Corporate entrepreneurship

An empirical look at the innovativeness dimension and its antecedents

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Abstract

Purpose – The purpose of this paper is to submit and test a model of corporate entrepreneurship (CE).

Design/methodology/approach – Using a sample of 264 employees of a mid-sized organization, the authors conceptualize three antecedent categories of CE: process, context, and individual characteristics. The authors also test the mediating affect of CE on desirable individual outcomes: job satisfaction, turnover intent, and affective commitment.

Findings – The results indicate that the model does an adequate job of explaining CE, and that CE mediates the relationship between our antecedents and individual outcomes.

Originality/value – For researchers, the primary value of this research is the opportunity to consider a predictive model of CE on the knowledge base currently in the field. For practitioners, the process seems to offer an important precursor to CE.

Keywords Entrepreneurialism, Innovation, Modelling

Paper type Research paper

Introduction

What encourages individuals to engage in entrepreneurial activities in an organization? Hornsby *et al.* (2002) have taken steps toward answering this question by attempting to empirically identify a set of factors that influence corporate entrepreneurship (CE). In their study, they identified five factors. These were:

- the appropriate use of rewards;
- top management support;
- resource availability;
- organizational support; and
- risk taking and failure tolerance.

Another unique property of their study is that they examine the phenomenon at the individual level by identifying five organizational factors that positively influence organizational members' entrepreneurial behavior.

To build on the ideas presented in this study, we follow the direction put forth by Zahra *et al.* (1999b), by opting not to present an entirely new model, as we believe the number of models currently in existence is sufficient for the time being. However, we

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also agree with Zahra *et al.* (1999a, pp. 45-6) in that "... greater creativity is needed in testing the relationships depicted in, or proposed by, these models." As a result, we reframe Hornsby *et al.*'s (2002) model to capture the factors that they put forth as well as additional factors that may help researchers and leaders of organizations better understand CE. Our conceptualization consists of three general antecedent categories: process, context, and individual characteristics. We use these categories to assess the extent to which these are related to individuals' perceptions of their own and their organization's entrepreneurial orientation. Then, we test the affect that CE has on the desired individual outcomes of satisfaction, turnover intention, and commitment.

What is corporate entrepreneurship?

Much like the field of entrepreneurship itself, a considerable degree of ambiguity surrounds the CE construct. While it is beyond the scope of this paper to resolve these issues, it is important clarify how we arrived at our conceptualization of CE by first reviewing the seminal studies. In a general sense, Zahra (1993) defines CE as "... a process of organizational renewal that has two distinct but related dimensions: innovation and venturing, and strategic renewal." Miller (1983) and several others (Morris and Paul, 1987; Covin and Slevin, 1990; Dean *et al.*, 1993) have echoed this notion by specifying three components of CE: proactiveness, innovation, and risk taking. Similarly, Lumpkin and Dess (1996) identified autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness as a set of behaviors that reflect CE.

As Covin and Miles (1999) have observed, the commonality in most conceptualizations of CE is the dimension of innovation. As a result, our definition is as follows: CE is the process of enhancing the ability of the firm to acquire and utilize the innovative skills and abilities of the firm's members. This is similar to many existing definitions; however, we posit that the organizational members' application of those innovative abilities and skills are at the very heart of CE. To capture this construct, we employ scales that measure CE at both the individual and organizational levels. Individual scale items focus on one's:

- willingness to introduce improved and innovative work processes; and
- comfort in a dynamic work environment.

This content aligns with many of the authors that suggest the corporate entrepreneur continually seeks new opportunities (McGrath and MacMillan, 2000) and openly embraces an ever-changing work place (Kuratko *et al.*, 1993). Organizational scale items tap into perceptions of organizational innovativeness.

There are two key reasons for this individual-level focus. First, we believe it is necessary to recognize that entrepreneurial activities are initiated and carried out by individuals in organizations. That is, organizations by themselves do nothing – even the most collective activities that take place within organizations are an amalgamation of the activities of individual organizational members; therefore, organizations will be innovative, proactive, and take risks through the actions of their members (Stevenson and Jarillo, 1990). Second, and related, we believe that examining organizational or work group level innovative skills and abilities require an analysis at the individual level.

Individual-level model of corporate entrepreneurship

Based on a review of the literature, three classes of variables were identified that may be related to an individual's interpretation of CE. These include process, context, and individual variables. Process variables are those that refer to the how CE is facilitated by leaders, encompassing the specific strategies leaders use to encourage entrepreneurial behaviors. Context variables are those that address the circumstances that describe the organization as it embarks on strategic renewal efforts and the diffusion of CE. Individual variables refer to those that describe who is being asked to engage in entrepreneurial activities, describing their general disposition, skills, abilities, and attitudes. These three classes of variables should not only influence people's perceptions regarding the organization's ability to be entrepreneurial but also perceptions of their own ability to be entrepreneurial.

