ENTREPRENEURS' OPTIMISM AND NEW VENTURE PERFORMANCE: A SOCIAL COGNITIVE PERSPECTIVE

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ABSTRACT

Previous research indicates that entrepreneurs are generally high in dispositional optimism—the tendency to expect positive outcomes even when such expectations are not rationally justified. The present research investigates the effects of such optimism and finds that in general, there is a negative relationship between entrepreneurs' optimism and the performance (i.e., revenue and employment growth) of their new ventures. These effects, however, are moderated by past experience in creating new ventures and industry dynamism, such that the negative relationship between entrepreneurs' optimism and new venture performance is stronger for experienced than inexperienced entrepreneurs, and stronger in dynamic than in stable environments. These findings indicate that the effects of entrepreneurs' optimism on new venture performance are contingent on key behavioral and environmental variables. In this respect, they illustrate the benefits of applying a social cognitive perspective—a framework that considers the interaction between key dispositional, behavioral, and environmental variables—to entrepreneurship research. More generally, results also offer support for the value of adopting a multi-level perspective in ongoing efforts to understand key aspects of the new venture creation and development process.

Keywords:

Entrepreneurial Hubris; Individual Differences; New Venture Growth; Overconfidence; Repeat Entrepreneurs

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Considering the substantial impact that new ventures have on economic growth within most industrialized nations (Sternberg & Wennekers, 2005), it is fortunate that entrepreneurs pursue their dreams of developing successful new ventures despite the great odds against them (Dosi & Lovallo, 1997). The fact that entrepreneurs decide to forge ahead in the face of daunting obstacles suggests that they are high in dispositional optimism and indeed, research findings indicate that entrepreneurs are particularly high on this personal characteristic (e.g., Abdelsamad & Kindling, 1978; Fraser & Greene, 2006; Lowe & Ziedonis, 2006). For example, Cooper, Woo, and Dunkelberg (1988) found that entrepreneurs express high levels of optimism, regardless of their preparedness to lead their firms. In addition, research by Busenitz and Barney (1997) demonstrates that entrepreneurs tend to overestimate the probability of being right, and overgeneralize from a few characteristics or observations significantly more so than managers of large, established organizations. Further supporting the claim that entrepreneurs tend to view the world through "rose colored glasses," Simon, Houghton, and Aquino (1999) found that entrepreneurs commonly overemphasize the extent to which their skills can increase performance in situations where chance plays a large role and skill is not necessarily a deciding factor; further, they tend to use a limited number of information inputs as the basis for drawing conclusions.

De Meza and Southey (1996) account for the occurrence of this phenomenon of "entrepreneurial optimism" by arguing that many individuals starting new businesses have little evidence upon which to base their beliefs about the likelihood of failure or success, and that this creates a situation ripe for attracting persons with unrealistic optimism into entrepreneurship. This line of reasoning is consistent with literature demonstrating that highly optimistic

individuals are confident of achieving successful outcomes independent of being able to visualize the path that will get them there—simply believing that everything will work out favorably in the end (Scheier, Carver, & Bridges, 2001).

A key question arising from the finding that entrepreneurs are generally high in optimism is this: How does optimism relate to the performance of their new ventures? Although it has been argued that excessive optimism is a primary reason for the high incidence of failure among startups (Gartner, 2005), few studies have investigated the relationship between entrepreneurs' optimism and the actual performance of their new ventures. Further, existing evidence suggests that high levels of optimism can negatively affect judgment and decision-making (Aspinwall, Sechrist, & Jones, 2005; Åstebro, Jeffrey, & Adomdza, 2007). Thus, optimism seems likely to have important negative effects on the strategic decisions made by lead entrepreneurs and the performance of their new ventures.

Social cognitive theory (SCT: Bandura, 1986) provides a useful theoretical framework for understanding such effects. Specifically, SCT suggests that the effects of personal dispositions (including optimism) are often determined by their interaction with important behavioral and environmental factors (Wood & Bandura, 1989). As such, the theory blends dispositional, behavioral, and environmental perspectives, thus providing a more comprehensive framework for examining human action and its outcomes than could be gained by focusing on any of these levels and classes of variables independently. In this regard, SCT provides a useful framework for undertaking the task of identifying the mechanisms through which individual dispositions ultimately influence firm-level performance—a task that has been identified as crucial in recent years by many researchers (e.g., Baron, 2007).

The basic proposals of SCT are also consistent with the multi-level perspective highlighted by Hitt, Beamish, Jackson, and Mathieu (2007). This perspective suggests that in order to fully understand complex organizational processes (including new venture development), it is essential to examine variables operating at different levels of analysis (e.g., individual, group, subunits, organizations, interorganizational, and environmental). The current study adopts this perspective by examining the joint effects of two individual variables (i.e., entrepreneurs' optimism and previous experience in starting new ventures), and a key environmental variable (i.e., dynamism). Resting firmly both on SCT and a multi-level perspective, the current research is designed to make several contributions. First, the majority of the empirical literature examining the effects of optimism is based on the results of investigations conducted with very diverse samples (e.g., college students, factory workers). While such samples offer important advantages, they do not provide information pertaining to effects that may occur at extreme levels of this dimension. Thus, they do not relate directly to entrepreneurs, who have been found to be very high with respect to optimism (e.g., Fraser & Greene, 2006; Lowe & Ziedonis, 2006). As we describe in more detail in the following section, very high levels of optimism are likely to produce different effects than moderate levels and—more importantly—there are strong theoretical grounds for predicting that the nature of these effects will vary considerably across different environments (e.g., those that are low or high in dynamism). Thus, the present research will provide new evidence concerning the role of optimism in new venture development and growth—processes that occur in a very wide range of environments.

Second, in examining the effects of optimism, we adopt a perspective suggested both by SCT and by the emerging multi-level perspective in management research (Barden & Mitchell,

2007; Hitt et al., 2007). Specifically, we recognize that the effects of individual-level variables occur primarily through interactions with key environmental factors. Failure to adopt such an approach has long been a criticism of prior research in both the fields of entrepreneurship (Shaver & Scott, 1991) and organizational behavior (House, Shane, & Herold, 1996). In response to such critiques, the current study employs social cognitive theory, which emphasizes the reciprocal relationships between dispositional, behavioral, and environmental variables, as the basis for deriving predictions concerning the mechanisms through which dispositional optimism influences the performance of key organizational decision-makers (in this case, lead founders of new ventures).

