

6-9-2012

## ENTREPRENEUR'S PSYCHOLOGICAL CAPITAL AND VENTURE GROWTH: TESTING THE GOAL MEDIATED RELATIONSHIPS

Mateja Drnovšek

*University in Ljubljana, Mateja.drnovsek@ef.uni-lj*

Pankaj C. Patel

*Ball State University*

Melissa S. Cardon

*Pace University*

---

### Recommended Citation

Drnovšek, Mateja; Patel, Pankaj C.; and Cardon, Melissa S. (2012) "ENTREPRENEUR'S PSYCHOLOGICAL CAPITAL AND VENTURE GROWTH: TESTING THE GOAL MEDIATED RELATIONSHIPS," *Frontiers of Entrepreneurship Research*: Vol. 32: Iss. 6, Article 4.

Available at: <http://digitalknowledge.babson.edu/fer/vol32/iss6/4>

This Paper is brought to you for free and open access by the Entrepreneurship at Babson at Digital Knowledge at Babson. It has been accepted for inclusion in Frontiers of Entrepreneurship Research by an authorized administrator of Digital Knowledge at Babson. For more information, please contact [digitalknowledge@babson.edu](mailto:digitalknowledge@babson.edu).

# ENTREPRENEUR'S PSYCHOLOGICAL CAPITAL AND VENTURE GROWTH: TESTING THE GOAL MEDIATED RELATIONSHIPS



*Mateja Drnovšek, University in Ljubljana, Slovenia*  
*Pankaj C. Patel, Ball State University, USA*  
*Melissa S. Cardon, Pace University, USA*

## ABSTRACT

Drawing from literatures on positive psychology we develop a model of the effects of psychological capital and entrepreneur's goals on venture growth. Using a mediation analysis on data from 215 entrepreneurs in high-technology US manufacturing ventures, we find support for positive direct effects of psychological capital on venture growth. We also find that this positive effect is mediated by personal goal mechanisms. Implications for research and practice are discussed.

## INTRODUCTION

Interest in the role of cognition of entrepreneurs has been growing in recent years (Grégoire et al., 2011). Entrepreneurial cognition typically includes processes related to entrepreneurs' thoughts, interpretations, and reasoning abilities (Gatewood et al., 1995) as well as outcomes, such as entrepreneurial opportunity emergence (Saravathy et al., 2005) and opportunity exploitation (McMullen and Shepherd, 2006). Prior entrepreneurship research has conceptually or empirically focused on the importance of positive psychological factors such as optimism (Hmieleski and Baron, 2009a), hope (Snyder et al., 1991), self-efficacy (Zhao et al., 2005), and resilience (Krueger et al., 2008). We focus on psychological capital (PsyCap), which is defined as an individual's psychological resource characterized by four components: self-efficacy, hope, optimism and resiliency (Luthans, 2007) and has been viewed as a core construct conceptually supported by financial, human and social capital traditions.

In this study we elaborate on and extend existing research on the role of positively rooted psychological processes of individuals in entrepreneurial organizations. While the existing body of work on entrepreneurial cognitions has contributed significant insights and advanced our knowledge concerning the role of cognitions in entrepreneurship, the focus is primarily on the positive consequences of various cognitive resources. Recently, Gregoire and colleagues (2011) suggested that the majority of research on entrepreneurial cognition suffers from too narrow of a theoretical perspective. To respond to this gap, we include psychological capital as a higher order cognitive construct that results from 'dynamic processes that activate the dynamic encoding of cognitive categories, expectancies, goals, values, affects and self-regulatory plans' (Avey et al., 2010). PsyCap acts as a cognitive 'resource reservoir' (Youssef and Luthans, 2007), whereby the individual capacities develop, manifest, and work as a collective rather than in isolation. In challenging situations, such as entrepreneurship, performance outcomes cannot be solely explained by only one of an entrepreneur's individual cognitive capacities (such as self-efficacy or hope) but is rather attributable to the collective contribution of all four. Thus our first contribution to the literature is

in introducing and empirically testing the role of psychological capital as a core cognitive resource capacity construct in entrepreneurship.

Our second contribution includes analysis of the mediating role that goals play in the entrepreneurship process. To that end, we draw from goal setting theory (Locke and Latham, 1990) and apply it to entrepreneurial contexts. In so doing we build on emerging work in entrepreneurship that focuses on the link between individual-level aspects of entrepreneurs and venture-level performance. Most research on state or trait characteristics in an organizational setting focuses on the link between individual traits and individual performance or attitudes (e.g. Baron, 2008), and most research in entrepreneurship also focuses on within-level effects, such as the impact of individual cognitions on individual behaviors (Mitchell et al., 2004) or firm-level strategies on firm performance (Edelman et al., 2005). More recent work has focused on between-level effects, including Hmieleski and Baron's (2009b) study of individual optimism and firm performance. In their review, Rauch and Frese (2007a: 57) observe that in smaller firms "it makes sense that personality of entrepreneurs has a direct relationship with business success." In line with this later work, we also focus on between-level effects (individual to organization), given that the individual entrepreneur has a profound impact on the success or failure of the venture (Chandler and Jansen, 1992).

Our conceptual model is in Figure 1. Below we first review literature on psychological capital and its four components, then discuss entrepreneurial goals as a precursor of venture growth. We test our hypotheses in the proposed mediation model using a sample of 215 entrepreneurs and discuss the findings and implications for research and practice.