Figure 1 shows the integrated model of CE that guided this research effort and summarizes the constructs that were explored. While there were several process, context, and individual variables that could be investigated, the entrepreneurship literature – along with the innovation and change literature – suggested a subset of variables that would be appropriate as a starting point for this exploratory investigation (Armenakis *et al.*, 1999; Eby *et al.*, 2000; Hornsby *et al.*, 2002; Judge *et al.*, 1999; Pettigrew *et al.*, 2001). Process variables identified were leadership support and rewards while contextual variables were communication climate, perceived organizational support (POS), and perceptions of co-workers. Finally, individual variables consisted of positive affect, negative affect and efficacy. It should be noted that these variables were selected for both theoretical and practical reasons. First, these variables were included because there appeared to be some empirical relationship evident between a particular variable and entrepreneurship. For more practical reasons, the variables were selected because valid and reliable measures were available. The discussion that follows further develops this model and summarizes the literature we used to guide the selection of the study variables.

Process

The entrepreneurial process variables refer to the facilitation strategies or how CE is implemented and diffused throughout the organization under the premise that the way leaders introduce CE will certainly affect members' reactions and behaviors.

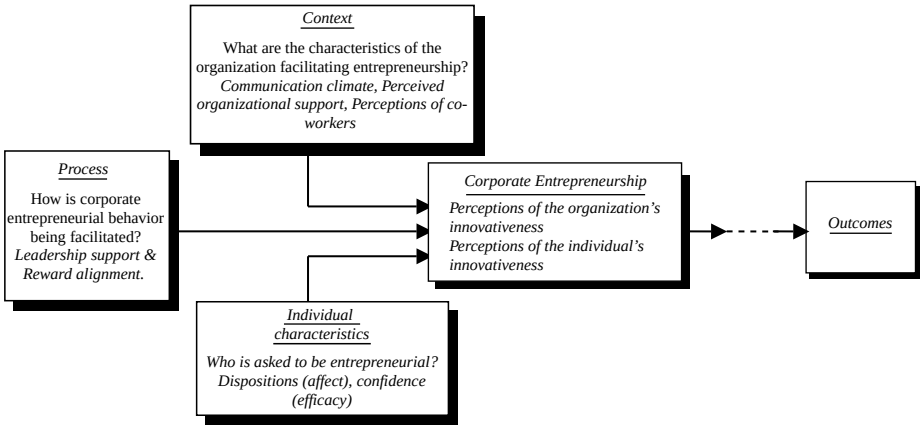

Figure 1.
An integrated model of CE that includes process, context, individual and outcome variables

How does an organization motivate entrepreneurship among organizational members? When the diffusion of an entrepreneurial mindset is viewed as an organizational change effort, one can turn to the change literature to gain some insights into this issue. Indeed, the literature is filled with prescriptions for leaders to use as guides to successfully implement change. Meyer and Goes (1988) found that managerial or leadership practices were strong predictors of physicians' adoption of new diagnosis, treatment, and prevention techniques.

While there are several facilitation strategies available to leaders that can be helpful in fostering an entrepreneurial environment, successful alignment of the organization's human resource management (HRM) techniques and policies is possibly the most effective (Baden-Fuller, 1995; Block and Ornati, 1987; Sykes, 1992; Barringer and Milkovich, 1998). Our review of the literature revealed that reward structures, in particular, are critical for aligning individual goals with firm goals and may be the most important HRM component in encouraging entrepreneurial behavior. Balkin and Logan (1988) submit that without properly aligned compensation and appraisal systems, significant barriers to CE may be present. Adequate rewards are also critical to retain entrepreneurial employees, since these employees have a propensity to strike out on their own (Hornsby, *et al.*, 2002). Similarly, Zahra *et al.* (1999a, b) submit that social capital and trust are created through effective use of rewards, leading to an effective entrepreneurial culture.

Leadership support is also believed to be a process component enabling entrepreneurial behavior. This is the perceived willingness of leadership to support an individual's innovative behavior (Damanpour, 1991; Pearce *et al.*, 1997). Hornsby *et al.* (2002) found that leadership support accounted for a large percentage of the variance in the creation of an entrepreneurial corporate environment. In a study of two large units from an electric utility system, Pearce *et al.* (1997) found managers who behaved entrepreneurially had a positive impact on their subordinates' satisfaction. This generally supports the notion that individuals who perceive that organizational leaders encourage entrepreneurial behavior are more likely to engage in it themselves. The following hypotheses are provided:

H1a. Perceptions of the process (i.e. rewards and leadership support) will be positively related to perceptions of the organization's innovative climate.

