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REGULATORY FOCUS AND NEW VENTURE PERFORMANCE: A STUDY OF ENTREPRENEURIAL OPPORTUNITY EXPLOITATION UNDER CONDITIONS OF RISK VERSUS UNCERTAINTY

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Research on cognitive fit suggests that entrepreneurs will be most successful at leading their firms when approaching the entrepreneurial process through the self-regulatory mode that most closely matches the requirements of their environment and its accompanying perspective on the nature of entrepreneurial opportunities. Consistent with the discovery view of entrepreneurial opportunities, it is suggested that a prevention focus will be the most effective self-regulatory mode for entrepreneurs leading their firms within stable industry environments, which are characterized by risk. Building from the creation view of entrepreneurial opportunities, it is argued that a promotion focus will be the most effective self-regulatory mode for entrepreneurs leading their firms within dynamic industry environments, which are characterized by uncertainty. These arguments are tested using a national (United States) random sample of 201 lead entrepreneurs. The findings indicate that in dynamic environments, entrepreneurs' promotion focus is positively associated with venture performance (i.e., lagged measures of revenue and employment growth), while entrepreneurs' prevention focus is negatively related to performance in such environments. In both cases, these effects are found to be fully mediated by deviation from firms' original business concepts. In stable environments, however, no significant relationships between entrepreneurs' promotion or prevention focus and new venture performance were observed. These results suggest that low cognitive fit (a mismatch between entrepreneurs' mode of self-regulation and the decision-making context in which they operate) is more damaging in dynamic environments (i.e., a context of uncertainty) than in stable environments (i.e., a context of risk).

INTRODUCTION

It has recently been suggested that because entrepreneurial opportunities are heterogeneous, contrasting theoretical perspectives regarding the nature of entrepreneurial opportunities may be more or less applicable in different decision-making contexts (Alvarez and Barney, 2007; Miller, 2007; Sarasvathy *et al.*, 2003). The current study considers two such theoretical perspectives: discovery and creation. According to the *discovery* perspective, entrepreneurial opportunities exist in the external world, independent of the entrepreneur. Further, the discovery context is thought to be one of *risk*, in which the entrepreneur is able to gather information about potential decisions regarding opportunity exploitation and the probabilities associated with possible outcomes. According to this perspective,

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entrepreneurs who conduct the most in-depth feasibility analyses and construct detailed business plans, *a priori* to moving forward to launch the venture should greatly enhance their chances of success. Thus, the opportunity exploitation process involves the development and enactment of strategic plans.

In contrast, according to the *creation* perspective, entrepreneurial opportunities do not exist independent of the entrepreneur. Further, the creation context is thought to be one involving *uncertainty*, in which the entrepreneur is unable to effectively gather information about potential decisions regarding opportunity exploitation and the probability of achieving certain outcomes. Since such information does not exist, feasibility analyses and business plans are of little value, and are, potentially, a waste of time. Thus, entrepreneurs must be able to deal with ambiguity, understanding that the business concept with which they begin will likely require significant alteration as they move forward through the entrepreneurial process and respond to unpredictable changes in the markets and industries in which they operate. In such a context, learning and adapting to change are what separates successful from less successful entrepreneurs.

Even though any given entrepreneurial opportunity might be retrospectively described through a discovery or creation lens, these different theoretical perspectives carry with them important implications for the effectiveness of entrepreneurial exploitation processes within different settings—i.e., those that are characterized by risk versus uncertainty (Alvarez and Barney, 2007). Further, each perspective requires a fundamentally different mindset on the part of the entrepreneur, who according to both theoretical perspectives is the *active element* driving the process of entrepreneurial exploitation—whether acting from a discovery or creation perspective (Baron, 2007). These facts suggest the importance of cognitive fit between the entrepreneur and his/her environment (Brigham, De Castro, and Shepherd, 2007). In this light, the current study focuses on the question of whether there are certain cognitive mechanisms that are more or less effective at exploiting entrepreneurial opportunities under the conditions of risk versus uncertainty.

If the discovery perspective is the more appropriate lens for viewing the nature of entrepreneurial opportunities in environments that are characterized by risk, entrepreneurs possessing cognitive frameworks that are in alignment with exploitation under the tenets of the discovery perspective should be most successful at developing and growing their new ventures in such environments. Similarly, if the creation perspective is the more appropriate lens for viewing the nature of entrepreneurial opportunities within environments that are characterized by uncertainty, entrepreneurs possessing cognitive frameworks that are in alignment with the tenets of the creation perspective should be most successful at developing and growing their new ventures within such environments.

In the current study we consider the cognitive frameworks of entrepreneurs in terms of two different chronic (i.e., dispositional) modes of self-regulation, as defined by regulatory focus theory (Higgins, 1998). According to this theory, individuals develop a strategic orientation about how they self-regulate their behavior, which becomes engrained early in life through childhood interactions with primary caregivers. Once developed, this orientation is consistently exhibited across time and context throughout their adult lives (Higgins, 1989). Individuals who form a *prevention focus* are primarily concerned with protection, safety, and responsibility. Thus, they tend to be motivated to avoid losses or setbacks. In contrast, those who self-regulate through a *promotion focus* are primarily concerned with advancement, growth, and accomplishment; hence, they are primarily motivated to seek gains and new achievements. Regulatory focus theory is applied to the current study due to its natural connection with discovery versus creation perspectives of entrepreneurial opportunity. Entrepreneurs who self-regulate through a prevention focus will not move forward to pursue an entrepreneurial opportunity unless they are first able to estimate the feasibility of the idea and develop a detailed plan for exploitation (Brockner, Higgins, and Low, 2004). Such individuals are driven by *ought self-guides* and focus on what they might lose by acting, rather than what they might gain, as a result of their natural inclination toward maintaining their duties, obligations, and responsibilities (Higgins, 1987). Thus, their self-regulatory mechanisms pull them toward a risk-reducing discovery approach to the new venture development process (Pennington and Roese, 2003). In contrast, entrepreneurs who self-regulate through a promotion focus do not feel the need to develop sophisticated analyses and plans before moving forward to exploit a perceived entrepreneurial opportunity (Brockner *et al.*, 2004). Such individuals are driven by *ideal self-guides* and focus on what they might gain by moving forward, rather than what they might lose, as a result of their strong desire to achieve their hopes, wishes, and aspirations (Higgins, 1987). Thus, their self-regulatory mechanisms will pull them

