



# Entrepreneurial self-efficacy and business start-up: developing a multi-dimensional definition

Entrepreneurial  
self-efficacy

329

Mateja Drnovšek

*Faculty of Economics, University of Ljubljana, Ljubljana, Slovenia*

Joakim Wincent

*Lulea University of Technology, Luleå, Sweden, and*

Melissa S. Cardon

*Lubin School of Business, Pace University, Pleasantville, New York, USA*

Received November 2008

Revised March 2009

Accepted July 2009

## Abstract

**Purpose** – The aims of this paper are to: critically review and identify gaps in current literature on entrepreneurial self-efficacy, provide a definition of entrepreneurial self-efficacy that addresses some of those gaps, and explore the role of entrepreneurial self-efficacy during the phases of a business start-up process. The research seeks to define entrepreneurial self-efficacy using three sources of dimensionality. The first includes the particular aspect of entrepreneurship to which self-efficacy is applied, whether to business start-up or business growth activities. The second sources of dimensionality refers to the content of self-efficacy beliefs (task or outcome goal beliefs), and the third source to the valence of entrepreneurial self-efficacy beliefs (positive or negative control beliefs).

**Design/methodology/approach** – The authors build from the origins and mechanisms of the self-efficacy construct in social cognitive theory and a synthesis of that work with prior use of self-efficacy in entrepreneurship to propose a definition of entrepreneurial self-efficacy that is context specific and empirically testable.

**Findings** – Entrepreneurial self-efficacy is best seen as a multidimensional construct made up of goal and control beliefs, and propositions for how these two different dimensions will play a role during phases in the process of starting-up a new business are developed.

**Research limitations/implications** – A well-defined entrepreneurial self-efficacy construct has significant pedagogical payoffs given that entrepreneurship education should also focus on social-cognitive, psycho-cognitive and ethical perspectives of entrepreneurship.

**Originality/value** – The proposed multidimensional nature of self-efficacy is original and unique in its contribution, and provides a conceptual foundation to understand how capabilities along different dimensions of entrepreneurial self-efficacy are created and nurtured. This knowledge is useful for potential entrepreneurs as well as those who support them in the process.

**Keywords** Self actualization, Cognition, Entrepreneurialism, Business formation

**Paper type** Conceptual paper

## Introduction

In this paper we develop a definition of entrepreneurial self-efficacy (ESE) that includes three dimensions and show the varied role that these dimensions have during the business start-up process. In broad terms, ESE involves individuals' beliefs regarding

The authors are grateful to Jagdip Singh for his important insights in the early development of this paper. They also thank Oswald Jones and two anonymous reviewers for their helpful comments and suggestions.



International Journal of  
Entrepreneurial Behaviour &  
Research

Vol. 16 No. 4, 2010  
pp. 329-348

© Emerald Group Publishing Limited  
1355-2554

DOI 10.1108/13552551011054516

their capabilities for attaining success and controlling cognitions for successfully tackling challenging goals during the business start-up process. In our definition, we include the domain of self-efficacy (business start-up or growth), the goals that self-efficacy beliefs are focused on (task or outcome goals), and the valence of the beliefs (positive or negative control beliefs). We suggest that the specific type of beliefs and the specific dimension of ESE considered is an important consideration, one that is often overlooked in current research on entrepreneurial self-efficacy.

Our research was motivated by the observation that the self-efficacy of entrepreneurs has emerged as an important construct for understanding entrepreneurial success, and a substantial body of evidence supports its influences on start-up and business growth processes (Boyd and Vozikis, 1994; Chen *et al.*, 1998; Baum *et al.*, 2001; Markman *et al.*, 2002; Krueger, 2003; Segal *et al.*, 2005).

The notion of entrepreneurial self-efficacy is grounded in the socio-cognitive approach that simultaneously examines the dynamic interaction between the individual and the environment by explaining what cognitive, motivational and affective processes are implicated in an individual's decision to engage in entrepreneurial activities (Baron, 1998; Shane and Venkataraman, 2000; Baron, 2004) and how these processes are shaped by environmental and market factors (Mitchell *et al.*, 2002). Different approaches to defining entrepreneurial self-efficacy have been identified in the literature. One stream of research defines self-efficacy as entrepreneur's task-specific self-confidence (for example in Boyd and Vozikis, 1994; Baron and Markman, 1999; Baum *et al.*, 2001). In contrast to this, several other researchers define self-efficacy as the ability to master the necessary cognitive, memory processing, and behavioural facilities to deal effectively with the environment (for example Chen *et al.*, 1998; Segal *et al.*, 2002). Overall, it seems that there is a lack of definitional consensus of what ESE is in the literature, which may undermine the advancement of our knowledge of entrepreneurship processes because researchers are likely to either commit errors of inclusion (e.g. claim that they are working with the same construct when in fact their definitions are disparate) or exclusion (e.g. claim that they are working with disparate constructs when in fact the underlying definitions are similarly grounded).

