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## AFRAID OF OPPORTUNITY: THE EFFECTS OF FEAR OF FAILURE ON ENTREPRENEURIAL ACTION

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## AFRAID OF OPPORTUNITY: THE EFFECTS OF FEAR OF FAILURE ON ENTREPRENEURIAL ACTION



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### ABSTRACT

In this study, we examine the effect that three dimensions of fear of failure have on the propensity for entrepreneurial action. Specifically, we explore the moderating effects the fear of devaluing one's self-estimate, fear of upsetting important others, and fear of having an uncertain future have on the relationships between human capital and self-efficacy and the propensity to entrepreneurial action (controlling for differences in opportunities). With a sample of 120 CEOs of technology firms, we find that while fear of failure does moderate the effects of specific human capital, general self-efficacy and entrepreneurial self-efficacy on propensity for entrepreneurial action, the nature of these effects differs across fear of failure dimensions. These results have important implications for understanding the entrepreneurial action of CEOs.

*I would encourage you to think of fear of failure, because the fear of failure will stop many people.* – One entrepreneur speaking to students

*Most of the things I've accomplished in my life have been based on fear of failure.*  
– Another entrepreneur speaking to students

### INTRODUCTION

Failure looms large in entrepreneurship. Because most new ventures end in failure (Knott & Posen, 2005), it should be no surprise that research interest in the topic continues to increase (Holmberg & Morgan, 2003; McGrath, 1999; Mitchell, Mitchell, & Smith, 2008; Shepherd, 2003; Zacharakis, Meyer, & DeCastro, 1999), with much of this research focusing on failure's beneficial aspects (Knott & Posen, 2005; Sitkin, 1992). And while entrepreneurs have been shown to underestimate the likelihood of venture failure for their own business, they nonetheless do exhibit a general awareness of the failure that can result from entrepreneurial action (Cooper, Woo, & Dunkelberg, 1988). In this paper, we seek to complement prior research on failure. But rather than investigating failure as a potential consequence of entrepreneurial action, we instead examine the effect that a *fear* of failure can have on the propensity for entrepreneurial action—by which we mean the likelihood an individual will act on *any* opportunity, independent of the characteristics of that opportunity—in the first place.

As the previous quotations from entrepreneurs illustrate anecdotally, fear of failure can have a differential effect on entrepreneurial action, impeding it on the one hand, while motivating that action on the other. In this paper, we seek to better understand the reasons underlying such

differences in the effects of fear of failure. And whereas fear of failure has been broadly described as a “generalized desire to avoid failure” (Elliot & Church, 1997, p. 220), in this paper we draw on the self-representation literature (Markus & Wurf, 1987) to explore how three dimensions of this desire to avoid failure (images of vulnerability as per Mitchell and Shepherd [2010]) affect entrepreneurial action. We do so by investigating how CEOs’ fears of *devaluing one’s self-estimate*, *upsetting important others* and *having an uncertain future* (cf., Conroy, 2001) moderate the effect human capital and self-efficacy (images of capability as per Mitchell and Shepherd [2010]) on the propensity for entrepreneurial action (cf. Corbett, 2007; Davidsson & Honig, 2003; Wood & Bandura, 1989).

We make three primary contributions. First, with this paper we provide added richness to the literature on failure by investigating the differential effects of three dimensions of fear of failure on the propensity for entrepreneurial action. Our results indicate that while fear of failure does moderate the effects of specific human capital, general self-efficacy and entrepreneurial self-efficacy on the propensity for entrepreneurial action, the nature of these effects differs across fear of failure dimensions. For example, we find that while the relationship between specific human capital and the propensity for entrepreneurial action is negative when fear of devaluing one’s self estimate is high and negative when it is low, the opposite is true for fear of upsetting important others. In other words, not all fear of failure is created equal.

Second, we counteract the many studies that are always looking at the upside potential of opportunities and how those decision makers that are highly motivated by that upside are more likely to act on the opportunity. By controlling for the quality of the opportunity in determining the effect of fear of failure on the propensity for entrepreneurial action, we control for the upside returns and the risks and relatedness of the opportunity to focus on an entrepreneur’s attitudes about failure. This represents a contribution because it is difficult to disentangle an entrepreneur’s fear of failure from an opportunity that may be creating the fear of failure. That is, one might argue that those entrepreneurs that face riskier or less desirable opportunities are more likely to have a higher fear of failure. We control for this possibility, which then allows us to understand the unique effects of fear of failure in the strategic decision making that underlies entrepreneurial action.

Third, this paper informs research on organizational renewal (Barr, Stimpert, & Huff, 1992; Dougherty, 1992). It has previously been suggested that the pursuit of opportunity is important to organizational renewal (Guth & Ginsberg, 1990; Zahra & Covin, 1995). Our findings provide insight into factors that might lead some CEOs to have higher propensities to act on opportunities than other CEOs, regardless of the opportunities themselves. That is, our results indicate that heterogeneity in fear of failure may, in part, underlie heterogeneity in the propensity for entrepreneurial action that drives organizational renewal.