H1b. Perceptions of the process (i.e. rewards and leadership support) will be positively related to perceptions of the individual's innovativeness.

Context

For CE to flourish in an organization, employees must perceive that the climate is one where they can engage in innovative activities freely. Thus, we consider the internal context that characterizes the circumstances, or the existing internal conditions, that influence the diffusion of CE. Mowday and Sutton (1993) have described context as organizational conditions external to individuals such as, organizational norms and values, and, rules and regulations that influence affective reactions. Again turning to the change literature to reinforce this idea, Johns (2001) contends that an organization's internal context can explain why a particular change not be received favorably, even though the leaders employed sound methods to introduce that change (i.e. used the appropriate process to initiate a change).

The context or components of the organization's climate that may be related to CE can take many forms and have been reported by researchers, variably, as: slack resources, time, supportive co-workers, structure, effective communication, and tolerance for failure (Hisrich and Peters, 1986; Katz and Gartner, 1998; Slevin and Covin, 1997; von-Hippel, 1977). Consistent with these findings, our model examines a subset of these contextual factors that can be measured perceptually. Specifically, we submit that perception of co-workers and communication will be the critical context antecedents along with POS (Figure 1).

Perceptions of co-workers. As suggested, the relationships that individuals have with their co-workers are expected to influence CE. Perceptions of co-workers refer to the satisfaction that employees have regarding the competency and amiability of the individuals they work with. While no research appears to have explored these relationships, there is a considerable body of literature that suggests it would be an important consideration if we are to understand individuals' reactions to innovative or entrepreneurial endeavors. For instance, social support from family, friends, and co-workers ameliorates the perceptions of stress and actual strain experienced at work (Viswesvaran *et al.*, 1999). Within the context of changing and transitioning environments, support from co-workers has been linked empirically to members' ability to cope with organizational change (Shaw *et al.*, 1993).

Communication climate. Empirical and anecdotal evidence indicates that the level of stress experienced by organizational members can be reduced at any time when employees' information needs are addressed. Clearly, an open environment would bolster entrepreneurial efforts. For instance, in an open environment, leaders can explicitly support entrepreneurial endeavors, enhancing commitment and simultaneously ameliorating fear and uncertainty that may be associated with an innovative, risk-taking environment. Covin and Kilmann (1990) found that over 1,000 managers believed that communication was critical to organizational success, saying that the failure to share why certain events are occurring and necessary negatively influences success. Consequently, we assessed perceptions regarding the overall quality of the information that is conveyed within the organization – a critical contextual variable.

Perceived organizational support. Our next contextual component is POS. This construct represents the extent to which employees believe the organization values and supports each individual member of the organization. This can be assessed in terms of employee perceptions of the adequacy of programs that provide employee recognition, problem-solving assistance, and safe working conditions. POS develops as the employee experiences various tangible and intangible outcomes through the daily exchange process with the organization (Eisenberger *et al.*, 1986). When these exchanges lead to positive outcomes, commitment and affect towards the organization are triggered (Eisenberger *et al.*, 1986). Within the CE context, positive feelings about the organization and its supportive nature could positively influence employees' receptivity towards the organization's efforts to introduce and implement CE. The following hypotheses are provided:

H2a. Perceptions of the context (i.e. perceptions of co-workers, communications climate, and POS) will be positively related to perceptions of the organization's innovative climate.

H2b. Perceptions of the context (i.e. perceptions of co-workers, communications climate, and POS) will be positively related to perceptions of the individual's innovativeness.

Individual characteristics

Even though research on individual antecedents of individual entrepreneurship has been largely inconclusive, there remains an interest in attempting to uncover such constructs (Stevenson, 1990). Intuition and anecdotal evidence lead us to suspect that – at least in an organizational setting – individual characteristics should have some impact on each person's propensity to act entrepreneurially. It is important to note that, though we do view CE as an individual construct, we do not view it as simply an extension of individual entrepreneurship.

Researchers in the innovation arena have begun to shed light on the way individual attributes shape that individual's responses to innovation. Wanberg and Banas (2000) found that that certain personality characteristics were positively related to individuals' general attitudes toward innovation. Similarly, Judge *et al.* (1999) recently found people's self-efficacy and positive affect (analogous to optimism) were strongly related to an their capacity to cope with turbulence and instability. Entrepreneurship researchers have also associated self-efficacy with the entrepreneurial condition both empirically (Chen *et al.*, 1998) and anecdotally (Stevenson and Jarillo, 1990). Our model incorporates individual characteristics because attributes such as efficacy and dispositions are critical to understanding any modern organizational condition, testing the extent to which self-efficacy and affect influence CE.