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toward an opportunity-maximization creation approach to the new venture development process (Pennington and Roese, 2003).

In the following sections, we present and examine a model suggesting that lead entrepreneurs' chronic prevention focus will be negatively related to the extent to which their new ventures deviate from their original business opportunity (i.e., following the discovery perspective), and that their chronic promotion focus will be positively related to such change (i.e., following the creation perspective). Deviation from the original business opportunity is a key differentiating factor in exploitation strategies between the discovery and creation perspectives (Alvarez and Barney, 2007). According to the discovery perspective, entrepreneurs should deviate from their original business opportunity only if they failed to accurately identify a true entrepreneurial opportunity. In contrast, the creation perspective suggests that entrepreneurs must deviate from their original business opportunity as the realities of an unpredictable future unfold. Therefore, we suggest that the extent to which deviation from original business opportunity relates to new venture performance will be moderated by industry environmental dynamism, such that the relationship will be most negative under stable conditions (i.e., the discovery approach will be most effective when dynamism is low—implying a context of risk) and most positive when dynamism is high (i.e., the creation approach will be most effective when dynamism is high—implying a context of uncertainty). This model is depicted in Figure 1.

The current study makes two primary contributions. First, the entrepreneurship literature has begun to move toward a perspective that views entrepreneurial opportunities as highly heterogeneous in nature (Alvarez and Barney, 2007; Miller, 2007; Sarasvathy *et al.*, 2003)—a perspective in which the nature of opportunities varies based upon key differences in environmental conditions. Even though differences in types of opportunities—such as discovery versus creation opportunities—have important implications for modes of opportunity exploitation and the fit between the characteristics of entrepreneurs and the types of opportunities in which they pursue, little research has been conducted to test such assumptions. The current study represents an initial step toward filling this gap. In so doing, the findings are expected to add empirical content to this emerging literature.

Second, the field of entrepreneurship has long sought to link individual characteristics of entrepreneurs with their effectiveness at exploiting entrepreneurial opportunities (Gartner, 1989; Shaver and Scott, 1991). Such linkages are complex and must consider both the mediating mechanisms through which the characteristics of individuals influence performance and moderating factors that determine when such mediating effects take place. Previous attempts have been made to examine both moderating and mediating effects of entrepreneurs' individual characteristics with respect to their performance, but there has been a dearth of research that has simultaneously considered both moderation and mediation. As a result, the literature on the individual characteristics of entrepreneurs has become fragmented, with some models addressing the question of *how* certain individual characteristics relate to performance (i.e., studies considering mediating effects) and others considering *when* certain individual characteristics influence performance

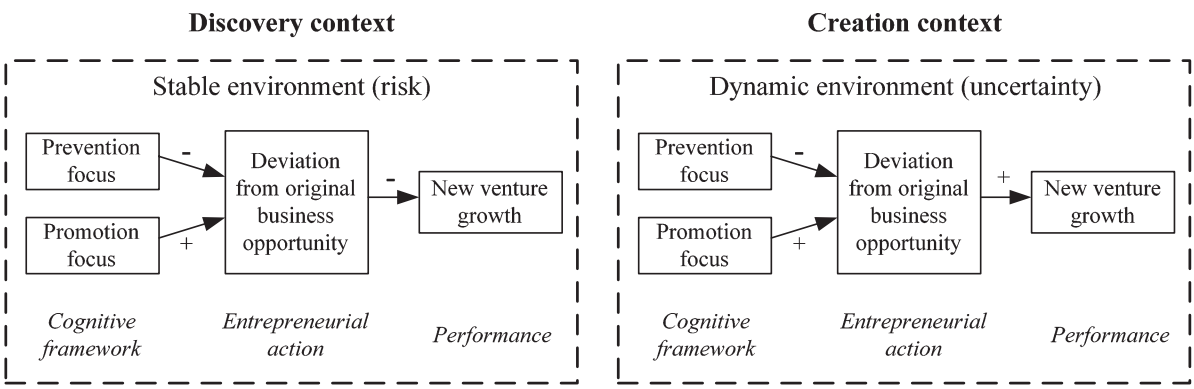

Figure 1. The relationship of entrepreneurs' regulatory focus, deviation from original business opportunity, and environmental dynamism with new venture performance

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(i.e., research examining moderating effects). This fragmented approach has limited the development of more comprehensive theory within the field of entrepreneurship (Gartner, 2001). The current study was designed to facilitate this ongoing task by examining both mediating and moderating effects simultaneously—that is, by examining *how* the individual characteristics of entrepreneurs ultimately influence their ability to exploit entrepreneurial opportunities (i.e., mediating mechanisms involved), and *when* such effects occur or are of greatest magnitude (i.e., moderation effects). This approach is consistent with arguments by Brockner *et al.* (2004), stating that studies examining the regulatory focus of entrepreneurs will prove most fruitful when the effects of both process (such as deviation from original business opportunity) and contextual (such as environmental dynamism) variables are jointly considered. Moreover, examining the potentially complex links between variables operating at the individual level (regulatory focus), firm level (deviation from original business opportunity), and industry environment (dynamism), is consistent with and contributes to the developing *multi-level perspective* in entrepreneurship research (e.g., Hmieleski and Baron, 2009) and in the broad field of management generally (e.g., Hitt *et al.*, 2007).