Our study proceeds as follows. We first develop the notion of propensity for entrepreneurial action, grounding this concept in prior research on entrepreneurial action (Alvarez & Barney, 2007; Klein, 2008; McMullen & Shepherd, 2006; Mitchell & Shepherd, 2010). Next, we develop hypotheses about the factors that underlie propensity for entrepreneurial action in opportunity decisions, focusing specifically on the moderating effect of fear of failure on the relationship between both human capital and self-efficacy and propensity for entrepreneurial action. We then discuss the methods we use to test these hypotheses. We present our results. Finally, we discuss the implications of our study for research and practice.

## ENTREPRENEURIAL ACTION

In the entrepreneurship literature, entrepreneurial action has been described as the concrete behaviors entrepreneurs undertake in their pursuit of opportunities (Alvarez & Barney, 2007; Klein, 2008; McMullen & Shepherd, 2006; Mitchell & Shepherd, 2010). In such conceptualizations of entrepreneurial action, it is the *combination* of the individual entrepreneur who is acting and the opportunity they are acting upon that occupies the central place in the theory (Shane & Venkataraman, 2000; Venkataraman, 1997). The actions that the individual takes to pursue the opportunity could involve the formation of opportunities, the exploitation of opportunities or both (Alvarez & Barney, 2007). In all of these cases, there exists a potential opportunity that is worth pursuing (McMullen & Shepherd, 2006). This fact, that there is an opportunity that is worth pursuing to an individual, represents an important tenet of the entrepreneurial action perspective of entrepreneurship. In this study we contribute to this entrepreneurial action perspective by disentangling the influence of the opportunity from the influence of the individual in action. We do this by looking at *propensity for entrepreneurial action*, which refers to the likelihood an individual will decide to act on *any* opportunity, independent of the characteristics of that opportunity.

By focusing on the decision to act on opportunities generally, we ground our research in terms of prior studies that have investigated the factors underlying strategic decision making about opportunities (e.g., Choi & Shepherd, 2004; Dimov, 2007; Mitchell & Shepherd, 2010). Such research has emphasized the importance of strategic decision making to new ventures (cf. Alvarez & Busenitz, 2001; Busenitz & Barney, 1997), *especially* in the centrality of opportunity pursuit in entrepreneurial action (Shane & Venkataraman, 2000; Short, Ketchen, Shook, & Ireland, 2010; Venkataraman, 1997). In the pursuit of opportunity, decision makers must commit resources (whether it is money, effort or time [Venkataraman, 1997]) to set the future direction of the firm. In this way, the propensity for entrepreneurial action reflects a decision-making process that is strategic in its aspirations and implications (Dean & Sharfman, 1996; Mintzberg, Raisinghani, & Théorêt, 1976: 246). Moreover, the processes reflected in the propensity for entrepreneurial action are important in existing organizations because of their role in critical organizational outcomes (cf. Rajagopalan, Rasheed, & Datta, 1993) such as organizational renewal (Guth & Ginsberg, 1990; Zahra & Covin, 1995).

To disentangle the influence of the opportunity and the influence of the individual on entrepreneurial action, we ask the question of why some, but not others pursue opportunities (Shane & Venkataraman, 2000, p. 218) and do so through an investigation of the moderating effect that fear of failure has on essential individual-level factors that have been previously shown to affect entrepreneurial action: human capital and self-efficacy. But instead of seeing fear of failure as a categorical barrier to entrepreneurial action (Sarasvathy, 2004), we suggest that its dimensions may have a differential impact in their interactions with human capital and self-efficacy factors in shaping the propensity for entrepreneurial action. In the following section, we develop the logic underlying these contingent relationships.

## HUMAN CAPITAL, SELF-EFFICACY AND FEAR OF FAILURE

The increased focus on entrepreneurial behavior (Gartner, 1989; McMullen & Shepherd, 2006), combined with the increase in attention given to entrepreneurial cognition (Busenitz & Barney, 1997; Mitchell et al., 2002a; Shaver & Scott, 1991) has given rise to a productive area of research that addresses the thinking that underlies entrepreneurial action (Gartner, Shaver,

Gatewood, & Katz, 1994; Mitchell et al., 2007). One avenue of inquiry along these lines is demonstrated in research that explores the role of expertise in entrepreneurial action (Baron & Henry, 2010; Mitchell, Smith, Seawright, & Morse, 2000; Mitchell et al., 2002b), especially as entrepreneurs utilize their expertise to “effectuate” their future through the combination of thought and action (Saravathy, 2001). Similarly, the investigation of how entrepreneurs differ from managers in their use of heuristics and biases in decision making and action (Busenitz, 1999; Busenitz & Barney, 1997; Simon & Houghton, 2002; Simon, Houghton, & Aquino, 2000) also makes explicit the link between thinking and action.

Related to the expertise line of inquiry is the concept of images<sup>1</sup> (Beach, 1993; Beach & Mitchell, 1987), which are defined as a knowledge structure that represents the “different kinds of information about what the actor is doing, why and how, and what kind of progress is being made” (Mitchell & Beach, 1990, p. 7). Because our focus is on understanding the *why* and *how* that underlie “doing” in entrepreneurial action, use of the image concept in our research is germane. As described by Mitchell and Shepherd (2010), entrepreneurial action derives, in part at least, from two kinds of images: images of opportunity and images of self. But instead of manipulating images of opportunity (as did Mitchell and Shepherd [2010]), we control for this in order to more fully understand the images of self: the factors that drive the propensity for entrepreneurial action generally. Grounding their work in the self-concept literature (Markus & Nurius, 1986; Markus & Wurf, 1987), Mitchell and Shepherd (2010) note two kinds of images of self: images of capability and images of vulnerability.

