

Why Entrepreneurs Often Experience *Low*, Not High, Levels of Stress: The Joint Effects of Selection and Psychological Capital

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While creating and running new ventures, entrepreneurs are exposed to conditions known to generate high levels of stress (e.g., rapid change, unpredictable environments, work overload, personal responsibility for others). Thus, it has been assumed that they often experience intense stress. A markedly different possibility, however, is suggested by Attraction-Selection-Attrition (ASA) theory. This perspective suggests that persons who are attracted by, selected into, and persist in entrepreneurship may be relatively high in the capacity to tolerate or effectively manage stress. In contrast, persons who are relatively low in this capacity tend to exit from entrepreneurship either voluntarily or involuntarily. As a result, founding entrepreneurs as a group are predicted to experience low rather than high levels of stress while running new ventures. Results supported this reasoning: Founding entrepreneurs reported lower levels of stress when compared to participants in a large national survey of perceived stress. Additional findings indicate that entrepreneurs' relatively low levels of stress derive, at least in part, from high levels of psychological capital (a combination of self-efficacy, optimism, hope, and resilience). Psychological capital was negatively related to stress, and stress, in turn, was negatively related to entrepreneurs' subjective well-being. Furthermore, and also consistent with ASA theory, the stress-reducing effects of psychological capital were stronger for older than younger entrepreneurs.

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In their efforts to launch and develop new ventures, entrepreneurs face a daunting array of potential stressors. The environments in which they work are often unpredictable and subject to rapid change, they face high levels of risk, their work loads are intense, they are responsible for their company and its employees, and they frequently operate under severe financial constraints. An extensive body of evidence on the causes of work-related stress and the adverse effects it generates (Jex & Beehr, 1991; Xie, Schaubroeck, & Lam, 2008) suggests that entrepreneurs might, therefore, experience high levels of stress. However, a well-documented theory in the fields of organizational behavior and industrial-organizational psychology—Attraction-Selection-Attrition (ASA) theory (Schneider, 1987; Schneider, Goldstein, & Smith, 1995)—points to a very different possibility.

In its original form, ASA theory was designed to provide an explanation for the finding that over time organizations tend to become increasingly homogeneous with respect to the knowledge, skills, abilities, and other characteristics of their employees (KSAOs; Bretz, Ash, & Dreher, 1989; Ployhart, Weekley, & Baughman, 2006). Recently, however, the theory has been extended to another, but closely related question: Why do individuals choose to enter and remain in particular careers or occupations? As noted by Schaubroeck, Ganster, and Jones (1998), the processes described by ASA theory may apply to choice of career as well as choice of specific organizations or employers. Briefly, individuals choose careers or occupations to which they are initially *attracted*, in part because they perceive their personal skills, characteristics, and motives as being aligned with the requirements of that career or occupation. *Selection* then operates so that only those who find that they are, in fact, suited to this occupation or career actually choose to enter. Finally, *attrition* occurs when individuals discover that their skills, characteristics, or interests do not align closely with the requirements of the field or occupation, and consequently, they withdraw from it, either voluntarily or otherwise. Extensive evidence suggests that these processes play an important role in career selection and retention (Ployhart et al., 2006).

When ASA theory is applied to entrepreneurship, an intriguing possibility emerges. Many individuals are attracted to entrepreneurship, and for many different reasons ranging from economic opportunity or necessity, to the “romance” of becoming an entrepreneur (akin to the “romance” of becoming a leader; Meindl, Ehrlich, & Dukerich, 1985). Regardless of the precise reasons for this initial attraction, however, selective factors may then begin to operate so as to generate a population of founding entrepreneurs that is relatively high on certain characteristics—ones relevant to, and perhaps required, for success as an entrepreneur. While the processes identified by ASA theory might well function with respect to many different characteristics or skills (including ones relevant to the successful performance of key entrepreneurial tasks), the present research, while recognizing the importance of these dimensions, focuses primarily on the capacity to tolerate or manage stress. There are several reasons for focusing on this variable, but two are especially important.

First, although it has long been suggested by scholars that entrepreneurs experience high levels of stress (Buttner, 1992), this suggestion has not, to date, been systematically

investigated. Lack of empirical evidence on this issue constitutes an important gap in current knowledge. Second, although low levels of stress can sometimes enhance performance, high levels of stress have been found to impair performance on many different tasks in a wide range of business settings (Gilboa, Shirom, Fried, & Cooper, 2008). Thus, if entrepreneurs experience high levels of stress, this may interfere with their capacity to perform several tasks crucial to the success of their new ventures (e.g., recognizing and developing value-generating opportunities; acquiring the financial and human resources necessary to develop these opportunities). In short, one key ingredient in entrepreneurial success may be the capacity to tolerate or cope effectively with stress. As explained in more detail below, ASA theory, in turn, suggests that individuals who are attracted to entrepreneurship, become entrepreneurs, and remain in this career, will tend to be above average in the capacity to cope with stress (Fine, Meng, Feldman, & Nevo, 2012).

At this point, we should note that although the processes included in ASA theory function in many different contexts and across many different careers or occupations, there are reasons for suggesting that they may have especially strong effects with respect to entrepreneurship. First, intense media attention has fostered widespread knowledge of the demands associated with becoming an entrepreneur, presumably reducing the attractiveness of this field for individuals who doubt that they possess the required knowledge, skills, or characteristics to effectively cope with such demands. Second, rates of attrition are very high in entrepreneurship, such that a high proportion of new ventures cease operating within their first 3 years of existence (Baron, 2013). This is often, but not always, due to failure; entrepreneurs also withdraw from new ventures for many other reasons, including the recognition of better opportunities (Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Regardless of the precise reasons, many individuals do indeed leave entrepreneurship, or withdraw from new ventures they have started. Employed persons who do not achieve early success in one position or task may simply receive additional training or be transferred to another position within the organization. Such paths are, however, not an option for entrepreneurs. If their performance is poor or perhaps merely mediocre and their new ventures fail, their current position is terminated. Overall, then, it seems possible that the processes of ASA may have especially strong effects in the realm of entrepreneurship.

A key question relating to the application of ASA theory to this issue then arises: What underlying mechanisms operate to produce a population of founding entrepreneurs who are above average in terms of their capacity to tolerate or deal effectively with stress? We suggest that both *environmental* factors and *self-selective* factors play a role. Turning first to environmental factors, research on how venture capitalists and others choose the new ventures to which they will offer financial support indicates that they focus, to an important extent, on the characteristics of the entrepreneurs—their skills, experience, knowledge, preparedness, and perhaps even their “passion,” a deep commitment to the roles they play as entrepreneurs (e.g., inventor, founder, developer; Cardon, Wincent, Singh, & Drnovsek, 2009; Chen, Yao, & Kotha, 2009). In fact, venture capitalists (VCs) and other sources of financial support for new ventures often report that they weight the characteristics of entrepreneurs more heavily than the quality of the idea or business concept being proposed. Among the characteristics VCs weight heavily is entrepreneurs’ capacity to function effectively under stress (Wright, Robbie, & Ennew, 1997). This preference then constitutes an important environmental factor operating to select individuals high in the capacity to cope with stress. Similarly, the route to

becoming an entrepreneur is filled with high-pressure situations that would-be entrepreneurs must navigate successfully in order to proceed with this career choice. For instance, in many academic programs, nascent entrepreneurs are required to make numerous presentations—often in front of highly critical audiences. Business plan and elevator pitch competitions are specifically designed so that the pressure on those competing in them is intense and only those who perform well under such conditions ultimately win the prizes offered. Overall, these environmental factors combine to select, as founding entrepreneurs, individuals relatively high in the capacity to function well under high levels of stress.

