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# Deciding to Persist: Adversity, Values, and Entrepreneurs' Decision Policies

Daniel V. Holland
Dean A. Shepherd

**Entrepreneurial persistence occurs when the entrepreneur chooses to continue with an entrepreneurial opportunity regardless of counterinfluences or enticing alternatives. The decision to persist is influenced by personal characteristics and by feedback from the environment relative to thresholds. Using a conjoint experiment, we investigate how adversity and values influence the weight placed on the decision attributes for the persistence decisions of 100 entrepreneurs. The findings suggest that the persistence decision policies are heterogeneous depending on the level of adversity experienced and the individual values held by the entrepreneurs. The results provide interesting insights into why and how entrepreneurs choose to persist.**

## Introduction

Entrepreneurs make the decision to start any given new venture once; but they make the decision to persist with the venture time and time again. Often, the persistence decision is made almost automatically with little deliberation or consideration of the alternatives. Yet when extreme adversity hits or very attractive alternatives to the venture arise, entrepreneurs are more likely to consciously appraise the situation as they decide whether or not to continue with the venture (Carver & Scheier, 1998). Even though the persistence decision is an important part of the entrepreneurial process, there has been relatively little research regarding why entrepreneurs choose to *persist* with a business (Gatewood, Shaver, Powers, & Gartner, 2002). In this study, we take an important step toward answering the call by Shane, Locke, and Collins (2003, p. 271) to examine the process that "separates those who continue to pursue opportunities from those who abandon the effort."

Some of the previous work on entrepreneurial persistence has considered persistence as a trait, suggesting that this characteristic leads to increased motivation, which leads to

Please send correspondence to: Daniel V. Holland, tel.: (435) 797-3132; e-mail: daniel.holland@usu.edu, to Dean A. Shepherd at shepherd@indiana.edu.
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venture growth (Baum & Locke, 2004). Other researchers have viewed persistence as a perception of control over adversity and have shown that entrepreneurs tend to have a greater perception of control than nonentrepreneurs (Markman, Baron, & Balkin, 2005). We choose to follow the lead of Gimeno, Folta, Cooper, and Woo (1997) and DeTienne, Shepherd, and De Castro (2008) in looking at persistence as a complex decision that is a function of both the person and the environment. Gimeno et al. considered the situational context of the firm and the individual human capital characteristics of the owners and found that these factors contributed to the use of differing thresholds of performance for persistence decisions. They argued that the threshold of performance below which entrepreneurs will choose not to persist, is constructed by more than the basic economic performance of the firm by including entrepreneurs' available alternative options, nonfinancial attachment, and costs of switching to an alternative. DeTienne et al. built on this work by examining a number of additional factors that may influence the persistence decision. They found that perceptions of the external environment, levels of personal investment, availability of personal options, organizational efficacy, and extrinsic motivation all played a role in the decision to persist with an underperforming firm.

This study makes several important contributions to this stream of literature by examining the direct effect of adversity on the persistence decision, as well as exploring how an entrepreneur's personal values affect the way that he or she chooses to persist. First, we examine the difference in entrepreneurs' persistence decision policies when the new venture is performing well versus when the business is facing adversity. Based on the work by Kahneman and Tversky (1979) and March and Shapira (1987), organizational researchers have examined potential biases in decision making as performance approaches decision reference points. For example, Miller and Chen (2004) found that organizations whose performance fell toward a survival point—the point at which survival becomes unlikely—tended to increase their willingness to accept risk compared with those whose performance was above or near the aspiration point—the subjective point by which success is measured. Shimizu (2007) investigated organizational decisions to divest or retain units that were previously acquired by larger corporations and found that the likelihood of divestiture of a poorly performing unit increases as the performance decreases, but then the likelihood tapers off as performance approaches the survival point. When looking at persistence decisions of entrepreneurs, research has largely focused on underperforming firms—i.e., those who are approaching the survival point (DeTienne et al., 2008; Gimeno et al., 1997). To our knowledge, there has not been an investigation that directly captures the decision policies used by decision makers at both reference points. By comparing decisions made in the context of low adversity (near the aspiration point) and high adversity (near the survival point), we are able to control for other factors and evaluate individuals' heterogeneity in persistence decisions (both the likelihood of persistence and the emphasis on criteria in making that decision) due solely to the change in the context.

Second, Gimeno et al. (1997) made a substantial contribution to the persistence literature by highlighting factors that encourage persistence—the decision criteria. DeTienne et al. (2008) made a further contribution by explaining how, given the same context, entrepreneurs can arrive at a different persistence decision—extrinsic motivation influences the emphasis placed on the decision criteria. In this study, we also investigate individual differences as a source of variance in the persistence decision but focus on values other than economic (extrinsic) motivation. Values are relatively stable yet changeable cognitive structures that transcend specific actions and situations and serve as guiding principles in people's lives (Schwartz, 1992). The role of values in decision making has been the source of considerable interest in psychology (Bardi, Lee, Hofmann-Towfigh, &

Soutar, 2009; Rohan, 2000; Schwartz & Boehnke, 2004) and cross-cultural studies (e.g., Hofstede, 1980; Schwartz, 2004), but there has been insufficient investigation on how personal values, as opposed to cultural values, influence the decision making of entrepreneurs. In this study, we build on the Schwartz (1992) values theory to investigate individual differences in how values influence entrepreneurial persistence decisions, and we find that personal values help explain variance in the emphasis that individuals place on different decision criteria.

Finally, entrepreneurship research has increasingly been concerned with developing a deeper understanding about how entrepreneurs think and make decisions (Mitchell et al., 2004; Sibin, Matthews, & Grace, 2007). For example, we are gaining a greater understanding that entrepreneurs may be susceptible to certain decision biases such as representativeness (Busenitz & Barney, 1997), overconfidence (Hayward, Shepherd, & Griffin, 2006), attribution (Ucbasaran, Wright, Westhead, & Busenitz, 2003), escalation of commitment (McCarthy, Schoorman, & Cooper, 1993), or others. Investigations of the fundamental decision structures of entrepreneurs help to illuminate the reasons why biases occur and why heterogeneity in decision making exists. In this study, we capture entrepreneurs' real-time decisions and examine how individual and contextual differences relate to variation in decision making. Specifically, we theorize and find that some dissimilarity in entrepreneurs' persistence decision making can be attributed, in part, to differences in values held by entrepreneurs. The influence of personal values in the cognitive appraisal of opportunities and the resultant decisions has been well established in the social psychology literature (Feather, 1995), and this study takes a small but important step in establishing how values affect the way entrepreneurs think and make persistence decisions.

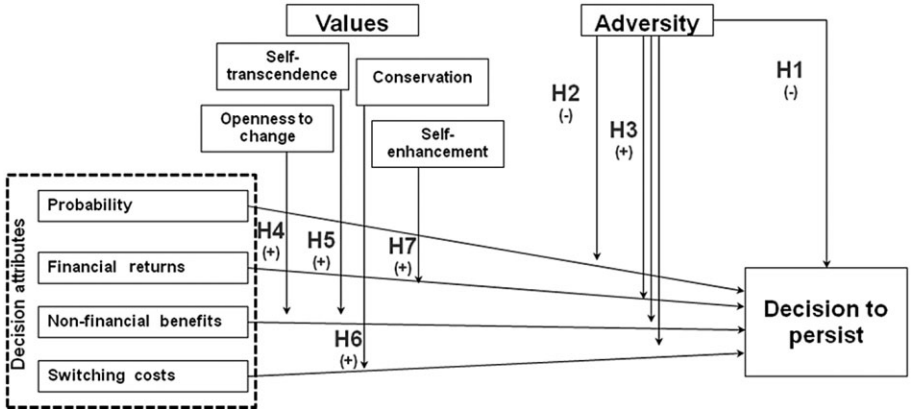
## Theory and Hypotheses

Entrepreneurial persistence occurs when the entrepreneur chooses to continue with an entrepreneurial opportunity regardless of counterinfluences or enticing alternatives. Thus, entrepreneurial persistence entails two distinct components: (1) the decision to *continue* to pursue a previously selected entrepreneurial opportunity, and (2) doing so in the face of opposing motivational forces. Opposing forces may include negative feedback about the current opportunity (e.g., adversity) or positive information about an alternative opportunity that makes a change more appealing (Gimeno et al., 1997).