As Mitchell and Shepherd (2010) described, images of capability derive from “an underlying set of skills and a corresponding belief in these skills” (p. 143). This logic is based in social cognition, which argues that for an individual to be successful, he or she “not only must possess the required skills, but also a resilient self-belief in one’s capabilities to exercise control over events to accomplish desired goals” (Wood & Bandura, 1989, p. 364). The possession of these skills is frequently conceptualized in terms of human capital (Becker, 1975). Research findings in entrepreneurship suggest that human capital is associated with actions underlying the identification and pursuit of entrepreneurial opportunities (Corbett, Neck, & DeTienne, 2007; Davidsson & Honig, 2003; Ucbasaran, Westhead, & Wright, 2008). The self-belief element refers to self-efficacy (Bandura, 1982, 1997). Research findings in entrepreneurship suggest that self-efficacy—defined as “people’s beliefs in their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives” (Wood & Bandura, 1989, p. 364)—is also associated with entrepreneurial actions (Boyd & Vozikis, 1994; Cassar & Friedman, 2009).

Because prior research has devoted significant attention to the relationship between human capital and the pursuit of opportunity and self-efficacy and the pursuit of opportunity (Boyd & Vozikis, 1994; Cassar & Friedman, 2009; Corbett et al., 2007; Davidsson & Honig, 2003; Ucbasaran et al., 2008); and given our focus on the contingent effects of fear of failure, herein we devote our attention to the moderating effects of fear of failure vis-à-vis human capital and self-efficacy. That is, while we expect that human capital and human capital are associated with a greater propensity for entrepreneurial action, we believe that their impact is moderated by key dimensions of fear of failure, as we now explain.

As Mitchell and Shepherd (2010) explained, whereas images of capability capture the images of self that are related to individual potential, images of vulnerability capture the images of self that are related to individual fears. In describing images of self, Markus and Nurius (1986) noted the dynamic

nature of the “working” self-concept, which involves the accessible images of the self that relate to (1) *intra-personal* (self-focused) processes and (2) *interpersonal* (other-focused) processes that exist in the individual’s (3) broader social *environment*. We adopt this three-pronged view of the “working” self-concept vis-à-vis the images of vulnerability that we investigate herein: the fears of devaluing one’s self-estimate, upsetting important others, and having an uncertain future.

### **Fear of devaluing one’s self-estimate**

To understand the intra-personal (self-focused) elements of fear of vulnerability, we utilize the concept of fear of devaluing one’s self-estimate. As its name denotes, this dimension of fear of failure captures vulnerabilities relative to the self. Such vulnerability is reflected in fears associated with personal diminishment, fears stemming from a lack of ability and fears arising from a lack of control (Birney, Burdick, & Teevan, 1969; Conroy, 2001). In a sense, this dimension describes the image of vulnerability to the reduction of one’s image of capability (cf. Mitchell & Shepherd, 2010). It reflects a fear that by failing, one will discover that he or she does *not* “possess the required skills” to be successful, and will thereby chip away at the “resilient self-belief in one’s capabilities to exercise control over events to accomplish desired goals” (Wood & Bandura, 1989, p. 364).

As we have described, previous research indicates that the possession of general and specific human capital (images of capability) is associated with the pursuit of opportunities (Corbett et al., 2007; Davidsson & Honig, 2003; Ucbasaran et al., 2008). One explanation for these findings is that human capital is indicative of the requisite skills needed to successfully identify and exploit opportunities (cf. Sanders & Nee, 1996; Ucbasaran et al., 2008). But when a fear of failure exists that views a potential failure as indicative of some *lack* of ability (Birney et al., 1969; Conroy, 2001)—whether or not this is in fact true—likelihood of action that stems from the possession of the requisite skills might be reduced. In this sense, we might expect those with high human capital (general and specific) and little emotional cost associated with failure (as a result of a low fear of devaluing self) to have a very high propensity for action. With an increase in the emotional cost associated with failure will come a tempering of the propensity for action. Thus,

*H1: The positive relationship between human capital (i.e., general or specific) and propensity for entrepreneurial action will be attenuated for those CEOs with a greater fear of devaluing one’s self-estimate.*

Similarly, as we have noted, research in entrepreneurship also provides evidence that beliefs in one’s own capabilities to accomplish a desired goal, in the form of self-efficacy (Bandura, 1982, 1997), has also been shown to impact entrepreneurial action (Boyd & Vozikis, 1994; Cassar & Friedman, 2009). One explanation for this is that the strong sense of belief in one’s own ability in the form of general and/or entrepreneurial self-efficacy leads individuals to be more aggressive in their entrepreneurial actions (Cassar & Friedman, 2009). But again, when there exists a fear of failure that views a potential failure as evident of a lack of ability to control the attainment of desired outcomes (Conroy, 2001)—again, whether or not this is true—then individuals may be more likely to avoid action that might lead to such aspirational non-attainment (Birney et al., 1969) due to this perceived lack of control. We might accordingly expect that those individuals with high self-efficacy who also have little emotional costs associated with failure (as a result of a low fear of devaluing self) to have a very high propensity for action. With an increase in the emotional cost associated with failure will come a tempering of the propensity for action. Thus,