Third, following the spirit of Hambrick's (2007) assertion that organizational researchers must balance theoretical with practical implications, this study also addresses an issue we consider to be of great importance: How best to coach or train entrepreneurs so that they both recognize their own tendencies toward high levels of optimism, and are maximally able to convert these tendencies into personal strengths that help them to found, lead, and grow their new businesses. Such findings are likely to contribute to the literature linking the characteristics of top management to firm performance. For example, much has been written within this literature about the negative effects of hubris (Hayward & Hambrick, 1997; Hayward, Shepherd, & Griffin, 2006; Hiller & Hambrick, 2005), which is a form of overconfidence and a potential manifestation of extreme optimism. However, to date, little empirical research has been conducted to examine theoretical arguments on this topic. Our results contribute to this body of work by evaluating when such negative effects are most likely to occur (i.e., at varying levels of experience and dynamism).

In the following section, we draw on the SCT perspective to develop hypotheses regarding the relationship of entrepreneurs' dispositional optimism with the performance of their new ventures. We then describe methods used to examine these hypotheses, and the results obtained. Finally, implications of these findings are discussed.

Theory and Hypotheses

We begin this section by examining the potential benefits and costs of entrepreneurial optimism. Then, following suggestions derived from the SCT framework, we explore the potential moderating effects of key behavioral (i.e., entrepreneurial experience) and environmental (i.e., environmental dynamism) variables with respect to dispositional optimism.

Entrepreneurial Optimism

Due to the pervasiveness of optimism exhibited by entrepreneurs, we focus on dispositional optimism, defined as generalized expectancies for experiencing positive outcomes (Scheier et al., 2001). Research has demonstrated that optimism tends to remain relatively stable for individuals across time, situation, and context (Schulman, Keith, & Seligman, 1993). Individuals high in optimism exhibit confidence in a way that is both broad and diffuse, and encourages them to approach challenges with enthusiasm and persistence (Carver & Scheier, 2003). Research findings indicate that as a result, individuals high in optimism tend to experience enhanced physical and psychological well-being as compared with individuals low in optimism (Peterson & Bossio, 2001).

Additional findings, however, underscore the fact that high levels of optimism can be linked to negative outcomes. Highly optimistic individuals often hold unrealistic expectations, discount negative information, and mentally reconstruct experiences so as to avoid contradictions (Geers & Lassiter, 2002). In contrast, individuals who are moderate in optimism tend to possess

a more balanced view and see the world less through rose-colored glasses (Spencer & Norem, 1996). Instead, they are more sensitive to negative information and less likely to gloss over discrepancies (Spirrison & Gordy, 1993), less easily persuaded by positive information (Geers, Handley, & McLarney, 2003), less likely to have an attentional bias in favor of positive stimuli (Segerstrom, 2001), and hold more realistic expectations when engaging in high risk situations than those higher in optimism (Gibson & Sanbonmatsu, 2004). For these reasons, research findings suggest, overall, that high levels of optimism often have significant detrimental effects on the judgment and decision-making of individuals. Considering the consistency of such findings in extant literature, it seems likely that highly optimistic entrepreneurs may be prone to make less than optimal strategic decisions, as compared to those who are moderately optimistic.

Also of particular relevance to entrepreneurs, positive expectations often lead to goal conflict, in that optimists tend to see new opportunities everywhere they look (Segerstrom & Solberg Nes, 2006). This can generate significant problems for individuals who cannot easily decide which goals to pursue, and therefore tend to become seriously overextended as they seek to exploit more opportunities than is realistically feasible. In contrast, moderate optimists tend to be more realistic in their choice and pursuit of opportunities. This is important because entrepreneurs must be able to decide which goals they can realistically accomplish early in the development of their new ventures in order to maximize the potential for survival and long-term success (McMullen & Shepherd, 2006).

In general, research findings indicate that across a wide range of activities and tasks, optimism has a curvilinear relationship with performance (Brown & Marshall, 2001). Individuals who are very low in optimism tend to lack motivation because they assume that no matter how hard they try, failure is likely to result. In addition, they have a propensity to focus

on negative information, which reinforces their view that impending disaster awaits them. For these reasons, they often attain relatively low levels of performance. Moderate optimists tend to set moderately high, yet realistic, goals and put forth the necessary effort to reach their goals. These individuals recognize a balance of positive and negative cues within their environment, noting both the potential benefits and risks associated with each decision alternative. This more balanced approach tends to make them above average performers. Extremely optimistic individuals, in contrast, tend to set unrealistically high goals, and are overconfident that their goals will be attained. Further, they focus primarily on positive information, which supports their belief that success is likely. These tendencies often interfere with effective performance. As a result, they tend to attain only average levels of performance in many contexts (Judge & Ilies, 2004).

Taken together, existing evidence suggests that across many different tasks, performance increases with task performers' optimism, but only up to a point; beyond this point, further increments in optimism actually generate reductions in performance (Brown & Marshall, 2001). When this curvilinear relationship between optimism and performance observed in the general population is extended to entrepreneurs, an intriguing—and counter-intuitive—prediction emerges. While performance is positively related to optimism in the general population, this relationship might well tend to be negative for entrepreneurs, since they range from moderately high to extremely high on the optimism dimension (Abdelsamad & Kindling, 1978; Busenitz & Barney, 1997; Cooper at al., 1988; Dosi & Lovallo, 1997; Fraser & Greene, 2006; Lovallo & Kahneman, 2003; Lowe & Ziedonis, 2006; Simon et al., 1999). Thus, they fall into the portion of the optimism-performance function beyond the inflection point (i.e., the downward-trending portion). Following this logic and also reflecting previously discussed literature regarding the

negative effects of optimism on judgment and decision making (e.g., Geers et al., 2003; Gibson & Sanbonmatsu; 2004; Judge & Ilies, 2004; Segerstrom, 2001; Segerstrom & Solberg Nes, 2006; Spirrison & Gordy, 1993), we propose the following hypothesis:

Hypothesis 1: Entrepreneurs' level of dispositional optimism will be negatively related to the performance of their new ventures.