In addition to these environmental selective factors, *self-selective* factors may also contribute to such outcomes. Most individuals considering the possibility of becoming an entrepreneur are familiar with the fact that a large proportion of new ventures fail, or at least cease operations, within a short period of time (Ucbasaran et al., 2013). Furthermore, academic programs of entrepreneurship, and the “outreach” activities they sponsor, frequently emphasize the fact that running one’s own business is a high-stress activity, one in which only persons able to tolerate stress can succeed. In addition, entrepreneurs’ metacognitive knowledge—their understanding of their personal capacity to cope with stress (essentially, their self-knowledge)—may play a similar, self-selective role. Self-knowledge (including metacognitive knowledge) generally increases with age (Kuhn, 2000), so that by the time they are adults, most persons know how well they can cope with high levels of stress, with the overall result that those who believe that they are high in this capacity are more likely than those who are low to actively pursue an entrepreneurial career. In addition, it has been found that entrepreneurs tend to perceive lower levels of risk in various situations than other persons (Busenitz & Barney, 1997). Since risk is often a source of stress, this too could serve as a selective factor.

Together, then, environmental and self-selective factors combine to produce a population of founding entrepreneurs who are above average in their capacity to deal effectively with or tolerate stress. Persons who are relatively low on this dimension, in contrast, exit from the field.

Although both groups of factors may play a role in generating such outcomes, it should be noted that only a small proportion of entrepreneurs seek venture capital funding, and only a small proportion receive formal university training in entrepreneurship. Thus, overall, self-selective factors may play a stronger role, since they apply to all individuals considering the possibility of becoming an entrepreneur, not simply those supported by VCs.

Before proceeding, it is important to clarify several additional issues relevant to the present research. First, we note that in sharp contrast to early investigations, recent work in the field of entrepreneurship has provided strong evidence that many individual-level characteristics (e.g., various aspects of personality, self-efficacy, optimism, dispositional positive affect, and several other characteristics) are significantly related both to the intention to become an entrepreneur, and to success in performing this role (Baron, 2012; Baron, Hmieleski, & Henry, 2012; Baron, Tang, & Hmieleski, 2011; Hmieleski & Baron, 2008; Rauch & Frese, 2007). For instance, in a recent meta-analysis, Zhao, Seibert, and Lumpkin (2010) found that four of the “Big Five” dimensions of personality are significantly related both to entrepreneurial intentions and also to entrepreneurial performance. Only agreeableness failed to yield significant effects in this regard. As Zhao et al. (2010: 381) put it in summarizing their results, “These effects suggest that personality plays a role in the emergence and success of entrepreneurs.”

Second, we note that by focusing on stress tolerance in the present research we in no way suggest that other factors may not also be relevant to attraction, selection, and attrition processes relating to entrepreneurship. For instance, as noted above, entrepreneurs have been found to be higher than several comparison groups in terms of certain aspects of intelligence, self-regulation, and achievement motivation, to mention just a few relevant dimensions (Baum & Bird, 2010; Johnson, 1990; McClelland, 1987). These variables, too, may play a role in many aspects of the entrepreneurial process and may contribute to reduced levels of stress among entrepreneurs.

Finally, we should also note that some prospective entrepreneurs may underestimate the demands of the entrepreneurial role and proceed to launch new ventures, despite the fact that they are lacking in the necessary psychological resources to do so effectively (e.g., the capacity to withstand high levels of stress). This may help explain why some entrepreneurs flourish and achieve high levels of success (as measured both by financial outcomes and personal life satisfaction), while others experience considerably lower outcomes in both respects.

Having described the basic logic underlying the present research, we turn next to a brief discussion of the major dependent variable in this research and its implications for expanding current definitions of entrepreneurial success.

Subjective Well-Being as a Measure of Entrepreneurial Success

In the past, entrepreneurial success has almost exclusively been defined in terms of financial outcomes (ROI, profits, growth in sales, etc.). While such measures are indeed important indicators of success, there is currently growing recognition in the field of entrepreneurship that entrepreneurs often seek other goals aside from purely financial ones, and reap many nonfinancial benefits from their entrepreneurial activities (Gimeno, Folta, Cooper, & Woo, 1997; Hmieleski & Corbett, 2008). Indeed, research findings indicate that many choose this role because of strong motives to achieve greater autonomy and independence and the opportunity to engage in work they find meaningful (Baron, 2010; Cassar, 2007). Taking note of this fact, Rindova, Barry, and Ketchen (2009) suggested that individuals often become entrepreneurs because they are seeking *emancipation* from social structures or conditions they find restricting. Together, these suggestions indicate that a somewhat broader definition of “entrepreneurial success”—one that includes subjective well-being as well as financial outcomes—may be useful. Reflecting this point, the primary dependent variable in the present research is a measure of entrepreneurs’ subjective well-being (Diener, 2000; Srivastava, Locke, & Bartol, 2001).

Theory Development and Derivation of Hypotheses

Differences in Perceived Stress Between Entrepreneurs and Nonentrepreneurs

As noted previously, the ASA model, operating through both environmental and self-selective factors, suggests that contrary to widespread belief, entrepreneurs may experience moderate or even low levels of stress relative to persons in other fields or occupations (Cohen & Janicki-Deverts, 2012). To summarize the logic behind this suggestion, environmental factors (e.g., a strong preference among VCs to invest in entrepreneurs who can perform well under pressure) and self-selective factors (e.g., nascent entrepreneurs’ knowledge of the

requirements of the entrepreneurial role and their metacognitive understanding of their own capacity to cope with stress) combine, through the processes of ASA theory, to generate a population of founding entrepreneurs who are above average in their capacity to tolerate stress. On the basis of this reasoning, and previous studies offering support for ASA theory and the processes it involves (Ployhart et al., 2006), we offer the following hypothesis:

Hypothesis 1: Entrepreneurs will report levels of stress equivalent to or lower than those reported by persons in other occupations or careers.

The Role of Psychological Capital in Entrepreneurs' Relatively Low Experienced Stress

Although ASA theory suggests that entrepreneurs may experience relatively low levels of stress, it does not, in itself, directly address the question of what specific skills, knowledge, or characteristics enable entrepreneurs to withstand high levels of work-related stress. While many different characteristics may be relevant, we focus here on one that may be of particular importance, psychological capital.

Psychological capital is a second-order variable reflecting four underlying components: self-efficacy, optimism, hope, and resilience (Luthans, Avolio, Walumbwa, & Li, 2005). Recent findings indicate that this variable is related to several important outcomes in work settings, such as superior performance, positive work-related attitudes (e.g., job satisfaction, organizational commitment), and reduced turnover (Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011). Moreover, and directly relevant to the present research, additional findings indicate that it is also negatively related to experienced stress. For example, Avey, Luthans, and Jensen (2009) found that psychological capital was negatively related to the perceived symptoms of stress in a large sample of individuals working in a wide range of industries. Similarly, a recent meta-analysis of research on the impact of psychological capital (Avey, Reichard, Luthans, & Mhatre, 2011) reported it to be negatively related to job stress as well as undesirable employee behaviors (e.g., workplace deviance). Psychological capital appears to provide individuals with the mental hardiness to effectively cope with job-related demands. For example, individuals high in self-efficacy believe that they can achieve whatever they set out to accomplish—that they can, in essence, “get the job done.” This may help to reduce experienced stress, which often involves cognitions of being unable to cope or being overwhelmed (Schaubroeck & Merritt, 1997). Similarly, those high in optimism believe that they will experience positive outcomes in almost any situation (Hmieleski & Baron, 2009), and this, too, may help to mitigate stress. Persons high in hope have the ability to imagine multiple pathways through which they can overcome challenges, thus reducing the likelihood of becoming overwhelmed by work-related stressors (Snyder, Simpson, & Ybasco, 1996). Finally, persons high in resilience have faced difficult situations in the past and, based on their experience, believe they can overcome similar obstacles in the present and future without feeling helpless and becoming stressed (Tugade, Fredrickson, & Barrett, 2004). Therefore, both theory and empirical findings combine to suggest that psychological capital can provide an effective buffer against high levels of stress. A major goal of the present research is to obtain further evidence relating to this possibility. Thus, we propose the following hypothesis:

Hypothesis 2: Entrepreneurs' level of psychological capital will be negatively associated with their reported level of stress.