*H2: The positive relationship between self-efficacy (i.e., general or entrepreneurial) and propensity for entrepreneurial action will be attenuated for those CEOs with a greater fear of devaluing one's self-estimate.*

### **Fear of Upsetting Important Others**

Our approach to understanding the interpersonal (others-focused) elements of fear of vulnerability involves the fear of upsetting important others (cf. Kemper, 1966). This dimension of fear of failure captures vulnerabilities relative to perceptions of the beliefs of other key individuals. Because the commitment of important others is essential to the pursuit of opportunity (Cooper & Daily, 1997; West, 2007), an individual's perceptions of others' beliefs matter. Fear of upsetting important others represents a kind of vulnerability to not getting the buy-in that provides the resources needed to pursue the opportunity (Jelinek & Litterer, 1995). As was the case at the individual-level, the successful accomplishment of desired goals by both the individual and important others also requires the possession of essential skills (human capital) and collective beliefs in these skills (self-efficacy) (Shepherd & Krueger, 2002; Wood & Bandura, 1989).

As described previously, images of vulnerability that are related to devaluing one's self-estimate are expected to attenuate the relationship between human capital and propensity for entrepreneurial action. We expect the opposite to be the case for an image of vulnerability that is associated with upsetting important others. The rationale for this expectation is based in how one perceives important others' beliefs about one's own capabilities (cf. Schafer & Keith, 1985). Where an individual has high human capital and a high fear of upsetting important others, we anticipate the individual to perceive others' beliefs in terms of an expectation of ability-based action (evidenced by high general human capital, specific human capital, or both) and to then act accordingly. In this sense, the individual's fear of upsetting important others magnifies his or her likelihood of action. When an individual lacks a fear of upsetting important others, he or she will act independent of any worry about important others perceptions of his or her abilities. Thus,

*H3: The positive relationship between human capital (i.e., general or specific) and propensity for entrepreneurial action will be magnified for those CEOs with a greater fear of upsetting important others.*

Our expectations for the effect of fear of upsetting important others on self-efficacy are similar to those for human capital. But instead of focusing on important others' perceptions of their abilities, the focus is on important others' perceptions of the individual's own perceptions about their abilities. As an example, an entrepreneur who has a strong belief in his or her ability to successfully engage in the pursuit of opportunity may also place a great deal of weight in others' beliefs that he or she can successfully pursue opportunity. By giving the perceptions of important others such weight, the individual is more likely to engage in action that is self-reinforcing (Cassar & Friedman, 2009; Shepherd & Krueger, 2002). Thus,

*H4: The positive relationship between self-efficacy (i.e., general or entrepreneurial) and propensity for entrepreneurial action will be magnified for those CEOs with a greater fear of upsetting important others.*

### **Fear of having an uncertain future**

To understand the how fear of vulnerability, as part of the "working" self-concept, is shaped by a changing social environment (Markus & Nurius, 1986) we utilize the concept of fear of having

an uncertain future. This dimension of fear of failure is especially germane to entrepreneurship because the pursuit of entrepreneurial opportunities takes place (to varying degrees, of course) under conditions of uncertainty (Alvarez & Barney, 2005; McMullen & Shepherd, 2006). As Baron (1998) noted, in the pursuit of opportunity “individuals face situations that are new to them and involve high degrees of uncertainty—situations in which they cannot readily fall back upon existing mental frameworks” (p. 278). In this sense, individuals who have high human capital, but who also have a high fear of having an uncertain future are less willing to trust their previous experience due to this fear of having an uncertain future. Because of this fear, their own experience is seen through a lens of uncertainty. Thus,

*H5: The positive relationship between human capital (i.e., general or specific) and propensity for entrepreneurial action will be attenuated for those CEOs with a greater fear of having an uncertain future.*

As we have described, a central component of self-efficacy is a belief that one is able to exercise control through action (Wood & Bandura, 1989). Indeed, a strong belief in oneself increases the amount of risk an individual is willing to take (Cassar & Friedman, 2009; Krueger & Dickson, 1994). In the face of the uncertain environment that surrounds the pursuit of entrepreneurial opportunities, individuals with a high self-efficacy and a high fear of having an uncertain future are likely to take action about their future, which they believe to be within their control. Such individuals address their fear of uncertainty through action. Such is not the case for those with either a lower fear of having an uncertain future (they are not as influenced by the uncertainty) or for those with low self-efficacy beliefs (do not believe the future to be within their control). Thus,

*H6: The positive relationship between self-efficacy (i.e., general or entrepreneurial) and propensity for entrepreneurial action will be magnified for those CEOs with a greater fear of having an uncertain future.*

## METHODS

### Sample

The sample that we used in this study was decision makers in technology-related firms, who operate in an environment that requires them to frequently make decisions about new or changing opportunities (Hughes, 1990). Because of its reputation as a repository of information of technology related firms (Kassel, 1999) and its legitimacy as a data source in the entrepreneurship and management literature (e.g., Kickul & Gundry, 2001; Schilling & Steensma, 2002), we utilized the OneSource CorpTech database to identify this sample.