Moderating Effects of Entrepreneurial Experience

The most commonly referred to form of experience discussed within the entrepreneurship literature is that which is acquired through the process of having started multiple new ventures (Wright, Westhead, & Sohl, 1998). Individuals possessing such experience are often described as habitual or repeat entrepreneurs. This type of experience tends to carry benefits in terms of developing contacts (Danson, 1999), gaining knowledge about obtaining the most appropriate sources of financing (Starr & Bygrave, 1991), learning managerial and technical skills necessary for leading new ventures (Wright, Westhead, & Sohl, 1998), and identifying how to serve new and emerging market segments (Wright, Robbie, & Ennew, 1997). Entrepreneurial experience is also a primary mode for increasing one's entrepreneurial self-efficacy, because it provides opportunities for enactive mastery and role modeling (Zhao, Seibert, & Hills, 2005).

At first glance, one might assume that experience would help to temper or counterbalance the high levels of optimism experienced by entrepreneurs (Hayward, Shepherd, & Griffin, 2006). However, the fact that entrepreneurs are, on average, relatively high in optimism calls attention to two relevant points. First, highly optimistic individuals tend to suffer from a "confirmation bias" (Klayman & Ha, 1987), focusing on information that supports or validates their current beliefs while largely ignoring information that is not consistent with these beliefs (Gibson & Sanbonmatsu, 2004). Thus, even though experienced entrepreneurs have more highly developed frameworks for processing a wide range of information than less experienced entrepreneurs,

(e.g., Baron & Ensley, 2006), those who are high in optimism are likely to focus most predominantly on confirming information. This, in turn, may result in overconfidence on the part of experienced, highly optimistic entrepreneurs–a tendency that, as noted by Hayward, Shepherd, and Griffin (2006), may have negative effects on the performance and survival of new ventures. Second, experienced entrepreneurs tend to have more opportunities available to them via their more extensive entrepreneurial networks and also possess richer cognitive frameworks for processing such opportunities than do novices. (Ozgen & Baron, 2007). One result of such an abundance of opportunities, especially for highly optimistic entrepreneurs, may be competing demands on their information processing capacity—a kind of "opportunity overload." Since highly optimistic entrepreneurs tend to expect positive outcomes across many situations, such "opportunity overload" may encourage experienced, highly optimistic entrepreneurs to spread themselves too thin, by pursuing more opportunities than they can realistically manage. This tendency, in turn, has been shown in previous research, to be a major problem for entrepreneurs, one that interferes with their ability to build sustainable growth for their new ventures (Baker & Nelson, 2005). On the basis of these considerations and in the context of social cognitive theory, we propose the following hypothesis:

> *Hypothesis 2: Entrepreneurial experience in starting new ventures will moderate the relationship between the level of entrepreneurs' dispositional optimism and the performance of their new ventures, such that the relationship will be more negative for those with high, as opposed to low, entrepreneurial experience.*

Moderating Effects of Environmental Dynamism

Dynamic environments are characterized by unpredictable and rapid change, which increases uncertainty for individuals and firms operating within them (Dess & Beard, 1984). It has been suggested that environmental dynamism forms a fertile context in which entrepreneurial opportunities arise (Hayek, 1945; Kirzner, 1997; Shane & Venkataraman, 2000). Such

environments, however, also present major challenges. Due to high levels of uncertainty and the large amount of financial capital (and associated risk) needed to compete (Aldrich, 2000), entrepreneurs leading their firms in dynamic environments often face unusually heavy information processing burdens (Chandler, Honig, & Wiklund, 2005). As a result, they may also tend to experience high levels of distress and anxiety (Markman, Baron, & Balkin, 2005). Optimism can help to reduce such effects (Luthans & Youssef, 2004), but can also lead to overconfidence or other cognitive errors (Hayward et al., 2006) and hence, can negatively affect judgment and decision-making (McKenzie, 1997), especially within dynamic environments (Klayman, Gonzalez-Vallejo, & Barlas, 1999). Therefore, we suggest that highly optimistic entrepreneurs will be particularly poor at leading their new ventures in dynamic, as opposed to stable, industry environments, because their attention will lack the focus needed to respond quickly and effectively to emerging opportunities. Further, their discounting of negative information could be particularly damaging if it prevents them from making the strategic changes necessary to respond effectively to competitors. For example, uncertainty reduction theory predicts that to make sense of the uncertainty present in dynamic environments, highly optimistic individuals will attune to the aspects of the environment that align most closely with their past experience (Berger & Gudykunst, 1991). Considering that optimistic individuals tend to view both their past and future through rose colored glasses, they are likely to selectively map an unbalanced mix of mostly positive information from their past into the present situation and thus tend to make less than optimal decisions. In further support of this line of reasoning, optimism has been found to be negatively related to situational awareness, such that highly optimistic persons tend to be fairly ineffective at perceiving the elements within their environment, comprehending their meaning, and projecting their status into the near-term future

(Eid, Matthews, Meland, & Johnsen, 2005). Considering the importance of rapidly identifying and integrating key information when making strategic decisions in fast-changing environments (Eisenhardt, 1989), highly optimistic entrepreneurs would appear to be at a particular disadvantage in leading new ventures in dynamic, as opposed to stable, industry environments. On the basis of this reasoning and again, consistent with a general social cognitive perspective, we offer the following hypothesis:

> *Hypothesis 3: Environmental dynamism will moderate the relationship between the level of entrepreneurs' dispositional optimism and the performance of their new ventures, such that the relationship will be more negative for those leading their firms within dynamic, as opposed to stable, industry environments.*

Method

Sample and Procedure

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, Marsden, Aldrich, & Cassell, 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 address of the firms and their top management team leader (i.e., chief executive officer), who in each case was also a founder of the firm.

A packet containing our survey, along with a cover letter and pre-paid business reply envelope was sent to the participants. In total, 185 of the mailings were returned as non-deliverable and 207 completed surveys were received. The number of non-deliverable survey

mailings was not surprising considering that Dun and Bradstreet reports that 20 percents of the firms that 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., Hmieleski & Ensley, 2007; Waldman, Ramirez, House, & Puranam, 2001). Non-response 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 non-significant.

Demographic questions at the end of the administered 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 startups tend to be in a critical developmental stage during their first six years of existence and may be considered new ventures during this period (Shrader, Oviatt & 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 earlier on in the firm's development such factors may be less relevant.