## THEORY AND HYPOTHESES

### Psychological Capital

Psychological capital (PsyCap) is a personal cognitive resource capacity with components of self-efficacy, hope, optimism and resiliency. It enables activation of creative and flexible adaptive mechanisms of entrepreneurs that result in behavioral patterns to flexibly cope with environmental setbacks, and secure venture growth. Psychological capital has been studied as a positive resource for combating employee stress at work (e.g. Avey et al., 2009). Conservation of resources theory (COR) (Hobfoll, 1989) provides a relevant perspective for how an entrepreneur nurtures personal psychological capital to confront challenging situations. The basic premise of COR is that people strive to retain, protect and build scarce personal resources (Hobfoll, 1989, p. 516) to deal with stressful situations as they arise. Additionally, COR theory assumes that individuals seek to acquire and retain resources because of the hedonistic motive to create situations that are pleasurable for them and avoid situations that might lead to the loss of valued resources (Ng and Feldman, In Press). Building from this 'resource accumulation and conservation tenet' we argue that entrepreneurs' psychological capital resources are important because they can improve venture performance and also increase their personal sense of worth because resources often have symbolic value over and above their tangible worth (Hobfoll, 1989).

Consider an entrepreneur who is facing persistent decline of revenues in one of his most important markets. In developing response behaviors, the entrepreneur can capitalize on his optimistic explanatory style when assessing lost market share of his company to external (many

other competitors recently entered the market), temporary (with economic expansion, the demand will grow), and situation specific causes (decreased revenues concern only domestic market). As a result, he is likely to have resiliency to bounce back and eventually go one step further to start considering entry to new foreign markets because of perceived self-efficacy to do so. Additionally, he is likely to use his hope pathways to find creative ways of applying his or her past experiences when entering new markets. The nature of this response behavior process cannot be solely explained with the relationship between single components of the entrepreneur's psychological capital (e.g. self-efficacy, hope, optimism, or resilience) and venture performance (e.g. entry to new markets). Rather, it can be attributed to the combined contributions of all four components, with each adding a unique perspective in relation to the desired outcomes (Youssef and Luthans, 2007). We briefly review each component of psychological capital and relevant existing research.

*Self-efficacy*, emerging from Bandura's (1986) social cognitive theory and empirical research in the workplace, is defined as 'one's confidence about his abilities to mobilize the motivation, cognitive resources, and courses of action needed to successfully execute a specific task within a given context' (Stajkovic and Luthans, 1998). When examined as a state-like trait of an entrepreneur, self-efficacy refers to an entrepreneur's ability to master the necessary cognitive, memory processing, and behavioral facilities to deal effectively with the environment (Chen et al., 1998; Luthans et al., 2000). In entrepreneurship, self-efficacy is most often seen as a multidimensional construct made up of goal and control beliefs that play important roles in decision making and subsequent phases in the process of starting-up and growing a new business (Baum et al., 2001; Boyd and Vozikis, 1994; Chen et al., 1998). During venture creation, for example, self-efficacy influences attributions nascent entrepreneurs develop for venture creation (Gatewood et al., 1995), entrepreneurial intentions Krueger (2000) and employment choice intentions (Chandler and Jansen, 1992; Segal et al., 2005). Such positive effects of self-efficacy on entrepreneurial outcomes happen because efficacious entrepreneurs employ cognitive capacities such as symbolizing, forethought, observation, and self-regulation during goal attainment processes (Avey et al., 2010; Bandura, 1997).

*Hope*, the second element of PsyCap, is defined as a positive motivational state that is fueled with the personal sense of agency over the determination and motivation to accomplish one's goals (e.g. 'the will') and processes through which alternative pathways are created and adapted to achieve goals and overcome obstacles (e.g. 'the way') (Snyder et al., 1991). It is similar to self-efficacy in its focus on goal directed motivations and behaviors but differs in the set of mechanisms through which these goals are achieved. In entrepreneurship, hope has been shown to impact entrepreneurs' satisfaction with business ownership (Luthans, 2002).

*Optimism* is an attributional style that explains positive events through personal, permanent, and pervasive causes and negative events through external, temporary, and situation-specific ones (Seligman and Nathan, 1998). This is important for goal related behaviors because optimists tend to build positive expectancies that motivate goal pursuit and an approach type of coping whereas pessimists are often hindered by self-doubts, negative expectancies and an avoidance type of coping (Carver et al., 2010). Optimism is similar to self-efficacy and hope in the sense of orientation to pursuing personally valuable goals but it extends sources of positive expectancies beyond the internalized self to external factors. Entrepreneurs tend to be optimistic individuals, and their optimism has been related to venture outcomes (Hmieleski and Baron, 2009a). For example, optimistic entrepreneurs attract prospective investors by being willing to accept payment for inventions contingent on the success of the invention (Dushnitsky, 2010).

*Resiliency*, the fourth component of PsyCap, is defined as ‘the capacity to bounce back from adversity, failure or even positive events, progress and increased responsibility’ (Luthans, 2002, p. 702). Resilient individuals tend to accept reality, keep stable values and beliefs and develop effective adaptive mechanisms to flexibly and creatively respond in unexpected situations, which are often seen as opportunities for learning and growth (Luthans and Youssef, 2007). Resilience is an important entrepreneurial resource given that venturing involves high base rates of failure and thus calls for highly resilient actors that need to valiantly persevere for eventual success (Shepherd, 2003). Failure is a key phenomenon in entrepreneurship with important consequences for individuals, organizations, and society (McGrath, 1999; McGrath and Cardon, 1997; Shane, 2001). Scholars have argued that the experience of failure provides entrepreneurs with key learning opportunities that improve an entrepreneur’s probabilities of success in subsequent entrepreneurial initiatives (Minniti and Bygrave, 2001; Shepherd, 2003). Thus, resilience in entrepreneurship is a salient resource to bounce back from entrepreneurial failure, and founders can develop emotional, cognitive, social and financial resilience to failure (Dewald and Bowen, 2010; Hayward et al., 2009).