H3a. Perceptions of the context (i.e. perceptions of co-workers, communications climate, and POS) will be positively related to perceptions of the organization's innovative climate.

H3b. Perceptions of the process (i.e. perceptions of co-workers, communications climate, and POS) will be positively related to perceptions of the individual's innovativeness.

Outcome variables

The previous sections discussed our suppositions regarding the affect that certain antecedent variables will have on CE. We extend our analysis here by offering our submissions regarding the mediating effect that CE will have between on work outcomes. In general, we hold that the firm and its members will reap some rewards by utilizing these innovative skills and abilities, and these rewards will come in the way of positive work outcomes. In other words, we would expect CE to have a positive affect on work outcomes.

Lumpkin and Dess (1996), in proposing a framework for investigating the link between CE and firm performance, point out that non-financial measures may be just as important in the study of entrepreneurial outcomes as financial measures such as growth, market share, and profitability. Commitment and satisfaction of organizational members are between two non-financial factors suggested for study by Lumpkin and Dess (1996). Hindle and Cutting (2002), for instance, found that pharmacists who had been part of organizations that embraced CE through formal

entrepreneurship education reported higher levels of job satisfaction than their counterparts that had received no entrepreneurial training. Similarly, Mullins *et al.* (2001) found that an entrepreneurial environment resulted in greater organizational commitment among all levels of employees. Caruana *et al.* (1998) also suggest that there is a dearth of literature examining the relationship between CE and less direct measures organizational performance. Specifically, they suggest that the affect of CE on employee turnover would be of interest. On this issue, a number of authors (Brand, 1998; Clampitt *et al.*, 2000; Jacoby, 1999) have found that highly innovative companies, like 3M, have comparatively low rates of turnover. Based on the studies mentioned above, we submit the following:

H4a. Perceptions of the organization's innovative climate will mediate the relationship between process, context, and individual variables and work outcomes (i.e. job satisfaction, affective commitment, and turnover intention).

H4b. Perceptions of the individual's innovativeness will mediate the relationship between process, context, and individual variables and work outcomes (i.e. job satisfaction, affective commitment, and turnover intention).

Method

Sample

The sample consisted of 264 employees that were members of a mid-sized organization (53 percent response rate). Of these, males represented 59 percent of the sample and the age of the average participant was 47.5 years. To determine whether any significant differences existed between those who responded and those that did not, the general demographics of the organization were compared to the demographics of those that participated, finding that the organization was comprised of 55 percent males and over 50 percent of the workforce was over 50 years old – consistent with the sample's. The organization under study was a public organization with approximately a $300 million budget. It was responsible for developing and fielding information systems. Since, the organization was being considered for outsourcing where an external service provider fulfilled its function, the leadership was confronted with an urgent need to become more effective, efficient, and competitive. Toward this end, the leadership planned to introduce a new organization structure that facilitated high performance and quality service, provided clear lines of authority, eliminated duplicate functions, and encouraged creativity and innovation.

Procedures

Data used in this study were collected using questionnaires that were part of a larger study that was being conducted to examine the psychometric properties of a change readiness instrument. A web questionnaire was used to collect the data because all employees had access to the world wide web. Data were collected for a three week period which ended nearly a month before any changes were implemented. To maximize the response rate, we used many of the strategies recommended by Simsek and Veiga (2000) for bolstering the response rate of electronic surveys: employees were given advance notice; two follow-up messages were sent; and, the questionnaire could be completed in segments.

Measures

Unless otherwise noted, a seven-point response format that ranged from strongly disagree to strongly agree was used in order to make the questionnaire as simple as possible.

Individual variables. Positive and negative trait-affect were measured along with self-efficacy. Positive and negative affect schedule (PANAS) was used to measure affect (Watson *et al.*, 1988). Ten items reflected positive affect (e.g. "interested") and ten reflected negative affect (e.g. "disinterested"). Participants indicate the frequency of the emotions that they have experienced on a five-point scale ranging from 1 – very slightly or not at all to 5 – very much. Since, the participants' dispositional affect was the focus of this study, participants were instructed to "indicate the extent to which you generally feel this way, that is, how you feel on average" (Watson *et al.*, 1988). In this study, coefficient αs were 0.92 for the positive affect scale and 0.87 for the negative affect scale. Efficacy was tapped with six items developed for the change study that these data were originally collected. These items measured the extent to which people felt they would be successful in a changing environment. Coefficient α was 0.81 for this scale.