Effects of Stress on Entrepreneurs' Subjective Well-Being

Stress—especially when prolonged and intense—has been found to be related to a wide range of harmful outcomes (Ganster & Rosen, 2013; Ganster & Schaubroeck, 1991; Sullivan & Bhagat, 1992). For instance, it often, although not always, interferes with task performance (Chan & Wan, 2012) and reduces personal health (DeLongis, Folkman, & Lazarus, 1988). In addition, and central for the present research, it has been found to be negatively related to subjective well-being (Srivastava et al., 2001). Founding entrepreneurs are, as noted earlier, exposed to many potential stressors. They have responsibility not just for the strategy, actions, and success of their companies, but also for the well-being of many stakeholders, ranging from partners, friends, and family to customers, suppliers, and external investors. Exposure to such stressors may reduce entrepreneurs' subjective well-being, which, in turn, is related to low task performance, negative work-related attitudes, and reduced personal health (Hunter & Thatcher, 2007).

Although many aspects of entrepreneurs' health and well-being may be adversely influenced by stress, we focus here on a variable that has been found to be an especially informative indicator of such effects: subjective well-being (Srivastava et al., 2001). This variable encompasses individuals' global life satisfaction (Diener, 2000). A large body of evidence indicates that subjective well-being is strongly linked to many aspects of work. For instance, it is positively related to work productivity, personal income, career success (as measured by speed of promotions), and job satisfaction (Wright & Cropanzano, 2000). It is also positively related to the quality and breadth of social relationships (Pinquart & Sorensen, 2000), to both physical and psychological health (Lyubomirsky, King, & Diener, 2005; Xu & Roberts, 2010), and to what Harter, Schmidt, and Keyes (2002) term employee engagement, which involves positive attitudinal and emotional reactions to work conditions and environments among employees—positive reactions that, in turn, are linked to desirable organizational outcomes such as improved work performance and reduced turnover. On the basis of these findings, we offer the following hypothesis:

Hypothesis 3: Entrepreneurs' level of stress will be negatively associated with their level of subjective well-being.

Psychological Capital and Subjective Well-Being: Mediating Effects of Perceived Stress

Psychological capital has been viewed as representing personal resources that help individuals achieve success in a wide range of life activities. As Peterson et al. (2011: 428) note, psychological capital provides individuals with the confidence to undertake challenging tasks, to persevere in performing them, to redirect their efforts when necessary, to make positive attributions about succeeding now and in the future, and to show resilience after failures. Overall, research findings indicate a positive relationship between psychological capital and success in a wide range of work and non-work-related activities (Culbertson, Fullagar, & Mills, 2010; Peterson et al., 2011). Attaining desired goals has been found to be an important

source of subjective well-being (Diener, 2000), so together these findings suggest the existence of a positive association between entrepreneurs' level of psychological capital and their subjective well-being. Reflecting these findings, we propose the following hypothesis:

Hypothesis 4: Founding entrepreneurs' level of psychological capital will be positively associated with their level of subjective well-being.

We further reason that this relationship is partly indirect. Specifically, we suggest that the positive relationship between psychological capital and subjective well-being is mediated, at least in part, by experienced stress. The reasoning behind this prediction is as follows. As a result of the processes of ASA theory, founding entrepreneurs are higher than average in psychological capital. Past research indicates that psychological capital is negatively related to stress, and that stress, in turn, is negatively related to subjective well-being. Thus, the effects of psychological capital on subjective well-being are likely to be partly mediated by stress. This prediction derives from ASA theory since it is the combined effects of environmental and self-selective factors relevant to this theory, and the processes of ASA theory through which they operate, that lead to higher than average levels of psychological capital among founding entrepreneurs. On the basis of this reasoning, we suggest the following hypothesis:

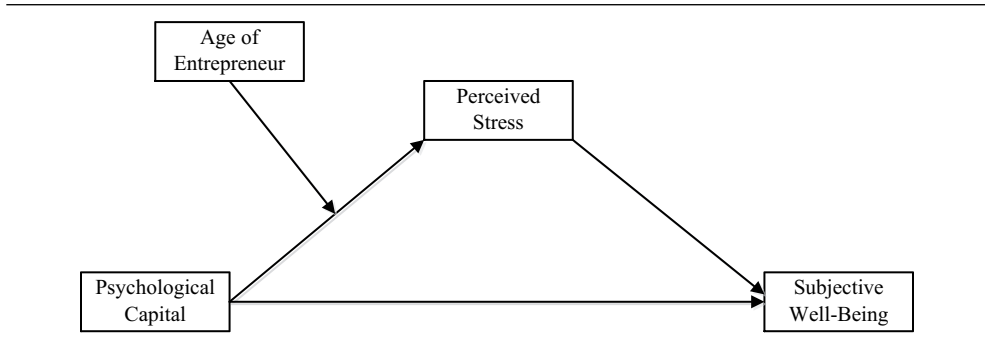
Hypothesis 5: The positive relationship between founding entrepreneurs' level of psychological capital and subjective well-being is mediated, in part, by stress.

The Moderating Effects of Age on the Indirect Relationship of Psychological Capital With Subjective Well-Being

Considering that the environmental and self-selective factors described earlier continue to function over time, we further predict that entrepreneurs' age will moderate the indirect effects of psychological capital (via stress) on subjective well-being, such that this relationship will be stronger for older than for younger entrepreneurs. This prediction reflects the fact that the selective factors identified previously, and relevant to ASA theory, will have operated for a longer period of time for older persons than younger ones, with the result that—all other factors being equal—older entrepreneurs will be more highly selected on relevant dimensions than younger ones. This does not imply that older individuals are more likely to become entrepreneurs than younger ones; it merely suggests that among individuals who become entrepreneurs, the indirect relationship between psychological capital and subjective well-being (via stress) will be stronger for older than younger entrepreneurs.

Indirect support for this reasoning is provided by research findings indicating that meta-cognitive knowledge (e.g., entrepreneurs' self-knowledge—their understanding of their own capacity to resist stress) tends to increase with age (Kuhn, 2000). That is, in general (and with important exceptions), individuals come to understand themselves, and their own strengths and weaknesses better, with increasing age. On the basis of these findings and reasoning, we suggest that the indirect relationship between psychological capital and subjective well-being will be moderated by entrepreneurs' age, being stronger for older than younger individuals (see Figure 1 for an illustration of our full model). Thus, we offer the following hypothesis:

Figure 1
Conceptual Model



Hypothesis 6: The indirect relationship between entrepreneurs' psychological capital and their level of subjective well-being (via perceived stress) will be moderated by age, such that the relationship is stronger (i.e., more positive) for older entrepreneurs than for younger ones.

Method

Data and Sample

Survey data were collected from a national random sample of business founders located in the United States. The Hoover's database (a product of Dun and Bradstreet) was used to identify a random selection of 2,000 founders of businesses that were started in the previous 6 years (2005-2010). Surveys were mailed with postage-paid return envelopes to these business founders. A reminder mailing was sent approximately 4 weeks later to nonrespondents. Follow-up calls were also made. Of the mailed surveys, a total of 276 surveys were undeliverable or returned with no forwarding address, leading to a total of 1,724 distributed surveys. We received a total of 170 completed surveys from individuals who indicated on the survey, "I run a business venture I started," which is a response rate of 9.86%. A total of 10 surveys were unusable due to missing data ($n = 4$) or reported firm size that was greater than 500 employees ($n = 6$), which left a useable sample size of 160 business founders.

