Though it occupies the center of most definitions of entrepreneurship, the concept of risk-taking and its linkages with other constructs (most notably personal traits) have been difficult to capture. As a result, it has been difficult to explain why entrepreneurs rush in to take advantage of opportunities that others fail to see or act upon. However, research on social cognition may shed new light on these challenging issues (Shaver and Scott 1991), providing useful frameworks that differentiate entrepreneurs from others while predicting differences in risk-taking behavior.

Within the strategic management literature, Dutton and Jackson (1987) adopted categorization theory as a conceptual framework to explain how decision-makers evoke alternate strategic decision frames. They argue that the attributes of a particular issue cause the decision-maker to categorize that strategic issue in different ways, and this heuristic guides the meaning of a stimulus by directing attention toward some of its elements and away from others. Building upon this work and the knowledge structure literature, Gooding (1989) developed decision frames concerning perceptions of strengths/weaknesses and opportunities/threats. Using distinctive and equivocal data in scenarios, he found that distinctive data tended to evoke the same decision frame in all subjects, whereas equivocal data led to different decision frames among subjects. In other words, in the absence of a particular stimulus (i.e., a scenario is equivocal in nature), individuals tend to resort to a chronic frame of reference when interpreting those data.

This research produced some revealing results, but these studies were not constructed to investigate the unique responses of entrepreneurs when faced with common circumstances. To extend this area...
of inquiry, we designed our study using a scenario approach to determine if entrepreneurs exhibit evidence of unique cognitive categorization processes when they are presented with equivocal data. Our findings proved interesting. As predicted, entrepreneurs did not vary significantly in their responses to a risk propensity scale, meaning that they did not perceive themselves as being any more predisposed to taking risks than nonentrepreneurs. This is consistent with previous findings. However, multivariate tests revealed that entrepreneurs categorized equivocal business scenarios significantly more positively than did other subjects, and univariate tests demonstrated that these perceptual differences were consistent and significant (i.e., entrepreneurs perceived more strengths versus weaknesses, opportunities versus threats, and potential for performance improvement versus deterioration). These results have implications for self-report risk propensity scales. Entrepreneurs may not think of themselves as being any more likely to take risks than nonentrepreneurs, but they are nonetheless predisposed to cognitively categorize business situations more positively. This interpretation leads entrepreneurs to view some situations as "opportunities," even though others perceive them to have little potential (i.e., the latter view these situations as risky ventures that offer disproportionately low returns relative to their associated risks).

These results offer hope to those who aspire to identify and exploit business opportunities, even when they are distracted by the perceived high risk of these ventures. Unlike personal traits, cognitive processes can be changed. That is, if certain aspects of cognition are different for entrepreneurs, or more successful entrepreneurs, these processes can be learned or mastered through programs such as "frame of reference" training. This approach has successfully increased the assessment accuracy of individuals charged with various assignments, including performance rating (cf. Sulsky and Day 1992). These efforts may be adapted for training in opportunity evaluation, allowing those predisposed to negative framing to increase the frequency of correct categorizations.

Our results also offer the potential to develop a taxonomy that may help to identify entrepreneurs, a tool that would be useful to firms interested in assessing individuals' natural potential for entrepreneurial behavior. At the same time, systematic differences in cognitive processes may permit the differentiation of entrepreneurs from small business owners, which would be useful since these groups often cannot be determined from the size of an enterprise (i.e., both tend to be associated with smaller ventures). Finally, such a taxonomy would provide the impetus for future research that may further define characteristics of risk-taking and, indeed, the nature of entrepreneurship itself.

INTRODUCTION

"What each man wishes, that he also believes to be true."