Why is self-efficacy so important in entrepreneurship and why do we need a robust definition? The self-efficacy construct is appropriate for the study of entrepreneurship because of its nature: it is a task-specific construct that includes an assessment of confident beliefs an individual has about internal (personality) and external (environment) constraints and possibilities, and it is close to action and action intentionality (Boyd and Vozikis, 1994). For instance, Krueger *et al.* (2000) found self-efficacy to be a good predictor of start-up intentions, Markman *et al.* (2002) described self-efficacy as a key determinant of new venture growth and personal success, and Shane *et al.* (2003, p. 267) cite Baum's (1994) research to highlight that self-efficacy was the "single best predictor in the entire array of variables" utilized to study entrepreneurial outcomes for a group of founders in the architectural woodworking industry. More recently, Byrant (2007) explored the role of self-efficacy in the use of decision making heuristics by entrepreneurs and Hmieleski and Corbett (2008) explored a moderating role of self-efficacy on new venture performance and entrepreneur's satisfaction.

Throughout the existing body of work there is a strong view that self-efficacy is a good thing for entrepreneurs to have. For example, scholars such as Shane *et al.* (2003, p. 267) have argued that an entrepreneur who is high in self-efficacy is likely to "exert more effort for a greater length of time, persist through setbacks, and develop better

---

plans and strategies for the *task* (emphasis added).” In addition, the self-efficacy construct has also been closely linked to important entrepreneurial outcomes such as start-up intentions (Krueger *et al.*, 2000) and new venture growth, as well as personal success of entrepreneurs (Markman *et al.*, 2002). Self-efficacy seems to be an important construct in entrepreneurship research. However, the lack of agreement over what self-efficacy encompasses and how to conceptualize and measure it poses challenges. For example, from prior research it is not clear whether self-efficacy is focused on tasks or outcomes. Is it about having self-confidence or having ability? We argue that until such questions are addressed, literature on self-efficacy in entrepreneurship cannot grow in its cumulative knowledge about the effects of self-efficacy in entrepreneurship.

By providing a definition of entrepreneurial self-efficacy that it is grounded in socio-cognitive theory we are able to propose an empirically testable model specific to the entrepreneurship context that can serve to integrate the existing literature and form a solid foundation for advancing knowledge about self-efficacy in this context. We make a specific point that self-efficacy is of a multi-dimensional character. We also make a point that the individual dimensions can explain meaningful variance, when looked on together. In this model, we suggest that self-efficacy beliefs about control (positively and negatively valent beliefs) will moderate the impact of beliefs about goals (whether focused on tasks or outcomes) on different phases of the business start-up process. Given that our model includes four distinct and sequential steps of the business start-up process our multi-dimensional view of self-efficacy can be useful to start answering important but yet unresolved questions in entrepreneurship, such as “Why do some individuals get stuck in the business start-up process, such as by succeeding at identifying opportunities but failing to go further in capitalizing on those opportunities?” or “Why do apparently efficacious nascent entrepreneurs give up during business start-up processes?” Specifically, we argue that by adopting a view of self-efficacy that includes multiple dimensions (entrepreneurship domain context, content and valence of self-efficacy beliefs) we may better understand why some individuals and not others are successful during the start-up process, and when and where during the business start-up process failure is likely to occur. In so doing, we do not hold that the proposed conceptualization and mechanisms are the only viable foundations for situating the ESE construct. Rather, we argue that by recognizing that there are several aspects of entrepreneurial self-efficacy beliefs, entrepreneurship researchers can begin to see how these differences might be aspects of the same “whole elephant” (Gartner, 2001) of entrepreneurial self-efficacy. Overall, this implies that future progress in our understanding of the nature, scope, and role of self-efficacy in entrepreneurial processes requires original conceptual work to adapt the social cognitive construct of self-efficacy to be useful to the field.

The paper proceeds as follows. First, we review existing literature concerning the self-efficacy construct in entrepreneurship. We continue by outlining theoretical mechanisms of the self-efficacy construct in the social cognitive theory. We bring these foundations to the entrepreneurship context and apply them to the model of business start-up process to show the role that the proposed dimensions of self-efficacy play in the process of establishing a new businesses. Finally, practical implications are discussed.

