring the

unique and multifaceted cognitive factors that lead to heterogeneity in start-up and persistence decision-making. Research in this area can inform entrepreneurial education and practice, enabling entrepreneurs to increase their understanding of decision processes and ultimately make higher quality decisions when considering the pursuit of new opportunities, with or without persistence in current ventures.

References

- Alvarez SA and Barney JB. (2005) How Do Entrepreneurs Organize Firms Under Conditions of Uncertainty? *Journal of Management* 31: 776-793.
- Amit R and MacCrimmon KR. (2001) Does money matter?: Wealth attainment as the motive for initiating growth-oriented technology ventures. *Journal of Business Venturing* 16: 119.
- Bandura A. (1997) *Self-efficacy: The Exercise of Control*, New York: Freeman.
- Bar-Eli M, Azar OH, Ritov I, et al. (2007) Action bias among elite soccer goalkeepers: The case of penalty kicks. *Journal of Economic Psychology* 28: 606-621.
- Baron RA. (1998) Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people. *Journal of Business Venturing* 13: 275-294.
- Baum JR and Locke EA. (2004) The Relationship of Entrepreneurial Traits, Skill, and Motivation to Subsequent Venture Growth. *Journal of Applied Psychology* 89: 587-598.
- Bhide AV. (2000) *The Origin and Evolution of New Business*, New York: Oxford University Press.
- Bruns V, Holland DV, Shepherd D, et al. (2008) The Role of Human Capital in Loan Officers' Decision Policies. *Entrepreneurship: Theory & Practice* 32: 485-506.
- Burmeister K and Schade C. (2007) Are entrepreneurs' decisions more biased? An experimental investigation of the susceptibility to status quo bias. *Journal of Business Venturing* 22: 340-362.
- Busenitz LW and Barney JB. (1997) Differences between entrepreneurs and managers in large organizations: Biases and heuristics in. *Journal of Business Venturing* 12: 9.
- Campbell CA. (1992) A Decision Theory Model for Entrepreneurial Acts. *Entrepreneurship: Theory & Practice* 17: 21-27.
- Cardon MS, Zietsma C, Saporito P, et al. (2005) A tale of passion: New insights into entrepreneurship from a parenthood metaphor. *Journal of Business Venturing* 20: 23-45.
- Carter NM, Gartner WB, Shaver KG, et al. (2003) The career reasons of nascent entrepreneurs. *Journal of Business Venturing* 18: 13.
- Caruso EM, Rahnev DA and Banaji MR. (2009) Using conjoint analysis to detect discrimination: Revealing covert preferences from overt choices. *Social Cognition* 27: 128-137.
- Carver CS and Scheier MF. (1998) *On the Self-Regulation of Behavior*, Cambridge: Cambridge University Press.

- Chandler GN and Hanks SH. (1994) Founder Competence, the Environment, and Venture Performance. *Entrepreneurship: Theory & Practice* 18: 77-89.
- Choi YR and Shepherd DA. (2005) Stakeholder Perceptions of Age and Other Dimensions of Newness. *Journal of Management* 31: 573-596.
- Chow G. (1960) Tests of Equality Between Sets of Coefficients in Two Linear Regressions. *Econometrica* 28: 591-605.
- Cope J, Jack S and Rose MB. (2007) Social Capital and Entrepreneurship: An Introduction. *International Small Business Journal* 25: 213-219.
- Cornelissen JP, Clarke JS and Cienki A. (2012) Sensegiving in entrepreneurial contexts: The use of metaphors in speech and gesture to gain and sustain support for novel business ventures. *International Small Business Journal* 30: 213-241.
- Daniel E, Wilson H and Myers A. (2002) Adoption of E-Commerce by SMEs in the UK. *International Small Business Journal* 20: 253 - 270.
- DeTienne DR, Shepherd DA and De Castro JO. (2008) The fallacy of "only the strong survive": The effects of extrinsic motivation on the persistence decisions for under-performing firms. *Journal of Business Venturing* 23: 528-546.
- Dobrev SD and Barnett WP. (2005) Organizational Roles and Transition to Entrepreneurship. *Academy of Management Journal* 48: 433-449.
- Douglas EJ and Shepherd DA. (2000) Entrepreneurship as a utility maximizing response. *Journal of Business Venturing* 15: 231.
- Douglas EJ and Shepherd DA. (2002) Self-Employment as a Career Choice: Attitudes, Entrepreneurial Intentions, and Utility Maximization. *Entrepreneurship: Theory & Practice* 26: 81-90.
- Drummond H. (2004) 'See You Next Week?': A Study of Entrapment in a Small Business. *International Small Business Journal* 22: 487-502.
- Edelman LF, Brush CG, Manolova TS, et al. (2010) Start-up Motivations and Growth Intentions of Minority Nascent Entrepreneurs. *Journal of Small Business Management* 48: 174-196.
- Feather NT. (1982) Human Values and the Prediction of Action: An Expectancy-Valence Analysis. In: Feather NT (ed) *Expectations and Actions: Expectancy-value Models in Psychology*. Mahwah, NJ: Erlbaum, 263-292.
- Feather NT. (1992) Expectancy-value theory and unemployment effects. *Journal of Occupational & Organizational Psychology* 65: 315-330.
- Feather NT and O'Brien GE. (1987) Looking for employment: An expectancy-valence analysis of job-seeking behaviour among young people. *British Journal of Psychology* 78: 251-272.