The combination of these four cognitive constructs into an overall construct of PsyCap adds value to what an entrepreneur already has (e.g. financial capital), what she already knows (e.g. human capital), and whom she already knows (e.g. social capital) (Luthans et al. 2004). In this sense PsyCap represents an entrepreneur’s sense of resources that she can use in dealing with challenging situations to further venture growth. Prior research conceptually and empirically demonstrated that although the four factors of psychological capital are independent from each other they form a higher order construct based on the common confidence core that the factors share at a higher level of abstraction (Stajkovic, 2006, p. 1212). Overall, in existing empirical research psychological capital has been used as a higher order construct with valid measurement and performance impact (Walumbwa et al., 2011).

In entrepreneurship many studies have recently emphasized the importance of cognitive constructs such as PsyCap in predicting venture growth. For example, Baum and colleagues (2001) analyzed the impact of CEOs’ specific competencies and firms’ strategies on venture growth while Hmieleski and Baron (2009) studied relationships between entrepreneurs’ optimism, contextual factors and growth. In line with these studies we argue that PsyCap works as a resource endowment of an entrepreneur: this is aligned with the positive organizational behavior tradition that sees one’s PsyCap as an important psychological resource capacity (Youssef and Luthans, 2007). A firm’s ability to generate profits is dependent on its resource endowments, those that are valuable, rare and inimitable in particular (Wiklund and Shepherd, 2003), and therefore we propose that this key individual resource will also drive venture growth. Accordingly, we propose:

*H1: There is a direct positive relationship between the entrepreneur’s psychological capital and venture growth.*

## **Goal Mechanisms**

Goal-related mechanisms are also salient to the entrepreneurial process. Goals direct attention, effort, and action in pursuit of desired outcomes at the expense of non-relevant activities (Locke and Latham, 2006; Rauch and Frese, 2007b). Following Austin and Vancouver (1996) we define

goals as internal representations of desired outcomes, events and processes that are best understood when examined as interrelated complex systems provoking behavioral and affective responses.

Although several goal mechanisms have been mentioned in the literature, we focus on goal challenge, goal commitment and goal striving. Goal challenge defines the level of satisfaction an individual gets from attaining set goals (Locke and Latham, 1990). A meta analysis of research on the relationship between setting challenging goals and personal performance indicated that when individuals set difficult goals, there is a linear relationship to the amount of effort they expended and their performance (Locke and Latham, 2002). Thus more challenging goals direct effort and ultimately performance on those goals. Goal commitment refers to “one’s determination to reach a goal” (Locke and Latham, 1990: 125). It denotes the degree to which we are attached to a subjectively important goal, how determined we are to reach it and keep it in the face of setbacks and obstacles (Hollenbeck and Klein, 1987). Research has shown that goal commitment typically leads to greater persistence and ultimately better performance on goals. Personal goal strivings represent the action of trying to achieve goals, where individuals are characteristically aiming to accomplish through their behavior by having their goals integrated and organized. People strive to attain goals because “possessing and progressing toward meaningful life goals is a prerequisite for a subjective well-being” (Emmons, 1986). For example, in an entrepreneurial setting, personal strivings consist of all recurring behaviors entrepreneurs are engaged in in order to achieve the goals they set for themselves and their ventures - an entrepreneur might be trying to increase the firm’s market share or develop retail distribution channels, which are specific behaviors organized around a common objective of pushing the venture to a higher level of growth.

The key arguments for hypothesizing goals as mediators of effects of psychological capital on venture performance are supported in goal-setting theory (Locke and Latham, 2006). First, goals direct attention and effort toward goal relevant activities. Through setting challenging goals, entrepreneurs employ their psychological capital resources towards activities that are important for venture performance. Second, goals have an energizing function. High goals lead to greater effort than low goals (Locke and Latham, 2006). Goals motivate an individual to use one’s existing ability and resources (e.g. psychological capital) in confronting challenges (Locke and Latham, 2006, p. 265) and persist in attaining the goals set. This is specifically true in the context of entrepreneurship where entrepreneurial firms need to adapt to environmental change and exploit opportunities created by uncertainties and discontinuances in the creation of wealth (Hitt et al., 2001). To ensure survival and growth in environments characterized by intense competition, innovation, emerging technologies and the need for continuous learning (Hitt, Ireland et al. 2001), entrepreneurs need to create new resources or combine existing resources in new ways to attain their business goals, such as developing new products, new technologies or entering new markets (Hitt, Ireland et al. 2001) with available resources. The mediating role of goals in entrepreneurship was for example identified by Baum and Locke (2004) who suggested goal setting as a mediator in the relationship between personality traits and business success. This leads us to postulate the following hypothesis.

*H2: The effects of psychological capital on venture performance are mediated through goal mechanisms. This will be true for: a) goal-setting; b) goal striving and c) goal commitment.*

## METHODS

### Sample

To test our hypotheses, we focus on high-technology manufacturing ventures in the Mid-western United States that were ten years or younger with 10 to 250 employees in the Corptech directory. In the United States alone, high-technology ventures contribute the most to economic growth from young firms. High-tech ventures face significant demand, and technological and competitive uncertainty, and therefore positive psychology related behavior could be increasingly important in mitigating such uncertainty. The *Corptech* directory is considered a reliable source of venture listings, and has been used widely for research on ventures (Lee and Lieberman, 2010; Sine et al., 2006). To balance survey cost and scope we focused on firms in the US states of Illinois, Indiana, Kentucky, Ohio and Missouri. We identified 1,526 firms listed in the 2009 Corptech directory that met our sampling criteria. High-tech manufacturing ventures represented in the 1,526 ventures were from 30 North American Industry Classification System (NAICS) codes.