The majority of respondents were male (75%) and Caucasian (84.4%). Their ages ranged from 24 to 82, with a mean age of 49.62 ($SD = 10.87$). The highest level of education completed by participants was as follows: 2.5% high school/GED, 8.8% some college, 37.5% 4-year college degree, 34.4% master's degree, and 16.9% doctoral degree.

Measures

Unless otherwise noted, respondents indicated their level of agreement with each item from the following measures using a 5-point Likert-type scale ranging from (1) *strongly disagree* to (5) *strongly agree*.

Perceived stress ($\alpha = .84$). This variable was accessed using the 10-item Perceived Stress Scale (PSS; Cohen & Williamson, 1988), which is a measure of the degree to which individuals appraise life situations as stressful. Items ask respondents to report their feelings and thoughts during the past month and are designed to provide a general measure of overall perceived stress. Sample items include, "In the last month, how often have you felt that you were unable to control the important things in your life," "In the last month, how often have you found that you could not cope with all the things that you had to do," and "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them." Responses were averaged to create an overall score of perceived stress.

Psychological capital ($\alpha = .87$). This construct was examined using the 12-item Psychological Capital Questionnaire (PCQ-12). The PCQ-12 has demonstrated acceptable reliability and support for construct validity has been obtained in several previous studies (Avey, Luthans, & Mhatre, 2008). The PCQ was developed on the basis of previously established scales measuring hope, optimism, resilience, and self-efficacy (Luthans, Youssef, & Avolio, 2007). Sample items include the following: hope—"I can think of many ways to reach my current work goals"; optimism—"I always look on the bright side of things regarding my job"; resilience—"I can get through difficult times at work because I've experienced difficulty before"; self-efficacy—"I feel confident contributing to discussions about the company's strategy." Responses were averaged to form an overall score of psychological capital.

Age of entrepreneur. This was obtained by means of a demographic question included in the study survey. The age of participants ranged from 24 to 82 years old. The mean and standard deviation were 49.62 and 10.87, respectively.

Subjective well-being ($\alpha = .84$). This variable was measured using the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS demonstrates good psychometric properties including high temporal reliability, high internal consistency, and discriminant validity (Pavot & Diener, 1993). Sample items include "In most ways my life is close to my ideal" and "If I could live my life over, I would change almost nothing." Responses were averaged to form an overall measure of subjective well-being.

Control variables. As controls we used both firm-level and individual-level variables. The firm-level controls included the age of the firm, number of persons employed by the firm, revenue of the firm, and performance of the firm. Data for firm age, number of employees, and revenue were acquired from Dun and Bradstreet. Firm performance ($\alpha = .89$) was measured by entrepreneurs' subjective reports of their firms' performance relative to that of other new ventures in their industry using items from McDougall, Covin, Robinson, and Heron (1994). The individual-level controls included the gender, education level, and dispositional positive affect of the lead entrepreneur. Data for each of these variables were obtained through the study questionnaire. The individual age of the entrepreneur was measured as the number of years old. Gender was measured as male (coded as 0) or female (coded as 1).

Education level was measured with five categories: high school/GED (coded as 1), some college (coded as 2), four-year college degree (coded as 3), master's degree (coded as 4), and professional or doctoral degree (coded as 5). Dispositional positive affect ($\alpha = .85$) was measured using 10 items from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988).

Measurement Model

A series of confirmatory factor analyses (CFAs) were conducted prior to hypothesis testing to examine the distinctiveness of the main variables studied. Goodness of fit was determined using the root mean square error of approximation (RMSEA) and the comparative fit index (CFI), and commonly used threshold values were used as indicators of poor fit ($RMSEA \geq .08$ and $CFI \leq .90$). The initial CFA examined was a three-factor model (i.e., psychological capital, perceived stress, and subjective well-being) that allowed the latent factors to correlate freely. Findings indicated this model to be a good fit to the observed data, $\chi^2 = 291.68$, $df = 203$, $RMSEA = .052$ (90% confidence interval = .038, .065), and $CFI = .952$. The three-factor model was then compared to a series of constrained models that each restricted the correlation of one pair of constructs to 1.0. Results of chi-square difference tests suggested that each of the alternative models with unity constraints was a significantly worse fitting.

In addition, following procedures described by Williams, Cote, and Buckley (1989) and recommended by Podsakoff, MacKenzie, and Lee (2003), we used CFA to determine the likelihood of common method variance in our data. Specifically, we added a latent common method factor to the three-factor measurement model to determine the potential increase in model fit when accounting for the common method factor and the variance extracted by this factor (Dulac, Coyle-Shapiro, Henderson, & Wayne, 2008). Findings indicated that the addition of a common method factor to the three substantive construct factors did improve model fit, $\Delta\chi^2(26) = 50.93$, $p < .05$. However, the variance extracted by the common method factor was only 0.34, which is below the 0.50 threshold indicating the presence of a substantive factor (Fornell & Larcker, 1981). Therefore, even though a small degree of common method variance may be present, it is unlikely that it is a strong enough to meaningfully affect our results.

Statistical procedures. Independent samples *t* tests were used to examine Hypothesis 1 by comparing the mean score of perceived stress from the current study using the PSS (Cohen & Williamson, 1988) with mean scores on the same measure from a wide range of occupational samples reported in Cohen and Janicki-Deverts (2012). Linear regression was used to examine the main effects predicted in Hypotheses 2, 3, 4, and 5. As predicted by Hypothesis 5, Hypotheses 2 to 4 collectively suggest an indirect effects model (Mathieu & Taylor, 2006) in which perceived stress is an intervening variable in the association between psychological capital and subjective well-being. Hypothesis 6 extended this prediction by suggesting that the strength of this indirect effect is partly contingent on the age of the entrepreneur. To test these hypotheses (H5-H6), we used the methodology and SPSS syntax described in Preacher and Hayes (2008). This procedure estimates confidence intervals for the population value of the unstandardized indirect effect (*ab*), which are derived using bias-corrected and accelerated (BCa) bootstrapping.

Table 1
Descriptive Statistics and Variable Intercorrelations

Variable	Mean	SD	<i>r</i>											
			1	2	3	4	5	6	7	8	9	10		
1. Firm age	5.13	1.44												
2. Number of employees	14.65	26.92	.16**											
3. Revenue (in millions)	0.18	2.32	.05	.03										
4. Firm performance	3.68	0.76	.08	.01	-.12									
5. Age (of entrepreneur)	49.62	10.87	.06	-.01	.05	-.04								
6. Gender (<i>male</i> = 0, <i>female</i> = 1)	0.25	0.43	-.10	-.04	-.05	.06	-.05							
7. Education	3.54	0.96	.09	.01	.04	-.01	.16**	-.07						
8. Dispositional positive affect	4.13	0.50	.09	.05	-.01	.09	.16**	.12	.18**					
9. Psychological capital	4.38	0.46	.11	.11	-.05	.34***	.08	-.07	.09	.41***				
10. Perceived stress	1.37	0.63	.07	.05	-.02	-.12	-.14*	.06	-.11	-.18**	-.33***			
11. Subjective well-being	3.94	0.70	.04	.05	.01	.30***	.11	-.07	.17**	.17**	.45***	-.45***		

Note. $N = 160$.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Results

The means, standard deviations, and intercorrelations for all study variables are presented in Table 1. Results relating to Hypothesis 1 are located in Table 2. Findings associated with Hypotheses 2, 3, and 4 are displayed in Table 3. The indirect effect and bootstrapped results pertaining to Hypothesis 5 are provided in Table 4, and the conditional unstandardized indirect effect and bootstrapped results pertaining to Hypothesis 6 are provided in Table 5.