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 4-digit Standard Industrial Classification codes). Further, no more than 4 firms were from the same state and no more than 3 firms were from the same industry. Thus, our national sample is not biased by industry or geographic location.

Measures

Optimism. Optimism was measured using Scheier, Carver, and Bridges' (1994) Life Orientation Test-Revised (LOT-R). The instrument is comprised of 6 items requiring respondents to indicate the extent of their agreement with each item. Example items include "In uncertain times, I usually expect the best" and "Overall, I expect more good things to happen to me than bad." We used a 7-point Likert-type scale anchored by (1) Strongly disagree and (7) Strongly agree. The responses were summed to form an overall score of optimism versus pessimism. Thus, high scores indicate a generalized feeling of optimism toward the future, whereas low scores indicate a more pessimistic outlook. To investigate the test–retest reliability of the LOT–R, Scheier and colleagues (1994) examined scores for four different groups of individuals who completed the scale at various time intervals. The test–retest intervals were 4 months, 12 months, 24 months, and 28 months. The test–retest correlations were .68, .60, .56, and .79, respectively. Therefore, as expected by a dispositional measure, the LOT–R appears to be fairly stable across time. Finally, the measure produced a Cronbach's coefficient alpha of .80 in the current study.

Entrepreneurial Experience. Following prior research, entrepreneurial experience was measured by the number of previous ventures founded by the participants (Stuart & Abetti, 1990). Specifically, respondents answered a single survey item asking them to report "the number of new ventures started prior to the founding of their current business." Responses ranged from 0 to 6, with nearly half of the respondents (n = 91) having previously founded a business. Whereas other studies have dummy coded the previous founding of new ventures dichotomously as 0 or 1 (e.g., Cooper, Folta, & Woo, 1995; Forbes, 2005), we used the actual number of new ventures started as our study variable. This approach was taken because there

should be additional learning that takes place, to some extent, each time an entrepreneur starts another new venture (Zhao, Seibert, & Hills, 2005). In other words, knowledge of the entrepreneurial process should increase each time that individuals proceed through founding an additional new venture (Wright, Westhead, & Sohl, 1998).

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 & Hitt, 1988; Sharfman & Dean, 1991), and number of employees is a common measure of change for use 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 & 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 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. To evaluate the extent to which the four variables loaded onto a single dimension, we conducted a single-factor confirmatory analysis using AMOS

6.0. The chi-square for the model was non-significant ($\chi^2 = 2.35$, $p = .13$) and results from absolute fit (GFI = .986; standardized RMR = .042) and relative fit (CFI = .979) indices each demonstrated good fit. The standardized factor loadings ranged from .68 to .86. Further supporting the reliability of the measure, the overall index produced a Cronbach's coefficient alpha of .69.

New Venture Performance. Growth is often cited as the most important performance indicator of new venture success (Brush & Vanderwerf, 1992; Danson, 1999). Consistent with this literature, we used two different objective measures of growth: revenue growth and employment growth. The performance data were obtained from Dun and Bradstreet. Recent studies have validated the accuracy of Dun and Bradstreet revenue and employment data for new ventures (e.g., Baum et al., 2001; Baum & Locke, 2004). 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.

Control Variables. Firm level control variables included the age of the firm, revenue and employment totals for the year in which the survey data were collected, and the average revenue and employment growth rates for the three-year period prior to when the survey data were collected. Data for each of these variables were acquired from Dun and Bradstreet. In order to reduce the threat of multicollinearity, revenue and employment totals for the year in which the survey data were collected were standardized and summed to create a variable labeled "firm size." For the same reason, the average revenue and employment growth rates for the three-year period prior to when the survey data were collected were standardized and summed to create a variable labeled "prior firm growth." Individual control variables included the sex (male = 0,

female = 1), age (years old), and educational attainment (1 = high school, 2 = associates degree, 3 = bachelors degree, 4 = masters degree, 5 = doctoral degree) of respondents. These data were collected as demographic items at the end of the administered survey.

Statistical Procedures

Moderated hierarchical regression analysis was utilized as the main statistical procedure for examining the relationship between entrepreneurs' optimism and new venture performance, as well as the proposed moderating effects of entrepreneurial experience and environmental dynamism. The variables were mean-centered before creating the interaction terms. Each interaction was graphed following procedures set forth by Dawson and Richter (2006).

Results

Table 1 provides the means, standard deviations, and bivariate correlations for study variables. The results of the hierarchical regression models for revenue and employment growth are provided in Table 2. The interactions are graphed in Figures 1-3. We will now describe the results in relation to the individual hypotheses.

Insert Table 1 and 2 about here

Hypothesis 1 proposed that entrepreneurs' level of dispositional optimism will be negatively related to the performance of their new ventures. As shown in Models 2 and 6 of Table 2, the relationships between entrepreneurs' optimism and the revenue growth (β = -.17, p < .05) and employment growth (β = -.20, p < .01) of their new ventures are both significant and negative. Therefore, the findings offer support for hypothesis 1.

Insert Figure 1 about here

Hypothesis 2 suggested that entrepreneurial experience in starting new ventures will moderate the relationship between the level of entrepreneurs' dispositional optimism and the performance of their new ventures, such that the relationship will be stronger (i.e., more negative) for those with high, as opposed to low, entrepreneurial experience. As shown in Models 3 and 7 of Table 2, the interaction of entrepreneurial experience with optimism is significant and negative for both revenue growth (β = -.15, p < .05) and employment growth (β = -.22, p < .01). The graph of this interaction (see Figure 1) shows that the relationship between entrepreneurs' optimism and the performance of their new ventures is more negative for those with high, as opposed to low, entrepreneurial experience. In fact, there appears to be no relationship between optimism and new venture performance for those with low entrepreneurial experience. Therefore, results offer support for hypothesis 2.

Insert Figure 2 about here

Hypothesis 3 stated that environmental dynamism will moderate the relationship between the level of entrepreneurs' dispositional optimism and the performance of their new ventures, such that the relationship will be stronger (i.e., more negative) for those leading their firms in dynamic than in stable industry environments. As shown in Models 3 and 7 of Table 2, the interaction of environmental dynamism with optimism is significant and negative for both revenue growth (β = -.33, p < .01) and employment growth (β = -.34, p < .01). The graph of this interaction (see Figure 2) shows that the relationship between entrepreneurs' optimism and the performance of their new ventures is more negative for those leading their firms in dynamic, as opposed to stable, industry environments. Therefore, hypothesis 3 too, receives support.