The nature of the data collection process required in-person meetings with decision makers. Because of this, we generated a list of firms from the CorpTech database that were located in the three surrounding area codes of a large, mid-western city in the United States ( $n = 948$ ). Our focus was on those decision makers ultimately responsible for opportunity pursuit, which led us to concentrate on small-medium sized companies with 10-500 employees (where a president, CEO, or owner is more likely to be making specific decisions about opportunity pursuit than in a large organization) and companies that actually provided contact information for a president, CEO, or owner (e.g., not a vice president or general manager). The result was a sample of 459 firms.

In our data collection, we randomly selected 240 companies from this list of 459 to contact. In total, 127 decision makers agreed to participate in our study resulting in a response rate of 53 percent. The decision makers' firms in the sample had a mean age of 35 years (median age was 24 years) and led firms that had on average 98 employees and \$23 million in sales (median size was 40 employees and \$5 million in sales)—96 percent of which were privately held and 87 percent of which were independent businesses. Most of the decision makers in the sample were men (95 percent), with a mean age of 52 years. Moreover, 58 percent of the decision makers in the sample were founders of the firm. We tested for participation bias using a logistic regression of decision makers' decision to participate on firm age, firm size and firm type and found no significant effects.

### Research Task

To better understand decision makers' propensity for entrepreneurial action, we adopted an opportunity-focused metric conjoint decision making task. In this task, we presented decision makers a set of 16 hypothetical opportunities for evaluation and asked them to decide whether or not they would act on each opportunity. As Shepherd and Zacharakis describe conjoint analysis basically "requires respondents to make a series of judgments based on a set of attributes (cues) from which the underlying structure of their cognitive system can be investigated" (1997, p. 211). The hypothetical opportunity profiles comprised four theoretically relevant attributes (cues) (Mitchell & Shepherd, 2010). We based our choice of attributes (cues) on a model of entrepreneurial action that, consistent with other opportunity-focused research (e.g., Baron, 2006; Krueger, 1993; Krueger, Reilly, & Carsrud, 2000), captures the decision-making process underlying opportunity pursuit (McMullen & Shepherd, 2006). In this model, the decision to pursue an opportunity is based on the extent to which a decision maker has the *motivation* and *knowledge* to pursue an opportunity in an *uncertain* environment.

For the motivation element, we utilized the *potential value of an opportunity*, which reflects expectations about the extent to which the decision to pursue an opportunity will be profitable (Venkataraman, 1997). Likewise, we utilized *knowledge relatedness* to capture the knowledge aspect of opportunity pursuit. This attribute (cue) reflects the extent to which the decision maker believes they possess the knowledge that will be needed in pursuit of the opportunity (Krueger & Brazeal, 1994). Lastly, we utilized *window of opportunity* and the *number of potential opportunities* to capture the uncertain elements of the opportunity pursuit. These aspects reflect the broader, uncertain environment within which decision making about opportunities takes place (Bourgeois & Eisenhardt, 1988; McGrath & Nerkar, 2004).

Like Mitchell and Shepherd (2010), we determined decision makers' likelihood of acting on opportunities (i.e., invest in fully exploiting the opportunity) using a 9-point scale—anchored by very likely to invest in this opportunity (9) and very unlikely to invest in this opportunity (1). In doing so, we asked decision makers to assume that: (1) other than the information provided in the profiles, the hypothetical opportunities presented are similar to other entrepreneurial opportunities they have "seen" in all respects; (2) they have the resources (or access to the resources) to invest in an opportunity, if they choose to do so; (3) they are making decisions about these opportunities for their current firm; and (4) they are making decisions about these opportunities in their current industry and economic environment. Unlike Mitchell and Shepherd (2010), however, our interest is on propensity for entrepreneurial action, which we reflects likelihood of acting on opportunities, controlling for *differences* in opportunities. In essence, this captures decision makers' overall likelihood of acting irrespective of each opportunity's attribute (cue) combination.

### Experimental Design

We used an orthogonal fractional factorial design in our conjoint experiment, which made the decision-making task more manageable (Green & Srinivasan, 1990). As we have described, decision makers evaluated 16 opportunity profiles, which included the 8 opportunity profiles required in the orthogonal fractional factorial design (Hahn & Shapiro, 1966) and 8 fully replicated opportunity profiles (permitting estimates of individual reliability [Shepherd, Zacharakis, and Baron, 2003]). To avoid order effects, four versions of the profiles were created that varied the order of the attributes and the order of the profiles. We familiarized decision makers with the task through use of a practice profile that was not used in the analysis.

### Measurement

Each of the four attributes (cues)—potential value, knowledge relatedness, window of opportunity, and number of potential opportunities available—was varied at two levels (e.g., *high* and *low* knowledge relatedness). The operationalization of each is consistent with that described in Mitchell and Shepherd (2010). To confirm the face validity of the attributes (cues), we conducted a pretest of the decision-making task with entrepreneurs and academics.

As we have described, propensity for entrepreneurial action was captured using decision makers' likelihood of acting on opportunities. But instead of focusing on decision makers' likelihood of investing in each opportunity based on variance in the attributes (cues), we instead investigated likelihood of action *independent* of the opportunity attributes (cues). We did so by controlling for the attributes (cues) in our analysis (as we describe in the next section).