The data was collected in two rounds. In the first round, we collected measures of psychological capital through a mail survey between October 2009 and January 2010. We received responses from 219 CEOs, for a response rate of 14.35%. Low response rates (10-15%) are typical for mailed surveys to top executives (e.g. Bartholomew and Smith, 2006). We excluded four firms with incomplete data, which yielded a final sample of 215 firms. The average CEO age was 38, with 12 years of industry experience, and 96% of the CEOs were male. We tested non-response bias for early and late respondents and also mean responses of respondents and non-respondents on firm age, sales revenues, firm size (number of employees), across 30 NAICS codes, CEO age, CEO gender, and CEO industry work experience, with no significant differences found.

In the second round (April 2011) we collected data on goal related cognitions. A cover letter and pre-paid business reply envelope were mailed with the survey to 215 CEOs responding in the first wave. To enhance response rates we informed the CEOs that we would donate USD \$10 for every completed survey to a charity of their choice. A follow-up reminder was mailed in mid-April 2011. We received responses from 122 CEOs, indicating a retention rate of 56.74%. The average CEO age was 39, with 14 years of industry experience. 97% of the CEOs were male and 59% were married, and on average respondents had 1.3 children. We tested non-response bias for participating vs. non-participating firms, and early vs. late respondents on firm age, sales revenue, firm size (number of employees), industry, CEO age, CEO gender, and CEO industry experience. We found no significant differences, leading us to conclude that there were no significant response biases for firms participating in the first and second waves.

### Measures

*Psychological Capital.* Positive Psychological Capital was measured using the 24-item PsyCap measure (PCQ-questionnaire) proposed by Luthans and colleagues (2007). The PCQ measure is based on widely used constructs of hope (Snyder et al., 1991), resiliency (Wagnild and Young, 1993), optimism (Scheier and Carver, 1985), and self-efficacy (Parker, 1998). The PsyCap measure is a 24-item scale (six items for each subscale of hope, resilience, optimism, and self-efficacy) using 6-point Likert-type responses (1-strongly disagree to 6-strongly agree). We adapted the scale to reflect the context of entrepreneurship. Based on recommendations by Luthans and colleagues

(2007), six item responses for each four subscales were summed and averaged to develop a subscale composite average for each subscale. Reliability in our study was 0.89, which is consistent with that of Luthans and colleagues' (2007) reliability measure of 0.89. We test model fit for the second-order factor and find it adequate ( $\chi^2=406.44$ ;  $df=242$ ;  $TLI=0.94$ ;  $CFI=0.94$ ;  $RMSEA=0.08$ ). An alternate model using a single factor and four correlated factors led to worse model fit.

*Goal mechanisms.* Drawing on the self-concordance framework of goal setting, goal striving, and goal commitment we asked respondents to list eight venture related goals they had between 2008 and 2010 (Sheldon and Elliot, 1999). To increase cognitive involvement in the goal statement process we asked the respondent to assess the relevance of each goal in five functional areas (i) marketing (ii) manufacturing (iii) R&D (iv) finance and (v) human resources. Next we asked the respondents to assess the financial impact of not meeting a particular goal on sales. Finally, we ask the CEO to rank each goal relative to the remaining seven goals. Sample goals were "increasing market share to 30%," and the assessed effect of not meeting this goal was "[\\$] 2 million decline in sales," and this goal was ranked second in importance. Other examples of goals were "developing retail distribution channels," "developing new products in collaboration with local university," and "establishing organizational recruitment and control systems."

*Goal setting* is related to the degree of difficulty in realizing the goals. We focus on the breadth of goals and the impact on sales for not meeting goals. Goal setting is measured as:

$$Goal\ Setting = \frac{\sum_{g=1}^G N_{functional\ Areas} \times \ln(Sales\ Impact)}{G}$$

Goal setting for each goal consists of the impact of that goal on different functional areas and the resulting impact on decline in sales if the goal was not met. Respondents reported up to eight goals ranging from  $g$  to  $G$ . Each goal  $g$  affects one or more of the five functional areas. The value of  $N$  functional areas ranged from 1 to 5 (1-marketing; 2 – manufacturing; 3 – R&D; 4 – finance, and 5 – human resources). Degree of goal setting was summed up for up to eight goals listed by the CEO. The final sum was standardized by dividing the sum with the total number of listed goals  $G$ . The final goal setting measure ranged from 0.22 to 9.05 with a mean of 2.79.

*Goal striving* – in context of the goals listed under goal setting we asked the respondents to "indicate how successful have you been in the last three years (2008 to 2010) in attaining your goals" (1-largely unsuccessful; 2 – 20 % successful; 3 – 50% successful; 4 – 70% successful; 5 – 100% successful). For each goal,  $g$ , goal striving is based on the number of goals and the level of success attained in realizing each goal:

$$Goal\ Striving = \frac{\sum_{g=1}^G Success_g}{G}$$

The mean for goal striving was 0.92 and the values ranged from 0.13 to 1.00.

*Goal commitment* is a seven-item scale based on (Klein et al., 1999). Respondents were asked to assess the level of goal commitment towards the goals listed by the CEO, rate don a 5-point (1-completely disagree to 5 – completely agree) rating scale. Sample scale items were "It wouldn't take me much to abandon these goals" (reverse-coded) and "I think these goals are good goals to shoot for". The scale reliability was 0.82.