We now examine the entrepreneurial discovery and creation perspectives in more detail. In so doing, we integrate work on regulatory focus theory to develop arguments regarding the fit of entrepreneurs' cognitive frameworks (i.e., self-regulatory mechanisms of prevention versus promotion) with the decision-making context (i.e., stable versus dynamic industry environments) and associated perspectives on the nature of entrepreneurial opportunities (i.e., discovery versus creation). Following that, the methods used to test the hypothesized relationships are reviewed and the results of our analyses are presented. Finally, implications of the results are considered.

THEORETICAL DEVELOPMENT

Predictions derived from the entrepreneurial discovery perspective

The basis of the discovery perspective is centered on the assumption that entrepreneurs act within a decision-making context that is characterized by *risk*. As articulated by Knight (1921), a state of risk occurs when the probabilities of decision outcomes can be estimated using existing information. One way of considering the decision-making context in which entrepreneurs operate is through the degree of environmental dynamism present in the industry in which they develop and lead their new ventures (Dess and Beard, 1984; Duncan, 1972). Dynamism refers to the rate of unpredicted change taking place in the environment. Thus, low dynamism (i.e., stable) environments meet the standards for Knight's (1921) definition of *risk*, in that relevant information should be available for entrepreneurs to be able to estimate the probability of achieving desired outcomes when there is little unpredictable change taking place with respect to their business environment. This is not to say that change does not occur within stable environments, but rather that the nature and rate of change can be reasonably anticipated.

When a context of risk is applied to entrepreneurial opportunities, several implications emerge regarding how entrepreneurs should approach the exploitation process. For example, under conditions of risk, Alvarez and Barney (2007: 17) suggest that entrepreneurs should follow business strategies that are 'relatively complete and unchanging.' Therefore, in stable industry environments, entrepreneurs are likely to be most successful when developing and executing detailed, specific plans for opportunity exploitation. In this context, deviation from the entrepreneurs' originally identified business opportunity should occur only in error, when probabilities of achieving desired outcomes are miscalculated by the entrepreneur.

Stable industry environments are well suited for prevention focus entrepreneurs, because prevention focus individuals tend to self-regulate their behavior toward attaining *correct rejections* (i.e., failing to exploit false opportunities) and avoiding *false alarms* (i.e., exploiting opportunities that are thought to be true, but are actually false or nonexistent) (Baron and Shane, 2008). Thus, their cognitive fit to such environments will be high. Further, prevention focus individuals will not be easily drawn to veer away from their originally identified opportunity, because they must be convinced that their risk is minimum before committing to move forward and alter their current business in which they have invested a great deal of time and resources (Pennington and Roese, 2003). Therefore, prevention focus entrepreneurs should be particularly effective in stable environments, since their risk-reducing tendencies will lead

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them to form sophisticated plans before moving forward to exploit a given opportunity. And in stable—as opposed to dynamic—environmental conditions, sticking with their plans should help them to achieve the success that they seek.

In contrast, promotion focus entrepreneurs tend to self-regulate their behavior toward attaining *hits* (i.e., exploiting true opportunities) and avoiding *misses* (i.e., failing to exploit true opportunities) (Baron and Shane, 2008). Further, promotion focus individuals tend to behave in an opportunity-seeking manner, which is likely to involve deviating from their initial business opportunity in order to capitalize on what they perceive to be a continuous stream of entrepreneurial opportunities that are worth pursuing. Here they are attempting to avoid potential losses associated with *not* shifting their current course of action (Pennington and Roese, 2003). As a result, their cognitive fit will be low, and promotion focus entrepreneurs should be relatively ineffective in stable environments, since their opportunity-seeking tendencies will lead them to continuously alter their business in an environment where incremental behavior is highly rewarded and too much change can prove costly (Gebert, Boerner, and Lanwehr, 2003; Miller and Friesen, 1982). This reasoning leads to our first set of hypotheses:

Hypothesis 1a (H1a)*: In stable industry environments, entrepreneurs' levels of chronic prevention focus will be positively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity.*

Hypothesis 1b (H1b)*: In stable industry environments, entrepreneurs' levels of chronic promotion focus will be negatively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity.*

Predictions derived from the entrepreneurial creation perspective

The basis of the creation perspective is centered on the assumption that entrepreneurs act within a decision-making context that is characterized by *uncertainty*. As suggested by Knight (1921), a state of uncertainty occurs when the probabilities of decision outcomes cannot be estimated, because the necessary information is unknowable in the present. This is descriptive of highly dynamic industry environments (Dess and Beard, 1984; Duncan, 1972). Thus, dynamic environments meet the standards for Knight's (1921) definition of *uncertainty*, in that entrepreneurs are not able to estimate the probability of successfully exploiting specific opportunities.

When a context of uncertainty is applied to entrepreneurial opportunities, certain implications emerge regarding how entrepreneurs should approach the exploitation process. For example, under conditions of uncertainty, Alvarez and Barney (2007: 17) suggest that entrepreneurs should follow business strategies that are 'emergent and changing.' Therefore, in dynamic industry environments, entrepreneurs are likely to be most successful when adjusting their business opportunity to the rapid changes that are taking place in their business environment. In this context, deviation from entrepreneurs' originally identified business opportunity is a prerequisite for survival, because their plans are likely to be, at minimum, partially flawed due to a lack of quality information needed to establish feasibility. Only as the unknowable future unfolds, does clarity in respect to what might be possible begin to emerge.