Insert Figure 3 about here

In addition to influencing the relationship between entrepreneurs' optimism and new venture performance individually, the social cognitive perspective suggests that environmental dynamism and entrepreneurs' past experience in creating new ventures may also exert joint effects on this relationship. In other words, these key behavioral and environmental factors should act as moderators concurrently—reciprocally enhancing the effects of entrepreneurs' optimism on the performance of their new ventures. Therefore, as a post hoc analysis, we examined the three-way interaction of optimism x entrepreneurial experience x dynamism on new venture performance. As shown in Models 4 and 8 of Table 2, the three-way interaction is found to be significant and negative for both revenue growth (β = -.32, p < .01) and employment growth (β = -.47, p < .01). The graph of this interaction (see Figure 3) indicates that the relationship between entrepreneurs' optimism and the performance of their new ventures is most negative when entrepreneurial experience and environmental dynamism are both high. Thus, as a social cognitive perspective suggests, these moderating variables appear to operate jointly in influencing new venture performance.

Discussion

The results of the current study suggest that entrepreneurs' level of optimism has, on average, a negative relationship with the performance of their new ventures and, that moreover, this relationship is moderated both by entrepreneurial experience and environmental dynamism. Specifically, the negative relationship between entrepreneurs' optimism and the performance of their new ventures is stronger for experienced than inexperienced entrepreneurs, and stronger in dynamic than stable environments. In addition, there is some indication (from our post hoc analysis) that the negative relationship between entrepreneurs' optimism and performance of

their new ventures is strongest when entrepreneurs are high in previous business-founding experience and lead their firms in dynamic environments.

From a theoretical perspective, these findings offer support for the basic predictions of social cognitive theory, which suggests that full understanding of the impact of dispositional variables can only be gained through careful consideration of the interaction between such variables and key behavioral and environmental factors (Bandura, 1986). In addition, results are consistent with the view that a multi-level perspective is essential in all branches of management science for continued refinement of our knowledge base and theoretical models, and to attain fuller understanding of complex organizational processes (Hitt et al., 2007).

Entrepreneurs' Optimism and Firm Performance: Is the Relationship Always Negative?

Overall, the findings of the present research suggest that entrepreneurs' dispositional optimism is negatively related to firm performance. As noted earlier, there are strong grounds for predicting such a relationship. Highly optimistic individuals often hold unrealistic expectations, suffer from overconfidence, and tend to discount negative information—tendencies that can seriously interfere with their decision-making and judgment (Geers & Lassiter, 2002; Segerson & Solberg Nes, 2006). The present results indicate that such effects may indeed operate among entrepreneurs, and combine to exert a negative influence on new venture performance.

It is important to note, however, that other evidence suggests that high levels of optimism can sometimes yield important benefits. These include enhanced ability to form coalitions and lasting friendships (Fredrickson, 2001), increased resistance to prolonged, intense stress (Tugade & Fredrickson, 2004), greater persistence in the face of adversity (Markman, Baron, & Balkin, 2005), and enhanced ability to develop extensive social networks (Greve &

Salaff, 2003). Several of these skills or capacities—especially, the ability to develop extensive social networks—have been shown to be important predictors of entrepreneurial performance (e.g., Ozgen & Baron, 2007). Thus, although the present findings clearly indicate a negative relationship between entrepreneurs' optimism and new venture performance, it seems premature to conclude that the relationship between these variables is always, or uniformly, negative. In fact, two points suggest that the relationship between these variables may be more complex—possibly, curvilinear in nature.

First, entrepreneurs in general, and certainly the entrepreneurs who participated in the present study, tend to be very high in optimism (e.g., Abdelsamad & Kindling, 1978; Busenitz & Barney, 1997; Cooper at al., 1988; Dosi & Lovallo, 1997; Fraser & Greene, 2006; Lovallo & Kahneman, 2003; Lowe & Ziedonis, 2006; Simon et al.,1999). In fact, the entrepreneurs in the current sample scored very high on the measure of optimism we employed ($\underline{M}$ = 5.87)—higher, in fact, than participants drawn from a wide range of different populations in previous research who completed the same measure (e.g., Armstrong-Stassen, 2006; Aspinwall et al., 2005). Second, the findings of many previous studies indicate that the relationship between optimism and individual performance is curvilinear in nature across a wide variety of tasks and populations (e.g., Brown & Marshall, 2001). Performance initially rises as optimism increases, but beyond some point, further increments in optimism are associated with actual decrements in performance. Taking these two facts into account, we suggest that the same principle may operate with respect to entrepreneurs. The relationship between optimism and new venture performance may be positive up to moderate levels of optimism, but beyond this point, may become negative. This reversal may occur because when optimism reaches very high levels, entrepreneurs may fail to assess potential opportunities carefully, show a strong preference for

heuristic decision-making (a procedures that is often ineffective in dynamic environments; Sarmány, 1992), and come to experience high levels of overconfidence. As noted by Hayward et al. (2006), this latter factor, in particular, may adversely affect new venture performance. While it is always difficult (and uncertain) to move from measures of individual performance to measures of firm performance, we tentatively suggest that very high levels of optimism encourage tendencies among entrepreneurs (e.g., overconfidence) that interfere with their performance of key tasks (e.g., a full assessment of potential opportunities) and hence, adversely affects the success of their new ventures.

Only future research can fully examine these and related possibilities. However, the present findings do suggest quite clearly that among entrepreneurs, the potential costs of high levels of optimism may often outweigh any potential benefits of such dispositions. Put in other terms, very high levels of optimism may indeed constitute "too much of a good thing" where entrepreneurs are concerned, and adversely influence the performance of their new ventures.