Context variables. Three context variables were measured. First, communication climate was measured with four items based on a scale presented by Miller *et al.* (1994). Coefficient α was 0.77.Second, POS was measured with seven items from Eisenberger *et al.*'s (1986) 36-item survey of POS scale – the seven selected had the highest factor loadings (ranging from 0.76 to 0.84) on the scale. Finally, a three-item scale published by Spector (1997) was used to measure perception of co-workers. Coefficient α for this scale was 0.62.

Process variables. Management support and reward perceptions were both measured. Management support was measured with six items and measured the extent to which management supported change. Coefficient α was 0.85. Reward perceptions were measured with three items. Coefficient α was 0.69.

Corporate entrepreneurship. As noted, both individual and organizational innovativeness was measured. Individual innovativeness was measured using four items from Trumbo's (1961) change readiness scale. Items reflected a person's general preference for stability over work-related variety (e.g. "One can never feel at ease on a job where the ways of doing things are always being changed."). The results from this sample indicated the reliability of the four-item scale was 0.77 (coefficient α). Perceptions of the organization's innovative climate were measured with a scale that was presented by Eby *et al.* (2000). Example items are: "Employees here are resistant to change" and "Employees here act as agents of change." For this sample, coefficient α was 0.64.

Attitudinal outcomes. Job satisfaction, affective commitment, and turnover intention were measured as outcomes. Job satisfaction and turnover intentions were measured with three items each that came from scales developed by Cammann *et al.* (1983). The estimate internal consistency (i.e. coefficient α) was 0.88 and 0.83 for the job satisfaction and turnover intentions, respectively. Affective commitment was measured using six items from the affective commitment scale presented by Allen and Meyer (1990). The estimate of internal consistency was 0.86 (coefficient α).

Results

Descriptive statistics

Table I shows means, standard deviations, and correlations among the study variables. To begin, the pattern of correlations among the perceptions of entrepreneurship and

	M	SD	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
Demographics																			
1. Age	47.53	8.56	–																
2. Gender	0.58	0.50	0.12	–															
3. Education	3.73	1.70	0.02	0.23**	–														
4. Organizational level	2.86	1.64	−0.03	0.03	−0.05	–													
Individual variables																			
5. Positive affect	3.71	0.74	0.06	−0.02	0.01	−0.11	(0.92)												
6. Negative affect	1.54	0.53	−0.09	0.07	0.06	0.12	0.33**	(0.87)											
7. Efficacy	5.35	0.97	−0.03	0.10	0.02	−0.15	0.44**	−0.23**	(0.81)										
Context variables																			
8. Communication climate	3.99	1.21	0.06	−0.01	0.09	−0.08	0.21**	−0.18**	0.30**	(0.77)									
9. POS	4.24	1.25	0.02	−0.01	0.07	−0.18**	0.31**	−0.26**	0.40**	0.65**	0								
10. Perceptions of co-workers	4.76	1.16	0.17*	0.14*	0.04	−0.18**	0.23**	−0.31**	0.29**	0.47**	0.57**	(0.62)							
Process variables																			
11. Management support	5.26	1.11	−0.04	0.07	0.04	−0.18**	0.19**	−0.13*	0.40**	0.45**	0.52**	0.35**	(0.85)						
12. Reward perceptions	4.90	1.15	−0.11	−0.01	0.07	−0.12	0.27**	−0.20**	0.50**	0.39**	0.45**	0.28**	0.36**	0					
Innovativeness																			
13. Individual	4.37	1.18	−0.003	−0.11	0.18**	−0.19**	0.32**	−0.30**	0.27**	0.20**	0.29**	0.24**	0.13*	0.34**	(0.77)				
14. Organizational	4.00	0.98	0.02	0.08	0.02	−0.14*	0.18*	−0.16*	0.25**	0.63**	0.68**	0.52**	0.50**	0.42**	0.21**	(0.64)			
Work outcomes (time 2)																			
15. Job satisfaction	4.95	1.46	0.09	−0.10**	−0.02	−0.12	0.30**	−0.27**	0.35**	0.34**	0.34**	0.16*	0.15	0.27**	0.27**	−22**	(0.88)		
16. Affective commitment	4.13	1.29	−0.08	−0.21**	−0.20*	−0.19*	0.32**	−0.09	0.25**	0.34**	0.39**	0.21*	0.11	0.14	0.14	0.18*	0.56**	(0.86)	
17. Turnover intentions	3.14	1.58	−0.08	0.11	0.16	0.08	−0.06	0.27**	−0.21**	−0.32**	−0.27**	−0.20*	−0.14	−0.18*	−0.08	−0.27**	−0.62**	−0.50**	(0.83)