### **Self-efficacy in entrepreneurship**

Two distinct but inter-related streams of research on entrepreneurial self-efficacy are evident in the literature. The first stream examines the role of self-efficacy during

business start-up processes while the second stream of research examines its role during business growth phases. We review literature on start-up only because that is the focus of the current study. In the domain of business start-up processes an area of continued interest is understanding individual differences in self-efficacy for different subgroups, including male and female entrepreneurs (Scherer *et al.*, 1989), entrepreneurs and managers (Chen *et al.*, 1998; De Noble *et al.*, 1999), technological entrepreneurs and inventors (Markman *et al.*, 2002), and successful and unsuccessful entrepreneurs (Markman and Baron, 2003). In what follows we review literature that examined direct and indirect effects of self-efficacy of entrepreneurs engaged in activities involving starting-up a new business.

One of the first contributions in research on entrepreneurial self-efficacy involved its role in the entrepreneurial intention formation. Boyd and Vozikis' (1994) extend Bird's (1988) model of entrepreneurial intentions where they proposed that self-efficacy was an important mediator in determining both the strength of entrepreneurial intentions, and the likelihood that those intentions would result in entrepreneurial actions. In further analyzing effects of self-efficacy on entrepreneurial intentions on populations of nascent entrepreneurs, Gatewood and her colleagues found that personal efficacy influenced the development of attributions of nascent entrepreneurs for creating new businesses (Shaver *et al.*, 2001; Gatewood *et al.*, 2002; Carter *et al.*, 2003). Krueger (2000) associated self-efficacy with perceived feasibility and formation of entrepreneurial intentions, while Chandler and Jansen (1992), Kolvereid (1996), Segal *et al.* (2002, 2005) used self-efficacy to explain employment choice intentions. Summarizing the state of the field in a meta-analysis, Rauch and Frese (2007) showed that entrepreneurial self-efficacy for starting a new business is a crucial factor in increasing the likelihood of business start-up activity. An overall finding from studies that examined direct impacts of self-efficacy on formation of entrepreneurial intentions cumulate to an observation that individuals with higher entrepreneurial self-efficacy have higher entrepreneurial intentions and are consequently more likely to believe they also have an actionable idea.

Another cluster of research on entrepreneurial self-efficacy and intention formation concerns specific gender related effects of self-efficacy. Wilson *et al.* (2007) empirically supported earlier findings on the relationship between entrepreneurial self-efficacy and career intention formation and the specific effect of gender. They found that entrepreneurial self-efficacy differs by gender with males typically scoring higher on perceived self-efficacy than females. In addition, they also found a significant effect of entrepreneurship education on development of self-efficacy beliefs, which was especially strong for women. Further studies have shown gender related differences and prior work experience to be more powerful for developing self-efficacy among males but that self-efficacy had a stronger effect on entrepreneurial intentions for women (Kickul *et al.*, 2007). In a related study in examining gender role orientation as a determinant of entrepreneurial self-efficacy, Mueller and Conway Dato-on (2008) found contrary results to those above: there were no significant differences in perceived self-efficacy beliefs between male and female students in their study. Exploring the results further, they tested the relationship between gender role-orientation and entrepreneurial self-efficacy to find that earlier in the start-up process the combination between masculine and feminine traits improves performance while later in the process masculine role orientation significantly determines the development of entrepreneurial self-efficacy. Moderation role of self-efficacy was also examined, for example, Tang

---

(2009) examined how self-efficacy moderated effects of environmental munificence on entrepreneurs' alertness and entrepreneurs' commitment to their new ventures.

In addition to these studies of how self-efficacy differs based on personality traits or role orientations, other research has examined normative, social and cognitive effects of self-efficacy on entrepreneurial intentions in different geographical settings in order to show that self-efficacy and close social supports may be instrumental to enhancing entrepreneurial activity in some countries but not others (Baughn *et al.*, 2006). For example, de Pillis and Reardon (2007) explored the effects of personal efficacy on entrepreneurial intention formation in a cross-cultural sample and found significant cultural differences in that relationship. In particular, they found that personal efficacy was significantly correlated with five-year entrepreneurial intention across different cultures. Kropp *et al.* (2008) used self-efficacy theory in measuring entrepreneurial orientation of ventures. Pyysiäinen *et al.* (2006) in their study of Finnish farmers used the concept of entrepreneurial skills and competences in showing how those farmers can become entrepreneurs by diversification. Luthans and Ibrayeva (2006) found that self-efficacy had a direct and mediating impact on performance of entrepreneurs in a transitional economy.