The Effects of Entrepreneurial Experience and Environmental Dynamism

The link between entrepreneurial experience and new venture performance is an intuitive connection and one that has been frequently assumed to be positive (Wright et al., 1998). Empirical evidence concerning this relationship has, however, generally been less than robust (Carter & Ram, 2003). The lack of significant findings regarding this relationship in past research may be due, in part, to the fact that entrepreneurs differ greatly in terms of the degree to which they learn from their experience, and optimism may influence the efficiency of such learning. For example, entrepreneurs who are highly optimistic are likely to learn less from their experience than ones who are moderate in optimism, due to their tendency to focus primarily on positive, belief-confirming information. This line of reasoning is supported by previous research

that has examined the important role that entrepreneurs' cognitive frameworks play in their ability to transform information from their past experience into knowledge to help them to identify and exploit entrepreneurial opportunities (Corbett, 2005; 2007). Considering that highly optimistic entrepreneurs are cognitively predisposed to undervalue new or dissenting information, they are likely to learn less from their past experience than more moderately optimistic entrepreneurs. This may partly explain why we found a strong moderating effect of entrepreneurial experience with optimism on new venture performance—suggesting that entrepreneurs who are moderate optimists might be more effective at learning from their past experiences than those who are very high in optimism.

Similarly, although it has been suggested that there is a positive link between environmental dynamism and new venture performance (Kirzner, 1997), there is relatively little empirical support for such a relationship. Even though there may be greater potential for achieving major success in dynamic industries than in stable ones, there is also a greater chance of failure (Markides & Geroski, 2004). Thus, the effects of the few who succeed may be offset by a considerably greater number of relatively low performers. In contrast, within stable environments there is a better chance of long-term survival, but less opportunity for impressive gains. As shown by our results, certain dispositional and behavioral characteristics (e.g., moderate optimism coupled with high entrepreneurial experience) might increase the odds of entrepreneurs successfully leading their new ventures within dynamic industry environments.

In sum, we believe that the design of our study, which applies SCT to entrepreneurship and adopts the contextual perspective recommended by Hitt et al. (2007), helps shed new light on why intuitively-appealing relationships between entrepreneurial experience and environmental dynamism on the one hand, and new venture performance on the other, have not

been clearly and definitively verified by extant literature. We suggest that this is primarily because these linkages are more complex than previously believed and are, in fact, contingent on moderating factors (such as the ones examined in the current study).

Implications for Entrepreneurship Educators and Practitioners

The results of the current study offer support for the suggestion by Lovallo and Kahneman (2003, p.63) that: "There needs to be a balance between optimism and realism—between goals and forecasting. Aggressive goals can motivate the troops and improve the chances for success, but outside-view forecasts should be used to decide whether or not to make a commitment in the first place." A natural conclusion would be to suggest that lead entrepreneurs, who are by nature often highly optimistic, may benefit from adding top management team members who are more moderate in optimism than themselves (Hayward et al., 2006). This is, however, more easily said than done. Decades of research in several fields clearly demonstrate that similarity is a powerful determinant of liking and positive personal relationships (e.g., Baron, Branscombe, & Byrne, 2008). Accordingly, optimistic persons prefer to work with individuals similar to themselves on this dimension (Hiller & Hambrick, 2005). Moreover, if the members of top management teams differ considerably in terms of optimism, this situation can generate conflict and dysfunctional management of the firm. We suggest, therefore, that a more effective approach may be to train entrepreneurs to self-regulate their optimism in ways that permit them to be realistic as well as positive—to recognize when they need to constrain their enthusiasm and when they can move more energetically. In other words, the development of appropriate metacognitive and self-regulatory mechanisms may be crucial, for it may be those entrepreneurs who are best able to regulate and direct their own intrinsic optimism who are most likely to achieve the success that they seek. In so doing, entrepreneurs

should pay particular attention to how their inherent level of optimism interacts with their experience and environment to influence their ability to achieve successful outcomes.

Limitations and Suggestions for Future Research

There are several limitations to the current study, which suggest opportunities for future research. First, although our findings uncovered contextual differences in the relationship between optimism and new venture performance, we did not examine the underlying mechanisms through which such effects occurred. Therefore future research might consider, for example, the use of heuristic versus systematic decision-making processes by entrepreneurs as pathways mediating such effects. Due to the tendency for high levels of optimism to be related to heuristic decision-making and lower levels of optimism to be related to systematic decision-making (Scheier et al., 2001) and for repeat entrepreneurs to rely more heavily on intuitive modes of thinking than novice entrepreneurs (Brigham et al., 2007; Buttner & Gryskiewicz, 1993), this may prove to be a particularly fruitful extension to the current study. Further, there may be additional behavioral factors, such as improvisation (Hmieleski & Corbett, 2006), and other environmental factors, such as munificence (e.g., Sharfman & Dean, 1991), that are worth investigating in combination with the effects of optimism.

Second, previous studies of entrepreneurs have failed to identify significant linkages between performance and personal satisfaction (e.g., Brigham et al., 2007; Hmieleski & Corbett, 2008). This is particularly relevant for studies of entrepreneurial optimism, because optimism has generally been found to be positively related to work satisfaction (Youseff & Luthans, 2007), but as shown by the present results, it appears to be negatively linked to performance among entrepreneurs. Future studies of entrepreneurs' optimism might seek to evaluate what

configurations of optimism with other behavioral and environmental factors simultaneously maximize both performance and satisfaction.

Third, the specific nature of our sample (i.e., entrepreneurs leading new ventures) limits the extent to which our findings can be generalized to other groups of individuals and organizations. As noted earlier, entrepreneurs tend to range from moderate to very high in optimism (Abdelsamad & Kindling, 1978; Busenitz & Barney, 1997; Cooper et al., 1988; de Meza & Southey, 1996; Fraser & Greene, 2006; Lowe & Ziedonis, 2006; Simon et al., 1999). Therefore, our results are not informative of populations in which optimism is considerably lower. Although we have no strong reason to assume that similar findings would not occur for leaders in other types of firms who are moderately to highly optimistic, research has shown that the optimal characteristics of leaders vary, depending on the stage in the evolution of the firm (Smith & Miner, 1983). For example, high optimism might be more beneficial than moderate optimism during the idea-generation stage of the new venture creation process. Therefore, it seems important to examine the relationships explored in the current study longitudinally across various stages in the organizational life cycle. Following this approach might necessitate the adoption of other performance measures that are more applicable to the type of firm and stage of its development. Such research should, insofar as possible, track the development of firms from their initial founding so as to avoid survival bias.

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 are measured on multiple occasions across time.