In highly dynamic environments, attempting to prevent change from altering the current business strategy will be the preferred path of firms led by entrepreneurs who self-regulate through a prevention focus. If prevention focus entrepreneurs engage in any change, it will, most likely, consist of slight planning refinements to their current exploitation processes (Miller, 1990). This relative rigidity will prove especially costly in dynamic environments, because the major assumptions on which the initial strategic decisions were made do not necessarily apply in the current state of the environment. Further complicating matters, prevention focus entrepreneurs will fail to capitalize on the fast-moving opportunities they could and should be exploiting. Even though their detail-oriented approach on quality and refinement is likely to prove advantageous to prevention focus entrepreneurs when leading their firms under stable industry conditions, such an incremental mindset is likely to become a weakness, impeding their ability to capitalize on the significant changes taking place within their industry in order to exploit new and evolving opportunities (March, 1991).

In contrast, promotion focus entrepreneurs are likely to use innovation as a means to capitalize on

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the wealth of opportunities that arise in dynamic environments and, as a result, be more likely to survive in such conditions. They will tend to internalize the change that is taking place throughout their industry as an assurance that their perspective will succeed. The firms led by such entrepreneurs will not simply refine current strategy; rather, they will continuously alter it in an effort to fully capitalize on the potential gains inherent in dynamic environments. This leads to our second and final set of hypotheses:

Hypothesis 2a (H2a)*: In dynamic industry environments, entrepreneurs' levels of chronic prevention focus will be negatively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity.*

Hypothesis 2b (H2b)*: In dynamic industry environments, entrepreneurs' levels of chronic promotion focus will be positively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity.*

METHODOLOGY

Sample and procedures

A national random sample of 1,000 new ventures was drawn from Dun and Bradstreet for use in the current study. Dun and Bradstreet compiles what is considered to be the most exhaustive database of young firms founded in the United States (Kalleberg *et al.*, 1990). The vast majority of new ventures within the United States must file for a DUNS number with Dun and Bradstreet in order to create a business credit record, which is a primary way that companies evaluate whether to do business with each other (e.g., whether to sell, lend money, partner, or lease equipment to a company). Dun and Bradstreet provided the names and addresses of the firms and their top management team leader (i.e., chief executive officer). Thus, we have operationalized a lead entrepreneur for the purposes of the current study as an individual who is both the founder and the top management team leader of the firm. It was particularly important that participants be the *lead entrepreneur* in their firms, rather than simply a member of the founding team, because the lead entrepreneur has been found to have a powerful impact on developing the vision and strategic direction of the firm and, thus, most directly impacts firm performance (Baum, Locke, and Kirkpatrick, 1998; Hmieleski and Baron, 2008).

A packet containing our survey, along with a cover letter and prepaid business reply envelope was sent to the lead entrepreneur of each firm. In total, 185 of the mailings were returned as nondeliverable, and 207 completed surveys were received. The number of nondeliverable survey mailings was not surprising considering that Dun and Bradstreet reports that 20 percent of the firms they track change addresses each year. Six cases were removed due to incomplete performance data. This resulted in a total usable response rate of 24.8 percent, which is in alignment with those produced by other studies using similar samples of top management (e.g., Sapienza and Korsgaard, 1996; Waldman *et al.*, 2001). Nonresponse bias was examined using *t* tests on gender of top management team leader, firm age, revenue, number of employees, and firm growth. In each case, the results were nonsignificant. Thus, the ventures and their top management team leaders appear to be representative of the population from which they were drawn.

Demographic questions at the end of the survey confirmed that each respondent was a founder and the top management team leader of his/her firm. These participants included 163 males and 38 females, with an average age of 52 years. The highest educational degree earned by participants included high school ($n = 37$), associates ($n = 18$), bachelors ($n = 80$), masters ($n = 47$), and doctoral ($n = 19$). The mean age of the firms studied was 5.74 years, which is in alignment with literature arguing that start-ups tend to be in a critical developmental stage during their first six years of existence and may be considered new ventures during this period (Robinson, 1999; Shrader, Oviatt and McDougall, 2000). Further, this is a particularly relevant time period in the development of the firm within which to consider objective performance outcomes such as revenue and employment growth, whereas such factors may be less relevant earlier on in the firm's development.

Finally, the sample is broad in scope, with participants' current businesses being located in 40 different states and with primary operations in 114 different industries (as classified by four-digit Standard Industrial Classification codes). Further,

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no more than four firms were from the same state and no more than three firms were from the same industry. Thus, our *national* sample is not biased by industry or geographic location.

Measures

Regulatory focus. The regulatory focus questionnaire (RFQ) (Higgins *et al.*, 2001) was used to assess participants' chronic disposition toward regulating their behavior through a promotion focus and a prevention focus. Four items related to promotion focus and four items related to prevention focus were used in the current study. Respondents were asked to indicate the extent of their agreement with each item using a seven-point Likert-type scale anchored by (1) strongly disagree and (7) strongly agree. Ratings were added within each dimension to form separate promotion focus and prevention focus scores. High scores for the promotion focus dimension indicate the extent to which the participant is concerned with advancement, growth, and accomplishment; whereas high scores for the prevention focus dimension indicate the extent to which the participant is concerned with protection, safety, and responsibility. Higgins *et al.* (2001) reported internal reliabilities of 0.73 for the promotion focus scale and 0.80 for the prevention focus scale using a sample of undergraduate participants. These authors also reported a test-retest reliability of 0.79 for promotion focus and 0.81 for prevention focus over a three-month period, demonstrating the scales to be relatively stable across time—as would be expected of dispositional measures.