It is important to note that in this paper we do not take a normative perspective of persistence. Persistence can result in either positive or negative consequences. The outcomes of choosing to persist are extremely important and have been the subject of significant streams of research. For example, resilience and escalation of commitment both require persistent behavior under adverse circumstances. Individuals who are resilient adapt to the feedback from the environment and emerge from the adversity strengthened and more resourceful (Sutcliffe & Vogus, 2003; Youssef & Luthans, 2007). On the other hand, entrepreneurs who escalate their commitment to a failing course of action persist in the same strategies with an increase in invested resources and end up throwing good money after bad (DeTienne et al., 2008; Garland, 1990; Staw, 1981). Persistence may ultimately result in the achievement and success sought by the entrepreneur, but it may also be costly to the individual and to the economy if the result is the allocation of resources to an unfruitful opportunity when the resources could have been more efficiently applied elsewhere (McGrath, 1999). It is important for researchers to continue to examine the positive and negative consequences of entrepreneurial persistence; however, in this

Figure 1

The Effect of Adversity and Individual Values on the Decision to Persist




paper, we have chosen to focus on its antecedents. Specifically, we focus on the "how" and "why" this important decision is made.

In Figure 1, we illustrate our model of the decision to persist. The persistence decision is influenced by the emphasis individuals place on the decision attributes of probability, financial returns, nonfinancial benefits, and switching costs. Variance in this persistence decision policy is explained by the level of adversity (directly and via the emphasis placed on all decision attributes) and by personal values (via the emphasis on the decision attributes of financial returns, nonfinancial benefits, and switching costs). We now explain and develop hypotheses for each of these relationships.

## The Persistence Decision

Preceding any decision to persist with an opportunity is the initial decision to act on that opportunity. This choice is primarily determined by assessing the desirability of the potential outcomes of the opportunity and the probability of achieving those outcomes.[1] These core decision attributes are the foundational elements of the family of expectancy value-based motivational theories (Ajzen, 1991; Bandura, 1997; Steel & Konig, 2006; Vroom, 1964), which are frequently investigated as a foundation of entrepreneurial decision making (e.g., Douglas & Shepherd, 2002; Gatewood et al., 2002; Krueger, Reilly, & Carsrud, 2000; Wiklund & Shepherd, 2003). The judgment of the *probability* of success of persisting with an opportunity is cultivated by a number of factors such as the person's self-efficacy regarding personal skills and knowledge needed to overcome obstacles; experiences of previous successes or failures in similar activities; beliefs that

1. The literature includes a number of similar yet subtly different terms for the primary attributes of desirability and probability including but not limited to: expectancy and valence (Vroom, 1964), expected value and feasibility (Ajzen, 1991), self-efficacy (Bandura, 1997), desirability and feasibility (McMullen & Shepherd, 2006), or expected value and probability often used in general decision-making theory (March & Shapira, 1987). We prefer the latter set of terms; however, since we are also testing the influence of individual values on decision policies, we determined that the use of expected *value* and individual *values* might lead to confusion between the two concepts. Thus, we have decided to use the terms desirability and probability.

the needed resources to succeed are accessible (or not); and perceptions of the competition, industry, economy, and broader environment (Bandura; Feather, 1992). If an individual believes that it is highly probable that his or her actions will produce a desired outcome (e.g., high venture performance), then the likelihood of persistence will increase.

When considering the *desirability* of outcomes associated with successful persistence, we follow the lead of Gimeno et al. (1997) who argued that the desirability of persisting with an entrepreneurial venture is ascertained through a comparison of the current opportunity versus the next-best alternative opportunity across three broad categories: (1) financial returns, (2) nonfinancial benefits, and (3) switching costs. *Financial returns* refer to the personal returns derived from the business. Clearly, one of the key reasons for entering self-employment is the potential economic benefits arising from the venture. Yet entrepreneurship is not driven solely by extrinsic rewards like income (Amit & MacCrimmon, 2001). Many *nonfinancial benefits*—nonmonetary rewards, satisfactions, and benefits that result from the business—play a role in motivating the entrepreneurial process. Intrinsic satisfaction gained from a variety of outcomes, such as independence, recognition, the welfare of others, autonomy, and family security, has been found to influence entrepreneurial choice (Carter, Gartner, Shaver, & Gatewood, 2003; Kuratko, Hornsby, & Naffziger, 1997; Wiklund, Davidsson, & Delmar, 2003). The third category is *switching costs*, which refers to the financial and nonfinancial costs inherent in the act of switching from the current venture to an alternative opportunity (Gimeno et al.). Switching costs may include the time, effort, and resources required to find another job or opportunity. Entrepreneurs make financial, social, and psychological investments over time and frequently perceive that switching to another venture or occupation would result in the loss of those investments (Sharma & Irving, 2005). Overall, entrepreneurs who perceive that the desirability of the current business, as determined by the financial returns, nonfinancial benefits, and switching costs, is greater than the next best alternative are more likely to persist with the current business.

Decision making evolves from the interface between the entrepreneur (motivation, cognitions, and individual characteristics) and the perceived situational factors (context) at the time of the decision (Bandura, 1986). Despite the tendency toward utility maximization, individuals often see decision alternatives in quite different ways depending on their personal characteristics and the context of the decision (Kahneman & Tversky, 1984). In this paper, we seek to help explain heterogeneity in persistence decisions by examining how personal values and the context of the decision interact with entrepreneurs' use of decision policy attributes on the likelihood of continued action. We first turn our attention to the context of the decision and then consider how personal values influence that decision.

## Decision Context: Level of Adversity

While utility maximization may be the economically rational approach to making decisions, rationality has its bounds. The fact that individuals often make very different choices, sometimes seemingly less than rational, has been the subject of much research. In their seminal work, Kahneman and Tversky (1979) found that the context of the decision can have a profound impact on which alternative is selected. The context of the decision is often perceived as the difference between the expected outcomes of the alternatives relative to a key reference point (Tversky & Kahneman, 1991). If the decision makers perceive that the choice is between an option that will result in a sure loss relative

to their expectation or an option that may lead to a greater loss but also has a chance of reducing the loss, they are more likely to be risk seeking. In other words, decision makers are more likely to select a risky opportunity that may help them overcome or minimize a loss rather than accept a sure loss. On the other hand, if the prospects of the outcomes of the decision alternatives are generally positive relative to the reference point—e.g., a choice between a certain smaller gain and a larger but less likely gain—individuals are more likely to be risk averse and choose the smaller but certain gain. They would rather be conservative in their actions and potentially lose out on the opportunity for further gain than take risks that might result in losing resources that they already possess (Shimizu, 2007).

March and Shapira (1987) extended the theory by suggesting that there are *two* primary reference points against which the outcomes of the alternatives are measured: aspiration and survival. Success is considered as performance above the aspiration point; failure is determined as performance below the aspiration point but above the survival point; and extinction takes place when performance falls below the survival point. In our study, these two reference points are used to delineate low and high adversity. Adversity is determined by the cognitive comparison between performance and the reference points. Adversity increases as performance falls below the aspiration point and moves toward the survival point. Simply stated, if an entrepreneurial venture's performance is at or near the aspiration level, we would consider that a state of low adversity, while high adversity would equate to a performance level that is at or near the survival threshold.