This would also allow for a more comprehensive test of social cognitive theory, by presenting the opportunity to examine the bi-directional relationships between the variables studied.

Conclusions

Initially, investigation of the potential role of entrepreneurs' personal dispositions in new venture creation and development failed to provide clear or consistent findings (Gartner, 1989). Many factors contributed to these disappointing results, including inadequate operationalization and measurement of variables, lack of attention to relevant theoretical frameworks, and relatively little focus on the crucial task of linking these micro-level variables to overt actions by entrepreneurs or to firm performance (Low & MacMillan, 1988). In contrast, more recent research focusing on the personal characteristics of entrepreneurs (or, more broadly speaking, individual-level variables such as the skills, motives, experience, attitudes, and other characteristics of individual entrepreneurs) has been based on well-established theoretical frameworks and employed carefully-chosen measures and improved research designs (e.g., Baum et al., 2001; Hmieleski & Baron, 2008; Zhao Siebert, & Hills, 2005). The resulting findings provide evidence that several individual-level variables do indeed matter—they are significantly related to new venture performance (e.g., Baron, 2007; 2008). Despite these advances, however, the amount of variance in new venture performance explained by such variables, even in recent studies, has continued to be small (Davidsson, Low, & Wright, 2001). This seems to be partly due to the fact that many studies still seek to identify global characteristics that differentiate successful from less successful entrepreneurs. We suggest that a more fruitful approach may be to examine the interactions between individual-level variables and both behavioral and environmental moderating variables, thus applying a social cognitive perspective. Such an approach fully reflects the nature of modern research on the role of micro-

level variables in several branches of management (e.g., organizational behavior, human resource management). In these fields, it is widely recognized that factors relating to the skills, motives, experience, and characteristics of individuals do indeed influence work-related behavior and, hence, important organizational outcomes. However, it is also recognized that such effects are rarely direct in nature; rather, they are more frequently moderated by other variables relating to the tasks that individuals perform and the environments in which they operate. Adopting this broader perspective in order to more fully understand the role of individual entrepreneurs in new venture performance may greatly facilitate progress toward a central goal of the field of entrepreneurship: gaining accurate comprehension of the complex process, involving many different factors operating at many different levels, through which new ventures are conceived, launched, and operated by enterprising entrepreneurs. In somewhat broader terms, we hope that the present findings will serve to encourage ongoing efforts to incorporate a multi-level approach into entrepreneurship research—an approach which seeks to understand the complex interplay between individual, organizational, and environmental variables in new venture performance (Hitt et al., 2007). In our view, such research is crucial, for it is this complex, reciprocal interchange that ultimately shapes the survival and fortunes of new ventures.

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TABLE 1
Descriptive Statistics and Variable Intercorrelations

Variable	*Mean*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Firm age	5.74	2.43										
2. Firm size	.00	1.81	-.08									
3. Prior growth	.00	1.93	-.09	.35**								
4. Age (of entrepreneur)	51.83	9.12	.07	.14*	-.08							
5. Sex (male = 0, female = 1)	0.19	.40	.00	-.12	-.17*	-.20**						
6. Education	2.97	1.17	.03	.11	-.08	.10	.11					
7. Optimism	5.87	.90	-.09	-.10	-.03	.16*	.12					
8. Entrepreneurial experience	.95	1.34	-.08	.00	.05	.22**	-.12	-.07	.21**			
9. Dynamism	16.56	11.19	-.04	.10	-.04	.12	-.04	.13	.02	.05		
10. Revenue growth	1.79	1.65	-.02	.09	.18**	-.05	-.02	.09	-.15*	.06	.09	
11. Employment growth	1.50	1.12	.02	.09	.11	-.02	-.04	.04	-.19**	.02	.10	.53**

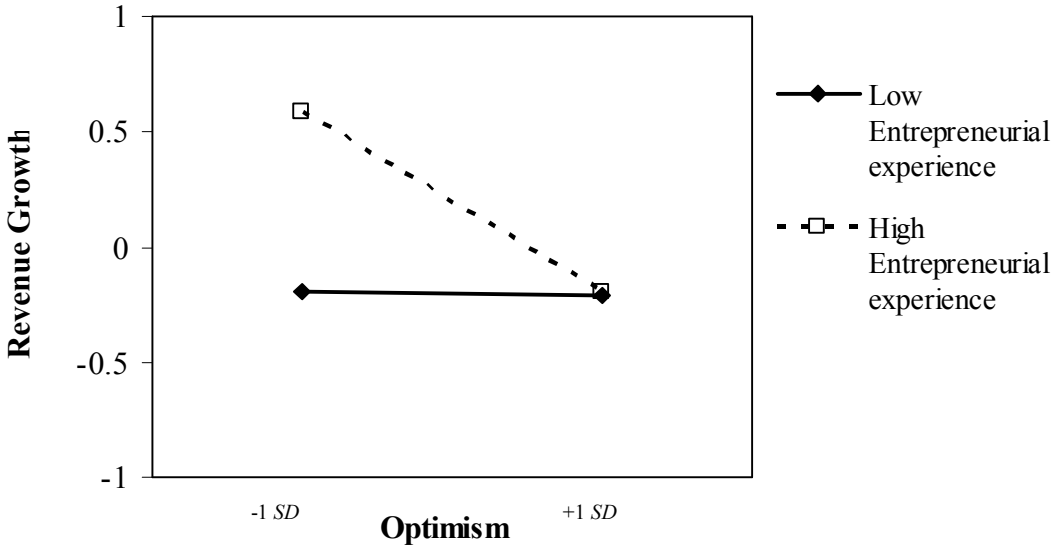
N = 201
* p < .05
** p < .01

TABLE 2
Hierarchical Regression Models of Revenue and Employment Growth

	Revenue growth				Employment growth			
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
	β	*β*	*β*	*β*	*β*	*β*	*β*	*β*
Firm control variables								
Firm age	.00	-.01	.02	.01	.04	.03	.05	.04
Firm size	.03	.00	-.01	.01	.06	.03	.01	.04
Prior growth	.17*	.18*	.19*	.19*	.09	.10	.10	.10
Individual control variables								
Age	-.05	-.04	-.06	-.07	-.03	-.01	-.03	-.05
Sex	-.01	.03	.07	.06	-.03	.01	.05	.04
Education	.10	.09	.08	.06	.04	.03	.01	.02
Main effects								
Optimism (O)		-.17*	-.20**	-.20**		-.20**	-.25**	-.25**
Entrepreneurial Experience (E)		.10	.17*	.23**		.06	.16*	.24**
Dynamism (D)		.09	.14	.22**		.10	.16*	.28**
Two-way interactions								
O x E			-.15*	-.16*			-.22**	-.24**
O x D			-.33**	-.40**			-.34**	-.45**
E x D			.10	.33**			.12	-.46**
Three-way interaction								
O x E x D				.32**				-.47**
F-Ratio	1.54	1.86	3.66**	4.25**	.64	1.48	3.90**	5.66**
R^2	.05	.08	.19	.23	.02	.07	.20	.28
Adjusted R^2	.02	.04	.14	.17	.00	.02	.15	.23