*Venture Growth.* Venture performance is typically measured as survival, growth or profitability (Gilbert et al., 2006). In testing the effects of entrepreneurs' psychological characteristics on firm performance, Hmieleski and Baron (2009), Baum and Locke (2004), Baum, Locke, and Smith (2001) and others (Gilbert et al. 2006) have used a multidimensional measure of venture growth. In the context of high-tech ventures, growth is a critical performance measure, so we use a multidimensional measure of venture growth. We used a compounded growth rate for sales, employment, and operating profit growth between 2007, 2008, 2009 and 2010. To operationalize compounded growth we use the following approach:  $Sales_{2010} = Sales_{2007} (1 + \text{growth rate})^4$ . Sales growth and employee growth were drawn from the Corptech Directory and triangulated with sales and employee information in Dunn and Bradstreet. We took the average of the performance information from the two sources. Triangulation helps minimize errors in performance reporting. Operating profit growth was self-reported with reliability ( $\alpha=0.72$ ).

*Controls.* We use firm level, industry level, and CEO level control variables. Firm level controls focus on the extent to which firms are able to mitigate liabilities of newness and liabilities of smallness. *Firm age* is years since establishment to 2009 reported in Corptech directory, and cross-referenced with the D&B dataset. *Firm size* is the average of employees in 2009 reported in the D&B and Corptech directory.

As environmental variables could have a significant impact on performance, we use *environmental dynamism* based on work of Dess and Beard (1984). We also control for *CEO age*, *CEO gender* (male=1, female=0), and *TMT Size*. We further control for both positive ( $\alpha=0.85$ ; AVE=0.64) and negative ( $\alpha=0.86$ ; AVE=0.68) trait affectivity using the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988).

In testing for multicollinearity, we found that all VIFs were less than 2.32, and the condition index did not exceed 6.94, which suggests that multicollinearity is not a threat to validity (Hair et al., 2006). All item loadings were significant, and the lowest item loading was 0.762 (t-value=8.540). Demonstrating discriminant validity, average variance extracted were above 0.5. The model demonstrated acceptable fit:  $\chi^2/df=1.72$ ; RMSEA = 0.07; SRMR=0.04; TLI = .93; CFI=0.94. The fit indices met or exceeded the minimum threshold values suggested by Hu and Bentler (1999). Therefore, based on the overall results measures are acceptable in terms of convergent and discriminant validity as well as overall fit.

Finally, following Podsakoff and Organ's (1986) we conducted a factor analysis of all the items used in our study. We extracted eight factors with eigenvalues above 1.0. The combined variance of the twelve factors was 88.70%. The first factor accounted for 18.23% of the variance. In addition, drawing on Podsakoff et al. (2003) we conducted a partial correlation procedure to further confirm whether common method variance was present. First, we calculated partial correlations between all the indicator variables in the model and the first principal component. We found statistically significant partial correlations between predictor variables and criterion variables, indicating no common method bias. Third, we include a method factor in connecting all items in our measurement model. Addition of the method factor did not alter significance of factor loadings and covariances. Individual scale items did not load on the method factor either. Overall, common method bias is not a significant threat to validity in our study.

## RESULTS

The descriptive statistics for the variables used in the empirical analysis are presented in Table 1 and results in Table 2. Hypothesis 1 predicted a positive relationship between PsyCap and venture growth. This hypothesis was supported ( $\beta=0.238$ ,  $p<0.001$ ). Hypotheses 2a proposed the indirect effect of Psychological Capital on venture growth through goal setting ( $\beta=0.021$ ; Sobel test=2.051; Aroian test=2.005; Goodman test=2.100). Similarly, hypotheses 2b and 2c proposed mediation effects of goal striving ( $\beta=0.025$ ; Sobel test=2.337; Aroian test=2.286; Goodman test=2.390) and goal commitment ( $\beta=0.022$ ; Sobel test=2.173; Aroian test=2.119; Goodman test=2.233), respectively. Hypotheses 2a, 2b, and 2c were also supported.

## DISCUSSION

This study sought to contribute to a growing body of research on the role of cognitive processes of individuals impacting performance of entrepreneurial organizations. Although adaptation is central to a venture's survival and growth (Zimmerman and Zeitz, 2002) and entrepreneurs' cognitive resources critically influence a venture's effectiveness (Alvarez and Busenitz, 2001), we do not know why some entrepreneurs are more flexible than others in developing effective responses to challenges. In dealing with volatile and uncertain environments, entrepreneurs need to draw from untapped inner psychological resources to help them address such challenges (Mosakowski, 1998). Our results indicate that the PsyCap construct could explain why some entrepreneurs develop more effective responses to internal challenges that arise when confronting environmental dynamics. In linking PsyCap to venture performance we provide some first steps to recognizing the utility of superordinate measures, such as PsyCap; a direction that it is now well acknowledged in broader management and organizational behavior literatures (e.g. Luthans et al., 2010).

Our empirical results support the hypothesized relationships. Specifically, our results show that PsyCap had a positive direct effect on venture growth, and a mediating effect on venture growth through goal directed mechanisms. This finding suggests that entrepreneurs who are aware of their psychological resources and make deliberate use of them are more likely to realize venture growth. It also suggests that the combination of hope, optimism, self-efficacy, and resilience into an overall construct of PsyCap offers a synergistic and unique combination of psychological resources that directly impacts the ability and actions of an entrepreneur towards more flexible thinking and strategic direction, such that venture performance and growth are enhanced.