***Main Effect of Adversity on the Persistence Decision.*** The cognitive comparison between performance feedback and the aspiration point is a key component of the maintenance of motivation (Klein, 1989). Generally, performance that is near or above the aspiration point will induce a feeling of satisfaction while a negative discrepancy between the performance and aspiration point will produce dissatisfaction (Locke, 1997). Negative affect acts as an error signal prompting some sort of corrective action to reduce the discrepancy (Carver & Scheier, 1998). If no error signal exists, then the previous behavior is typically sustained. Low levels of adversity normally cause minimal interruption in persistence by activating a predetermined or scripted response to the feedback (Carver & Scheier). The motivational force toward the goal will tend to remain stable as little attention is dedicated to a reassessment of the current course. Therefore, *even if alternative opportunities may be more promising than the current venture*, an entrepreneur is more likely to persist with the current venture when there is little adversity because he or she may not even invest the effort to seriously consider other opportunities.

On the other hand, substantial or recurrent negative discrepancies between actual and expected outcomes cause an interruption of action in order to cognitively assess the likelihood of future success. "In effect, people suspend the behavioral stream, step outside it, and evaluate in a more deliberated way than occurs while acting" (Carver & Scheier, 1998, p. 175). At that point, a new assessment of the decision to continue with the current venture relative to other available opportunities is made, and persistence will ensue if participation in the original venture remains more motivating than the alternatives (Hollenback, 1979). Thus, when adversity is high, the individual is likely to be more deliberate in contemplating the probability and desirability of the alternatives to determine the cognitive or behavioral response than when adversity is low (Taylor, 1991). This more serious consideration of alternatives in the context of high adversity suggests a greater likelihood of choosing an alternative opportunity, or in other words, diminishes the likelihood of choosing to persist. Therefore:

**Hypothesis 1:** Entrepreneurs will be less likely to persist with their current venture in the context of high adversity than in the context of low adversity, even when controlling for the probability and desirability of the current venture relative to the best alternative.

***Adversity and Decision Attributes.*** When individuals are in the context of low adversity, they are intent to remain successful and typically seek to minimize the risk of alternatives that may drop them below the aspiration point (Kahneman & Tversky, 1979; March & Shapira, 1987). When facing high adversity, decision makers are likely to be focused on opportunities for gain that will move them back toward the aspiration point (Miller & Chen, 2004). The choice of whether to continue with a struggling venture or to exit the business would likely be framed with a loss perspective. Persisting with the business could be perceived as a chance of increased losses (moving further away from the aspiration point) but also as a possibility of eliminating or reducing current losses (moving closer to the aspiration point). The other option, choosing to exit the business because of poor performance could be perceived as accepting a certain loss. In this context, an entrepreneur will be likely to choose the more risky option—risking further loss for a chance at reducing the current loss (Tversky & Kahneman, 1991). Choosing the more risky option implies that the entrepreneur will tend to place more weight on the value of potential outcomes and less weight on the probability of success in the decision policy. In its extreme form, risk-seeking decisions would be based solely on the desirability of the outcome with complete disregard for the probability of achieving that outcome.

Taylor (1991) has argued that negative events lead to a mobilization of physiological, affective, cognitive, and social resources in order to minimize the impact of the negative event. Negative discrepancies can evoke strong emotional reactions, increase information processing, and lead individuals to be more aware of the potential of future negative outcomes (Shepherd & Cardon, 2009). The heightened emotional and cognitive awareness often results in an increased number of outcomes being considered (Carver & Scheier, 1998) and in greater weight being placed on potential outcomes that are perceived as moving back toward the aspiration level (Kahneman & Tversky, 1984). March and Shapira (1987) argued that in such a context, managers place greater emphasis on the magnitude or value of a potential loss than on the probability of loss. This is consistent with the stream of research on escalation of commitment. Escalation of commitment is a destructive form of persistence where decision makers not only choose to continue in a failing course of action but also choose to increase the amount of resources dedicated to that strategy (Staw, 1981). The research has shown that escalation decisions are often driven by the perceived potential value (financial and psychological) of the outcomes while downplaying the probability of achieving those outcomes (e.g., Brockner, 1992; Kin Fat Ellick, & Kwong, 2007; Schulz-Hardt, Thurow-Kraning, & Frey, 2009; Zardkoohi, 2004). Accordingly:

**Hypothesis 2:** Entrepreneurs will place less emphasis on *the probability of success* in their persistence decisions in the context of high adversity than in the context of low adversity.

**Hypothesis 3:** Entrepreneurs will place greater emphasis on (1) *future financial returns*, (2) *future nonfinancial benefits*, and (3) *switching costs* in their persistence decisions in the context of high adversity than in the context of low adversity.

We now investigate the influence of individual values on the use of decision criteria in entrepreneurial persistence decisions.

## Individual Values

The search for a direct relationship between individual characteristics and entrepreneurship has produced mixed results; however, it is clear that the entrepreneur is a vital piece of the entrepreneurial process (Shook, Priem, & McGee, 2003). In recent years, there has been a resurgence of research about the individual characteristics of entrepreneurs as researchers have moved beyond searching for "*trans*-situational consistency in personality traits" (Shaver & Scott, 1991) to considering richer models of direct and indirect relationships between individual characteristics, cognitive processes, motivation, and behavior (e.g., Baron, 2004; Baum & Locke, 2004; Baum, Locke, & Smith, 2001; Busenitz & Barney, 1997; Mitchell et al., 2004; Rauch & Frese, 2007; Zhao, Seibert, & Hills, 2005). For example, Baum et al. and Baum and Locke found that individual characteristics (i.e., passion and tenacity) did not have a significant direct effect on venture growth but were significantly related to the motivation that was associated with venture growth. Zhao and Seibert (2006) and Rauch and Frese independently used meta-analyses of studies about personality traits and entrepreneurship to show the need to examine more proximal moderators rather than direct effects of individual characteristics on entrepreneurial outcomes. Understanding the relationship between the entrepreneur and more proximal outcomes such as motivation, cognition, and decision making provides us with a richer and more complete picture of the entrepreneurial process (Shane et al., 2003). In this paper, we look at the way that individual values affect the decision policies of entrepreneurs when making persistence decisions. We set out to investigate individual values because the psychology literature shows a strong link between values and choosing among alternatives (Feather, 1995) and provides a comprehensive and universal framework for researching behavioral decisions (Rohan, 2000).

Values are at the heart of motivated choice (Judge & Bretz, 1992). Personal values are the lens through which prospective actions and their associated desirability are viewed. In this way, personal value priorities induce valences (desirability) of potential future outcomes (Feather, 1982, 1990) and "cause decisions" (Rohan, 2000, p. 270). Therefore, the values that one holds influence the ways in which one defines situations, considers alternatives, and ultimately chooses a course of action. It is expected that when deciding whether or not to persist, the weight placed on the desirability of a successful outcome will be at least partially dependent on the personal values of the entrepreneur.

Values are derived from cognitive representations of basic biological, psychological, and social needs (Rokeach, 1973; Schwartz, 1992). While values have been studied for well over a century, Milton Rokeach has been credited with motivating a new wave of research on values with his pioneering work (Rohan, 2000). Building on the work of Rokeach, Schwartz developed a more comprehensive values theory that provided an underlying structure of the value system and has been shown to predict choices and behavior in a number of applied settings (Bardi, Calogero, & Mullen, 2008). In this study, we use the individual-level Schwartz values theory as opposed to the cultural-level values theories presented by Hofstede (1980), the GLOBE project (House, Hanges, Javidan, Dorfman, & Gupta, 2004), or Schwartz (2004), because we are interested in understanding the individual differences in how values influence entrepreneurial persistence decisions. The cultural-level theories are most appropriate for research questions examining the effect of culture on the structure of groups and societies (Bardi et al.).

Schwartz (1992) argued that there are 10 basic universal value types: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. Utilizing the similarities and differences among the motivational structures of the 10 basic values, Schwartz delineated four higher order value types: self-enhancement, openness to change, self-transcendence, and conservation. The values are presented in a circular structure with the adjacent values being more likely to share commonalities in motivations, while values on opposite ends of the structure are more likely to produce incompatible motivations. The opposing values are not antonyms and are not expected to have negative correlations; yet if they are simultaneously held by individuals, contradictory motivations may raise the level of internal conflict when making decisions (Schwartz). Schwartz's theoretical structure of value types has been empirically supported as reliable and generalizable across a number of samples (Morris et al., 1998). This integrated structure of values allows us to consider how the related sets of values may induce the desirability of the financial returns, nonfinancial benefits, and switching costs associated with entrepreneurial persistence (Feather, 1995).