—Demosthenes

Entrepreneurship is a multidimensional phenomenon. When tracing the development of this concept in the literature, it becomes clear that no one definition of an entrepreneur prevails. This diversity is reflected in works such as those that have conceived of entrepreneurs as confident individuals who act upon their own judgment in the face of uncertainty (Knight 1921), innovators who "carry out new combinations" by introducing new products or processes (Schumpeter 1934), or those who quickly recognize opportunity but have little interest in building organizations (Kirzner 1973). Despite this variance, one common theme running through the entrepreneurship literature revolves around differences in predisposition toward risk-taking. This was clearly at the center of the first formal theory of entrepreneurship wherein Cantillon (1755) described entrepreneurs as the self-employed who "adjust themselves to risk" where the return is uncertain. Although theorists disagree over exact definitions, entrepreneurs are widely considered to be attracted to risky ventures that promise above-average profit and growth (d'Amboise and Muldowney 1988).
Notwithstanding this core concept, it remains difficult to identify entrepreneurs. Vesper (1980) investigated entrepreneurship and concluded that its nature may be a matter of individual perceptions. For example, economists tend to adopt Schumpeter's view that entrepreneurs are those that integrate resources in unique combinations to generate profits. Corporate executives often equate entrepreneurs with small business managers incapable of directing larger enterprises. Governments see entrepreneurs as the drivers of new job creation. Still others suggest that entrepreneurs can be recognized by traits such as their need for achievement (McClelland 1961) or a strong internal locus of control (Van de Ven, Hudson, and Schroeder 1984). Nonetheless, empirical support for these conceptualizations has been disappointing at best (Low and MacMillan 1988).

Recently several scholars (e.g., Gartner 1985; Wortman 1987) have suggested that entrepreneurs may be as different from each other as they are from the rest of the population. This realization, and the lack of results from trait research in particular, have created interest in cognitive dimensions of entrepreneurship. As Shaver and Scott (1991, p. 26) conclude, "a psychological approach to new venture creation must involve cognitive processes that occur within the individual." Although risk-taking seems to be the common denominator to most definitions of entrepreneurship, we postulate that entrepreneurs may have no greater propensity to bear risk than nonentrepreneurs (cf. Brockhaus 1980; Brockhaus and Horwitz 1986). Rather, based upon the tenets of cognitive theory, entrepreneurs may simply categorize and subsequently frame the same stimuli differently from nonentrepreneurs. That is, what has been widely recognized as a propensity for risk on the part of the entrepreneur may instead be an artifact of this alternate framing. Entrepreneurs may not necessarily prefer to engage in more risky behavior; instead, their behavior may be the result of framing a given situation more positively than negatively, thereby focusing on the high probability for favorable outcomes and responding according to these perceptions. In contrast, nonentrepreneurs may not share this "rose garden" view, leading them to react more cautiously.

Within the strategic management literature, Dutton and Jackson (1987) adopted categorization theory as a conceptual framework to explain how decision-makers evoke alternate strategic decision frames. They argue that the attributes of a particular issue cause the decision-maker to categorize that strategic issue in different ways, and this heuristic guides the meaning of a stimulus by directing attention toward some of its elements and away from others. Building upon this work and the knowledge structure literature, Gooding (1989) developed decision frames concerning perceptions of strengths/weaknesses and opportunities/threats. Using distinctive and equivocal data in scenarios, he found that distinctive data tended to evoke the same decision frame in all subjects, whereas equivocal data led to different decision frames among subjects. In other words, in the absence of a particular stimulus (i.e., a scenario is equivocal in nature), individuals tend to resort to a chronic frame of reference when interpreting those data.

This research produced some revealing results, but these studies were not constructed to investigate the unique responses of entrepreneurs when faced with common circumstances. To extend this area of inquiry, we designed our study using a scenario approach to determine if entrepreneurs exhibit evidence of unique cognitive categorization processes when they are presented with equivocal data.