### Practical Implications

Insights from this study bear several implications for business owners and those that seek to support them. First, having the evidence on what PsyCap does for venture performance suggests that entrepreneurs need to be cognizant about this important, heterogeneous and rare psychological resource and find ways to nurture it. For example, experiences from stress management practices provide several ideas on how to enhance individual components of self-efficacy, hope, resilience and optimism. For example, Luthans, Avey and colleagues (2006) suggest that the hope component of the PsyCap can be enhanced by involving entrepreneurs in structured goal-setting training (Avey et al., 2009). Similarly, the practical need to build the resilience component of PsyCap is supported by research on how individuals can bounce back from firm failure, such as by oscillating

between a loss-orientation and restoration-orientation in their thinking (Shepherd, 2003) or by more carefully assessing the locus of causality for their failures, so that they can quickly re-engage in the entrepreneurial process so they can capitalize on their knowledge stocks and social capital (Yamakawa et al., 2008).

Given that cognitive behavioral approaches which seek to change individual's cognitions and reinforce active coping skills may be the most effective approaches in reducing work related anxiety, and improving the perceived quality of work life (Avey et al., 2009), government and other support institutions for entrepreneurship should consider designing tailor made training programs for enhancing coping skills needed to face environmental uncertainties. Forthcoming experiences from training intervention programs (Avey, Luthans et al. 2009) that are designed to build one's PsyCap indicate that PsyCap is synergistic and that participants experience an overall result greater than the sum of the four components of the training (Luthans et al., 2006). Several authors have already argued the importance of support that different institutions can provide in building key entrepreneurial skills, such as self-efficacy (Wilson et al., 2007). Training intervention programs aimed at the development of entrepreneurs' PsyCap therefore promise a more structured and effective approach to building such skills.

### **Limitations and Future Research Directions**

Several potential limitations of the study should be noted. The most important limitation comes from the cross-sectional design of the study. The presence of common method bias may artificially inflate correlations and regression weights. However, our dependent measure of venture growth was collected independently from the independent measures and calculated based on three years of data rather than at a single point in time, which is consistent with how Podsakoff et al. (2003) suggest minimizing the potential of common method bias. Future research could measure independent variables over a longer period of time, which would also provide valuable information on the sustainability of the PsyCap. A second major limitation is that our data was collected from high-technology manufacturing ventures that are located in five states in the Mid-western US. The robustness and generalizability of the research results might increase by including other data sets, preferably from other industries and non-US based ventures. However, our empirical data includes a sample of high technology entrepreneurs that are on average more oriented towards growing their ventures than others (Kazanjian and Drazin, 1990). As such they provide a promising view of the importance of PsyCap and goal mechanisms in driving firm level performance.

**CONTACT:** Mateja Drnovšek; Mateja.drnovsek@ef.uni-lj.si; (T): +386 1 5892 613; (F): +386 1 5892 698; University in Ljubljana, Ljubljana, Slovenia.

### **REFERENCES**

- Alvarez S, Busenitz L. 2001. The entrepreneurship of resource-based theory. *Journal of Management* 27(6):755.
- Austin JT, Vancouver JB. 1996. Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin* 120(3):338.
- Avey J, Luthans F, Jensen S. 2009. Psychological capital: A positive resource for combating employee stress and turnover. *Human Resource Management Review* 48(5):677-693.

- Avey J, Luthans F, Youssef C. 2010. The additive value of positive psychological capital in predicting work attitudes and behaviors. *Journal of Management* **36**(2):430-452.
- Bandura A. 1997. *Self-efficacy: The exercise of control*. Freeman: New York.
- Baron RA. 2008. The role of affect in the entrepreneurial process. *Academy of Management Review* **33**(2):328-340.
- Bartholomew S, Smith AD. 2006. Improving survey response rates from chief executive officers in small firms: The importance of social networks. *Entrepreneurship Theory and Practice* **30**(1):83-96.
- Baum J, Locke E, Smith K. 2001. A multidimensional model of venture growth. *Academy of Management Journal* **44**(2):292-303.
- Baum JR, Locke EA. 2004. The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology* **89**(4):587-598.
- Boyd N, Vozikis G. 1994. The influence of self-efficacy on the development of entrepreneurial intentions and actions. *Entrepreneurship: Theory and Practice* **18**(4):63-77.
- Carver C, Scheier M, Segerstrom S. 2010. Optimism. *Clinical Psychology Review*.
- Chandler GN, Jansen E. 1992. The founder's self-assessed competence and venture performance. *Journal of Business Venturing* **7**(3):223-236.
- Chen CC, Greene PG, Crick A. 1998. Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing* **13**(4):295-316.
- Dess G, Beard D. 1984. Dimensions of organizational task environments. *Administrative Science Quarterly* **29**(1):52-73.
- Dewald J, Bowen F. 2010. Storm clouds and silver linings: Responding to disruptive innovations through cognitive resilience. *Entrepreneurship Theory and Practice* **34**(1):197-218.
- Dushnitsky G. 2010. Entrepreneurial optimism in the market for technological inventions. *Organization Science* **21**(1):150-167.
- Edelman LF, Brush CG, Manolova T. 2005. Co-alignment in the resource-performance relationship: strategy as mediator. *Journal of Business venturing* **20**(3):359-383.
- Emmons RA. 1986. Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology* **51**:1058-1068.
- Gatewood EJ, Shaver KG, Gartner WB. 1995. A longitudinal study of cognitive factors influencing start-up behaviors and success at venture creation. *Journal of Business Venturing* **10**(5):371-391.
- Gilbert B, McDougall P, Audretsch D. 2006. New venture growth: A review and extension. *Journal of Management* **32**(6):926-950.
- Grégoire D, Corbett A, McMullen J. 2011. The cognitive perspective in entrepreneurship: An agenda for future research. *Journal of Management Studies* **48**(6):1443-1477.
- Haber S, Reichel A. 2005. Identifying performance measures of small ventures—The case of the tourism industry. *Journal of Small Business Management* **43**(3):257-286.
- Hair JF, Black WC, Babin BJ, Anderson RE, Tatham RL. 2006. *Multivariate data analysis*. Pearson Prentice Hall: Upper Saddle River, NJ.
- Hayward MLA, Forster WR, Sarasvathy SD, Fredrickson BL. 2009. Beyond hubris: How highly confident entrepreneurs rebound to venture again. *Journal of Business Venturing*.
- Hitt M, Ireland R, Camp S, Sexton D. 2001. Strategic entrepreneurship: entrepreneurial strategies for wealth creation. *Strategic Management Journal* **22**(6-7):479-491.
- Hmieleski K, Baron R. 2009a. Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *The Academy of Management Journal* **52**(3):473-488.
- Hmieleski K, Baron R. 2009b. Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal* **52**(3):473-488.