In reviewing and synthesising existing conceptual and empirical research we observe two conceptual gaps in how entrepreneurial self-efficacy is used. First, there seems to be little convergence in how self-efficacy is defined. There are multiple definitions that range from self-efficacy as an entrepreneur's task-specific self-confidence (Boyd and Vozikis, 1994; Brown and Kirchhoff, 1997; Neck *et al.*, 1999; Baum *et al.*, 2001), to self-efficacy as the ability to master the necessary "cognitive, memory processing, and behavioural facilities" to deal effectively with the environment (Chen *et al.*, 1998; Luthans *et al.*, 2000). For instance, Baron (2004, p. 4) defines self-efficacy as a "belief in one's ability to muster and implement necessary resources, skills, and competencies to attain levels of achievement" whereas Krueger *et al.* (2000, p. 417) defines it as "the perceived ability to execute a target behaviour". In the former, self-efficacy is a confident belief regardless of actual skill, while in the latter self-efficacy involves cognitive and behavioural skill sets regardless of confidence. Second, there is also little convergence in whether self-efficacy is focused on task performance, outcome attainment or both when it is used to study entrepreneurial processes. Consistent with the first focus, Boyd and Vozikis (1994) introduced self-efficacy as a strictly task oriented construct, and following their work, some entrepreneurship researchers have seen self-efficacy as confident beliefs for mastering a variety of tasks that seem to be crucial for outcome attainment (see De Noble *et al.*, 1999; Neck *et al.*, 1999). Several other researchers have treated self-efficacy as solely focused on outcome attainment. For example, Segal *et al.* (2002) define self-efficacy as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of outcomes.

Based on the above review we argue that "multi" rather than one or more "uni" views (Herron *et al.*, 1991) of how self-efficacy is defined and used in entrepreneurship may help in understanding how "all of these different parts make up a whole" (Gartner, 1990, p. 28). This multi-dimensional view could be useful for explaining important effects of ESE on entrepreneurial outcomes, given the present abundance of partial ESE conceptualizations. The current absence of agreement in the literature about what self-efficacy actually is and how it is best conceptualized may restrict building a cumulative body of findings concerning what ESE does for entrepreneurs to better understand the true nature of entrepreneurial processes. Practically, such a body of

knowledge that cumulates from “uni” views of what ESE is has some inherent restrictions to our understanding of how entrepreneurs can diagnose and build their self-efficacy to be more effective during business start-up. We argue that these shortcomings can be tackled by linking the use of the construct in entrepreneurship to its home domain in social psychology. Based on our review and synthesis of conceptual and empirical work on ESE in entrepreneurship, we conclude that the distinction between holding beliefs of task and/or outcome success which is clear in the social cognitive origins of self-efficacy is not well integrated in the definition of entrepreneurial self-efficacy. This gap can be addressed by:

- defining self-efficacy as a multi-dimensional construct that consists of goal and control beliefs and is domain specific (business start-up vs. business growth in entrepreneurial process); and
- identifying the role that these two types of beliefs have on task performance and outcome attainment during different phases of the start-up process.

Drawing from this multidimensional perspective of ESE, researchers can decide for which instances and research problems an inclusion of all dimensions is necessary to fully map the role of the ESE construct. Alternatively, in narrower, more focused research frameworks, it may be more useful to focus on only one dimension (e.g. goal beliefs) so that inquiry and forthcoming findings would be theoretically grounded.

### **Self-efficacy in psychology**

The proposed multidimensional construct of ESE that we outline in this paper builds on underlying mechanisms of self-efficacy beliefs identified in the social cognitive theory. The theory of self-efficacy was advanced by Bandura and his colleagues (Bandura, 1982; Ozer and Bandura, 1990; Bandura, 2001) to explain individuals' variability in attaining goals. Individuals with different levels of self-efficacy beliefs are expected to systematically differ in the amount of effort they spend on goal-directed tasks, the magnitude of coping activities they initiate to overcome impediments, and the degree to which they maintain persistent goal pursuit despite obstacles (Bandura, 1997; Stajkovic and Luthans, 1998). Before an individual initiates and pursues goal-directed tasks, he/she invokes personal cognitive capabilities to weigh, evaluate, and integrate information about personal skills relative to specific challenges and to form beliefs about probabilities of attaining success. The strength of these beliefs and certainty with which they are held are personal self-efficacy beliefs relative to that set of challenges.