CATEGORIZATION THEORY

Categorization is one of several theories of social cognition. Pioneered by Rosch and colleagues (e.g., Mervis and Rosch 1981; Rosch 1975, 1978; Rosch et al. 1976), categorization
theory acknowledges the power of cognitive heuristics to explain human behavior and decision-making. Human beings simply do not have the cognitive capacity to process and remember all information stimuli that arise from complex situations (Komatsu 1992). Therefore, for the sake of mental economy, they use cognitive devices to manage these complicated cues. One common heuristic involves matching observed stimuli with a mental "prototype" (the most representative member of a cognitive category) or, more generally, with the schema represented by the prototype (Anderson 1991; Mount and Thompson 1987). This cognitive organization allows the perceiver to make inferences about the attributes of the situation as well as the relationships among those attributes (Fiske and Linville 1980). That is, based upon observations of the salient attributes of an object or concept, decision-makers formulate mental categories to optimize the management of that information (Dutton and Jackson 1987).

As one of the most basic cognitive functions, categorization proves useful by allowing for efficient storage of information (Mount and Thompson 1987). Implicitly, these categories improve the accuracy of predictions regarding categorized situations while at the same time permitting efficient communication about the features of category members (Anderson 1991; Corter and Gluck 1992). Because of these functional advantages, managers are quick to apply this heuristic as they form opinions about complex business situations that reveal less than complete information. This leaves room for alternate interpretations (assessments) of the very same scenario, depending upon the "mental short-cut" each perceiver is predisposed to take (i.e., the category they are most likely to associate with that situation). If these categorizations vary systematically between perceivers or groups of perceivers, then assessments are likely to be similarly skewed or distorted (Kahneman 1992; Krueger, Rothbart, and Sriram 1989; Tversky and Kahneman 1992).

ENTREPRENEURS AND COGNITIVE PROCESSES

Historically, much of the literature has characterized entrepreneurs as risk-takers. However, we posit that this view may be inaccurate. Rather than risk-taking, perhaps the characteristics observed and reported in the entrepreneurship literature are actually the result of systematic differences in cognitive processes. Research has demonstrated that entrepreneurs are notably more optimistic in their assessments of business situations (e.g., Cooper, Woo, and Dunkelberg 1988). Applying the previous theory, entrepreneurs will generally categorize more situations as holding strengths and opportunities because the positive attributes (and potential outcomes) of a situation are naturally more salient to them. Therefore, concomitant decision-making behavior could be consistent with that of others who are less risk-taking, had the latter categorized the situation similarly as dominated by strengths and opportunities. In reality, nonentrepreneurs may be less likely to characterize the situation similarly as dominated by strengths and opportunities. In short, these responses illustrate the aforementioned principle articulated by Demosthenes. Perhaps Weick (1979) said it better when he concluded from observing human behavior that "believing is seeing." That is, when receiving equivocal information, individuals are likely to perceive that which they are predisposed to see. The literature sometimes refers to this as "schema accessibility" (Fiske and Taylor 1984) or the "available heuristic" (Wofford 1994). Higgins and King (1981) describe this phenomenon as the readiness with which a particular schema is used in information processing. Others simply define it as the availability of a specific schema or cognitive structure in a person's memory (Bruner 1957; Tulving and Pearlstone 1966), which increases the likelihood of its use (Kahneman and Tversky 1987).
The essence of these definitions is the same—that is, at any given time one cognitive structure may be more available to an individual than others. This undergirds our conclusion that entrepreneurs do not perceive and accept risk more than their nonentrepreneurial counterparts; they are simply predisposed to access categories that suggest more potential, on balance, when they assess business scenarios. Assuming rational behavior, this should naturally lead entrepreneurs to pursue potential enterprises that others would reject.