To evaluate the extent to which the promotion and prevention focus scales measure distinct constructs, we conducted a two-factor confirmatory analysis using AMOS 6.0. The chi-square for the model was nonsignificant ($\chi^2 = 24.18$, $p > 0.05$) and results from absolute fit (GFI = 0.97; standardized RMR = 0.05), parsimony fit (RMSEA = 0.04), and relative fit (CFI = 0.97) indices each demonstrated good fit. As a test of discriminant validity, we compared the chi-square value of a model allowing the covariance of the correlation between the constructs to be unconstrained to a model constraining the covariance to 1. The chi-square value for the constrained model was significantly higher ($\Delta\chi^2 = 22.9$, $p < 0.01$), indicating that the unconstrained model is a better fit and, thus, demonstrating discriminant validity. These findings suggest that the scales do indeed measure two distinct constructs and that the items load together within these independent factors.

Deviation from original business opportunity. This was assessed using an item employing a seven-point semantic differential scale anchored at the low end by *our firm has deviated very little from its original business concept* and at the high end by *our firm has deviated very much from its original business concept*. Therefore, high scores indicate that the firm has deviated considerably from its original business opportunity, while low scores indicate that the firm has deviated little from its original business opportunity.

Environmental dynamism. The industry-level rate of unpredicted change was measured as the standard errors of four regression slopes following the work of Dess and Beard (1984), Keats and Hitt (1988), Sharfman and Dean (1991), and Castrogiovanni (2002). In each case, the independent variable was time. The dependent variables were industry revenues, number of industry establishments, number of industry employees, and research and development intensity. Industry revenue has been used as a measure of uncertainty in prior studies (e.g., Keats and Hitt, 1988; Sharfman and Dean, 1991), and number of employees is a common measure of change in research involving new businesses. The number of establishments has been used by Aldrich (1979) as the basis for understanding industry size and the extent of industry change. Finally, industry-wide research and development intensity is a variable that captures the speed of technological evolution of the industry (Dess and Beard, 1984; Castrogiovanni, 2002).

Data on industry revenues, industry establishment, and industry employment totals were acquired through the U.S. Bureau of the Census. Research and development intensity data were acquired from the U.S. Patent Office. Following Sharfman and Dean (1991), time was regressed against these variables for the most recent 10-year period. An index of the standard errors of the regression slopes divided by their respective means was used as the indicator of unpredicted change for each of the four variables. These figures were then standardized and summed to create an overall index of environmental dynamism.

New venture performance. Growth is often cited as the most important performance indicator of new venture success (Brush and Vanderwerf, 1992; Hmieleski and Ensley, 2007). Consistent with this approach, we used two different objective measures

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of growth: revenue growth and employment growth. The performance data for the study were obtained from Dun and Bradstreet.[1] The performance measures were calculated as the average annual revenue and employment growth over the two-year period immediately following the collection of the survey data. We used lagged performance data in order to enhance our ability to draw causal inferences from our results. Following previous work, we formed an index of new venture performance by standardizing, and then summing, revenue and employment growth measures (Keats and Hitt, 1988). This allowed for a more parsimonious presentation of the results. Considering the high correlation between revenue and employment growth ($R = 0.53$, $p < 0.01$) in conjunction with the fact that we observed similar results when testing our hypotheses using these variable as separate performance indicators, this approach seemed warranted.

Control variables. Following previous research measuring new venture growth, firm age along with revenue and employment totals were used as control variables in order to account for the fact that the percentage of growth achieved by a firm may be influenced by the age and size of the firm (Keats and Hitt, 1988). Because revenue and employment totals were highly correlated ($R = 0.63$, $p < 0.01$), we standardized and then added these figures to form a measure of *firm size* in order to reduce the potential threat of multicollinearity. Firm age was measured as the number of years since the firm had been established. Revenue and employment totals were measured at the end of the year in which the survey data were collected. The data for each of these variables were acquired through Dun and Bradstreet. In addition, we used control variables commonly included when studying individual dispositions and because of their potential relationship with the types of businesses in which entrepreneurs choose to start and the subsequent growth of their firms (Hochwarter *et al.*, 2005; Sonfield *et al.*, 2001; Staw and Barsade, 1993). These variables included the sex (male = 0, female = 1), age (years old), and educational attainment (high school = 1, associates degree = 2, bachelors degree = 3, masters degree = 4, doctoral degree = 5) of respondents. These data were collected as demographic items at the end of the administered survey.

[1] Recent studies have validated the accuracy of Dun and Bradstreet revenue and employment data for new ventures (e.g., Baum *et al.*, 2001; Baum and Locke, 2004).

Statistical procedures

Collectively, hypotheses 1 and 2 suggest a moderated mediation model, whereby the effects of entrepreneurs' regulatory focus on the performance of their new ventures is transmitted through deviation from their firm's original business concept, and the nature of these effects is contingent on the level of dynamism present in the industry environment. To test this model, we utilized an SPSS macro designed by Preacher, Rucker, and Hayes (2007), which allows us to examine the stated mediation effects at low (−1 *SD*), moderate (Mean), and high (+1 *SD*) levels of the moderating variable. Prior to the analyses, all continuous measures were mean centered (Cohen *et al.*, 2003).