*Self-enhancement* includes the values of achievement, power, and hedonism. Self-enhancement values focus on the development of personal interests, even at the expense of others, if necessary (Schwartz, 1992). Entrepreneurs who place high importance on self-enhancement will seek to be abundantly successful in the new venture with the hope of obtaining recognition and social status. They are often willing to invest significant time and effort to demonstrate competence and success in their endeavors (Bardi & Schwartz, 2003). Individuals who value self-enhancement tend to enjoy the power of, or control over, resources and employees offered by running a business. They also understand that building a successful venture can result in a positive public image and influential positions in social circles (Scheinberg & MacMillan, 1988).

In business, power and achievement are most prominently associated with the venture's financial success, which results in high income or wealth. Those who attach importance to self-enhancement may take pleasure in the opportunities for self-indulgence that are afforded to those who are wealthy. They are likely to look beyond meeting basic needs by seeking out opportunities to gratify wants and luxuries (Bardi et al., 2008). Entrepreneurs often state that the potential for income, wealth, and recognition are significant rationales for starting a new venture (Carter et al., 2003; Kuratko et al., 1997). We reasoned that for those who value achievement, power, and hedonism, financial returns would be more influential in their judgment of the desirability of the entrepreneurial outcomes than for those who value self-enhancement less. Thus:

> **Hypothesis 4:** Entrepreneurs for whom the self-enhancement value is a more important guiding principle in their lives will place greater emphasis on *future financial returns* in their persistence decisions than those for whom the self-enhancement value is a less important guiding principle.

*Openness to change* consists of the values of stimulation, self-direction, and hedonism. Individuals who value openness appreciate independent thought and action and thrive on the excitement and challenge of life (Schwartz, 1992). They explore new ways of doing things and are not afraid to buck conventional roles or systems. They are stimulated by learning and by using their intellectual capacity to develop new products and services (Shane, Kolvereid, & Westhead, 1991). People who highly value an openness to change will tend to be more promotion focused in their self-regulatory system by seeking growth and advancement toward their ideal selves (Brockner, Higgins, & Low, 2004). It follows that those who value openness to change will be more likely to place

additional emphasis on the nonfinancial benefits, such as self-realization or learning through experience, derived from entrepreneurial action.

Individuals who value self-enhancement and those who value openness to change share the value of hedonism but differ in their source of gratification of desires and pleasure seeking (Schwartz, 1992). The former derive greater gratification from power and accomplishment while the latter seek out novel experiences and the freedom to choose one's own goals (Bardi et al., 2008). Entrepreneurs who use openness as a guiding principle in their lives likely take pleasure in the autonomy of the entrepreneurial role (Carter et al., 2003). The freedom to control one's time and work approach and the opportunity to wear many "different hats" generates psychic income that is often valued as much or even more than financial benefits by many entrepreneurs (Amit & MacCrimmon, 2001). Accordingly, we reasoned that such noneconomic benefits resulting from entrepreneurial action will likely be accentuated in the persistence decision-making process by those who value an openness to change compared to those who do not. Thus:

> **Hypothesis 5:** Entrepreneurs for whom the openness to change value is a more important guiding principle in their lives will place greater emphasis on *future nonfinancial benefits* in their persistence decisions than those for whom the openness to change value is a less important guiding principle.

*Self-transcendence* includes the values of universalism and benevolence. Universalism and benevolence are similar in being other focused, yet universalism generally applies to people outside one's immediate circle of contacts, while benevolence applies to people inside one's immediate environment (Bardi et al., 2008). Therefore, self-transcendence values motivate people to look beyond selfish interests toward elevating the welfare of personal acquaintances, colleagues, communities, and the world in general (Schwartz, 1992). Individuals who place emphasis on these values will be concerned with being honest, helpful, and loyal to those with whom they interact. Individuals who highly value self-transcendence will thrive on positive affiliation with others (Mikulincer et al., 2003). They are motivated by enriching the lives of associates and enjoy the personal psychological benefits derived from such prosocial behaviors (Lyons, Higgins, & Duxbury, 2007).

Individuals who live by the self-transcendence value may be more inclined to be involved in social entrepreneurship (Hemingway, 2005). They may be moved to create a venture that promotes equal opportunity for all, protection of the environment, improved standard of living in third world countries, or other social concerns. In doing so, self-transcendent entrepreneurs will likely gain satisfaction from making a positive, ongoing difference in the lives of employees, customers, and other stakeholders. Consequently, we reasoned that individuals who emphasize self-transcendence values will be more likely to focus on these types of nonfinancial benefits in their decision policies than those who are low in self-transcendence. Thus:

> **Hypothesis 6:** Entrepreneurs for whom the self-transcendence value is a more important guiding principle in their lives will place greater emphasis on *future nonfinancial benefits* in their persistence decisions than those for whom the self-transcendence value is a less important guiding principle.

*Conservation* values include tradition, conformity, and security (Schwartz, 1992). People who are committed to time-honored ideals, standards, and traditions uphold the value of conservation. People who emphasize conservation value the stability of society, the preservation of traditions, and moderation in action (Schwartz). Thus, entrepreneurs who value conservation are liable to make stability a high priority when starting their

companies. Personal or family security may be a driving force behind their decision to continue a venture (Kuratko et al., 1997). Individuals who highly value conservation will tend to emphasize self-control and prudence in their actions. They will be more inclined to preserve the status quo, sticking with traditional roles while seeking harmony in relationships (Lyons et al., 2007). They will also be motivated by societal norms and feel a sense of duty to meet obligations (Egri & Herman, 2000). Entrepreneurs who place high value on conservation will be more likely to have a prevention regulatory focus such that they will seek to minimize discrepancies with their "ought" selves through avoidance of change, which may lead to negative outcomes (Brockner et al., 2004). Thus, they will be more sensitive to the potential costs associated with change in their entrepreneurial decision policies.

Staw (1981) proposes that a shared norm for consistency may lead to the notion that it is better to stay committed to a previously selected course, even if it is failing, than to be perceived as a quitter or as indecisive. Remaining consistent is an automatic response that may provide a sense of security in difficult times (DeTienne et al., 2008). Since those who feel that conservation is important value maintaining traditions and norms, they may be particularly susceptible to norms of consistency and consequently place greater weight on the costs of switching to a new opportunity. Thus:

> **Hypothesis 7:** Entrepreneurs for whom the conservation value is a more important guiding principle in their lives will place greater emphasis on *switching costs* in their persistence decisions than those for whom the conservation value is a less important guiding principle.

## Method

### Research Design

To examine the persistence decision policies of entrepreneurs, we used a metric conjoint experiment. Conjoint analysis is valuable in that it allows for the decomposition of the decision revealing the underlying structure of the decision policies and the contingency relationships or two-way interactions between decision attributes (Louviere, 1988). Additionally, as a real-time method that examines actual choice behavior, conjoint experiments overcome many of the potential problems associated with *post hoc* methods, such as introspection and recall biases (Fischhoff, 1982). Conjoint analysis has been used in hundreds of decision-making studies across a variety of disciplines (Green, Krieger, & Wind, 2001), including entrepreneurship (Bruns, Holland, Shepherd, & Wiklund, 2008; Choi & Shepherd, 2005; Haynie, Shepherd, & McMullen, 2009).

Conjoint experiments require respondents to make a series of judgments based on a set of attributes. In this case, the participants made judgments regarding the likelihood to persist with their current business based on decision attributes that compared the current business to the next best alternative opportunity. In "real-world" settings, entrepreneurs will often have other opportunities that they identify as possible pursuits. When investigating the decision of whether to persist with or exit a business, it is critical to include such alternatives in the decision process (Di Paula & Campbell, 2002). In order to provide a common context in which the participants make their decisions (i.e., control for unobservable situational effects on decision making), the participants were asked to make several assumptions before making the persistence decisions, including: "if you are an owner-manager of more than one business, please consider your primary business in which you spend a majority of your time"; "you have the resources (or access to the

resources) to continue with the current business OR to change to the alternative but you do not have the resources to pursue both opportunities"; "if you choose to participate in the alternative opportunity, you will have to close or sell your current business"; "other than the information provided in the hypothetical profiles, the opportunities presented operate in a similar industry and economy as the current business and are otherwise similar to other opportunities you have seen in all respects."