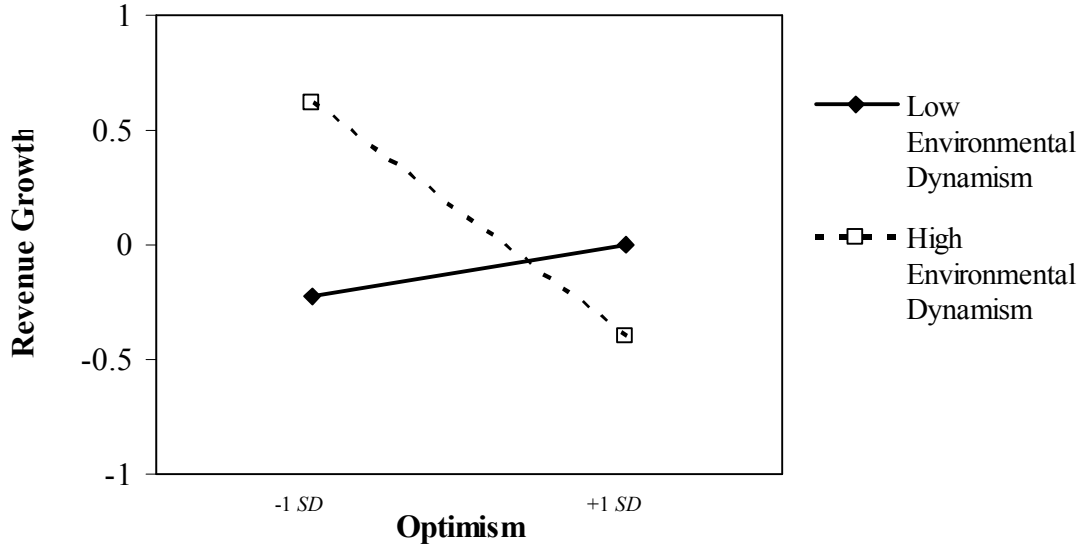
Note: Standardized beta coefficients are shown
N = 201
* p < .05
** p < .01

FIGURE 1
Interaction of Dispositional Optimism with Environmental Dynamism on Revenue Growth



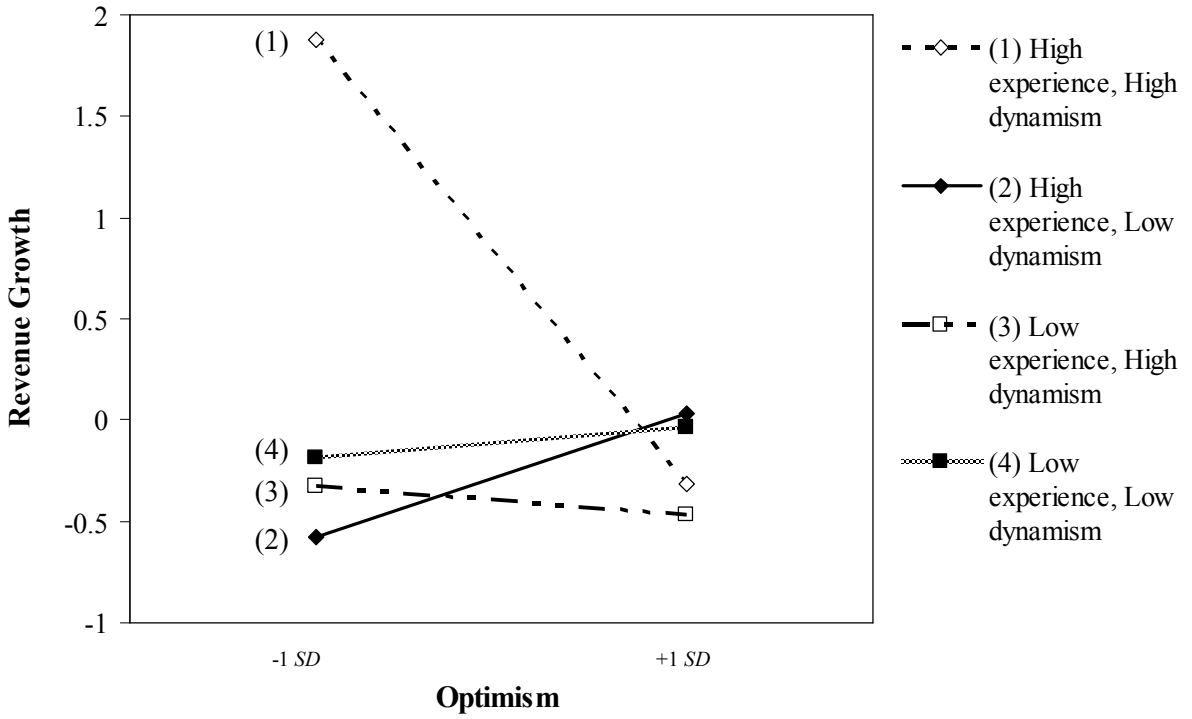
Note: The interaction graph for employment growth follows the same pattern as the above shown graph.

FIGURE 2
Interaction of Dispositional Optimism with Entrepreneurial Experience on Revenue Growth



Note: The interaction graph for employment growth follows the same pattern as the above shown graph.

FIGURE 3
Interaction of Dispositional Optimism with Entrepreneurial Experience and Environmental Dynamism on Revenue Growth



Note: The interaction graph for employment growth follows the same pattern as the above shown graph.

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