Notes: * $p < 0.05$; ** $p < 0.01$; numbers in parentheses represent coefficient α

Table I.
Means, standard deviations, and intercorrelations among study variables

demographic, process, context, and individual variables merits some discussion. With one notable exception, the perceptions of organizational and individual entrepreneurship were not significantly related to the participants' demographic characteristics. The exception was observed when considering entrepreneurship relative to the organizational level of the members. Specifically, the closer individuals' positions were to the executive director the more entrepreneurial the individuals perceived themselves ($r = -0.19$, $p < 0.01$) and the organization ($r = -0.14$, $p < 0.05$).

The hypotheses that were posited suggested that the process, context, and individual level variables would be positively related to the perceptions of the organization's innovativeness as well as the individual's. While the hypotheses that were presented were supported, measures of the individual variables (i.e. positive affect, negative affect, and efficacy) were more closely related to individuals' perception of their own CE (i.e. *r*'s ranged from a magnitude of 0.27 to 0.32) than their perceptions of the organization's CE (i.e. *r*'s ranged from a magnitude of 0.16 to 0.25). In turn, measures of the context and the process were more closely related to the perceptions of the organization's entrepreneurial behavior. For instance, the mean *r* across the context variables was 0.24 and 0.61 for the perceptions of both the individual and organizational CE, respectively.

Regression of perceived entrepreneurship

To further test the extent to which process, context, and individual variables influenced perceptions of both the organization's and individual's CE and subsequent outcomes (Figure 1); two unique models were tested. One model had the perceptions of the individual's innovativeness as the dependent variable while the second had perceptions of the organization's innovativeness as the dependent variable. Before these models were tested, it is necessary to note the generally moderate to high, intercorrelations among the process, context, and individual variables. The correlation between management support and valence (i.e. process variables) was 0.36 ($p < 0.01$); the mean *r* among the context variables was 0.56 ($p < 0.01$); and, the absolute mean *r* among the individual variables was 0.33 ($p < 0.01$). Based on these results, variance inflation factors (VIF) were examined to determine the extent to which multicollinearity might pose a problem for the subsequent analyses. VIF ranged from a low of 1.02 to a high of 2.34 well below the threshold value of ten where multicollinearity becomes problematic (Neter *et al.*, 1996).

With the problems associated with multicollinearity ameliorated, a hierarchical priority was defined for the categories of antecedents so that spurious relationships could be removed and incremental contributions could be determined. In our case, the priority of variables was determined by examining their stability. That is, those variables perceived to be more stable (i.e. demographics, individual, and context variables) were entered in the first steps and those that were more discretionary were entered later (i.e. process variables). Demographics were entered in the first step of each model (one for each of the two perceptions of innovativeness). Individual and contextual variables were entered in the second and third steps, respectively. Process variables were entered in the last step. The results from this analysis are presented in Table II.

Variable	Equation (standardized β)							
	Individual Entre.				Organizational Entre.			
	1	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Step 1: demographic variables								
Age	0.001	−0.02	−0.03	−0.02	0.04	0.04	0.01	0.01
Gender	−0.16*	−0.16*	−0.15*	−0.12	−0.004	−0.02	0.02	0.03
Education	0.21**	0.20**	0.19**	0.17**	0.01	0.01	−0.04	−0.05
Organizational level	−0.16*	−0.10	−0.09	−0.09	−0.16*	−0.12	−0.05	−0.04
Step 2. individual variables								
Positive affect		0.18*	0.17*	0.16*		0.04	−0.04	−0.03
Negative affect		−0.17*	−0.15*	−0.14*		−0.07	0.06	0.06
Efficacy		0.16*	0.11	0.04		0.22**	−0.03	−0.10
Step 3. context variables								
Communication climate			0.05	0.03			0.27**	0.23**
POS			0.07	0.05			0.43**	0.38**
Perceptions of co-workers			0.05	0.05			0.24**	0.23**
Step 4. process variables								
Management support				−0.11				0.10
Reward perceptions				0.26**				0.12*
R^2	0.09**	0.23**	0.25**	0.29**	0.03	0.10**	0.58**	0.60**
ΔR^2	–	0.14**	0.02	0.04**	–	0.07**	0.48**	0.02*

Notes: *$p < 0.05$; **$p < 0.01$; $N = 264$

Table II.
Regression results with demographics, individual, context, and process variables predicting perceptions of entrepreneurship