Emerging research in social cognitive theory has provided converging data that self-efficacy is not a global construct and that it involves several distinct dimensions that are differentiated by its content and valence. First, the content of self-efficacy beliefs includes both task beliefs that one can successfully perform a particular action, and outcome beliefs that an action would lead to a certain outcome. The fact that individuals have different levels and content of self-efficacy beliefs and consequently differ in the amount of effort they expend on goal-directed activities is supported by empirical evidence. For example, research has noticed that such self-efficacy beliefs influence coping with change, commitment and performance (e.g. Bandura's, 1997 for a review). Because the mechanism behind implementing either of the two is attainment of a specific goal, we refer to these self-efficacy beliefs as goal beliefs. We hypothesize that this is of specific relevance for entrepreneurship because entrepreneurs face considerable uncertainty and obstacles in achieving desired goals.

Second, the social cognitive literature has examined the valence of self-efficacy beliefs. Emerging research has provided converging data that self-efficacy beliefs involve at least two distinct yet related dimensions, including positive control beliefs – confidence people have in their capabilities to attain success, and negative control beliefs – confidence in their capabilities to control negative thoughts about failure. Because the mechanism behind implementing either of the two is exercising personal control, we refer to these beliefs as control beliefs. Research indicates that people may have different beliefs and feelings about each aspect of a challenging task: for some tasks, they may feel fairly efficacious, even though their confidence in coping with other aspects may be undermined by self-doubt and failure thoughts (Ozer and Bandura, 1990). In such instances, “the stronger the sense of personal efficacy, the more readily people exercise control over intrusive negative thinking” (Ozer and Bandura, 1990, p. 478). This is of specific relevance for the domain of entrepreneurship. For example, self-management through self-efficacy beliefs is specifically salient for career choice decisions – it contributes to formation of entrepreneurial intentions to become self-employed as an entrepreneur (Bandura, 2001). Individuals who have stronger cognitive control are better equipped to suppress negative thoughts and bolster positive thoughts that are instrumental for proactive mastery behaviour (Dweck and Leggett, 1988). According to the origins of self-efficacy, research should therefore look at both types of control beliefs – the holding of positive thoughts and the control of negative thoughts. Although perceived beliefs about personal goals and perceived beliefs of the control one has are positively related to the strength of efficacy beliefs, they operate distinctly and should be measured as such (Ozer and Bandura, 1990, p. 482).

We integrate this key observation from social cognitive theory into our conceptual work to propose that self-efficacy has structural characteristics akin to a multidimensional rather than a global construct. In other words, the social cognitive propensities of self-efficacy do not suggest seeing ESE as an all-inclusive variable that would fit and could homogeneously encompass any aspect and any object within an entrepreneurship setting. We propose that:

...entrepreneurial self-efficacy involves individuals’ beliefs regarding their capabilities to attain goals and control positive and negative cognitions that an entrepreneur has during the process of starting-up a business.

Entrepreneurial self-efficacy includes at least two dimensions: the type of goal beliefs (task/outcome), and type of control beliefs (positive/negative) that exist in the context of business start-up processes. Why is this multidimensional view of self-efficacy potentially relevant? Based on the reviewed literature on human agency in general and entrepreneur’s agency specifically, we argue that entrepreneurs are unlikely to view tasks independent of outcomes but they rather manage tasks in a way to maximize outcomes. In addition, being self-efficacious means that one is confident about both his/her capabilities to attain success as well as capabilities to control negative thoughts about failure. In what follows we explain these mechanisms of ESE’s dimensionality.

### **Entrepreneurial self-efficacy goal beliefs: tasks and outcomes**

Following social cognitive theory, personal self-efficacy includes beliefs about capabilities of achieving desired outcomes as well as beliefs about one’s capabilities to complete tasks. The survival of a business does not merely depend on completing planned tasks but rather on attaining desired outcomes that result from those tasks. Therefore, including both task and outcome goal beliefs are necessary in defining ESE

for entrepreneurship research. Having these two types of goal beliefs in mind, research indicates that during the business start-up processes an entrepreneur may feel efficacious in opportunity search activities (for example gathering required information, which is a specific task during this phase), but may not have confident beliefs about reaching the decision to exploit the most attracting opportunity (which concerns attainment of a specific outcome during this phase). Therefore, we expect that ESE beliefs about one's capability to successfully tackle tasks will be distinct from ESE beliefs about successfully attaining outcomes.

### **Entrepreneurial self-efficacy control beliefs: positive and negative**

During the process of establishing a new business entrepreneurs experience both positive and negative thoughts because the odds for a real business success and/or failure are really high. Several authors including McGrath (1999), Cardon and McGrath (1999), and Shepherd (2003) have explored why so many entrepreneurs who have experienced business failure lack motivation to try again. One possible reason is that negative thinking arising from past failure hinders the future use of knowledge gained from past experience. Psychology literature and practice suggest that mastering the self-protective capability to control negative thoughts is important in reducing the entrepreneurs' sense of personal vulnerability and enhancing a sense of having the ability to control the environment.