**Decision Dimensions**

Perhaps the most well-recognized framework for an overview of the strategic situation of an enterprise is what has come to be called “SWOT Analysis” (Thompson and Strickland 1992). This approach considers four dimensions that underlie that assessment: internal strengths and weaknesses and external opportunities and threats. We incorporated these dimensions into the present study as they have already been established and justified in the literature and in similar research (cf. Dutton and Jackson 1987; Gooding 1989) and because they provide a concise summary of business situations. Strengths and opportunities are positive attributes, whereas weaknesses and threats represent negative dimensions. Strengths and weaknesses are internal characteristics of a frame, whereas opportunities and threats are external orientations. Each of the above pairs represents an opposing frame which is similar but not overlapping in terms of cognitive framing. Nonetheless, both pairs are complementary. Given the general optimism with which entrepreneurs regard business situations (Cooper et al. 1988), we also included a measure for optimism/pessimism in the study. This measure required respondents to record their projections of potential venture performance in terms of improvement versus deterioration (cf. Gooding 1989).

**SPECIFIC HYPOTHESES**

To restate our central thesis, although entrepreneurs are widely considered to be risk-takers, their business-related behaviors may be the result of their unique perceptions from systematic differences in cognitive processes, not a desire to pursue ventures because they are risky per se. Therefore, their propensity for risk should be no different from that of nonentrepreneurs, even though their perceptions of the differences in internal strengths and weaknesses, external opportunities and threats, and performance improvement versus deterioration will be skewed toward optimism (Cooper et al. 1988). To test this cognitive theory of entrepreneurial perceptions, we developed the following four hypotheses:

\[ H1: \] There will be no difference in risk propensity between entrepreneurs and nonentrepreneurs.\(^1\)

\[ H2: \] When presented with identical situations, entrepreneurs will categorize them as having more strengths (versus weaknesses) than nonentrepreneurs.

\[ H3: \] When presented with identical situations, entrepreneurs will categorize them as having more opportunities (versus threats) than nonentrepreneurs.

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\(^1\)Our theory suggests that entrepreneurs do not see themselves as having any greater risk propensity than nonentrepreneurs—they simply frame business situations as more positive and opportunity-laden. That is, our position would only be consistent with nonsignificant findings on this hypothesis; therefore, we have stated it in its null form.
H4: When presented with identical situations, entrepreneurs will categorize them as having more potential for gain (versus loss) than nonentrepreneurs.

METHODS

Subjects

Samples for the study were derived from a 2,500 member business organization. The purpose of the association was to provide a context for networking between entrepreneurs and potential sources of support resources (i.e., nonentrepreneurs such as bankers, managers, and venture capitalists). The study used a random sample of 548 members of the organization. Initially we mailed subjects a four-page questionnaire along with a cover letter that revealed only that we were studying decision-making processes of members of the business community. In cases of nonresponse, we sent as many as two follow-up letters (with questionnaires enclosed) to maximize returns (cf. Dillman 1977). In all, 148 members responded to the survey for a favorable 27% response rate. Of the returned surveys, 92 contained responses to all parts of the instrument and were therefore included in the analysis.

Scenario Development

In order to measure cognitive categorization characteristics, we presented each respondent with the same stimuli and recorded variations in their responses. The stimuli consisted of a series of three scenarios with embedded ambiguous data regarding three issues—technological developments, changes in the competitive environment, and the trend toward internationalization (see the Appendix for a sample of these scenarios). These were adapted from Dutton and Jackson's (1987) equivocal scenarios describing a fictitious bank, which we changed to a clothing retailer, J. J. Long and Co. The information paralleled that of the original scenarios.

MEASURES

Entrepreneur versus Nonentrepreneur

In order to make comparisons between entrepreneurs and nonentrepreneurs, it was necessary to divide respondents into these two groups. We achieved this via a sorting exercise conducted by a panel of three entrepreneurship experts, two of whom serve on the faculty of a graduate business school while the third was a practitioner highly familiar with entrepreneurs and their firms. Based upon a common entrepreneur profile emphasizing the founding of new ventures, the creation of new innovations, and aspirations for rapid enterprise growth and high profitability (cf. d'Amboise and Muldowney 1988), panel members assigned subjects to the two groups according to their responses to eight survey questions that captured this information (e.g., items to measure new venture involvement, priority of goals for rapid growth and high profitability for the respondent's enterprise, and revenue growth projections). Agreement among these experts was high (exact agreement more than 87% of the time); all split assessments were decided by assignment majority.