Overall, far more variation in the perceptions of the organization's ability to be entrepreneurial was explained ($R^2 = 0.60, p < 0.01$) than the individual's perception of entrepreneurial ability ($R^2 = 0.29, p < 0.01$). Specifically, the individual variables explained a statistically significant amount of variance in entrepreneurial behavior, regardless of which frame of reference was considered (i.e. individual or organizational). Not surprisingly, the percent of unique variance accounted for by the individual variables was higher for predictions individuals ($\Delta R^2 = 0.14, p < 0.01$) than for organizational assessments ($\Delta R^2 = 0.07, p < 0.01$). In contrast, the organizational variables did not explain significant unique variation in the individual's perceptions ($\Delta R^2 = 0.02, p > 0.05$) while it explained a considerable amount of unique variation in the organization's entrepreneurial perceptions ($\Delta R^2 = 0.48, p < 0.01$). Most importantly, the process variables explained significant variation in both the individual ($\Delta R^2 = 0.04, p < 0.01$) and organizational ($\Delta R^2 = 0.02, p < 0.05$) perceptions of entrepreneurial behavior after controlling for demographics, individual differences, and contextual differences. These results suggest that perceptions of entrepreneurial behavior might be shaped by the process used by leaders (a factor at their discretion) to facilitate this within their organizations, given the existing employees and culture.

Relationships of perceptions of entrepreneurship and outcomes

To test whether perceptions of entrepreneurial potential mediated the relationship between process, context, and individual variables and the outcomes, we estimated a series of hierarchical regressions as described above. Cohen and Cohen (1983) suggest that are three requirements to be satisfied for mediation to be present. First, entrepreneurial perceptions must be related to the outcomes. Second, the process, context, and individual variables must be related to the outcome variables (i.e. there must be an effect to mediate). Finally, the relationship between the process, context, and individual variables and the outcome variables must be reduced after adjusting for the effects of entrepreneurial perceptions. If these conditions are satisfied, the percent of mediation can be calculated by dividing (a) the incremental variance explained by the process, context, and individual variables after controlling for entrepreneurial perceptions by (b) the total variance explained by the process, context, and individual variables when entered into the regressions alone, and then subtracting this proportion from 1.0. Table III presents the results from the mediated regression analysis.

The correlations among the study variables were used to evaluate the first condition for mediation. As indicated in Table I, the relationship between the perceptions of individuals' entrepreneurial behavior and the outcomes suggested that perceptions of individuals' entrepreneurial behavior could not mediate the relationship between process, context, and individual variables and affective commitment ($r = 0.14$, $p > 0.05$) or turnover intentions ($r = -0.08, p > 0.05$) because it was not significantly related to these outcomes. However, it could mediate the relationship between process, context, and individual variables and job satisfaction ($r = 0.27, p < 0.05$). In contrast, significant relationship between the outcomes and perceptions of the organization's entrepreneurial behavior suggested that it could serve as a mediator (i.e. mean $r = 0.22$ for all the relationships, $p < 0.05$ for all relationships). With respect to the relationship between process, context, and individual variables and outcomes, the regression results revealed that these variables collectively explained significant variance in each

	Job satisfaction			Affective commitment			Turnover intention		
	Model 1[a]	Model 2[b]	Model 3[c]	Model 1[a]	Model 2[d]	Model 3[c]	Model 1[a]	Model 2[d]	Model 3
Perceptions of entrepreneurship									
Individual	–	0.12	–	–	–	–	–	–	–
Organizational	–	–	−0.05	–	–	−0.07	–	–	−0.29*
Process, context, and individual (PCI) variables									
Positive affect	0.09	0.07	0.09	0.21*	–	0.21*	0.13	–	0.13
Negative affect	−0.13	−0.11	−0.13	0.07	–	0.07	0.23**	–	0.25**
Efficacy	0.23*	0.24*	0.23*	0.16	–	0.15	−0.16	–	−0.18
Communications climate	0.24*	0.24*	0.24*	0.26*	–	0.27*	−0.33**	–	−0.30*
POS	0.19	0.18	0.21	0.29*	–	0.32*	0.003	–	0.13
Perceptions of co-workers	−0.13	−0.12	−0.12	−0.08	–	−0.06	0.08	–	0.15
Management support	−0.11	−0.12	−0.10	−0.08	–	−0.07	−0.01	–	0.04
Personal valence	0.04	0.003	0.05	−0.14	–	−0.13	−0.003	–	0.04
R^2	0.27**	0.29**	0.27**	0.27**	–	0.27**	0.20**	–	0.23**
ΔR^2 (after PCI variables added)	–	0.21**	0.21**	–	–	0.21**	–	–	0.12**