Because of the strong association between potential study covariates and our focal variables, we checked for multicollinearity. Results showed that the largest variance inflation factor was 1.50 ($M = 1.15$), below the value of 10 that is seen as problematic (Neter, Kutner, Nachtsheim, & Wasserman, 1996). In addition, the highest condition index was 2.06 ($M = 1.49$), which is below the value of 30 that is commonly viewed as problematic (Tabachnick & Fidell, 2001). Thus, multicollinearity is not a major threat to the integrity of the results.

Hypothesis 1 predicted that founding entrepreneurs will report significantly lower levels of stress than persons in other occupations or careers. To test this hypothesis, we identified a recent study that provides group means for perceived stress using the same 10-item scale as the current study. Cohen and Janicki-Deverts (2012) report levels of perceived stress from a number of data collections. We utilized the means, standard deviations, and sample size data reported in their study, collected in 2009 from a national sample of 2,000 adults. We conducted a series of t tests comparing the perceived stress mean of our sample of founding entrepreneurs with perceived stress means from each group reported in the Cohen and Janicki-Deverts study (i.e., sex, age, race, education, income levels, and employment categories including employed full-time, employed part-time, unemployed, and retired). These comparisons are reported in Table 2 and indicate that for the majority of t tests

Table 2
Mean Scores of Perceived Stress From Current Study Compared With Samples From Various Populations Included in Cohen and Janicki-Deverts (2012)

	Sample Size	Mean	SD	<i>t</i> -Value	<i>df</i>	<i>p</i> Value
Current study—Business founders	160	13.73	6.31			
Employment						
Full-time	1,037	16.23	7.31	4.097	1195	.0000***
Part-time	167	15.32	7.28	2.107	325	.0223*
Unemployed	187	16.62	6.97	4.021	345	.0001***
Retired	282	12.34	7.63	1.956	440	.0511
Homemaker	156	15.79	7.33	2.680	314	.0078**
Other	159	18.99	7.57	6.743	317	.0000***
Education						
Less than high school	62	19.11	7.92	5.293	220	.0000***
High school	404	16.59	7.76	4.149	562	.0000***
Some college	784	16.00	7.54	3.562	942	.0004***
Bachelor's degree	513	15.17	7.22	2.267	671	.0237*
Advanced degree	231	14.65	7.14	1.313	389	.1900
Income						
\$25,000 or less	313	17.77	7.60	5.781	471	.0000***
\$25,001-\$35,000	367	16.69	7.72	4.267	525	.0000***
\$35,001-\$50,000	191	16.37	8.27	3.310	349	.0010**
\$50,001-\$75,000	418	15.26	7.54	2.279	576	.0230*
\$75,001 or more	711	14.74	6.88	1.703	869	.0890
Race						
White	1,704	15.70	7.51	3.213	1862	.0014**
Black	99	15.68	7.51	2.245	257	.0256*
Hispanic	81	17.00	7.45	3.572	239	.0004***
Other	84	17.44	7.67	4.045	242	.0001***
Age (in years)						
Younger than 25	223	16.78	6.86	4.436	381	.0000***
25-34	433	17.46	7.31	5.715	591	.0000***
35-44	331	16.38	7.07	4.028	489	.0001***
45-54	419	16.94	7.83	4.641	577	.0000***
55-64	372	14.50	7.20	1.173	530	.2414
Sex						
Men	968	15.52	7.44	2.877	1126	.0041**
Women	1,032	16.14	7.56	3.830	1190	.0001***

* $p < .10$. ** $p < .05$. *** $p < .01$.

performed, our sample of founding entrepreneurs is significantly lower in perceived stress ($M = 13.73$) than the other groups included in the 2009 study reported in Cohen and Janicki-Deverts with $p < .05$ (or lower). The only exceptions to this general pattern are as follows: Perceived stress mean for our sample of founding entrepreneurs is not significantly different from that of individuals with advanced degrees, individuals aged 55 to 64, or individuals with an income over \$75,000 (though our sample had a lower perceived stress mean than

Table 3
Hierarchical Regression Models of Stress and Subjective Well-Being

Variable	Perceived Stress						Subjective Well-Being					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Firm control variables												
Firm age	0.05	0.04	0.05	0.03	0.05	0.03	-0.02	0.04	-0.02	0.04	-0.00	0.03
Number of employees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Revenue	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Firm performance	-0.11*	0.07	-0.04	0.07	-0.04	0.07	0.29***	0.07	0.18**	0.07	0.16**	0.07
Individual control variables												
Gender	0.13	0.12	0.08	0.11	0.05	0.11	-0.14	0.12	-0.06	0.12	-0.04	0.11
Education	-0.04	0.05	-0.04	0.05	-0.04	0.05	0.10*	0.06	0.10*	0.05	0.08*	0.05
Dispositional positive affect	-0.21**	0.10	-0.06	0.11	-0.06	0.11	0.16	0.11	-0.05	0.11	-0.07	0.10
Main effects												
Age of entrepreneur (AE)	-0.01	0.01	-0.01	0.00	-0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00
Psychological capital (PC)			-0.40***	0.12	-0.43**	0.12			0.58***	0.13	0.44***	0.12
Perceived stress											-0.36***	0.08
Interaction												
AE × PC					-0.02*	0.01						
<i>F</i> -Ratio	1.79*		2.91***		2.975***		3.38***		5.81***		8.04***	
<i>R</i> ²	.09		.15		.17		.15		.26		.35	
Adjusted <i>R</i> ²	.04		.10		.11		.11		.21		.31	

Note. *N* = 160. Unstandardized regression coefficients are shown.

p* < .10. *p* < .05. ****p* < .01.

Table 4
Bootstrapped Indirect Effect Results

Model	Subjective Well-Being ^a					
	Boot Indirect Effect	Boot <i>SE</i>	LL 95% CI	UL 95% CI	Boot <i>z</i>	Boot <i>p</i>
Psychological capital (via perceived stress) on subjective-well-being	0.146	0.055	0.057	0.285	2.640	.005

Note. Biascorrected and accelerated confidence intervals are reported. *N* = 160. Bootstrap sample size = 10,000. CI = confidence interval; LL = lower limit; UL = upper limit.

^aControl variables = firm age, number of employees, revenue, firm performance, age of entrepreneur, gender, education, and dispositional positive affect.

these groups, the difference was not significant). The perceived stress mean for founding entrepreneurs in our sample is also not significantly different from the perceived stress mean for retired individuals reported in Cohen and Janicki-Deverts. So interestingly, the

Table 5
Conditional Indirect Effect Results

Model	Age of Entrepreneur ^b	Subjective Well-Being ^a					
		Boot Indirect Effect	Boot SE	LL 95% CI	UL 95% CI	Boot z	Boot p
Psychological capital (via perceived stress) on subjective-well-being	37	0.082	0.059	-0.015	0.216	1.390	.082
	41	0.105	0.054	0.022	0.235	1.944	.026
	49	0.150	0.055	0.063	0.284	2.727	.003
	57	0.195	0.070	0.079	0.361	2.786	.003
	65	0.240	0.092	0.086	0.460	2.609	.005

Note. Biascorrected and accelerated confidence intervals are reported. $N = 160$. Bootstrap sample size = 10,000. CI = confidence interval; LL = lower limit; UL = upper limit.

^aControl variables = firm age, number of employees, revenue, firm performance, gender, education, and dispositional positive affect.

^bIndirect effects are provided at the 10th, 25th, 50th, 75th, and 90th percentiles of the moderator (age of entrepreneur).

amount of perceived stress for founding entrepreneurs in the current study is similar to that of retirees in a large national sample.