Four attributes (discussed in greater detail in the next section) that vary across two levels were used in the decision profiles. Consequently, there are 16 ($2^4$) possible combinations of profiles that could have been used. With replication, the total number of profiles could have become unwieldy for participants. In order to make the decision task more manageable, we used the Hahn and Shapiro (1966) orthogonal fractional factorial design to reduce the number of profiles to eight. In choosing an orthogonal fractional factorial design, we followed the general rule of confounding the effects of most interest with effects that are unlikely to be significant or to cause much bias in the estimated parameters (Green & Srinivasan, 1990). This design allowed for the testing of all the main effects (Louviere, 1988).

A practice profile was provided in order to familiarize the participants with the conjoint procedure. The respondents were then asked to make the same set of decisions in a context of low adversity and in a context of high adversity. For each context, the participants were instructed that "at that time, you discover or are presented with an alternative business or employment opportunity. Your current business compares with the alternative opportunity in the following ways." The participants are then presented with the profiles described by high or low levels of the four decision attributes. For each context, the eight profiles were replicated in order to test response reliability among the participants, resulting in 16 scenarios per adversity level. Given that there are two adversity levels, participants were asked to respond to 32 decision scenarios (and one practice scenario). The instrument was pilot tested with five doctoral students, and minor changes were made to improve the clarity of the task. Feedback from the pilot study suggested that the attributes and contexts were understandable and the survey had face validity.

Research has suggested that order effects can have a significant impact in conjoint experiments (Chrzan, 1994). In order to test for order effects, we created four unique versions of the experiment that differed in order of attributes and order of profiles. Participants were randomly assigned to one of the four experimental forms. Tests of independence showed that versions 1, 2, and 3 were not significantly different from each other. However, the data generated by entrepreneurs with version 4 of the experiment were significantly different than the other three. This finding raised concerns of potential order effects. Further analysis of the data revealed that the version 4 sample consisted of two outliers with appreciably lower mean scores for the dependent variable. When removing these two outliers from the version 4 sample and re-testing for a difference among samples, results showed that the four versions were not significantly different from each other ($p > .10$). Consequently, we concluded that the initial difference was due to random outliers rather than the order of attributes within a scenario or the order of the scenarios within the overall experiment.

## Sample

Technology-related industries are particularly dynamic in nature (Puranam, Singh, & Zollo, 2006). While adversity in new venture creation may be universal across industries, the unpredictability of high-technology industries lends itself to the study of persistence. Dynamic industries seem to breed both opportunity and adversity (De Andres-Alonso,

Azofra-Palenzuela, & De La Fuente-Herrero, 2006). Therefore, entrepreneurs in technology-related industries may be more likely to be aware of a number of alternative potential opportunities for profit as they manage their own venture. They are also more likely to have experienced the hard times that frequent fast-changing industries. Based on these factors, the population selected for this study includes entrepreneurs in high-technology industries. High-technology industries were determined using the 46 four-digit North American Industry Classification System (NAICS) codes classified by the Bureau of Labor Statistics as high-technology (Hecker, 2005). The sampling frame consists of active owner-managers of businesses that are less than 8 years old, as commonly set forth in entrepreneurial studies (McDougall, Covin, Robinson Jr, & Herron, 1994). We acknowledge that many entrepreneurial firms are managed by teams and may make decisions as a team, which may be very different than the individual decision-making process. However, many entrepreneurs are the primary decision makers in their firms, and it is such individuals that we targeted as our sample.

In 2007, a list of entrepreneurs was acquired from the Department of Commerce Business Entity List from a western state in the United States. The business entity list includes all companies that have registered with the state for a business license, which is required by law. In narrowing the search by location (four adjacent counties), NAICS codes (high-technology) and year registered (1999 or later), the preliminary list consisted of 804 new ventures. However, it was found that 463 of the listings had incomplete or inaccurate data (e.g., older than 8 years old, out-of-business, sold the business, no telephone number, etc.), resulting in a total of 341 potential participants. An invitation of participation was mailed to the 341 potential participants. Next, we made up to five attempts to contact the potential participants by telephone during the data-collection period. Of the 341 entrepreneurs on the potential participant list, 158 (46%) could not be reached; 27 (8%) said that they would be willing to participate but were unable to make the time during the data-collection period; and 38 (11%) declined to participate. There were 118 active business owners (35%) who elected to take part in the study and agreed to an appointed time at which they would complete the experiment using a professional Internet survey site. At the appointed time, we emailed a web link for the experiment and called to talk the participant through the instructions. On average, the experiment took approximately 35 minutes to complete. Four of the respondents had missing data and were consequently removed from the study. An additional 14 respondents had poor test–retest reliability and were also removed from the final analysis. Therefore, the final useable sample included 100 entrepreneurs. Table 1 summarizes the characteristics of the respondents.

## Variables and Measures

***Decision Attributes.*** Four attributes representing the probability of expected outcomes and desirability of outcomes (financial returns, nonfinancial benefits, and switching costs [reverse]) were developed for the conjoint experiment. In order to control for the importance of alternative opportunities in persistence decisions, the attributes are presented as relative to the next best alternative—i.e., either higher or lower than the alternative (contrast coded).

1. Financial Returns: Higher—make substantially more money from the current business than from your best alternative; Lower—make substantially less money from the current business than from your best alternative.

Table 1

Descriptive Statistics of the Sample

| Characteristic | Mean | SD |
|---|---|---|
| Age of entrepreneur | 40–45 | 2.40 |
| Gender (% male) | 91.0% | — |
| Education (% college graduate) | 73.0% | — |
| Percentage with previous new venture experience | 65.0% | — |
| Work experience (years) | 21.69 | 12.44 |
| Age of firm (years) | 3.50 | 2.45 |
| Number of employees | 5.13 | 18.98 |
| Sales over the previous year | $346,074 | $762,191 |

2. Nonfinancial Benefits: Higher—receive substantially more nonfinancial benefits from the current business than from your best alternative; Lower—receive substantially less nonfinancial benefits from the current business than from your best alternative.
3. Switching Costs: High—the emotional, financial, and social costs of switching from the current business to your best alternative will be high; Low—the emotional, financial, and social costs of switching from the current business to your best alternative will be low.
4. Probability of Expected Outcomes: Higher—substantially more likely to meet your expectations regarding financial returns, nonfinancial benefits, and switching costs with the current business than with your best alternative; Lower—substantially less likely to meet your expectations regarding financial returns, nonfinancial benefits, and switching costs with the current business than with your best alternative.

***Adversity.*** The context for adversity was manipulated by setting the stage prior to the decision-making task.[2] The following statements were used to set the context:

> Low Adversity Context: Over the next 18 months, the financial and nonfinancial benefits that you receive from your business generally meet your positive expectations. An objective evaluation of the business suggests that there is a high likelihood that the business will continue to be viable for the foreseeable future. At that time, you discover or are presented with an alternative business or employment opportunity. Your current business compares with the alternative opportunity in the following ways.
>
> High Adversity Context: Over the next 18 months, the financial and nonfinancial benefits derived from your business repeatedly fall substantially below your expectations. An objective evaluation of the business suggests that there is a low likelihood

2. Adversity is prominent in our theoretical model and therefore it was critical for us to design a study that allowed the decision makers to take on a "mindset" in the given level of adversity. While we considered using adversity as a decision attribute, it would have required the decision makers to put themselves in and out of an adversity "mindset" many times. We believed that such a design was less desirable than manipulating the level of adversity and having the decision makers take on one mindset (e.g., low adversity) to complete the first conjoint task and then take on the other mindset to complete the second conjoint task.

that the business will continue to be viable in the foreseeable future. At that time, you discover or are presented with an alternative business or employment opportunity. Your current business compares with the alternative opportunity in the following ways.