In our measurement of both general and specific human capital (Becker, 1975), we adopt an approach that is similar to that of previous entrepreneurship research (e.g., Corbett, 2007; Dimov & Shepherd, 2005; Gimeno, Folta, Cooper, & Woo, 1997). Specifically, we measured general human capital by creating an index consisting of standardized values for each individual's age, education (university degree versus no university) and total work experience. Likewise, we measured specific human capital by creating an index consisting of standardized values for each individual's industry-specific work experience, status as a founder of the firm, and the number of other startups in which they had been involved. This measure of specific human capital allowed us to capture the precise context of opportunity pursuit that is relevant to our study. Because the number of previous startups was not normally distributed, we log-transformed this item.

To measure general self-efficacy, we adopted the scale developed by Chen and Klimoski (2003). This scale requires decision makers to indicate on a 7-point Likert-type scale the extent to which they strongly disagree (1) to strongly agree (7) with a series of statements regarding their beliefs about their own abilities in general ( $\alpha = 0.80$ ). Similar to the general self-efficacy scale provided by Chen and Klimoski (2003), entrepreneurial self-efficacy was measured using 7-point Likert type scale anchored by strongly disagree (1) and strongly agree (7). The items for this eight-item scale were based on the stages of entrepreneurship as outlined by Vesper (Vesper, 1996) and were designed to capture a decision maker's beliefs about their own abilities in entrepreneurship specifically ( $\alpha=0.83$ ).

To measure the three fear of failure dimensions that are of interest in this study, we used the relevant items from Conroy's fear of failure scale (Conroy, 2001; Conroy, Metzler, & Hofer, 2003). Specifically, using a 7-point Likert-type scale, we presented decision makers with a series of statements about their attitudes toward failure and asked them to indicate the degree to which they Do not Believe at all (1) to Believe 100% of the time (7). This approach allowed us to capture fear of

devaluing one's self-estimate (four items,  $\alpha=0.62$ ), fear of upsetting important others (five items,  $\alpha=0.75$ ), and fear of having an uncertain future (four items,  $\alpha=0.75$ ).

A number of controls were also included in our analysis. First, because there exists the possibility that a decision maker's level of motivation to complete the task would affect their propensity for entrepreneurial action, we included a measure of task motivation as a control. This was captured in a four-item, Likert-type scale that asked decision makers to describe their level of motivation on the task ( $\alpha = 0.73$ ).

Second, because we focus specifically on propensity for entrepreneurial action, we also sought to control for any industry differences that might exist in the importance of pursuing opportunities generally. To do so, we asked decision makers to indicate on a 7-point Likert-type scale the extent to which they view pursuing new opportunities in their current industry not at all important (1) to very important (7).

Third, while decision makers' firms were all technology-based companies, we nonetheless controlled for differences in the environmental dynamism they faced using a variant of the Miller and Friesen (1982) dynamism scale (similar to the measure used by Green, Covin and Slevin [2008]). This seven-item measure required CEOs to indicate on 7-point Likert-type scale the extent to the extent to which they strongly disagree (1) to strongly agree (7) with a series of statements regarding the dynamism of their environmental context ( $\alpha = 0.73$ ).

Fourth, entrepreneurial decision making occurs in an environment that is "characterized by high levels of uncertainty, novelty, emotion, and time pressure" (Baron, 1998, p. 275). While we capture this, in part, by controlling for environmental dynamism, we nonetheless also control for the cognitive aspects of operating in such environments by including measures of metacognitive experience and metacognitive knowledge. Both of these "metacognitive resources" were measured using Haynie and Shepherd's (2009) measure that required decision makers to indicate on a 7-point Likert-type scale the extent to which they strongly disagree (1) to strongly agree (7) with a series of statements about their experience with cognition (seven items,  $\alpha = 0.65$ ) and knowledge of cognition (ten items,  $\alpha = 0.69$ ).

### Data Analysis

In metric conjoint analysis, data are collected at two (although potentially more) distinct levels of analysis. In our conjoint experiment, this includes the decision level (level 1) and the individual level (level 2). Because we focus on decision makers' propensity for entrepreneurial action, we concentrate on the individual level of analysis, but include the decision-level (opportunity) factors as a control. In so doing, we are able to understand the extent to which decision makers are more or less likely to act on opportunities generally.

Because our research task involved one individual making a *series* of nested decisions (leading to decisions that are not independent), we used Hierarchical Linear Modeling (HLM) in our tests of the hypotheses, which takes into account such nested data. Important to our study, HLM allows the researcher to explicitly model variance both within and between levels (Hofmann, 1997, p. 726), which expressly allows us to control for decision-level differences. We did this by including all of the relevant decision-level relationships as controls (i.e., the impact of the opportunity attributes on decision making) and then looked at the individual-level effects on the intercept for likelihood of investment for each decision maker. Because of missing data at the individual level, we had a final sample of 120 decision makers who made 1920 total decisions.

## RESULTS

Table 1 shows the summary statistics and correlations of the variables in the model. All independent variables were mean-centered. Because the correlation between variables in an orthogonal fractional factorial design is zero, our decision-level variables are not included in Table 1. However, the mean of the decision-level dependent variable (likelihood to invest) is 4.46 and the standard deviation is 2.48 ( $n = 1920$ ). In a regression equation (using each decision makers' mean likelihood to invest), we examined the variance inflation factors to check for multicollinearity. All of the variables in the models were considerably lower than the recommended value of 10 (Neter, Kutner, Nachtsheim, & Wasserman, 1996). Table 2 provides the results of the HLM analysis (because the coefficients for the decision-level controls are controlled, they are not included). Model 1 includes the control variables and model 2 includes the non-hypothesized main effects.