Risk Propensity

We used a scale developed and validated by Gomez-Mejia and Balkin (1989) to measure each respondent's level of risk propensity. We asked subjects to respond to each of four
TABLE 1 Descriptive Statistics and Correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Group</td>
<td>1.62</td>
<td>0.49</td>
<td>-0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Risk propensity</td>
<td>5.84</td>
<td>0.92</td>
<td></td>
<td>-0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Strengths/Weaknesses</td>
<td>1.09</td>
<td>1.26</td>
<td>-0.25</td>
<td>0.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Opportunities/Threats</td>
<td>1.45</td>
<td>1.71</td>
<td>-0.20</td>
<td>0.11</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>5. Improve/Deteriorate</td>
<td>1.07</td>
<td>1.36</td>
<td>-0.38</td>
<td>0.10</td>
<td>0.68</td>
<td>.46</td>
</tr>
</tbody>
</table>

\* N = 92.
\* p < .05.
\* p < .01.
\* p < .001.

items using a seven-point Likert-type scale ranging from strongly agree to strongly disagree. With a Cronbach's alpha of 0.67, this scale exhibited acceptable reliabilities (cf. Nunnally 1978). Results of our factor analysis of the scale yielded support for its unidimensionality. For example, analysis of the scree-plot (the most reliable indicator of factor structure: Cattell 1966; Kim and Mueller 1978) demonstrated that a one-factor solution was appropriate.

Perceptual Measures

Subjects responded to three items after reading each of the scenarios. These items measured their perceptions of the relative levels of the scenario firm's (1) internal strengths versus weaknesses, (2) external opportunities versus threats, and (3) the potential for increases versus decreases in future performance (cf. Gooding 1989). These were nine-point Likert-type scales running from strengths (4) to weaknesses (-4), opportunities (4) to threats (-4), and improve (4) to deteriorate (-4), respectively.

Analyses

A MANOVA design was used to assess whether entrepreneurs and nonentrepreneurs differed significantly in their perceptions of strengths, weaknesses, opportunities, threats, and prospects for performance improvement or deterioration— all of these taken jointly. We then used univariate tests (separate ANOVAs) to look at each of these attributes in isolation. The results of these analyses reveal whether entrepreneurs differ from others overall in their cognitive responses to identical business information (scenarios). Then the univariate tests detect specific dimensions across which these two groups may differ.

RESULTS

As a further check of interrater reliability, we ran all analyses using the entire sample and then using only those cases which the panel sorted with 100% agreement. In all analyses, these follow-up tests replicated the results found using the entire sample. To augment our analyses, Table 1 reveals the means, standard deviations, and correlations for all of the variables used in the study. The strongest correlation among the variables was 0.68 (that between perceived strengths/weaknesses and performance deterioration/improvement). Overall, the strongest correlations involved the improve/deteriorate variable.

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2 The analysis entered each of these variables using the respondent's mean assessment across all three scenarios.
TABLE 2 Results of ANOVA Comparing Risk Propensity for Entrepreneurs and Nonentrepreneurs

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Risk Propensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurs</td>
<td>35</td>
<td>5.89</td>
</tr>
<tr>
<td>Nonentrepreneurs</td>
<td>57</td>
<td>5.81</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>0.16 NS</td>
</tr>
</tbody>
</table>

Risk Propensity

According to cognitive theory as applied to perceptions of business situations, entrepreneurs tend to frame these scenarios more favorably than others. However, we theorize that they will not be any more predisposed to accept risk than nonentrepreneurs (i.e., they will have the same risk propensity). To test this notion we compared differences in responses to Gomez-Mejia and Balkin’s (1989) risk propensity scale across groups using a one-way ANOVA. This test demonstrated that the difference between mean responses (see Table 2) for entrepreneurs and nonentrepreneurs was far from significant: $F(1, 90) = 0.16$, NS. Thus, we cannot reject H1, a finding that is consistent with our revised view of entrepreneurs.3