A three-question manipulation check was employed by asking respondents to compare the two contexts based on level of adversity. Results revealed that respondents did consider the high adversity context to be significantly more adverse than the low adversity context.

***Decision Outcome.*** Participants were asked to respond to the question "What is the likelihood that you will continue with your current business?" for each of the scenarios in each context. This decision outcome was measured on a 9-point Likert scale anchored by (1) not likely to continue, (5) moderately likely to continue, and (9) very likely to continue. We want to emphasize that the participants chose how likely they are to continue with the overall entrepreneurial opportunity, not with a specific strategy or way of exploiting the opportunity. An entrepreneur may persist with the new venture yet plan to make significant changes in the way that he or she executes the strategy.

***Values.*** We used a postexperiment questionnaire to gather data regarding the importance of values in the participants' lives. The Schwartz Value Survey (SVS) (Schwartz, 1992) includes 56 potentially desirable value items with an associated explanatory phrase in parentheses. Examples of items include: loyal (faithful to my friends, group); social recognition (respect, approval by others); and independent (self-reliant, self-sufficient). The SVS has been verified across a number of samples using multidimensional scaling (Schwartz) and confirmatory factor analysis (Schwartz & Boehnke, 2004) and has been used in a variety of studies over the last 15 years (e.g., Bardi et al., 2009; Egri & Herman, 2000; Feather, 1995; Ryckman & Houston, 2003). Following the prescribed SVS procedure, the participants were asked to rate the importance of each value item as "a guiding principle in my life." The scale is a nonsymmetrical 9-point scale with labels at the following values: (7) of supreme importance, (6) very important, (3) important, (0) not important, and (−1) opposed to my values. Schwartz asymmetrically compressed the scale at the lower end and expanded the scale at the upper end because the initial tests showed that this type of scale better matched the way individuals think about values (i.e., individuals are likely to feel that most values have some level of importance in their lives). The importance of each value was determined by the sum of the items that were designated *a priori* as markers of that value (Schwartz, 1994). The internal reliabilities of the higher-level values of self-enhancement, openness to change, self-transcendence, and conservation were an acceptable .82, .80, .87, and .85, respectively.

***Control Variables.*** Consistent with previous studies in entrepreneurial persistence, we gathered data for control variables related to entrepreneurial and firm characteristics (Gimeno et al., 1997). The individual competencies developed through an entrepreneur's previous start-up experience can play a role in new venture performance (Chandler & Hanks, 1994). Such experience may influence the persistence decision as the entrepreneur has a deeper understanding of the new venture process which may increase the ability to discern whether to persist or exit. Thus, participants were asked whether they had any previous start-up experience, and this variable is used to control for the effects of such experience on the persistence decision policy.

Firm size is frequently an indicator of venture performance (Jayaraman, Khorana, Nelling, & Covin, 2000). It is important to control for firm size because the performance

of the venture may play a role in an entrepreneur's persistence decision process. Furthermore, the number of people affected by the decision to persist is obviously greater as the firm size increases, which may influence the decision to persist. Consistent with other entrepreneurship studies (e.g., Baum & Locke, 2004), the size of the firm is measured by the number of employees.

## Analysis and Results

Of the 118 individuals that started the experiment, four did not complete the experiment. Consequently, these four respondents were dropped from the study. The experimental decisions were fully replicated allowing for a test of correlation between each individual's answers for the original profiles and their answers for the replicated profiles. Eighty-two percent of the remaining 114 respondents were significantly reliable in their responses ($p < .05$) with a mean test–retest correlation of .72, which is comparable to that of other 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 Pearson R correlations that were low and not significant revealed a cluster of nine respondents that had a test–retest correlation of less than .30 and another cluster of an additional five (14 total) respondents that had test–retest correlations less than .45. While weighing the trade-off between low reliability data and decreased sample size, we tested the data at both cutoff levels and found that the results were essentially the same at both levels. It was determined that the more robust cutoff level of .45 would be most appropriate. After dropping the 14 cases below .45, 94% of the final sample of 100 entrepreneurs had significantly reliable responses with a mean test–retest correlation of .79.

The design of this conjoint experiment resulted in 32 decision observations per entrepreneur or 3,200 total observations. Due to the nested nature of the data, we relied on hierarchical linear modeling (HLM) for the analysis of the data. HLM is particularly effective with nested data because it controls for autocorrelation and heteroscedasticity that may be inherent in such data (Choi & Shepherd, 2005; Hofmann, 1997). HLM accounts for variance both within and between individuals and allows for the decomposition of the foundational structure of decision policies (Bruns et al., 2008). Looking at the sample as a whole, 74.9% of the explained variance is within the individual level. Level 2, i.e., adversity, accounts for 14.5% of the explained variance, and the level 3 variables (values and control variables) account for 10.6% of the explained variance in the decisions. Overall, 54.8% of the variance in decisions is accounted for by the variables in this study.

In Table 2 we report the means, standard deviations, and correlations of the level 3 variables. As shown, the value variables are significantly correlated with each other. This is not unexpected as the theory implies that there should be correlation among the values with generally higher correlations among adjacent values than the values on opposite ends of the circular structure (Schwartz, 1992). For example, conservation has a correlation of 0.45 and 0.73 with self-enhancement and self-transcendence, respectively. It is also correlated with openness to change, which is on the opposite side of the value structure, but the correlation is smaller (0.26) than with the adjacent values. A more thorough review of the individual survey items associated with each value helps to elucidate how the values may be generally opposing but somewhat correlated; due to space limitations, we refer you to Schwartz for a full list of survey items. Having said this, multicollinearity among the independent value variables is a potential problem with regression analysis and may

Table 2

Means, Standard Deviations, and Correlations

| | Mean | SD | Self-enhancement | Openness to change | Self-transcendence | Conservation | Number of employees |
|---|---|---|---|---|---|---|---|
| Self-enhancement | 55.84 | 11.71 | | | | | |
| Openness to change | 50.58 | 9.16 | 0.58** | | | | |
| Self-transcendence | 91.10 | 14.83 | 0.47** | 0.47** | | | |
| Conservation | 75.78 | 15.18 | 0.45** | 0.26* | 0.73** | | |
| Number of employees | 4.91 | 18.55 | 0.10 | 0.10 | 0.13 | 0.17 | |
| Previous NV experience | 0.65 | 0.48 | –0.07 | –0.02 | –0.17 | –0.18 | 0.09 |

* $p < .05$, ** $p < .01$.

lead to unstable betas; therefore, the variance inflation factors (VIF) were calculated. The VIFs ranged from 1.78 to 2.51. Since all of the VIFs are well below the generally accepted limit of 10, we concluded that multicollinearity is not a serious problem in this analysis (Kutner, Nachtsheim, & Neter, 2004).

## Hypothesis Testing

Hierarchical linear modeling produces a model where the particular decision criteria (i.e., probability, financial returns, nonfinancial benefits, switching costs, and the intercept) become the dependent variables, and the independent variables consist of an intercept, the four values of openness to change, self-enhancement, conservation, and self-transcendence, and the two control variables. We report the results in Table 3. The results of Level 2 intercept (controlling for adversity) are reported in rows 1–7 and Level 2 adversity in rows 8–14. The intercept for adversity (row 8) represents the influence of adversity on the persistence decision policy (probability, financial returns, nonfinancial benefits, and switching costs) controlling for the values (rows 9–12) and the other control variables (rows 13–14). The Level 2 intercept results represent the influence of values (rows 2–5) on the persistence decision policy independent of the influence of adversity (rows 8–14). The results show that across adversity conditions, the sample as a whole significantly used the decision attributes of probability, financial return, nonfinancial benefits, and switching costs in their persistence decisions. The intercept for the Level 2 intercept (row 1) represents the persistence decision policy independent of the influence of values and adversity. The cells in gray highlight the results for testing the hypotheses. The adversity section is used to interpret the results for Hypotheses 1–3. The intercept section is used to interpret the results for Hypotheses 4–7.