- Hobfoll SE. 1989. Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist* **44**(3):513.
- Hollenbeck JR, Klein HJ. 1987. Goal commitment and the goal-setting process: Problems, prospects, and proposals for future research. *Journal of Applied Psychology* **72**(2):212-220.
- Hu LT, Bentler PM. 1999. Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria vs new alternatives. *Structural Equation Modeling* **6**(1):1-55.
- Judge T, Erez A, Bono J, Thoresen C. 2003. The core self-evaluation scale: Development of a measure. *Personnel Psychology* **56**(2):303-331.
- Kazanjian RK, Drazin R. 1990. A stage-contingent model of design and growth for technology based new ventures *Journal of Business Venturing* **3**(5):137-150.
- Klein HJ, Wesson MJ, Hollenbeck JR, Alge BJ. 1999. Goal commitment and the goal-setting process: Conceptual clarification and empirical synthesis. *Journal of Applied Psychology* **84**(6):885.
- Krueger N, Reilly M, Carsrud A. 2000. Competing models of entrepreneurial intentions. *Journal of Business Venturing* **15**(5-6):411-432.
- Krueger N, Schulte W, Stamp J. Beyond intent: Antecedents of resilience and precipitating events for social entrepreneurial intentions and action. In Proceedings of the USASBE Conference, San Antonio, TX. Available at.
- Lee GK, Lieberman MB. 2010. Acquisition vs. internal development as modes of market entry. *Strategic Management Journal* **31**(2):140-158.
- Locke EA, Latham GP. 1990. *A Theory of Goal Setting and Task Performance*. Prentice-Hall: New Jersey.
- Locke EA, Latham GP. 2002. Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist* **57**(9):705.
- Locke EA, Latham GP. 2006. New directions in goal-setting theory. *Current Directions in Psychological Science* **15**(5):265.
- Luthans F. 2002. The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior* **23**(6):695-706.
- Luthans F, Avey J, Avolio B, Norman S, Combs G. 2006. Psychological capital development: toward a micro intervention. *Journal of Organizational Behavior* **27**(3):387-393.
- Luthans F, Avey J, Avolio B, Peterson S. 2010. The development and resulting performance impact of positive psychological capital. *Human Resource Development Quarterly* **21**(1):41-61.
- Luthans F, Avolio B. 2009. The "point" of positive organizational behavior. *Journal of Organizational Behavior* **30**(2):291-307.
- Luthans F, Avolio B, Avey J, Norman S. 2007. Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology* **60**(3):541-572.
- Luthans F, Stajkovic A, Ibrayeva E. 2000. Environmental and psychological challenges facing entrepreneurial development in transitional economies. *Journal of World Business* **35**(1):95-110.
- Luthans F, Youssef C. 2007. Emerging positive organizational behavior. *Journal of Management* **33**(3):321.
- McGrath RG. 1999. Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Journal* **24**(1):13-30.
- McGrath RG, Cardon MS. Entrepreneurship and the functionality of failure. In Proceedings of the Seventh Annual Global Entrepreneurship Research Conference, Montreal, Canada. Available at.
- McMullen JS, Shepherd DA. 2006. Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review* **31**(1):132-152.
- Minniti M, Bygrave W. 2001. A Dynamic Model of Entrepreneurial Learning. *Entrepreneurship: Theory and Practice* **25**(3):41-52.