Notes: $p < 0.05$; **$p < 0.01$; $N = 131$; [a]model includes the process, context, and individual variables only; [b]model includes process, context, and individual variables after controlling for the perceptions of individual entrepreneurship; [c]model includes process, context, and individual variables after controlling for the perceptions of individual entrepreneurship; [d]model was not computed because the second requirement for mediation was not satisfied

Table III.
Mediated regression results

outcome variable (i.e. 27 percent in job satisfaction; 27 percent in affective commitment; and 20 percent in turnover intentions). Therefore, the second requirement of mediation was satisfied.

Given that the first two requirements for mediation were generally satisfied, we performed the final test on mediation. Specifically, after controlling for perceptions of entrepreneurial behavior, our results show that where process, context, and individual variables were used to explain variation in the outcomes, there was some level of mediation. In all cases the process, context, and individual variables explained significance variance in the outcomes, they also explained significant incremental variance when controlling for perceptions of entrepreneurial behavior. After controlling for perceptions of organizational entrepreneurial behavior, the process, context and individual variables explained on 21 percent of the variation in job satisfaction; 21 percent of the variation in affective commitment; and 12 percent of the variation in turnover intentions.

Discussion

This work submitted and tested antecedents to CE. Our model was guided by the previous work done by Hornsby *et al.* (2002), who proposed a factor structure for the CE phenomenon. We reframed their findings to include three categories of variables (i.e. process, context, and individual characteristics) and empirically examined the affect that variables within each of these antecedent categories had on perceptions of the individual's and organization's CE. Specifically, we proposed that process, context, and individual characteristics would be positively related to the perceptions of both individual and organizational CE. We also independently assessed the extent to which individual and organizational CE mediated the relationship between the antecedent categories and outcomes.

The categories of antecedents were largely effective in explaining both types of CE perceptions, which we characterized as consisting of two measures of innovation behavior: individual and organizational. In terms of individual CE behavior, individual characteristics and process were positively associated, while context was not. For organizational CE behavior, all three antecedent categories were positively associated. The fact that our antecedents did a better job explaining organization CE behavior than individual CE behavior suggests that our model may be more effective in examining CE as an organizational construct than a collection of individual actions.

Possibly the most interesting finding is that process was significantly associated with both types of CE. This suggests that how CE behavior is encouraged organization-wide is key. Managers can, through deliberate actions, affect the level of CE within a given organization. This supports a number of researchers (Block and Ornati, 1987; Sykes, 1992; Zahra *et al.*, 1999a, b), and may be the most stable CE component reported across studies.

Our second analysis attempted to assess the mediating affect that CE played between our three components (process, context, and individual) and desirable individual outcomes (job satisfaction, affective commitment, and turnover intention). This contention was also generally supported with perceptions of organizational CE mediating 22 percent of the relationship between process, context, and individual variables and job satisfaction; it mediated 22 percent of the relationship between process, context, and individual variables and affective commitment; and, it mediated

40 percent of the relationship between process, context, and individual variables and turnover intentions. Similar results were found with regard to individual CE (27 percent in job satisfaction; 27 percent in affective commitment; and 20 percent in turnover intentions).

Limits and directions

Like all studies, this one has some weaknesses that merit discussion. First, our survey is a self-report instrument. The weaknesses of self-report data have been widely discussed and apply here. Second, our view of CE may be imperfect. This is a function of a field in flux, as no definition has been resolved. We feel that we have captured the essence of CE, but others may feel that we have a measurement issue. Third, as noted, the data were collected as part of a larger study of organizational change. Because of this, the innovative climate was measured as leaders were actually taking steps to bolster it. Lastly, the lack of support for the context component on individual CE was a little surprising, as most researchers have indicated that climate is a key component of CE. This causes us to suggest that our measures may not be properly capturing context, and should be viewed with caution.

For researchers, we feel the primary value of this research is the opportunity to consider a predictive model of CE based on the knowledge base currently in the field. While certainly not a panacea, our model moves the field closer to understanding an important issue – the causes of CE. Also, the fact that individual characteristics predicted CE is interesting in that it suggests that (unlike general entrepreneurship findings) these individual characteristics may play an important role in an organization's ability to be entrepreneurial.

For practitioners, the most exciting aspect of the study is that process seems to be an important precursor to CE. In other words, the manner in which a manager chooses to encourage CE is important. This should prove comforting in that it gives the manager a modicum of control in an otherwise chaotic setting.

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