In order to test Hypothesis 1, we examine the coefficient for the intercept in the adversity condition (row 8, column 1). The coefficient is negative and significant (coefficient = –0.829, $p < .001$) which suggests that controlling for all persistence decision criteria (the probability, financial benefits, nonfinancial benefits, and switching costs), entrepreneurs are less likely to choose to persist when adversity is high than when adversity is low. This finding supports Hypothesis 1.

In Hypothesis 2, we posited that entrepreneurs would place less emphasis on probability in the decision policy in the context of high adversity than they would in the context

Table 3

HLM Results of the Effect of Adversity and Values on Entrepreneurs' Persistence Decision Policies

| Evaluation criteria | | 1. Intercept | 2. Probability | 3. Financial returns | 4. Nonfinancial benefits | 5. Switching costs |
|---|---|---|---|---|---|---|
| **Level 2 (Intercept)** | | | | | | |
| 1. Intercept | Coefficient | 5.443 | 1.177 | 1.752 | 2.151 | 0.676 |
| | t-ratio | 66.822*** | 21.307*** | 31.717*** | 38.937*** | 12.232*** |
| 2. Self-enhancement | Coefficient | –0.003 | –0.010 | 0.015 | 0.003 | –0.013 |
| | t-ratio | –0.327 | –1.626 | 2.324* | 0.423 | –2.075* |
| 3. Openness to change | Coefficient | –0.006 | 0.026 | –0.002 | 0.025 | –0.004 |
| | t-ratio | –0.473 | 3.206** | –0.268 | 3.108** | –0.484 |
| 4. Self-transcendence | Coefficient | 0.001 | 0.009 | –0.010 | –0.010 | –0.007 |
| | t-ratio | 0.128 | 1.453 | –1.709 | –1.733 | –1.077 |
| 5. Conservation | Coefficient | 0.006 | –0.008 | 0.005 | 0.006 | 0.003 |
| | t-ratio | 0.700 | –1.485 | 0.980 | 1.036 | 0.581 |
| 6. Number of employees | Coefficient | 0.008 | –0.004 | 0.014 | 0.008 | –0.002 |
| | t-ratio | 1.807 | –1.423 | 4.669*** | 2.760** | –0.549 |
| 7. Other start-up experience | Coefficient | 0.301 | –0.302 | –0.029 | –0.530 | –0.029 |
| | t-ratio | 1.721 | –2.538* | –0.249 | –4.464** | –0.245 |
| **Level 2 (Adversity)** | | | | | | |
| 8. Intercept | Coefficient | –0.829 | –0.271 | –0.171 | –0.154 | 0.086 |
| | t-ratio | –7.282*** | –2.455* | –1.550 | –1.392 | 0.781 |
| 9. Self-enhancement | Coefficient | 0.007 | –0.016 | –0.005 | 0.005 | 0.015 |
| | t-ratio | 0.547 | –1.217 | –0.393 | 0.363 | 1.185 |
| 10. Openness to change | Coefficient | –0.002 | 0.006 | –0.021 | –0.021 | 0.007 |
| | t-ratio | –0.125 | 0.341 | –1.328 | –1.289 | 0.418 |
| 11. Self-transcendence | Coefficient | 0.005 | 0.005 | 0.003 | –0.003 | –0.007 |
| | t-ratio | 0.430 | 0.446 | 0.271 | –0.256 | –0.598 |
| 12. Conservation | Coefficient | –0.002 | 0.007 | –0.005 | –0.012 | 0.014 |
| | t-ratio | –0.173 | 0.652 | –0.473 | –1.037 | 1.249 |
| 13. Number of employees | Coefficient | 0.000 | –0.001 | 0.008 | –0.000 | –0.003 |
| | t-ratio | 0.028 | –0.239 | 1.402 | –0.033 | –0.534 |
| 14. Other start-up experience | Coefficient | 0.385 | 0.221 | 0.242 | 0.092 | –0.022 |
| | t-ratio | 1.572 | 0.931 | 1.021 | 0.387 | –0.092 |

* $p < .05$, ** $p < .01$, *** $p < .001$.

of low adversity. The coefficient for the relationship of adversity (row 8) with the use of probability in the decision policy is indeed negative and significant (column 2; coefficient = –0.271, $p = .014$). Since the main effect of probability on the decision to persist was positive, a negative coefficient in the context of adversity indicates that probability receives less emphasis in the high adversity condition. Thus, Hypothesis 2 is supported.

In contrast, the participants in the study did not place significantly greater emphasis on the decision attributes of financial returns (column 3; coefficient = –0.171, $p = .12$), nonfinancial benefits (column 4; coefficient = –0.154, $p = .16$), or switching costs (column 5; coefficient = 0.086, $p = .44$) when facing greater adversity (row 8), as put forward in Hypothesis 3. Hypothesis 3 is not supported.

Hypotheses 4 through 7 examine the relationship between individual values (level 3) and the persistence decision policy of entrepreneurs. Hypothesis 4 suggests that the self-enhancement value will be positively related to emphasis placed on financial returns in the persistence decision policy (row 2, column 3). When looking at the financial returns as the outcome variable, the coefficient for the self-enhancement value is positive and significant (coefficient = .015, $p = .02$). In order to analyze this result, we must first look at the main effect of financial benefits on the sample as a whole. Examination of the main effects of financial returns on the persistence decision (row 1, column 3) indicates a significant and positive relationship. Therefore, financial returns have a greater level of influence in the decision policy for those entrepreneurs who highly value self-enhancement as a guiding principle in their life than for those entrepreneurs who do not highly value self-enhancement. This finding supports Hypothesis 4.

According to Hypothesis 5, entrepreneurs who value openness to change will place greater emphasis on nonfinancial benefits than those who place less value on openness to change. When looking at nonfinancial benefits as the dependent variable, the coefficient for openness to change is positive and significant (row 3, column 4; coefficient = 0.025, $p = .002$). The main effect of nonfinancial benefits on the decision to persist (row 1, column 6) was also positive and significant. Therefore, a positive openness to change coefficient implies that entrepreneurs who place greater value on openness to change as a guiding principle in their life placed greater weight on nonfinancial benefits than those who place less value on openness to change. Thus, Hypothesis 5 is supported.

Hypothesis 6 states that nonfinancial benefits will receive more emphasis from entrepreneurs who hold self-transcendence as a guiding principle in their lives than those who do not. The coefficient for the self-transcendence variable was not significant (row 4, column 4; coefficient = –.010, $p = .08$), therefore Hypothesis 6 is not supported. Hypothesis 7 is also not supported by the data. In Hypothesis 7, we inferred that entrepreneurs who are high in conservation would place greater emphasis on switching costs in their persistence decision policy but this relationship is not significant (row 5, column 5; coefficient = .003, $p = .56$).

## Discussion

### Implications

There are several theoretical contributions from this study. First, this study contributes to the extant literature on entrepreneurial persistence by taking a more comprehensive and integrative decision-making approach. Others have viewed persistence as a trait (Baum & Locke, 2004) or as perceptions of control over outcomes (Markman et al., 2005). This study looks at persistence as a decision process with the fundamental *choice to continue to act entrepreneurially* at its core. The focus of the study is on proximal relationships in

the decision process across levels of individual characteristics, context, and motivational factors that influence entrepreneurial choices.