RESULTS

Table 1 provides the means, standard deviations, and bivariate correlations for the study variables. The results of the regression models for deviation from original business opportunity and new venture performance are provided in Table 2. The conditional indirect effects of entrepreneurs' promotion and prevention focus on new venture performance at low (−1 *SD*), moderate (Mean), and high (+1 *SD*) levels of environmental dynamism are shown in Table 3.

Before moving forward, there are few correlations in Table 1 worth noting. First, the correlations of environmental dynamism with promotion ($R = 0.02$, $p > 0.05$) and prevention ($R = 0.01$, $p > 0.05$) focus were each nonsignificant. This supports the notion that chronic regulatory focus tends to be relatively stable across context. Second, as anticipated, prevention focus was negatively correlated with deviation from original business opportunity ($R = -0.16$, $p < 0.05$) and promotion focus was positively correlated with deviation from original business opportunity ($R = 0.16$, $p < 0.05$).

There are also some nonhypothesized relationships in Table 2 that should be mentioned. First, as shown in Model 1, prevention ($\beta = -0.24$, $p < 0.01$) and promotion ($\beta = 0.19$, $p < 0.01$) focus were each found to be significant predictors of deviation from original business opportunity. This represents the first linkages in our moderated mediation model. The second linkage in the proposed model is between deviation from original business opportunity and new venture performance. As shown in Model 2, a significant main effect between deviation from

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Table 1. Descriptive statistics and variable correlations

Variables	*Mean*	*SD*	1	2	3	4	5	6	7	8	9
1. Firm age	5.74	2.43									
2. Firm size	0.00	1.81	–0.07								
3. Age (of entrepreneur)	51.83	9.12	0.07	0.017*							
4. Sex (male = 0, female = 1)	0.19	0.40	0.00	0.15*	–0.20**						
5. Education	2.97	1.17	0.03	0.11	0.10	0.11					
6. Prevention focus	4.80	1.11	–0.01	0.21**	0.06	0.03	0.19**				
7. Promotion focus	5.55	0.09	–0.06	0.08	0.07	0.13	0.07	0.17*			
8. Deviation from original business opportunity	3.70	1.90	0.01	0.12	0.09	–0.07	0.07	–0.16*	0.16*		
9. Dynamism	16.56	11.19	–0.04	0.09	0.12	–0.04	0.13	0.01	0.02	–0.03	
10. New venture performance	0.00	1.85	0.04	0.09	0.10	–0.01	0.11	–0.08	0.07	0.15*	0.07

*$p < 0.05$; **$p < 0.01$.

original business opportunity and new venture performance is not observed ($\beta = 0.13$, $p > 0.05$). However, our moderated mediation model does not predict a significant main effect between these variables (Preacher *et al.*, 2007). As anticipated, this linkage is instead moderated by environmental dynamism ($\beta = 0.24$, $p < 0.01$). Similarly, direct effects were not assumed between the independent variables of prevention or promotion focus with new venture performance (Shrout and Bolger, 2002), and no significant main effects were observed between these sets of variables ($\beta = -0.10$, $p > 0.05$ and $\beta = 0.02$, $p > 0.05$, respectively). Instead, these effects were found to be context specific (i.e., moderated by environmental dynamism) and fully mediated by deviation from original business opportunity, as shown in Table 3 and described below in respect to each of the proposed hypotheses.

Hypothesis 1a stated that in stable industry environments, entrepreneurs' levels of chronic prevention focus will be positively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity. As shown in Table 3, the indirect effect of entrepreneurs' prevention focus on the performance of their new ventures is found to be positive, as anticipated, but not statistically significant when environmental dynamism is low (–1 *SD*) ($Z = 1.093$, $p = 0.274$). Therefore, Hypothesis 1a is not supported.

Hypothesis 1b stated that in stable industry environments, entrepreneurs' levels of chronic promotion focus will be negatively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity. As shown in Table 3, the indirect effect of entrepreneurs' promotion focus on the performance of their new ventures is found to be negative, as anticipated, but not statistically significant when environmental dynamism is low (–1 *SD*) ($Z = -1.040$, $p = 0.257$). Therefore, Hypothesis 1b is not supported.

Hypothesis 2a stated that in dynamic industry environments, entrepreneurs' levels of chronic prevention focus will be negatively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from the original business opportunity. As shown in Table 3, the indirect effect of entrepreneurs' prevention focus on the

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Table 2. Regression models of deviation from original business opportunity and new venture performance

Variables	Deviation from original business opportunity	New venture performance
	Model 1 β	Model 2 β
Firm control variables		
Firm age	0.02	0.07
Firm size	0.13	0.08
Individual control variables		
Age	0.05	0.05
Sex	–0.07	0.04
Education	0.09	0.13
Main effects		
Prevention focus	–0.24**	–0.10
Promotion focus	0.19**	0.02
Deviation from original business opportunity		0.13
Dynamism		0.16*
Two-way interaction		
Deviation from original business opportunity × dynamism		0.24**
F-Ratio	3.04**	2.47**
R^2	0.10	0.12
Adjusted R^2	0.07	0.07

Table 3. Conditional indirect effects of promotion focus and prevention focus on new venture performance at different levels of environmental dynamism

	Dynamism	Indirect effect	SE	Z	P > |Z|
Prevention focus	–11.19 (–1 *SD*)	0.069	0.063	1.093	0.274
	0.00 (Mean)	–0.066	0.047	–1.381	0.167
	11.19 (+1 *SD*)	–0.201	0.086	–2.336	0.020
Promotion focus	–11.19 (–1 *SD*)	–0.064	0.061	–1.040	0.257
	0.00 (Mean)	0.060	0.047	1.293	0.280
	11.19 (+1 *SD*)	0.184	0.090	2.038	0.043

performance of their new ventures is found to be negative and statistically significant when environmental dynamism is high (+1 *SD*) ($Z = -2.336$, $p < 0.05$). Therefore, findings offer support for Hypothesis 2a.