However, too much positivism under difficult circumstances may also lead to suboptimal results. Entrepreneurs who experience instant successes may become too confident in approaching business activities, which may harm rather than help the business (Mellahi, 2005). In self-regulation thinking of entrepreneurs, two mechanisms operating under positive and negative cognitive states may be significant (Eisenberg *et al.*, 2000). The conservation regulation that is operated by negative control efficacy belief involves an individual's efficacious control over negative thinking and secures re-activation after failure experiences. The prevention regulation exerts efficacious control over too positive thinking and keeps an individual in the creative processing mode, thus preventing escalation of overconfidence biases (Martin and Clore, 2001). Based on the above we argue that ESE beliefs about capability to control positive thoughts (governed by prevention mechanism) will be distinct from ESE beliefs about capability to successfully control negative thoughts (governed by conservation mechanism).

### **Entrepreneurial self-efficacy domains: business start-up and growth**

In our conceptualization of a multidimensional ESE construct we do not suggest that one ESE construct could or should be used in all entrepreneurship studies. For example, it is likely that the nature of beliefs and success expectancies are likely to differ depending on whether one's desired goal is to start a new business or to grow an existing business. Prior research shows that entrepreneurs who are successful during business start-up activities are not necessarily those who are successful in growing a venture (Ucbasaran *et al.*, 2000). By separating business start-up and growth self-efficacy constructs we can expect a different nature and scope of the substantive content of self-efficacy beliefs. For instance, business start-up self-efficacy may focus on entrepreneurs' beliefs about successfully recognizing and converting a technological innovation into a marketable product (for example, an item would read as: I am confident in my ability to recognize technological innovations that are likely to succeed in the market). By comparison, venture growth self-efficacy may focus

on entrepreneurs' beliefs about successfully exploiting the market value of current products and services (for example, an item would read as: I am confident in my ability to grow the market of my current products and services). Research in psychology and management has provided evidence that the construct of self-efficacy is best understood at the level of specific and distinct domains, and its incremental value declines (Phillips and Gully, 1997). By implying separate and distinct business start-up and growth self-efficacy constructs we want to highlight the need to develop psychometrically sound constructs for each domain that have convergent and discriminant validity rather than say that a separate theoretical foundation and dimensional structure is needed too. Therefore, we expect that ESE beliefs about one's capability to successfully tackle business start-up processes will be distinct from ESE beliefs about one's capability to successfully tackle business growth processes.

We next develop a model that focuses on the application of our definition of ESE to the domain of business start-up in order to illustrate how such definition can be practically used.

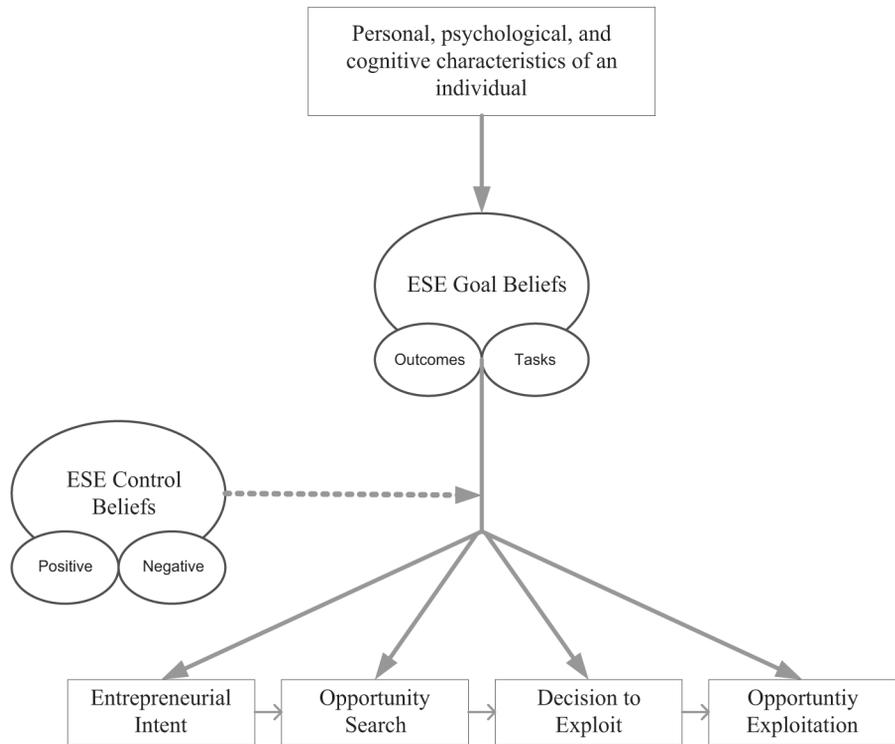
### **Entrepreneurial self-efficacy during business start-up process**