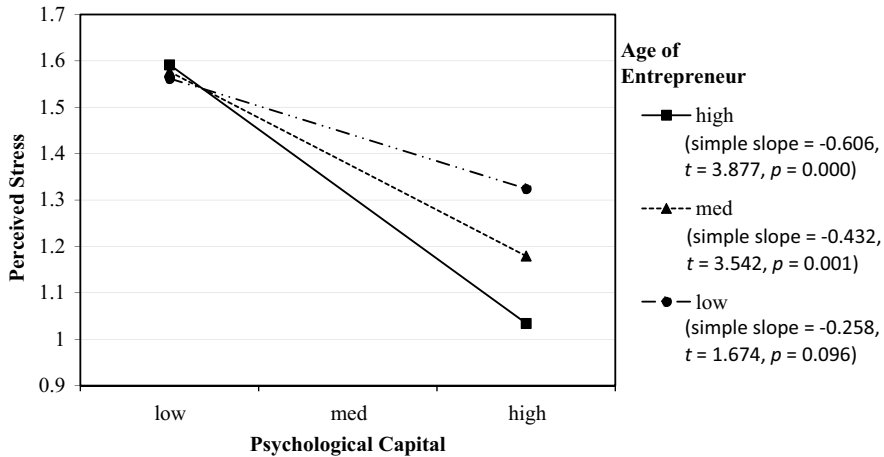
There were no groups with statistically significantly lower levels of perceived stress than our sample of founding entrepreneurs. Of particular note among those groups that were statistically significantly higher in perceived stress compared to our sample of founding entrepreneurs are individuals employed full-time ($M = 16.23$, $SD = 7.31$, $p < .01$), individuals employed part-time ($M = 15.32$, $SD = 7.28$, $p < .05$), unemployed individuals ($M = 16.62$, $SD = 6.97$, $p < .01$), and homemakers ($M = 15.79$, $SD = 7.33$, $p < .01$). These findings provide support for Hypothesis 1.

Hypothesis 2 proposed that founding entrepreneurs' level of psychological capital will be negatively associated with their reported level of perceived stress. As shown in Model 2 of Table 3, the relationship between psychological capital and stress was significant and negative ($B = -0.40$, $p < .01$). Hypothesis 3 predicted that founding entrepreneurs' level of stress will be negatively associated with their level of subjective well-being. As shown in Model 6 of Table 3, the relationship between stress and subjective well-being was significant and negative ($B = -0.36$, $p < .01$). Hypothesis 4 suggested that founding entrepreneurs' level of psychological capital will be positively associated with their level of subjective well-being. As shown in Model 6 of Table 3, the relationship between psychological capital and subjective well-being was significant and positive ($B = 0.44$, $p < .01$). These results offer support for Hypotheses 2, 3, and 4.

Hypothesis 5 predicts that psychological capital will, in part, be indirectly (positively) related to subjective well-being through reduced levels of stress. As shown in Table 4, the unstandardized indirect effect (ab) and bootstrapped confidence intervals are consistent with our prediction that the indirect effect of psychological capital on subjective well-being (via stress) is positive ($ab = 0.146$), with a 95% confidence interval of 0.057 to 0.285. These results provide support for Hypothesis 5.

Hypothesis 6 predicts that the indirect relationship between entrepreneurs' psychological capital and their level of subjective well-being (via perceived stress) will be contingent on their age, such that the relationship will be more positive for older entrepreneurs than for

Figure 2
Interaction of Psychological Capital With Age of Entrepreneur on Perceived Stress



younger ones. The pattern of results shown in Table 5 demonstrates that the unstandardized indirect effect and confidence intervals are consistent with our prediction that the indirect effect of psychological capital on subjective well-being (via perceived stress) is contingent on the age of the entrepreneur, such that the indirect effect increases as the age of the entrepreneur increases. Specifically, the indirect effect is only marginally significant at the 10th percentile of age (at age 37, indirect effect = 0.082, $z = 1.390$, $p = .082$), while the indirect effect is highly significant at the 50th (at age 49, indirect effect = 0.150, $z = 2.727$, $p = .003$) and 90th (at age 65, indirect effect = 0.092, $z = 2.609$, $p = .005$) percentiles of age for our sample of entrepreneurs. The nature of this conditional indirect effect appears to be largely a result of the interaction of psychological capital with age of entrepreneur on perceived stress ($B = 0.02$, $p = .075$). As Figure 2 illustrates, the relationship between psychological capital and perceived stress is only marginally significant at low age of entrepreneur (-1 SD; simple slope = -0.258 , $p = .096$), while the relationship is highly significant at the mean (simple slope = -0.432 , $p = .001$) and at high age of entrepreneur ($+1$ SD; simple slope = -0.606 , $p = .000$). Therefore, results provide support for Hypothesis 6 and for our overall conditional indirect effects model.

Discussion

It has often been suggested that, because of the conditions they face while founding and operating new ventures, entrepreneurs are exposed to many factors known to generate high levels of stress (Jex & Beehr, 1991; Xie et al., 2008); consequently, they would be expected, all other factors being equal, to experience considerable stress. The present findings indicate, however, that in fact entrepreneurs report relatively low levels of stress—levels lower than those reported by many other occupational groups included in a recent national survey of stress (Cohen & Janicki-Deverts, 2012). Although this finding seems contrary to widely held

beliefs (Buttner, 1992), it was predicted by the model proposed and tested in this research—a model based on ASA theory (Schneider, 1987; Schneider et al., 1995). Applying this theory to entrepreneurs suggests the possibility that as a group, founders of new businesses are selected—both by environmental factors and by self-selection factors—to be above average in the capacity to tolerate or manage stress. As a result, they then report relatively low, rather than high, levels of stress. Findings of the current study offer support for this hypothesis, indicating that founding entrepreneurs do in fact report moderate or even relatively low levels of stress.

An alternative interpretation of the relatively low levels of stress observed among entrepreneurs in the present research is that ASA operates not with respect to factors related to high tolerance for stress, but, rather, on the basis of success: Only individuals who perform well as entrepreneurs continue to pursue this activity, and the success they experience, in turn, tends to mitigate stress. This possibility is consistent with previous research indicating that achieving key goals generates high levels of subjective well-being and, in this way, can offset the adverse effects of stress (Diener, 2000). On the other hand, success in running a new venture often leads to high rates of growth that may, in turn, generate *high*, rather than low, levels of stress.

To investigate the possible role of success in generating the relatively low levels of stress reported by founding entrepreneurs, we performed several analyses. As noted earlier, firm performance (as reported by the entrepreneurs) was employed as a control variable. As such, it proved to be marginally significant in our model of perceived stress ($B = 0.11, p < .10$) and highly significant in our model of subjective well-being ($B = 0.29, p < .01$). Thus, we probed to determine whether it may play a role as a focal variable within the sequence of the indirect effects examined in the current study. Results, however, indicated that firm performance did not act as a significant mediating or moderating variable in the relationship between psychological capital and perceived stress, perceived stress and subjective well-being, or psychological capital and subjective well-being. Of course, the possibility remains that such relationships might be observed with respect to other measures of success. However, support for this suggestion is lacking in the present data.

Support was also absent for another possibility, that entrepreneurs high in stress tolerance tend to choose opportunities that are high in risk or difficulty and hence, are more likely to fail than persons lower in stress tolerance. This would lead to the prediction that surviving entrepreneurs (the group included in the present research) would, perhaps, be relatively high in reported stress, since the most stress-resistant individuals have been eliminated by the failure of their high-risk ventures. This is an intriguing possibility, but the finding that entrepreneurs in the present study reported levels of stress lower than those of many groups in a recent national survey does not support it. Future research could, however, add clarity to this issue by including entrepreneurs who have exited the field as well as ones who have survived.