- Fischhoff B. (1982) For those condemned to study the past: Heuristics and biases in hindsight. In: Kahneman D, Slovic P and Tversky A (eds) *Judgment under uncertainty: Heuristics and biases*. Cambridge, UK: Cambridge University Press, 335-351.
- Fishbein M and Ajzen I. (1975) *Belief, attitude, intention and behavior: An introduction to theory and research*, Reading, MA: Addison-Wesley.
- Franke N, Gruber M, Harhoff D, et al. (2006) What you are is what you like--similarity biases in venture capitalists' evaluations of start-up teams. *Journal of Business Venturing* 21: 802-826.
- Gatewood EJ, Shaver KG, Powers JB, et al. (2002) Entrepreneurial Expectancy, Task Effort, and Performance. *Entrepreneurship: Theory & Practice* 27: 187.
- Gimeno J, Folta TB, Cooper AC, et al. (1997) Survival of the Fittest? Entrepreneurial Human Capital and the Persistence of Underperforming Firms. *Administrative Science Quarterly* 42: 750-783.
- Gofman A, Moskowitz HR, Bevolo M, et al. (2010) Decoding consumer perceptions of premium products with rule-developing experimentation. *Journal of Consumer Marketing* 27: 425-436.
- Green PE and Srinivasan V. (1990) Conjoint analysis in marketing: New developments with implications for research and practice. *Journal of Marketing* 54: 3.
- Grilli L. (2011) When the going gets tough, do the tough get going? The pre-entry work experience of founders and high-tech start-up survival during an industry crisis. *International Small Business Journal* 29: 626-647.
- Hahn G and Shapiro S. (1966) *A Catalogue and Computer Program for the Design and Analysis of Orthogonal Symmetric and Asymmetric Fractional Factorial Designs*, Schenectady, NY: General Electric Corporation.
- Harper P. (2007) History's 10 greatest entrepreneurs. MSNBC Interactive.
- Hartman C. (1983) *Getting to the top -- and staying there*. Inc.
- Haynie M and Shepherd DA. (2009) A Measure of Adaptive Cognition for Entrepreneurship Research. *Entrepreneurship: Theory & Practice* 33: 695-714.
- Hecker DE. (2005) High-technology employment: a NAICS-based update. *Monthly Labor Review*: 57-72.
- Hitt MA and Barr SH. (1989) Managerial Selection Decision Models: Examination of Configurational Cue Processing. *Journal of Applied Psychology* 74: 53.
- Hoang H and Gimeno J. (2010) Becoming a founder: How founder role identity affects entrepreneurial transitions and persistence in founding. *Journal of Business Venturing* 25: 41-53.