Responses to Scenarios

To test the main hypotheses of the study, a one-way MANOVA assessed differences between entrepreneurs and nonentrepreneurs. A significant multivariate effect indicates that the vectors of mean scores (across all dependent variables) for the two groups are statistically different. Further, this effect is a necessary precondition before conducting univariate comparisons (Dillon and Goldstein 1984; Hair, Anderson, and Tatham 1987; Stevens 1986). As reported in Table 3, the results of our MANOVA test (Multivariate $F[3,86] = 4.79$, $p < .01$) indicated that entrepreneurs significantly differed from nonentrepreneurs across all perceptual measures.

TABLE 3 Results of Multivariate and Univariate Analyses

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean Scores</th>
<th>Wilkes Lambda</th>
<th>$F$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multivariate Model</td>
<td></td>
<td>0.86</td>
<td></td>
<td>4.79$^a$</td>
<td></td>
</tr>
<tr>
<td>Strengths/Weaknesses</td>
<td></td>
<td></td>
<td></td>
<td>5.75$^a$</td>
<td>0.06</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>35</td>
<td>1.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonentrepreneurs</td>
<td>55</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities/Threats</td>
<td></td>
<td></td>
<td></td>
<td>3.80$^b$</td>
<td>0.04</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>35</td>
<td>1.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonentrepreneurs</td>
<td>55</td>
<td>1.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve/Deteriorate</td>
<td></td>
<td></td>
<td></td>
<td>14.58$^c$</td>
<td>0.14</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>35</td>
<td>1.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonentrepreneurs</td>
<td>55</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a p < .05$.

$^b p < .01$.

$^c p < .001$.

3We measured the statistical power of our test to determine whether the probability of Type II error was within acceptable limits. Following the prescription of Cohen and Cohen (1983), we assumed a medium effect size of $r = 0.30$. We then used their tables to determine the power of our test, using an alpha of 0.05 and our sample size ($n = 92$). Power was calculated to be .83, which exceeds the .80 threshold established by Cohen (1988). Therefore, it appears that our test had sufficient power to minimize the probability of Type II error.
taken together—strengths versus weaknesses, opportunities versus threats, and improvement versus deterioration in future performance.

Table 3 also presents group differences from univariate tests. First, the mean response for entrepreneurs on strengths versus weaknesses was higher than for nonentrepreneurs (i.e., entrepreneurs perceived greater strengths relative to weaknesses), and this difference is significant: \( F = 5.75 \) (1, 88), \( p < .05 \). In other words, compared to others, entrepreneurs perceive that the firm has greater internal capabilities and fewer weaknesses, even when responding to the same business scenario (supporting H2). Cognitive theory suggests that the accessed schema may be characterized by more favorable internal assessments.

Differences between perceptions of opportunities versus threats were also significant: \( F (1, 88) = 3.80, p < .05 \). These results indicate that in contrast to other business people, entrepreneurs tend to perceive the firm's environment as holding more opportunities or external potentials to be exploited and fewer threats against which to guard. This, too, is consistent with cognitive theory. That is, responding to the same business situation, entrepreneurs will associate the firm with a schema suggesting positive environmental attributes. This provides support for H3.

Extending beyond the SWOT framework, we also measured subjects' perceptions of the firm's potential for future performance. Again, after reviewing the same business scenario, entrepreneurs were more optimistic about the future of the hypothetical firm than were nonentrepreneurs, and the difference was significant: \( F (1, 88) = 14.57, p < .001 \). This is consistent with categorization theory (as posited in H4) and with previous empirical findings (e.g., Cooper et al. 1988).