Model 3 includes the interaction effects that are the focus of this study. Evident in this model, the interaction between specific human capital and fear of devaluing one's self-estimate is significant and negative (coefficient =  $-0.028$ ,  $p < 0.05$ ). This result indicates that the fear of devaluing one's self-estimate does attenuate the relationship between specific human capital and propensity for entrepreneurial action, lending support for Hypothesis 1. The results also indicate that the interaction between general self-efficacy and fear of devaluing one's self-estimate is significant and positive (coefficient =  $0.016$ ,  $p < 0.01$ ). This result indicates that the fear of devaluing one's self-estimate actually magnifies the relationship between general self-efficacy and propensity for entrepreneurial action, opposite our expectations. Thus, Hypothesis 2 is not supported.

The interaction between specific human capital and fear of upsetting important others is also significant and positive (coefficient =  $0.015$ ,  $p < 0.05$ ). This result lends support for Hypothesis 3, suggesting that the positive relationship between human capital and propensity for entrepreneurial action is magnified for those CEOs with a greater fear of upsetting important others. Likewise, the interaction between entrepreneurial self-efficacy and fear of upsetting important others is significant and positive (coefficient =  $0.009$ ,  $p < 0.05$ ). This result, thus, lends support for Hypothesis 4, which suggests that the positive relationship between self-efficacy and propensity for entrepreneurial action will be magnified for those CEOs with a greater fear of upsetting important others.

The results in Model 3 do not lend support for a moderating effect of fear of having an uncertain future on either general or specific human capital in their effect on propensity for entrepreneurial action. In both cases, the coefficients are not significant. Thus, Hypothesis 5 is not supported. For the interaction between general self-efficacy and fear of having an uncertain future, the coefficient is significant and negative (coefficient =  $-0.010$ ,  $p < 0.05$ ), suggesting that the positive relationship between self-efficacy and propensity for entrepreneurial action is actually attenuated for those CEOs with a greater fear of having an uncertain future. This runs counter to our expectations. Thus, Hypothesis 6 is not supported.

## DISCUSSION

In this paper we have demonstrated that fear of failure can have a differential effect on entrepreneurial action, depending on the kind of fear of failure and the characteristics of the individual. In some situations, fear of failure impedes the propensity for entrepreneurial action (as is the case for the interaction between specific human capital and fear of devaluing self and the interaction for general self-efficacy and fear of having an uncertain future). In other cases, however, fear of

failure actually motivates the propensity for entrepreneurial action (as is the case for the interaction between general self-efficacy and the fear of devaluing one's self, the interaction between specific human capital and the fear of upsetting important others, and the interaction between entrepreneurial self-efficacy and the fear of upsetting important others).

As previously noted, with this paper we make a number of contributions. In addition to providing added richness to the literature on failure through our investigation of the differential effects of these three dimensions of fear of failure on the propensity for entrepreneurial action, we also complement prior research that looks at the upside potential of opportunities (and how those decision makers that are highly motivated by that upside are more likely to act on the opportunity). In essence, by controlling for the quality of the opportunity in determining the effect of fear of failure (as an image of vulnerability) on the propensity for entrepreneurial action, we control for the upside returns and the risks and relatedness of the opportunity to focus on an entrepreneur's attitudes about failure. At a basic level, this represents a contribution because we have disentangled the decision maker's fear of failure from the opportunity that may be creating this fear.

Of course, it might be argued that in controlling for the opportunity (in essence holding it constant), in this research we have reverted to prior conceptualizations of entrepreneurship (cf. Shane & Venkataraman, 2000; Venkataraman, 1997) that focus solely on who the entrepreneur is (e.g., traits) or what the entrepreneur does (e.g., behavior), without "consideration of the variation in the quality of opportunities that different people identify" (Shane & Venkataraman, 2000, p. 218). However, unlike this past research, wherein researchers "neglect[ed] to measure opportunity" but instead "confound[ed] the influence of opportunities and individuals" (Shane & Venkataraman, 2000, p. 218), we do measure opportunity and then control for its influence relative to that of individuals in their respective effects on entrepreneurial action (cf. Alvarez & Barney, 2007; McMullen & Shepherd, 2006; Mitchell & Shepherd, 2010).

Additionally, in our investigation of CEOs' decisions about the pursuit of new opportunities, we indirectly speak to research on organizational renewal (Barr et al., 1992; Dougherty, 1992)—especially when the pursuit of opportunity is seen as representing an important to organizational renewal (Guth & Ginsberg, 1990; Zahra & Covin, 1995). Specifically, our findings provide insight into factors that might lead some CEOs to have higher propensities to act on opportunities than other CEOs, regardless of the opportunities themselves. That is, our results indicate that heterogeneity in fear of failure may, in part, underlie heterogeneity in the propensity for entrepreneurial action that drives organizational renewal. In one sense, our results offer a unique individual-level explanation of decision making and entrepreneurial risk (Dickson & Giglierano, 1986; Mullins & Forlani, 2005) in that they inform why some CEOs may prefer to act on opportunities (rather than "miss the boat"), while others may prefer to not act on opportunities (rather than "sink the boat"). Indeed, it would seem that the fear of upsetting important others results in action that decreases the risk of missing the boat, at least for those CEOs with high specific human capital and high entrepreneurial self-efficacy. In this way, CEOs who have a high fear of upsetting important others might be, as a matter of course, more likely to engage in activities that promote organizational renewal (Guth & Ginsberg, 1990; Zahra & Covin, 1995).