Second, the study helps to answer how adversity affects the motivational factors in the decision to persist. One of the predominant findings of this study concerns the heterogeneity in persistence decision policies based on the level of adversity. We uniquely contribute to the literature by measuring the decision policies used by entrepreneurs at both the aspiration point and the survival point proposed by March and Shapira (1987). By comparing decisions made in the context of low adversity (near the aspiration point) and high adversity (near the survival point), we are able to control for other factors and evaluate entrepreneurs' differences in persistence decisions due to the change in context. When given the exact same assessments of the current venture versus the best alternative, entrepreneurs tended to change the weight placed upon the decision criteria depending on the level of adversity faced. Specifically, entrepreneurs tend to place less weight on probability in a state of high adversity than in a state of low adversity. This finding provides insight into the mechanisms behind the tendency for greater acceptance of risk when facing a loss as suggested by decision-making theories. The reduction in emphasis on probability may also shed light on the tendency to escalate commitment to a failing course of action. At a high level of adversity, entrepreneurs seem to de-emphasize the probability of achieving successful outcomes, even if the current venture seems more promising than the alternative, and simply base their decision on the desirability of the outcomes. When the probability of success is low, placing less weight on that particular decision criterion may bias the choice toward persistence in a failing course of action. Future research may help to discern the situations and individual characteristics that have the greatest influence on the escalation decision policy.

Despite the finding that entrepreneurs placed less emphasis on the probability of success in high (relative to low) adversity, there was no significant difference across adversity contexts in the emphasis on the desirability of outcomes (financial returns, nonfinancial benefits, and/or switching costs). Although care must be taken in inferring too much from nonsignificant findings, it does provide potential opportunities for future research. Perhaps there are different thresholds for desirability than for probability. It could be that a threshold was reached for probability but not for desirability. A more extreme manipulation of adversity may produce results consistent with those hypothesized. Alternatively, it could be that adversity does not influence desirability. That is, across levels of adversity, desirability is a consistent influence while the emphasis on probability is more influenced by context. Future research can explore these possibilities of different thresholds for probability and desirability or investigate why, in the face of increasing adversity, the emphasis on criteria related to desirability are constant while those criteria related to the probability of success change significantly.

Third, the findings of this experiment suggest that some differences in the persistence decision policy used by entrepreneurs can be attributed to differences in the individual values held by entrepreneurs. Entrepreneurship research has increasingly been concerned with developing knowledge about how entrepreneurs think and make decisions (Mitchell et al., 2004). The findings from this study suggest that differences in decision making may be due, in part, to heterogeneity in individual values and the way that values induce valences of outcomes. The findings support the notion that values play a role in the cognitive appraisal of opportunities and the corresponding decisions (Feather, 1995).

However, we did not find support for all of the hypotheses regarding values, in particular the self-transcendence and conservation values. Our nonfinding regarding self-transcendence might be explained by the fact that the criterion offered does not clearly

delineate between benefits to the entrepreneur and benefits accruing to others. Only the latter would be expected to be more desirable to entrepreneurs who place greater value on self-transcendence. Future research could explore this possibility by clearly specifying outcomes that benefit others. Similarly, individuals guided by the value of conservation are less likely to make decisions that change the status quo; but which status quo is the entrepreneurs most interested in? Perhaps the status quo is less about the conservation of the venture and more about the conservation of the individual's resources and aspirations. Future research might be able to explore this nuance. Increasingly fine-grained experiment designs might provide new insights into the role of values on the emphasis placed on a variety of financial and nonfinancial outcomes (for the entrepreneur and for others) and the switching costs borne by the entrepreneur and those borne by others. We also believe that there are many additional research opportunities to investigate the role of values on other aspects of the entrepreneurial process.

Fourth, we used a conjoint analysis to explore entrepreneurs' real-time decisions. This method is not without limitations, as discussed in the section below, but it is a method that has been used in numerous decision-making studies across disciplines (Green et al., 2001). Conjoint analysis is a powerful technique that captures numerous decisions for each individual with the only changes between decisions being the level (e.g., high or low) of the decision attributes that are provided. This enables a much clearer understanding of the fundamental drivers of the decision while averting most biases inherent in *post hoc* experiments (Shepherd & Zacharakis, 1997).

Finally, there are some practical contributions offered by this study. Persistence is critical to entrepreneurial success but also has a dark side. Persistence can lead to significant financial and emotional costs for the entrepreneur if the consequence is the allocation of resources in a fruitless opportunity when the resources could have been more efficiently applied elsewhere (McGrath, 1999). Therefore, awareness of the factors involved in the persistence decision process may be of great value to entrepreneurs. An understanding that adversity and values may predispose them toward disproportionate weighting of decision attributes may encourage decision makers to take preventive measures. They may be more willing to seek objective data from other sources that can be used to justify or modify expectancies and ultimately increase the probability of making quality decisions. It is useful for decision makers to candidly consider the future implications of the alternatives, even imagine hypothetical outcomes, to get a true sense of the probability and value of those outcomes (Kin Fat Ellick & Kwong, 2007). Furthermore, entrepreneurs may be less likely to persist in a failing course of action if they make an effort to minimize the tendency to neglect probability in emotional decisions (Sunstein, 2002). The findings show that entrepreneurs tend to place less emphasis on the probability of achieving expected outcomes when adversity is high. This inclination can result in a choice that may be riskier than the entrepreneur would normally choose. In potential escalation situations, entrepreneurs would do well to seek out confidants who may not be encompassed by the emotion of the decision and may also have different values that would help ensure diverse perspectives in the decision policy. Understanding the complex antecedents of the decision to persist may enable an entrepreneur to more effectively determine if he or she should give in and pursue other opportunities.

## Limitations

We acknowledge that as with all research, this study has limitations. While we tried to minimize these limitations throughout the design and administration of the experiment,

it is important to address such limitations. In conjoint experiments, researchers attempt to approximate the "real world" with the decisions used in the experiment. Obviously, this attempt is imperfect in that it is difficult to capture and control all of the factors involved in decision making. This experiment forces the entrepreneurs to make decisions based on the four general attributes provided. In reality, the entrepreneur would have access to more detailed information and time. Yet, despite the inescapable drawbacks of conjoint experiments, Louviere (1988) and others have argued that the method has strong validity and is useful in capturing the decision policies of individuals. Moreover, we attempted to minimize the limitation by controlling for the potential use of other information. This was accomplished by explicitly setting the context for the decisions in the instructions and by directing participants to treat each decision independently and equally. Conjoint and policy-capturing experiments have been used in hundreds of decision-making studies (Green et al., 2001), and we have approached it in a manner consistent with others (e.g., Bruns et al., 2008; Haynie et al., 2009).

Another challenge with conjoint experiments is managing the number of decision attributes so that the experiment does not become unwieldy for the participants. For example, it would be preferable to include a much longer list of attributes (e.g., break down nonfinancial benefits into emotional benefits, benefits for others, benefits for the environment, etc.) but the required number of decision scenarios raises substantially with each additional attribute. In this study, we determined that limiting the number of attributes to four would allow for the experiment to be completed without creating respondent fatigue. We believe that this was an important factor in ensuring quality data and in generating a higher participation rate. We look forward to future research that may consider more fine-grained decision attributes.

This experiment was conducted with active entrepreneurs and should be generalizable to other entrepreneurs. However, it is important to note that the sample was limited to the high-technology sector in a particular geographical area. Thus, the external validity is limited to this context. Future research could increase the external validity by targeting samples of entrepreneurs in other industries and locations.

## Conclusion

Persistence is an important determinant of entrepreneurial success as many entrepreneurs have to overcome extreme adversity in the form of resource constraints, competition, and other environmental dynamics (Alvarez & Busenitz, 2001). In this study, we examined entrepreneurial persistence decision making. We found that entrepreneurs' persistence decision policies are heterogeneous depending on the level of adversity experienced and the individual values held by the entrepreneurs. Such findings create significant opportunities for future cognitive research exploring the unique and complex factors involved in decisions to persist, and how the process may differ from decisions to start a business. Research in this area can inform training and educational programs that target entrepreneurial development, enabling entrepreneurs to increase their understanding of the persistence decision process and ultimately make better decisions when choosing whether or not to persist.

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Daniel V. Holland is Assistant Professor of Entrepreneurship at Jon M. Huntsman School of Business at Utah State University.

Dean A. Shepherd is Professor and Randall L. Tobias Chair in Entrepreneurial Leadership, Kelley School of Business, Indiana University.