- Mitchell R, Busenitz L, Lant T, Mcdougall P, & et al. 2004. The distinctive and inclusive domain of entrepreneurial cognition research. *Entrepreneurship Theory and Practice* **28**(6):505-518.
- Mosakowski E. 1998. Entrepreneurial resources, organizational choices, and competitive outcomes. *Organization Science* **9**(6):625-643.
- Ng T, W.H., Feldman DC. In Press. Employee voice behavior: A meta-analytic test of the conservation of resources framework. *Journal of Organizational Behavior*.
- Parker S. 1998. Enhancing role breadth self-efficacy: The roles of job enrichment and other organizational interventions. *Journal of Applied Psychology* **83**:835-852.
- Rauch A, Frese M. 2007a. Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship. In *The psychology of entrepreneurship*, Baum JR, Frese M, Baron RA (eds). Lawrence Erlbaum Associates: New Jersey; 41-65.
- Rauch A, Frese M. 2007b. Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology* **16**(4):353-385.
- Raykov T. 1998. A method for obtaining standard errors and confidence intervals of composite reliability for congeneric items. *Applied Psychological Measurement* **22**:369-374.
- Sarasvathy S, Dew N, Velamuri S, Venkataraman S. 2005. Three views of entrepreneurial opportunity. *Handbook of entrepreneurship research*:141-160.
- Scheier M, Carver C. 1985. The self consciousness scale: A revised version for use with general populations. *Journal of Applied Social Psychology* **15**(8):687-699.
- Segal G, Borgia D, Schoenfeld J. 2005. The motivation to become an entrepreneur. *International Journal of Entrepreneurial Behaviour & Research* **11**(1):42-57.
- Seligman M, Nathan E. 1998. *Learned optimism*. Pocket Books New York.
- Shane S. 2001. Organizational incentives and organizational mortality. *Organization Science* **12**(2):136-160.
- Sheldon KM, Elliot AJ. 1999. Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology* **76**(3):482.
- Shepherd DA. 2003. Learning from business failure: Propositions of grief recovery for the self-employed. *Academy of Management Review* **28**(2):318-329.
- Sine WD, Mitsuhashi H, Kirsch DA. 2006. Revisiting Burns and Stalker: Formal structure and new venture performance in emerging economic sectors. *Academy of Management Journal* **49**(1):121-132.
- Snyder CR, Harris C, Anderson JR, Holleran SA, Irving LM, Sigmon ST, Yoshinobu L, Gibb J, Langelle C, Harney P. 1991. The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology* **60**:570-585.
- Stajkovic A, Luthans F. 1998. Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin* **124**:240-261.
- Stajkovic AD. 2006. Development of a core confidence-higher order construct. *Journal of Applied Psychology* **91**(6):1208.
- Wagnild G, Young H. 1993. Development and psychometric evaluation of the resilience scale. *Journal of nursing measurement* **1**(2):165-178.
- Walumbwa FO, Luthans F, Avey JB, Oke A. 2011. Authentically leading groups: The mediating role of collective psychological capital and trust. *Journal of Organizational Behavior* **32**(1):4-24.
- Watson D, Clark L, Tellegen A. 1988. Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology* **54**(6):1063-1070.
- Wiklund J, Shepherd D. 2003. Knowledge based resources, entrepreneurial orientation, and the

performance of small and medium sized businesses. *Strategic Management Journal* 24(13):1307-1314.

Wilson F, Kickul J, Marlino D. 2007. Gender, Entrepreneurial Self Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education1. *Entrepreneurship Theory and Practice* 31(3):387-406.

Yamakawa Y, Peng M, Deeds D. 2008. What drives new ventures to internationalize from emerging to developed economies? *Entrepreneurship Theory and Practice* 32(1):59-82.

Youssef C, Luthans F. 2007. Positive organizational behavior in the workplace. *Journal of Management* 33(5):774.

Zhao H, Seibert SE, Hills GE. 2005. The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology* 91:1265-1272.

Zimmerman M, Zeitz G. 2002. Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review* 27(3):414-431.

Zumbo BD, Gadermann AM, Zeisser C. 2007. Ordinal versions of coefficients alpha and theta for Likert rating scales. *Journal of Modern Applied Statistical Methods* 6(1):21-29.

**FIGURE 1: Conceptual model**



**TABLE 1: Correlation Table**

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Venture Growth	0.13	0.26	(0.73, 0.55)											
2. Firm Age	8.93	1.38	.16**	1										
3. Firm Size	27.86	17.62	.07	.31***	1									
4. Environmental Dynamism	1.01	0.71	-.13**	.07	.04	1								
6. CEO Age	37.92	8.62	.06	.06	.06	.02	1							
7. CEO Gender (1=Male)	0.95	--	.07	.04	.03	.04	.04	1						
8. TMT Size	4.63	3.10	.04	.12*	.07	.07	.04	.01	1					
9. Positive Affect	2.89	0.73	.15**	.07	.04	.06	.02	.04	.06	(0.85, 0.64)				
10. Negative Affect	1.97	0.76	-.17***	.04	.06	.09*	.06	.05	.05	-.22***	(0.86, 0.68)			
11. Psychological Capital	72.69	17.88	.21***	.03	.02	.14**	.06	.07	.02	.13**	-.11**	1		
12. Goal Commitment	2.16	0.93	.21***	.02	.04	.03	.02	.01	.03	.11*	-.00	.17***	(0.82, 0.60)	
13. Goal Striving	0.92	0.36	.14**	.01	.09	.05	.04	.06	.05	.18***	-.04	0.13**	.11*	1
14. Goal setting	2.79	3.42	.16**	.03	.10*	.18***	.06	.07	.19***	.14**	-.19***	0.15**	.14**	.26***

Notes.

N=122

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

The items in the diagonal show Cronbach's alpha, average variance extracted.

**TABLE 2: Results**

**Table 2(a): Path Analysis Estimates**

	$\beta$	s.e.
Psychological Capital → Venture Growth [H1]	0.238**	0.083
Psychological Capital → Goal setting	0.184**	0.077
Psychological Capital → Goal striving	0.193***	0.053
Psychological Capital → Goal commitment	0.204***	0.064
Goal Setting → Venture growth	0.112***	0.028
Goal Striving → Venture growth	0.128**	0.042
Goal Commitment → Venture growth	0.107**	0.036
Firm Size → Venture growth	0.187*	0.074
Firm age → Venture growth	0.042	0.071
Environmental dynamism → Venture growth	-0.189**	0.066
CEO Age → Venture growth	0.097	0.056
CEO Gender → Venture growth	0.230	0.136
TMT Size → Venture growth	0.187	0.134
Positive Affect → Venture growth	0.042	0.071
Negative Affect → Venture growth	0.187	0.074

Notes.

N=122; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table 2(b): Mediation Estimates**

	DV: Venture Growth			
	Indirect Effects	Sobel	Aroian	Goodman
Psychological Capital → Goal setting → Venture growth [H2a]	0.021*	2.051	2.005	2.100
Psychological Capital → Goal striving → Venture growth [H2b]	0.025*	2.337	2.286	2.390
Psychological Capital → Goal commitment → Venture growth [H2c]	0.022*	2.173	2.119	2.233

Notes.

N=122

\* $p < 0.05$