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## NOTES

1. Conceptually, images are similar to scripts, schemas, and prototypes—they primarily differ in terms of the theoretical lens being applied (cf. Abelson, 1981; Beach & Mitchell, 1987; Gioia & Poole, 1984; Reed, 1972)

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## TABLES

**Table 1: Means, standard deviations, and correlations at the individual level (level 2)**

Variables	Mean	s.d	1	2	3	4	5	6	7	8	9	10	11
1. Task motivation	0.00	3.37											
2. Opportunity importance	0.00	0.88	0.11										
3. Environmental dynamism	0.00	8.17	0.08	0.23 *									
4. Metacognitive experience	0.00	4.62	0.21 *	0.16	0.21 **								
5. Metacognitive knowledge	0.00	5.50	0.19 *	0.12	0.14	0.54 ***							
6. General human capital	0.00	2.09	0.06	0.01	-0.03	0.06	0.01						
7. Specific human capital	0.00	1.94	0.07	-0.03	-0.05	0.06	0.12	0.27 **					
8. General self-efficacy	0.00	4.48	0.24 **	0.07	0.02	0.44 ***	0.47 ***	-0.08	0.24 **				
9. Entrepreneurial self-efficacy	0.00	5.27	0.33 ***	0.18 *	0.12	0.30 **	0.37 ***	-0.01	0.26 **	0.58 **			
10. F. devaluing one's self est.	0.00	4.01	-0.08	-0.11	-0.03	-0.25 **	-0.13	0.01	-0.07	-0.20 *	-0.21 *		
11. F. upsetting imp. others	0.00	5.64	0.01	-0.04	0.17	0.03	-0.02	0.06	-0.05	0.07	0.03	0.24 **	
12. F. having uncertain future	0.00	5.01	-0.03	0.06	0.04	-0.04	-0.16	0.01	-0.06	-0.12	-0.10	0.37 ***	0.50 ***

n = 120

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 2: Results of HLM estimation for propensity for entrepreneurial action<sup>a, b, c</sup>**

Variables	Model 1	Model 2	Model 3
Intercept	4.460 ** (0.078)	4.460 ** (0.0746)	4.460 ** (0.065)
Task motivation	0.014 (0.025)	0.010 (0.0258)	0.021 (0.024)
Importance of opportunity pursuit	0.040 (0.081)	0.060 (0.0766)	0.034 (0.068)
Environmental dynamism	0.010 (0.009)	0.008 (0.0095)	0.010 (0.009)
Metacognitive experience	-0.018 (0.022)	-0.010 (0.0208)	-0.019 (0.021)
Metacognitive knowledge	-0.022 (0.017)	-0.033 (0.0177)	-0.028 (0.017)
General human capital		-0.089 * (0.0405)	-0.086 * (0.038)
Specific human capital		0.064 (0.0379)	0.031 (0.034)
General self-efficacy		-0.011 (0.0248)	0.012 (0.022)
Entrepreneurial self-efficacy		0.015 (0.0194)	0.000 (0.019)
Fear of devaluing one's self-estimate		0.009 (0.0243)	0.011 (0.023)
Fear of upsetting important others		0.012 (0.0162)	0.014 (0.014)
Fear of having an uncertain future		-0.033 (0.0217)	-0.017 (0.020)
Gen.human capital x f. of devaluing one's self			0.003 (0.012)
Spec. human capital x f. of devaluing one's self			-0.028 * (0.012)
Gen.self-efficacy x f. of devaluing one's self			0.016 ** (0.006)
Ent. self-efficacy x f. of devaluing one's self			0.000 (0.006)
Gen.human capital x f. of upsetting imp. others			-0.003 (0.007)
Spec. human capital x f. of upsetting imp. others			0.015 * (0.007)
Gen.self-efficacy x f. of upsetting imp. others			-0.005 (0.004)
Ent. self-efficacy x f. of upsetting imp. others			0.009 * (0.004)
Gen.human capital x f. of having uncertain future			0.000 (0.010)
Spec. human capital x f. of having uncertain future			-0.011 (0.010)
Gen.self-efficacy x f. of having uncertain future			-0.010 * (0.004)
Ent. self-efficacy x f. of having uncertain future			-0.003 (0.004)
Deviance	7124.63	7156.68	7227.06
Deviance Difference		32.05	70.38
$\Delta R^2$		0.03	0.17
$R^2$	0.00	0.03	0.20

n = 1920 at the decision level; n = 120 at the individual level

<sup>a</sup> Coefficient estimates are reported with robust standard errors in parentheses.

<sup>b</sup> The  $R^2$  statistic is calculated using the procedures outlined in Hoffman (1997)

<sup>c</sup> The HLM analysis controlled for the decision-level factors

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$