- Holland DV. (2011) Utility maximization? An expectancy view of entrepreneurial persistence. *Management Research Review* 34: 337 - 352.
- Holland DV and Shepherd DA. (2013) Deciding to Persist: Adversity, Values, and Entrepreneurs' Decision Policies. *Entrepreneurship Theory and Practice* 37(2).
- Jayaraman N, Khorana A, Nelling E, et al. (2000) CEO Founder Status and Firm Financial Performance. *Strategic Management Journal* 21: 1215-1224.
- Kahneman D and Miller DT. (1986) Norm theory: Comparing reality to its alternatives. *Psychological Review* 93: 136-153.
- Kahneman D and Tversky A. (1979) Prospect theory: An analysis of decision under risk. *Econometrica* 47: 263-291.
- Knight R. (1921) Cost of Production and Price Over Long and Short Periods. *Journal of Political Economy* 29: 332.
- Kolvereid L. (1996) Organizational employment versus self-employment: Reasons for career choice intentions. *Entrepreneurship: Theory & Practice* 20: 23.
- Krueger NF, Reilly MD and Carsrud AL. (2000) Competing models of entrepreneurial intentions. *Journal of Business Venturing* 15: 411.
- Kuratko DF and Hodgetts RM. (2007) *Entrepreneurship: Theory, process, practice*, Mason, OH: Thomson South-western.
- Kuratko DF, Hornsby JS and Naffziger DW. (1997) An examination of owner's goals in sustaining entrepreneurship. *Journal of Small Business Management* 35: 24-33.
- Lewin K. (1938) *The conceptual representation and the measurement of psychological forces*, Durham, NC: Duke University Press.
- Lohrke FT, Holloway BB and Woolley TW. (2010) Conjoint Analysis in Entrepreneurship Research. *Organizational Research Methods* 13: 16-30.
- Louviere JJ. (1988) *Analyzing Decision Making: Metric Conjoint Analysis*, Newbury Park, CA: Sage Publications.
- Lynch JG and Cohen JL. (1978) The use of subjective expected utility theory as an aid to understanding variables that influence helping behavior. *Journal of Personality & Social Psychology* 36: 1138 - 1151.
- Manzini P and Mariotti M. (2009) Consumer choice and revealed bounded rationality. *Economic Theory* 41: 379-392.
- Martin J. (2006) Persistence Pays Off for Young Entrepreneurs. *Young Money*. (accessed 1/26/07).

- McDougall PP, Covin JG, Robinson Jr RB, et al. (1994) The effects of industry growth and strategic breadth on new venture performance and strategy content. *Strategic Management Journal* 15: 537-554.
- McKelvie A, Haynie JM and Gustavsson V. (2011) Unpacking the uncertainty construct: Implications for entrepreneurial action. *Journal of Business Venturing* 26: 273-292.
- McMullen JS and Shepherd DA. (2006) Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review* 31: 132-152.
- Meeks F and Sullivan RL. (1992) If at first you don't succeed. (Cover story). *Forbes*. Forbes Inc., 172-180.
- Morris M, Schindehutte M and Allen J. (2005) The entrepreneur's business model: toward a unified perspective. *Journal of Business Research* 58: 726-735.
- Oppewal H, Louviere JJ and Timmermans HJP. (1994) Modeling Hierarchical Conjoint Processes With Integrated Choice Experiments. *Journal of Marketing Research (JMR)* 31: 92-105.
- Palich LE and Bagby DR. (1995) Using Cognitive Theory to Explain Entrepreneurial Risk-taking: Challenging Conventional Wisdom. *Journal of Business Venturing* 10: 425.
- Pierce JL, Kostova T and Dirks KT. (2001) Toward a Theory of Psychological Ownership in Organizations. *Academy of Management Review* 26: 298-310.
- Robson PJA, Akuetteh CK, Westhead P, et al. (2012) Exporting intensity, human capital and business ownership experience. *International Small Business Journal* 30: 367-387.
- Shah J and Higgins ET. (1997) Expectancy x Value Effects: Regulatory Focus as Determinant of Magnitude and Direction. *Journal of Personality & Social Psychology* 73: 447-458.
- Sharma P and Irving PG. (2005) Four Bases of Family Business Successor Commitment: Antecedents and Consequences. *Entrepreneurship: Theory & Practice* 29: 13-33.
- Shaver KG, Gartner WB, Crosby E, et al. (2001) Attributions About Entrepreneurship: A Framework and Process for Analyzing Reasons for Starting a Business. *Entrepreneurship: Theory & Practice* 26: 5-32.
- Shepherd DA. (1999) Venture Capitalists' Assessment of New Venture Survival. *Management Science* 45: 621.
- Shepherd DA and Zacharakis A. (1997) Conjoint analysis: A window of opportunity for entrepreneurship research. In: Katz J (ed) *Advances in Entrepreneurship, Firm Emergence and Growth*. Greenwich, CT: JAI Press 203-248.
- Staw BM. (1997) The escalation of commitment: An update and appraisal. In: Z.Shapira (ed) *Organization decision making*. New York: Cambridge University Press, 191-215.