The process of starting-up a new venture involves interaction between the environment and individuals (Venkatraman, 1997) cumulating in activities of opportunity identification, business idea development, its refinement, and a final launch of a new business (Korunka *et al.*, 2003). Based on taxonomy of start-up activities, Shook *et al.* (2003) proposed an organizing model of the business start-up processes that consists of four steps:

- (1) intent formation – the entrepreneur's motivated disposition to actively pursue the goal of starting a business;
- (2) opportunity identification – the entrepreneur's search and discovery of potential opportunities for exploitation;
- (3) decision to exploit – the entrepreneur's commitment to exploit one or more of the identified opportunities; and
- (4) venture creation – the entrepreneur's assembly of the resource base and infrastructure to implement the business start-up.

We use this model to emphasize the specific role that dimensions of self-efficacy have at different phases of the start-up process as discussed earlier. This is in accordance to the social cognitive theory, which holds that individual's success at different activities can be better predicted "by the beliefs she/he holds about personal capabilities than by what skills and knowledge one actually possess, or one's previous attainments" Bandura (1997, p. 2).

In Figure 1, bolded paths represent direct relationships (between goal beliefs dimension and sequential phases of a business start-up process) and dotted paths represent proposed moderation effects by the control beliefs. An important element to understand here is that a specific aspect of ESE is tied with characteristics of each stage of a business start-up. If only a global construct of ESE was linked to these stages, the potential of identifying significant relationships would probably be much lower. Based in narrower, more focused research frameworks, it may be more useful to focus on only one dimension (e.g. goal beliefs) so that inquiry and forthcoming findings would be theoretically grounded on prior empirical evidence in entrepreneurship we may expect that some dimensions are significant in some stages while they are not in



**Figure 1.**  
The role of entrepreneurial self-efficacy for business start-up processes

others. We turn to specific relationships between dimensions of the ESE construct and phases of entrepreneurial start-up processes next. We begin with the phase of entrepreneurial intent formation.

#### *Entrepreneurial intent formation*

Intent is a state of mind that directs attention and action toward a specific goal – in this case, creating a new business (Bird, 1988). In general, the higher the self-efficacy beliefs, the greater an entrepreneur’s perceived competence for successfully starting a new business and, consequently, the more positive the intent. Increased strength of beliefs in one’s capabilities to start-up is likely to promote mobilization and allocation of energy and resources to pursue business start-up goals, if they are desirable. For example, Kolvereid (1996) found that self-efficacy has a functional influence on entrepreneurial intent even after controlling for an entrepreneur’s attitudes and subjective norms. Also, Zhao *et al.* (2005) investigated the mediating role of self-efficacy in the development of students’ intentions to become entrepreneurs. However, neither study distinguished between task and outcome goals that entrepreneurs set during the business start-up process. This is relevant because when goals are focused on outcomes and results, outcome beliefs will be more relevant, and when goals involve tackling tasks and processes, beliefs about tasks will be more relevant.

---

At the entrepreneurial intent phase, the relevant type of goal is attaining success in starting a new business, which is an outcome type of a goal. The perceived feasibility of its attainment holds the entrepreneur's attention and mobilizes energy to enhance action propensity. By contrast, task and process considerations are likely to be less relevant because it is not likely that an entrepreneur has identified what concrete opportunities to pursue, or how to pursue them at this stage. Thus we propose:

- P1a.* ESE goal beliefs about outcomes will have significant positive effects on entrepreneurial intent after controlling for the entrepreneur's demographic and psychographic characteristics.
- P1b.* ESE goal beliefs about tasks will have non-significant effects on entrepreneurial intent after controlling for the entrepreneur's demographic and psychographic characteristics.