**DISCUSSION**

Most definitions of an “entrepreneur” emphasize the risk propensity of these unique individuals. That is, they are usually described as risk-takers who attempt to achieve fast enterprise growth and above-average profits (d'Amboise and Muldowney 1988). In accord with cognitive theory, we averred that entrepreneurs may not actually prefer to take risks; rather, due to schema accessibility, they simply tend to associate business situations with cognitive categories that suggest more favorable attributes (greater strengths versus weaknesses, opportunities versus threats, and potential for future performance improvement versus deterioration). In other words, entrepreneurs are more likely to see the business world through “rose-colored glasses.” This optimistic outlook has been documented in previous research (e.g., Cooper et al. 1988).

Two conditions are necessary to support the theory of entrepreneurial perceptions outlined previously: first, entrepreneurs must not report any greater risk propensity than their nonentrepreneurial counterparts, and second, they must generally associate business situations with more positive cognitive structures. Our comparison of entrepreneur and nonentrepreneur samples satisfied both of these conditions. That is, these two groups did not differ significantly in their responses to Gomez-Mejia and Balkin's (1989) risk propensity scale. At the same time our findings suggest that entrepreneurs tend to derive more positive/optimistic perceptions, compared to others, when presented with identical business scenarios. Both MANOVA and univariate tests confirmed that the former perceived greater internal strengths (versus weak-
nesses), external opportunities (versus threats), and potential for improvement in future performance (versus deterioration). These are all consistent with cognitive theory and previous findings (e.g., Cooper et al. 1988). When an entrepreneur pursues an activity that would be ignored or neglected by a nonentrepreneur, it may be due to the entrepreneur's perception of a positive outcome rather than to differences in predisposition toward risk.

**Implications**

Because cognitive theory provides a cogent explanation for entrepreneurial and nonentrepreneurial behavior, several implications follow for academics and practitioners. In line with previous research in cognitive processes, our findings suggest that people do indeed use simplified cognitive processes when they form perceptions (Lord and Maher 1990). Unfortunately, categorizations often lead to serious distortions in the processing of information (Lord and Maher 1991; Mount and Thompson 1987; Slusher and Anderson 1987; Sulsky and Day 1992). As applied to entrepreneurship, this can lead to two potential biases—excessive optimism (by entrepreneurs) or pessimism (by nonentrepreneurs). In effect, the former may underestimate the riskiness of their enterprises while the latter may overlook promising ventures by inflating estimated venture risk through inaccurate impressions. Either extreme yields less than optimal business decisions.

When observations are consistent with expectations or the mental prototype of the perceiver, the categorization process tends to operate automatically (Mount and Thompson 1987) and often increases the inaccuracy of subsequent recall (Lord and Maher 1991). Thus entrepreneurs and nonentrepreneurs alike may benefit from training that provides a framework to identify the critical dimensions of assessment and to understand how to accurately appraise business situations according to those important attributes (Mount and Thompson 1987). Sulsky and Day (1992) used such an approach (i.e., “frame of reference” training) to improve the accuracy of the ratings of performance raters. The objective of this training is to increase the frequency of correct categorizations. Though the success of Sulsky and Day’s (1992) intervention may be duplicated for those assessing potential business opportunities, this effort must overcome resistance from assessors who lack the motivation to adopt a new framework or have difficulty mastering new prototypes (Fiske and Dyer 1985).

A more positive view of our findings may recommend a different approach. That is, entrepreneurs may be best distinguished from others according to their cognitive tendencies (Shaver and Scott 1991). This may be particularly useful given the shortcomings of other streams of research (especially trait studies) that have endeavored to identify the differentiating qualities of entrepreneurs. Further, understanding the phenomenon of entrepreneurship on a cognitive level may pave the way for more efficacious pedagogy for use in entrepreneurship programs in educational and governmental environments, enhancing the business assessment skills of these individuals. Finally, systematic differences in cognitive processes may help to distinguish high growth entrepreneurs from those interested in lifestyle enterprises, which would be useful because these groups often cannot be divided based upon firm size (i.e., both tend to be associated with smaller enterprises). This may also help to identify small business owners who have greater potential to identify opportunities and expand their operations rapidly in a way that typifies entrepreneurial concerns.