- Steel P and Konig CJ. (2006) Integrating theories of motivation. *Academy of Management Review* 31: 889-913.
- Van Eerde W and Thierry H. (1996) Vroom's Expectancy Models and Work-Related Criteria: A Meta-Analysis. *Journal of Applied Psychology* 81: 575-586.
- Vroom V. (1964) *Work and Motivation*, New York: Wiley.
- Wald A. (1950) *Statistical Decision Functions*, New York: John Wiley.
- Wanous JP, Keon TL and Latack JC. (1983) Expectancy Theory and Occupancy/Organizational Choice: A Review and Test. *Organizational Behavior & Human Performance* 32: 66.
- Westhead P, Ucbasaran D and Wright M. (2003) Differences Between Private Firms Owned by Novice, Serial and Portfolio Entrepreneurs: Implications for Policy Makers and Practitioners. *Regional Studies* 37: 187.
- Westhead P, Ucbasaran D and Wright M. (2005a) Experience and Cognition. *International Small Business Journal* 23: 72-98.
- Westhead P, Ucbasaran D, Wright M, et al. (2005b) Novice, Serial and Portfolio Entrepreneur Behaviour and Contributions. *Small Business Economics* 25: 109-132.
- Westhead P and Wright M. (2011) David Storey's optimism and chance perspective: A case of the Emperor's new clothes? *International Small Business Journal* 29: 714-729.
- Wiklund J, Davidsson P and Delmar Fdr. (2003) What Do They Think and Feel about Growth? An Expectancy-Value Approach to Small Business Managers' Attitudes Toward Growth. *Entrepreneurship: Theory & Practice* 27: 247-270.
- Zhao H, Seibert SE and Hills GE. (2005) The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions. *Journal of Applied Psychology* 90: 1265-1272.

TABLE 1
Descriptive Statistics of the Sample

Median Age of Entrepreneur	48
Gender (% male)	83.0%
Education (% college graduate)	76.3%
Previous Start-up Experience (%)	82.2%
Median Work Experience (years)	25
Median Age of the Firm (years)	7
Median Number of Employees	2
Median Previous Year Revenue	\$150,000

TABLE 2
Results of HLM of Entrepreneurs' Decision Policies in the Start-up Context

	Intercept Model		Size Model (Full time Employees)	
	Coefficient	T-ratio	Coefficient	T-ratio
Expectancy of Financial Returns	2.646	15.690***	0.003	2.627**
Expectancy of Non-financial	0.942	11.828***	-0.001	-3.496**
Value of Financial Returns	2.467	15.941***	0.003	1.905
Value of Non-financial Benefits	1.104	13.140***	0.000	0.189
Value x Expectancy (Financial)	-0.007	-0.036	-0.004	2.655**
Intercept	5.457	62.225***	0.002	5.185***

*** $p < .001$; ** $p < .01$; * $p < .05$; $n = 1350$ per context (Level-1); $n = 135$ (Level-2).

Notes: Final estimation of fixed effects with robust standard errors. All variables were standardized and group centered. The number of previous startups was included as a control variable in the model but it was not significant ($p < .05$).

TABLE 3
Results of HLM of Entrepreneurs' Decision Policies in the Persistence Context

	Intercept Model		Size Model (Full time Employees)	
	Coefficient	T-ratio	Coefficient	T-ratio
Expectancy of Financial Returns	3.274	19.924***	0.000	0.103
Expectancy of Non-financial	0.718	10.798***	-0.001	-5.286***
Value of Financial Returns	3.051	17.849***	-0.001	-1.75
Value of Non-financial Benefits	0.966	13.751***	-0.001	-1.779
Value x Expectancy (Financial)	-1.462	-6.719***	0.003	1.774
Intercept	6.247	59.565***	-0.001	-1.352

*** $p < .001$; ** $p < .01$; * $p < .05$; $n = 1350$ per context (Level-1); $n = 135$ (Level-2).

Notes: Final estimation of fixed effects with robust standard errors. All variables were standardized and group centered. The number of previous startups was included as a control variable in the model but it was not significant ($p < .05$).