Hypothesis 2b stated that in dynamic industry environments, entrepreneurs' levels of chronic promotion focus will be positively related to the performance of their new ventures, and this relationship will be mediated by the degree to which their new ventures have deviated from theoriginal business opportunity. As shown in Table 3, the indirect effect of entrepreneurs' promotion focus on the performance of their new ventures is found to be positive and statistically significant when environmental dynamism is high (+1 *SD*) ($Z = 2.038$, $p < 0.05$). Therefore, findings also offer support for Hypothesis 2b.

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DISCUSSION

The results of the current study suggest: (1) within dynamic industry environments entrepreneurs' *prevention* focus has a negative indirect effect (through deviation from original business opportunity) on new venture performance; (2) under dynamic industry conditions entrepreneurs' *promotion* focus has a positive indirect effect (through deviation from original business opportunity) on new venture performance; and (3) within stable industry environments, entrepreneurs' regulatory focus has no significant effect on new ventures. We now discuss the implications of these findings.

Entrepreneurial opportunity exploitation: the importance of context

In the current study, we have argued that the fit between entrepreneurs' cognitive frameworks and the environment in which they develop their new ventures will have a significant bearing on the performance of their firms. More specifically, we argued that entrepreneurs who predominantly self-regulate their behavior through a prevention focus will be most successful at leading their ventures within a discovery context (characterized by interpretable, predictable risk, as in a stable industry) and that entrepreneurs who self-regulate their behavior primarily through a promotion focus will be most successful at leading their ventures within a creation context (characterized by uncertainty, as in a dynamic industry).

Overall, the findings suggest that entrepreneurs' self-regulatory mode (prevention or promotion) does indeed have important implications for the performance of their firms, or more broadly, entrepreneurs' degree of cognitive fit with the context of opportunity exploitation in which they operate does matter where new venture performance is concerned. This finding was most pronounced within a creation context, where changes in the business environment are unpredictable. In such a context (as found in dynamic environments), a focus on achieving gains and maintaining flexibility (promotion focus) significantly enhances new venture performance, whereas, a focus on preventing losses and being rigid toward change (prevention focus) significantly reduces performance. No significant relationship was found, however, between mode of entrepreneurs' regulatory focus and the performance of their new ventures in a discovery context (i.e., in stable environments), where changes in the business environment are more predictable.

Therefore, a key question that emerges from the present findings is *why entrepreneurs' regulatory focus is significantly related to firm performance in a creation (dynamic), but not in a discovery (stable) context.* One possible answer is suggested by previous research on the phenomenon of *sunk costs* (e.g., Johnson and Hoopes, 2003; Staw, 1981). Sunk costs refer to the tendency to *stick with* plans, strategies, or courses of action that yield increasingly negative outcomes. More specifically, it refers to the strong pressure to continue with such actions or strategies arising from the basic fact that the persons involved believe they *have too much invested* to back away from their initial decisions or strategies (Cabral and Ross, 2008). This tendency toward sticking with actions or plans that yield increasingly negative results has been found to be powerful and pervasive. It occurs in many different contexts and across a wide range of populations (e.g., Arkes and Ayton, 1999; Bobocel and Meyer, 1994). The essence of this phenomenon is perhaps best captured by the phrase *throwing good money after bad*—a strong tendency to continue investing resources in failing strategies or courses of action. This tendency occurs frequently among individuals (e.g., when they continue to make expensive repairs on an old used car), government decision makers (e.g., when they continue to follow foreign policy or economic strategies that yield negative outcomes), and top executives (e.g., when they adhere to failing business strategies).

While sunk costs are a potential hazard for all decision makers, they are most likely to occur—and to be especially damaging—in highly dynamic (i.e., creation) environments. In such environments, *flexibility*, rather than persistence or calculated analyses, may be the crucial overall approach to manage uncertainty (Baker and Nelson, 2005; Hmieleski and Corbett, 2008). Past research suggests that individuals high in promotion focus are more likely to follow this principle than persons high in prevention focus (e.g., Higgins, 2002; Liberman *et al.*, 1999). Individuals high in promotion focus direct their primary attention toward attaining positive outcomes and gains, while those high in prevention focus tend to concentrate, instead, on minimizing losses. Although this might suggest that the latter group would be more willing to *walk away from* failing plans or actions, prevention focus individuals also tend to perceive great risk in change. Consequently, they

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may be more likely to continue investing in failing plans or strategies than persons high in promotion focus. In stable environments—which we have described as a discovery context—the cost of doing so may be relatively small, assuming that the initial business opportunity or strategy was a sound one; hence, only small adjustments to plans or strategies may be required in order to manage risk. As a result, the relationship between prevention focus and firm performance is not significant. Further, in such environments, a promotion focus—which might encourage greater flexibility and greater change with respect to initial business models—would provide few benefits, since such flexibility is not a requirement for success. In a creation context, however, the relative inflexibility encouraged by prevention focused self-regulatory behavior may yield truly devastating outcomes, since rapid changes in response to unpredicted shifts in markets, competition, etc., are required, and prevention focus individuals tend, instead, to *stick* resolutely to their initial business opportunity.