**LIMITATIONS AND FUTURE RESEARCH**

As with all research, this study is subject to certain limitations. For example, we examined evidence for categorization processes that follow immediately after reviewing business scenar-
This approach fails to consider distortions that may occur only after a certain interval of time has lapsed. Detection of these delayed effects must await future research that adopts alternate study designs. Heuristics such as those related to availability, representativeness, or anchoring were not considered in the current design either. Also, what we actually assessed in this study were outcomes of cognitive processes, not the processes themselves. Future research should incorporate direct observation of subjects while they make decisions in order to gather more revealing information regarding cognitive processes.

Like most survey research, our achieved response rate was less than ideal. Although it was consistent with that of most reported research in the field, we must acknowledge the potential for response bias and resist making strong conclusions from the data. The sample also was drawn from a limited geographical area, calling for caution when generalizing the results to other populations. Clearly, more research would be helpful in order to expand our sample.

Further, we examined only equivocal business scenarios. It is possible that responses from both entrepreneurs and others will vary when exposed to situations that are skewed toward either positive or negative frames. As a first step, our exploratory study used only equivocal scenarios to assess intergroup differences in responses. Given our significant findings, a next step may require more varied stimuli. This would demonstrate whether entrepreneurs are more sensitive to different types of information.

Finally, we recognize that human perceptions are prone to distortion due to the cognitive limitations of observers (Mount and Thompson 1987). However, elimination of the biases we examined in this study nonetheless would not guarantee accurate assessments. Further complicating this problem, it is impossible to get true (i.e., unquestionably valid) measures of a firm's strengths, weaknesses, opportunities, threats, and potential for future performance. Therefore, researchers cannot know with certainty the quality of an individual's assessment of these dimensions.

In addition to the research directions implied previously, we have others to recommend. For example, some researchers (cf. Gartner 1985; Wortman 1987) have suggested that entrepreneurs may be as different from one another as they are from the rest of the population. Therefore, assessing cognitions may provide a method to differentiate between high growth and life style entrepreneurs, among others. A taxonomy of entrepreneurs could enhance research efforts in the field. At present, the most popular operational definition of an entrepreneur appears to be the founding of new ventures, but individuals start firms for different reasons. Cognitive styles may present a means by which these groups can be differentiated.

As suggested by our findings, we are convinced that cognition affects entrepreneurship. However, the role that experience and other such factors play in shaping the selection of various decision frames begs exploration. For example, do successful entrepreneurs adjust their frames as the venture grows? Do unsuccessful entrepreneurs maintain a chronic frame in spite of changing conditions? Do success and failure impact cognitive processes? These and other questions will simply remain unanswered for now, awaiting the illumination of future research.

Nonetheless, our findings suggest that entrepreneurs do indeed operate by a unique set of cognitive processes, thereby supporting their documented optimism. Gordon Allport (1954, p. 172) contended that a "principle of least effort inclines us to hold coarse and early generalizations as long as they can possibly be made to serve our purposes." By this logic, entrepreneurs may be inclined to offer positive/optimistic assessments of business scenarios since they are constantly searching for new ventures (Kirzner 1973). It stands to reason that those who seek opportunity are most likely to find it.
Sample Scenario (Technological Developments)

Interviews with top- and middle-level managers have revealed the following industry trends. There are many new technological developments that will affect the future of J.J. Long and Co. These developments have potential for a wide range of retailing activities. For example, cash and personal checks will no longer be the dominant means of payments used by customers in the future. Technological breakthroughs have increased the convenience and therefore the use of credit cards, debit cards, and other electronic transfers. J.J. Long and Co. may be able to make some gains here, but in any case, they are unlikely to lose much.

REFERENCES