In contrast, support was obtained for the model proposed and tested here, and for several hypotheses derived from this model. As predicted, entrepreneurs' level of psychological capital was negatively associated with their reported level of stress. In addition, founding entrepreneurs' level of psychological capital was found to be positively associated with their level of subjective well-being, and this relationship was mediated, in part, by experienced stress. This indirect effect was, however, also found to be moderated by entrepreneurs' age, such that the stress-reducing effects of psychological capital were found to be stronger for older

entrepreneurs than for younger ones. This finding is consistent with ASA theory, since presumably older individuals, through accumulated life experience, are likely to have developed more accurate understanding of their knowledge, skills, and abilities, broader knowledge of the pressures inherent to specific vocational opportunities, and greater recognition of the levels of stress they are able or willing to tolerate than younger persons (Kuhn, 2000). As a result, attraction and selection mechanisms of ASA would be expected to operate more effectively for older individuals. Furthermore, since older persons have been found to be less susceptible to sunk costs than younger individuals (Bruine de Bruin, Parker, & Fischhoff, 2007; Strough, Mehta, McFall, & Schuller, 2008), the attrition mechanism of ASA might also operate more strongly with increasing age. Overall, then, findings are consistent with the suggestion that as a result of both environmental and self-selective factors, founding entrepreneurs are indeed relatively high in their capacity to tolerate or manage stress.

The present research also sheds light on the factors that contribute to entrepreneurs' capacity to tolerate or manage stress—the factors through which ASA produces a population above average on this dimension. One such factor appears to be *psychological capital*, a construct that encompasses four basic components: self-efficacy, optimism, hope, and resilience. The present findings indicate that the higher entrepreneurs are in psychological capital, the lower their reported stress. This finding is consistent with previous research indicating that psychological capital is negatively related to stress among managers and employees (Avey et al., 2009). To the best of our knowledge, however, this relationship has not previously been investigated in the context of entrepreneurship, where, given the absence of external norms and the presence of many stressors, it might be expected to play an especially important role. In sum, present results indicate that founding entrepreneurs are high in psychological capital and that this, in turn, underlies their relatively low levels of reported stress.

The findings of this research also offer evidence concerning the relationship between psychological capital and subjective well-being (Diener, 2000). As described previously, subjective well-being refers to individuals' overall satisfaction with their lives—their overall personal happiness. Subjective well-being, in turn, has been found to be positively related to many beneficial outcomes, including higher work productivity, personal income, career success, and job satisfaction, as well as greater breadth and quality of social relationships and social networks (Pinquart & Sorensen, 2000). It is also significantly related to both physical and psychological health (Lyubomirsky et al., 2005; Xu & Roberts, 2010). The present findings indicate that psychological capital is positively related to subjective well-being and, furthermore, that this relationship is mediated, in part, by perceived stress. Put in other terms, the greater entrepreneurs' psychological capital, the lower their stress, and the lower their stress, the higher their subjective well-being. Given the numerous benefits of high levels of subjective well-being, this is an important outcome, and one that may well contribute to entrepreneurs' effectiveness in several ways—for instance, by enhancing their personal health and vigor, contributing to the establishment of high-quality social networks, and increasing their work output and productivity.

Theoretical and Practical Implications

Together, the findings described thus far have significant implications both for theory and practice. First, the findings help to extend ASA theory (Schneider, 1987; Schneider et al., 1995) to an important issue in entrepreneurship: “Why do particular individuals choose

to become entrepreneurs?” (Hmieleski & Corbett, 2006; Zhao et al., 2010). The present results indicate that part of the answer involves the components of ASA theory. In essence, individuals become entrepreneurs because they have an initial interest in this activity or career and are then selected—by both environmental factors and self-selective factors—for entry into and then, by attrition, for exit from entrepreneurship—or persistence in entrepreneurship.

Second, as noted briefly above, the present research helps to explain how the mechanisms of ASA theory operate so as to produce a population of founding entrepreneurs who are above average in their capacity to tolerate or manage stress. Briefly, environmental and self-selective factors tend to generate a population of founding entrepreneurs who are relatively high in psychological capital—a combination of skills and capacities that helps them resist the potentially adverse effects of stress. Evidence for this reasoning is provided in Table 6, which compares the level of psychological capital among founding entrepreneurs in this research with the levels observed among diverse additional groups in a large number of previous studies. These data provide indirect evidence that, as anticipated, entrepreneurs are indeed relatively high in psychological capital, and so are better able to tolerate or manage stress when it occurs.

Third, by investigating the effects of stress on entrepreneurs’ subjective well-being, the present research helps to expand the definition of “entrepreneurial success” to include personal life satisfaction. In the past, such success has been measured primarily in terms of financial measures; yet it is becoming clear that such outcomes are only one of the many goals sought by entrepreneurs (Rindova et al., 2009).

Finally, the present findings help to link a widely accepted theory in the fields of organizational behavior, human resources management, and industrial-organizational psychology (ASA theory) with important questions in the field of entrepreneurship. Forging such interdisciplinary connections between the field of entrepreneurship and other branches of management has long been viewed as an important and desirable goal (Baron, 2002).

In addition to these theoretical implications, the present findings also offer ones of a more practical nature. First, the present results suggest that one skill entrepreneurs should seek to acquire is the capacity to cope with and manage stress effectively. Fortunately, many effective techniques for achieving these goals exist (Lehrer, Woolfolk, & Sime, 2007), so making them available to current or future entrepreneurs would appear to be both feasible and potentially valuable. Second, psychological capital appears to be a valuable personal asset for entrepreneurs. Thus, steps to help them develop or build psychological capital may also prove valuable (Luthans et al., 2007). A key goal of the field of entrepreneurship is assisting entrepreneurs in their efforts to convert their ideas and vision into reality—viable products or services. Thus, helping them acquire skills that can assist them in this endeavor is truly a central task—one worthy of careful attention (Baron, 2012).

Limitations

All empirical research has limitations, and the present research is certainly no exception. First, as already noted, the absence of lagged performance data—especially measures based on verifiable financial information—restricts the possibility of examining relationships between the variables of interest (e.g., psychological capital, experienced stress, subjective

Table 6
Mean Scores of Psychological Capital (PsyCap) From Current Study Compared With Mean Scores From Other Populations

Authors	Sample	PsyCap Measure	Reported Mean (adjusted mean)	SD	t-Value	df	p Value
Current study	Business founders (N = 160)	12-item PCQ, 5-point scale	4.38	0.46			
Avey, Hughes, Norman, & Luthans (2008)	Working adults asked to volunteer via e-mail from a large Midwestern university (N = 348)	24-item PCQ, 6-point scale	4.69 (3.908)	0.62 (0.517)	9.887	506	.0000***
Avey, Luthans, & Jensen (2009)	Working adults across a variety of industries who responded to a request for volunteers for a research study on motivation in the workplace (N = 416)	24-item PCQ, 6-point scale	4.77 (3.975)	0.57 (0.475)	9.245	574	.0000***
Avey, Luthans, & Youssef (2010)	Employees from a variety of organizations and jobs who agreed to participate in a research project on leadership and motivation (60% in nonmanagement, 38% first-level manager to CEO or owner; N = 336)	24-item PCQ, 6-point scale	4.63 (3.858)	0.67 (0.558)	10.284	494	.0000***
Avey, Nimmicht, & Pigeon (2010)	Study 1: tellers in large banking firm (N = 345); Study 2: franchisees (N = 109)	24-item PCQ, 6-point scale	4.56 (3.80) 4.53 (3.775)	0.55 (0.458) 0.37 (0.308)	13.2222 12.015	503 267	.0000*** .0000***
Avey, Patera, & West (2006)	Engineering managers from large <i>Fortune</i> 100 firms (N = 105)	24-item PCQ, 6-point scale	4.83 (4.025)	0.455 (0.379)	6.577	263	.0000***
Avey, Wernsing, & Luthans (2008)	Employees from a variety of organizations and jobs who agreed to participate in a research project on leadership and motivation (ranged from nonmanagerial employees to supervisors, executives, and business owners; N = 132)	24-item PCQ, 6-point scale	4.56 (3.80)	0.63 (0.525)	10.058	290	.0000***
Combs, Milosevic, Jeung, & Griffith (2011)	Undergraduate college students from 13 colleges and universities (N = 380)	12-item PCQ, 6-point scale	4.83 (4.025)	0.765 (0.637)	6.382	538	.0000***
Gooty, Gavin, Johnson, Frazier, & Snow (2009)	Members of a marching band at a university (N = 158)	24-item PCQ, 6-point scale	4.48 (3.733)	0.76 (0.633)	10.436	316	.0000***
Luthans, Avey, Clapp-Smith, & Li (2008)	Workers from large copper refining factories in China (N = 456)	12-item PCQ, 6-point scale	4.33 (3.608)	0.46 (0.383)	20.778	614	.0000***
Luthans, Avey, & Patera (2008)	Pretest, posttest control group experimental design with sample of working adults recruited online from a variety of industries (treatment N = 187, control N = 177)	24-item PCQ, 6-point scale	T1: 4.58 (3.817) C1: 4.69 (3.908) T2: 4.70 (3.917) C2: 4.64 (3.867)	0.610 (0.508) 0.591 (0.492) 0.643 (0.536) 0.605 (0.504)	10.747 9.069 8.557 9.724	345 335 345 335	.0000*** .0000*** .0000*** .0000***