Figure 1: Interaction between expectancy and value (Start-up context)

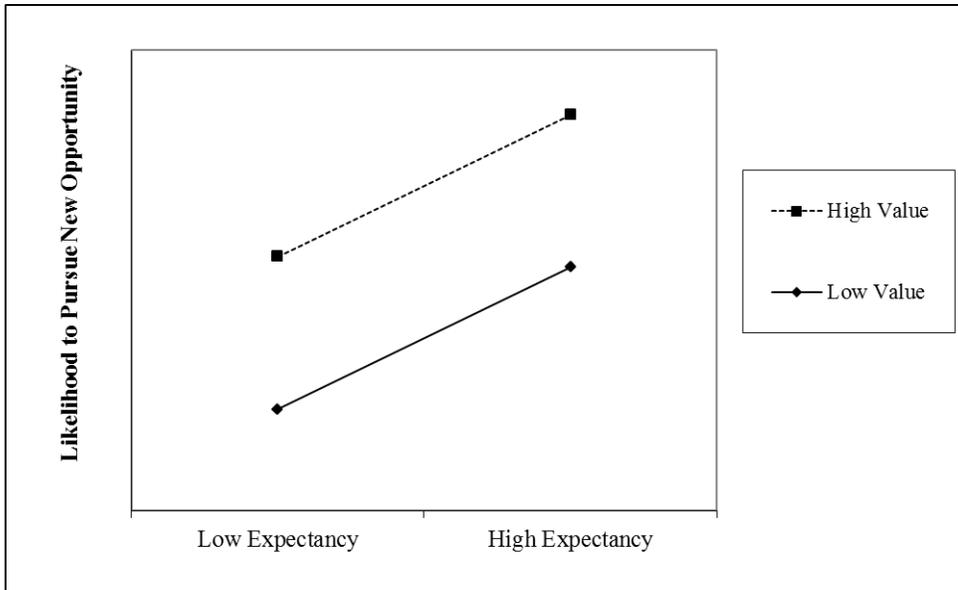
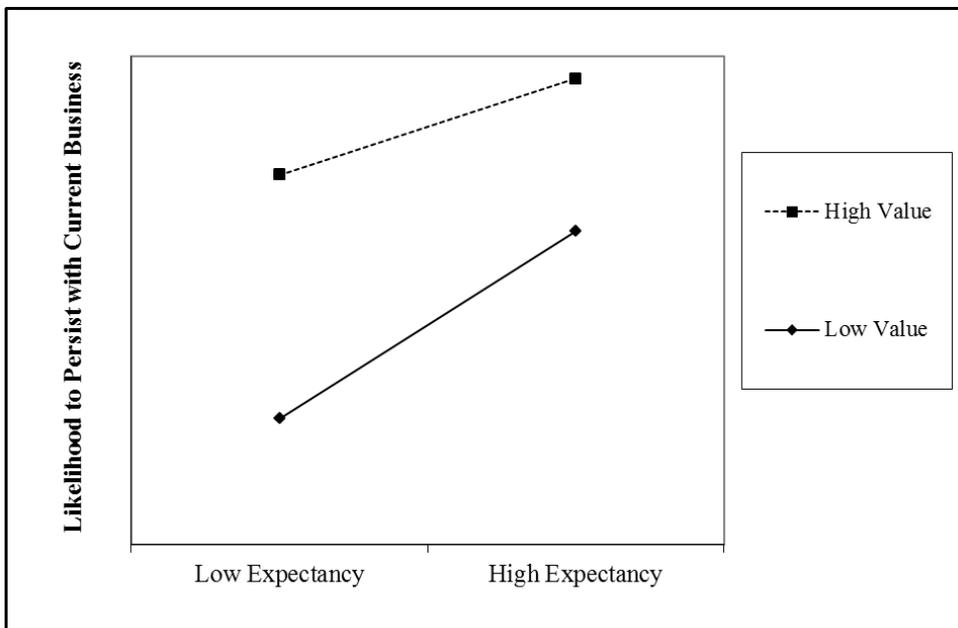


Figure 2: Interaction between expectancy and value (Persistence context)



Appendix 1: Sample Opportunity Profile

In this part of the survey, we asked respondents to rate the likelihood that they would pursue hypothetical entrepreneurial opportunities. Each hypothetical opportunity was presented as a comparison to the respondent's current business across four criteria. Specifically, the new opportunity was presented as offering either HIGHER or LOWER: value of financial returns, likelihood of financial returns, value of nonfinancial benefits, and likelihood of nonfinancial benefits. After a detailed explanation of the decision attributes and the process, the opportunities were presented in the following manner.

Value of Financial Returns	LOWER
Likelihood of Financial Returns	HIGHER
Value of Non-financial Benefits	HIGHER
Likelihood of Non-financial Benefits	LOWER

Based on these opportunity attributes, please rate the likelihood that you would pursue this potential opportunity.