Another possibility is that discovery contexts (e.g., stable environments) are ones in which the link between the characteristics of individual entrepreneurs and new venture performance is relatively weak overall. This might be the case, as in such environments, the strategies and actions most likely to yield success are equally apparent—and available—to all entrepreneurs. Thus, variations in their cognitive frameworks simply have less scope in which to operate (e.g., House, Shane, and Herold, 1996; Mischel, 1977). This may be why, even though we observed the expected direction of effects for prevention and promotion focus within stable environments, these effects were not strong enough to be statistically significant.

Reducing cognitive misfit: countering the effects of sunk costs

As stated above, one potential danger of a mismatch between entrepreneurs' regulatory focus and the business environment in which they lead their firms is increased susceptibility to sunk costs. We suggest that the tendency to fall victim to the effects of sunk costs may be especially devastating for entrepreneurs high in prevention focus—individuals who find reversing course or admitting previous errors of judgment to be particularly difficult–and especially in dynamic environments, where such flexibility is often required. In other words, prevention focus entrepreneurs who find themselves operating in highly dynamic environments face low levels of cognitive fit—and this, as our results suggest, can be devastating.

Are such entrepreneurs, whose dominant cognitive frameworks are inconsistent with the external environments they face, doomed to failure, or at least, disappointing results? Fortunately, research findings indicate that several techniques for countering the effects of sunk costs exist, and these can be used to help protect entrepreneurs from this potential danger. For instance, individuals can be induced to *stop* making investments in failing courses of action when: (1) available funds for making investments are clearly limited; (2) the threat of failure is made overwhelmingly obvious; and (3) responsibility for the original failing decision can be diffused to others (Garland and Newport, 1991; Staw, Barsade, and Koput, 1997). The last tactic seems to be especially effective, and can be implemented by assuring that, insofar as possible, different people make the initial decisions and subsequent decisions (i.e., to continue or *cut losses*) concerning a given strategy. Applied to entrepreneurs and new ventures, it seems possible that the potentially detrimental effects of sunk costs can be reduced by providing entrepreneurs with compelling indications or reminders of the limited nature of available funds and the potentially devastating effects of rising costs, and by assuring that the *formulation* and *continued implementation* of specific strategies rest with different members of the founding team. While applying such practices may be difficult, the results—in terms of reduced susceptibility to sunk cost effects and enhanced flexibility on the part of entrepreneurs—may be truly invaluable.

Limitations and directions for future research

There are some noteworthy limitations to the current study, which also suggest opportunities for future research. First, although our findings uncovered one mediating mechanism (i.e., deviation from original business opportunity) of the relationship between entrepreneurs' regulatory focus and the performance of their new ventures, there are likely to be additional mediating factors. For example, Alvarez and Barney (2007) suggest that differences in leadership, human resource practices, financing, marketing, and approaches taken toward sustaining a competitive advantage are also likely to have different effects based on the context in which the entrepreneur develops and grows his/her new business.

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Second, the current study focused on the cognitive fit of lead entrepreneurs with the business environments in which they lead their new ventures. However, the majority of new ventures are founded by teams (Kamm *et al.*, 1990; Ensley, Hmieleski, and Pearce, 2006). Even though the lead entrepreneur is likely to have the greatest impact on the strategic behavior of the firm, the influence of other team members is also likely to be meaningful. Therefore, future studies might explain additional variance in new venture performance by exploring the match between the collective cognitions of new venture teams with the business context.

Finally, the cross-sectional design of the current study limits our ability to make causal inferences about the observed relationships. The fact that our performance data were lagged from the time period in which the data for the independent variables were collected does support our case for causality. Such arguments would, however, be made stronger in future studies if both the independent and outcome variables were measured on multiple occasions across time. This would also enable the examination of entrepreneurs' regulatory focus across different stages of the new venture development process—which may capture contextual shifts between contexts of risk versus uncertainty, as the degree of dynamism within the business environment fluctuates over time (Sharfman and Dean, 1991).

CONCLUSIONS

Within capitalistic economies, the behavior of entrepreneurs is largely self-regulated and industry environments fluctuate between states of risk and uncertainty. As a result, there are important potential benefits and costs associated with both promotion and prevention focused perspectives and how they are applied to the opportunity exploitation process. Individuals high in promotion focus are likely to make too many speculative assumptions and, in so doing, put themselves, their companies, and stakeholders at substantial risk. Conversely, individuals high in prevention focus may spend too much time and effort refining their decisions in an attempt to assure that their chosen strategy or business opportunity does not fail, which can lead to negative sunk cost effects. Both perspectives can endanger the fortunes and survival of new ventures, especially—and crucially—if they are significantly out of alignment with the demands of the current business environment. Thus, it is not useful to view either of these two regulatory focus perspectives (promotion or prevention) as superior or more adaptive across all situations and contexts. Rather, both have an important role to play. Often, the extra thought or collection of data points encouraged by a prevention focus perspective can be very helpful in avoiding *blind alleys* and *false alarms*, when relevant information for so doing is readily available, such as within a discovery context. In addition, a prevention focus can be leveraged as a personal strength to lead the development of organizational efficiencies, enabling new ventures to extract profits under stable conditions. On the other hand, too much analysis can be exceedingly costly when relevant information is not available and a willingness to engage in emergent decision processes is required to survive, such as within a creation context. Under such conditions, the greater flexibility encouraged by a promotion focus can be beneficial. In developing effective strategies for exploiting entrepreneurial opportunities, therefore, perhaps the key principle for entrepreneurs should be *balance*—a reasonable blend of the desire for success *and* the dictates of appropriate levels of caution. Since dominant modes of self-regulation are established early in life and are often difficult to change, efforts by entrepreneurs to assure a closer fit between their preferred approach and the environments in which their new ventures function is an important step they can take to help tip the daunting odds against them somewhat in their favor.

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