(continued)

Table 6 (continued)

Authors	Sample	PsyCap Measure	Reported Mean (adjusted mean)	SD	t-Value	df	p Value
Luthans, Norman, Avolio, & Avey (2008)	Study 1: management students/emerging adults (N = 404), Study 2: insurance service firm employees (N = 163), Study 3: engineers/technicians in high-tech manufacturing (N = 170)	24-item PCQ, 6-point scale	4.33 (3.608) 4.82 (4.017) 4.67 (3.892)	0.41 (0.342) 0.47 (0.392) 0.51 (0.425)	21.799 7.638 10.017	562 321 328	.0000*** .0000*** .0000***
Norman, Avey, Nimmicht, & Pigeon (2010)	Contacts of faculty and students from large Midwestern university, all from U.S. organizations (N = 199)	12-item PCQ, 6-point scale	4.61 (3.842)	0.82 (0.683)	8.528	357	.0000***
Peterson, Luthans, Avolio, Walumbwa, & Zhang (2011)	Employees from the retail advisory department of a large financial service organization (N = 179)	24-item PCQ, 6-point scale	T1: 3.65 (3.042) T2: 3.52 (2.933) T3: 3.51 (2.925)	0.75 (0.625) 0.91 (0.758) 0.92 (0.767)	22.226 20.943 20.872	337 337 337	.0000*** .0000*** .0000***
Peterson, Walumbwa, Avolio, & Hannah (2012)	Soldiers attending a training program at an Army base (N = 171)	8-item PCQ, 7-point scale	5.54 (3.957)	0.73 (0.521)	7.809	329	.0000***
Rego, Sousa, Marques, & Pina e Cunha (2012)	Shop assistants working in 33 commerce organizations in Portugal (N = 201)	24-item PCQ, 6-point scale	3.7 (3.083)	0.63 (0.525)	24.618	359	.0000***
Roberts, Scherer, & Bowyer (2011)	Working adults from various industries recruited only for research studies (N = 390)	24-item PCQ, 5-point scale	3.55	0.46	19.219	548	.0000***
Sweetman, Luthans, Avey, & Luthans (2011)	Working adults from a wide cross section of organizations, levels, and jobs who agreed to participate in a research project on leadership and motivation (N = 899)	24-item PCQ, 6-point scale	4.55 (3.792)	0.64 (0.533)	13.1111	1057	.0000***
Walumbwa, Peterson, Avolio, & Hartnell (2010)	Police sergeants in large metropolitan city in southwestern United States (N = 264)	19 items from PCQ, 5-point scale	2.97	0.5	28.998	422	.0000***
Woolley, Carza, & Levy (2011)	Stratified random sample of employed New Zealand adults representative of New Zealand's national statistics (N = 828)	12-item PCQ, 6-point scale	4.78 (3.983)	0.63 (0.525)	8.925	986	.0000***

Note. Adjusted mean for comparison of 6-point scales and 7-point scale to 5-point scale. PCQ = Psychological Capital Questionnaire. **p* < .10. ***p* < .05. ****p* < .01.

well-being) and firm-level performance. Although attention in this study was focused primarily on nonfinancial outcomes among entrepreneurs—specifically, their subjective well-being—future research should seek to expand the scope of the current research by obtaining direct financial information as well. While subjective performance data were obtained (entrepreneurs' ratings of the revenue growth, employee growth of their companies), the major limitations of such data indicated that it was most appropriate to treat these data as a control variable. However, with full recognition of their uncertain meaning, we did examine, in a very preliminary way, potential relationships between these data and the other key variables in the study: psychological capital, perceived stress, and subjective well-being. Findings indicated that there was a significant positive relationship between psychological capital and firm performance ($r = .34, p < .01$), and also between subjective well-being and such performance ($r = .30, p < .01$). The correlation between stress and performance, although negative, as expected, did not attain significance ($r = .12, p = .12$). These findings should, of course, be interpreted with extreme caution. However, they do provide some very preliminary indication that psychological capital and subjective well-being are linked, to some degree, to firm performance.

An additional limitation involves the nature of the sample of founding entrepreneurs. Although all participants were founders of their companies and were obtained from a random sample of new ventures throughout the United States, the return rate was low, only 9.8%. While this rate is comparable to that in many other studies (Ling, Simsek, Lubatkin, & Veiga, 2008), it raises the possibility that nonrespondents may have differed in unknown ways from the persons who did respond to the survey. For instance, nonresponders may have been experiencing higher levels of stress and so declined to participate because of intense time pressure. To the extent this occurred, the level of stress reported by entrepreneurs may have been spuriously lowered. It should also be noted that in a more general sense, the present sample may have been somewhat unrepresentative of the population of all entrepreneurs because the companies started by the participants had survived, at least until the collection of the current data. As a result of being “survivors,” they may demonstrate a higher capacity to tolerate or manage stress than is true of the entire population. Future research should therefore seek to obtain a broader sample of entrepreneurs, perhaps one including entrepreneurs whose businesses have failed, as well as those whose new ventures are still in operation. With this said, however, we should also note that empirical findings have shown that a low response rate does not necessarily indicate nonresponse bias (Goldberg, 2003; Schalm & Kelloway, 2001).

A final limitation is that the primary study variables were measured with the use of a single survey. This raises possible concerns with respect to common-method variance. It should, however, be noted that complex models including moderation and/or mediation are less likely to suffer from such issues (Evans, 1985). For example, if present, common method bias would be expected to appear consistently through all study variables, thus decreasing the odds of being able to detect significant indirect effects. Moreover, we highlight that findings from our CFA (Williams et al., 1989) indicated that common method variance did not significantly affect our ability to test the relationships hypothesized in our study. Taking these considerations, as well as the complex pattern of the conditional indirect effects examined into careful account, it seems unlikely that the present results are due to same-source confounds.

Conclusion

The findings of the present study add to our understanding of the role of stress in entrepreneurship, providing insights into the processes and mechanisms that allow entrepreneurs to survive—and even flourish—under conditions that often undermine the health, well-being, and performance of many others. We close, therefore, with the following thought, offered in many stress management workshops: “*We can’t always change the world, but we can change our reactions to it.*” Basically, this statement suggests that stress is inevitable—we are certain to encounter it during the course of an active life. But its effects upon us are at least partly under our own control and depend, to an important extent, on how we choose to interpret and cope with them. Perhaps, in essence, entrepreneurs are especially adept at following this advice—in part, perhaps, because the processes of attraction, selection, and attrition result in a population of “survivors” high in psychological capital; and such persons, in turn, are well equipped to deal with the daunting challenges virtually certain to emerge as they attempt to convert the “possible” (their ideas and dreams) into the “real”—new businesses providing useful, and valuable, products or services.

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