#### *Opportunity identification*

Once entrepreneurial intent is formed, nascent entrepreneurs search for potential opportunities for exploitation (Casson, 1982). Previous empirical work suggests that entrepreneurs accomplish this goal through a number of interrelated tasks, such as environmental scanning, information sorting, categorizing, and reflecting (see Baron, 2004 for a review). It follows that to the extent that opportunity identification involves activating entrepreneurs' socio-cognitive skills and engaging in tasks, the entrepreneur's self-efficacy beliefs about tasks are relevant. Individuals with high levels of ESE goal beliefs about tasks are likely to perceive themselves as more competent in identifying exploitable opportunities, and consequently attain a higher level of performance as compared to entrepreneurs who possess high levels of ESE goal beliefs about outcomes. Prior research reports that in identifying opportunities effective entrepreneurs focus disproportionately on specific activities and tasks such as market research, technology development, contracting key stakeholders and prototype testing (Choi and Shepherd, 2004; Chrisman and McMullan, 2004; Rice, 2002). This consistent focus on tasks suggests a functional and significant role of self-efficacy beliefs about entrepreneurial tasks during the opportunity identification stage. We propose:

- P2a.* ESE goal beliefs about tasks will have a significant positive effect on an entrepreneur's opportunity identification after controlling for entrepreneurial intent.
- P2b.* ESE goal beliefs about outcomes will have a non-significant effect on an entrepreneur's opportunity identification after controlling for entrepreneurial intent.

#### *Decision to exploit*

Once potential opportunities are identified, the entrepreneur has to make a decision to either exploit them or to forgo the decision to start a new business (Choi and Shepherd, 2004). The exploitation of an opportunity refers to activities and investments committed to gain returns from the new product, such as market research, development and testing of new technologies, developing and building management teams and generating stakeholder support with the goal of providing entrepreneurs with resources needed for opportunity exploitation (see Choi and Shepherd, 2004). Shook *et al.* (2003) noted that both psychological attributes and cognitive processes are

involved in an entrepreneur's decision to exploit, which can lead to conflicts an individual has within self. In order to resolve them, entrepreneurs need to further process these cognitive recommendations in light of their own capabilities to determine the expectancies for attaining success and securing desirable outcomes, given the decision to exploit. This logic suggests that the decision to exploit will be guided by perceived efficacy to achieve expected outcomes. A decision to exploit will be initiated when an entrepreneur's beliefs in their ability to attain desired outcomes, such as financial returns from the new product are high and positive. We propose:

- P3a.* ESE goal beliefs about outcomes will have a significant positive effect on an entrepreneur's decision to exploit after controlling for opportunity identification.
- P3b.* ESE goal beliefs about tasks will have a non-significant effect on an entrepreneur's decision to exploit after controlling for opportunity identification.

#### *Opportunity exploitation*

Exploitation activities include planning, networking, selling, and locating resources (Shook *et al.*, 2003). These activities facilitate resource management, development of distribution channels, and high levels of customer service to support new products and services, among other important tasks during the exploitation process (Choi and Shepherd, 2004). Why do more than half of entrepreneurs who decide to exploit an opportunity eventually fail at successful opportunity exploitation (Cooper *et al.*, 1988)? While several studies have examined the nature and influence of these activities, much less attention has been paid to the agentic role of the entrepreneur in persisting in these activities and overcoming impediments when faced with setbacks or failures (Gatewood *et al.*, 1995). We reason that entrepreneurs with higher levels of self-efficacy beliefs for attaining success on tasks are more likely to persist longer and attain higher levels of performance on opportunity exploitation. For example, entrepreneurs who have high self-efficacy beliefs about entrepreneurial tasks feel competent to exploit opportunities immediately and thus extend the lead time of their product, which may consequently enhance brand building, broaden the product line and achieve important cost benefits (see Choi and Shepherd, 2004). We propose:

- P4a.* ESE goal beliefs about tasks will have a significant positive effect on an entrepreneur's opportunity exploitation after controlling for the decision to exploit.
- P4b.* ESE goal beliefs about outcomes will have a non-significant effect on an entrepreneur's opportunity exploitation after controlling for the decision to exploit.

#### **Moderating effects of positive and negative control efficacy beliefs**

In addition to the self-efficacy goal beliefs we indicated that entrepreneur's beliefs about bolstering positive thoughts and controlling negative thoughts are also relevant during business start-up. The functional role of positive and negative control beliefs is regulating an entrepreneur's confidence in his or her capabilities to attain success. Individuals with confidence in their capabilities to control negative thoughts are more likely to remain "task-diagnostic and continue to search for solutions" as opposed to their low negative control beliefs counterparts (those who cannot control their negative

thoughts) who tend to be “self-diagnostic and concentrate on their personal inadequacies” (Barone *et al.*, 1997, p. 291). Likewise, individuals with high positive control beliefs are likely to recognize opportunities even in scarce environments, and engage in problem solving in challenging situations (Ozer and Bandura, 1990). Although there are instances when overconfident control beliefs feed persistence in pursuit of dysfunctional strategies (Audia *et al.*, 2000), a well acknowledged social cognitive premise holds that high positive and or negative control beliefs facilitate persistence, better solutions and greater achievement (Ozer and Bandura, 1990; Barone *et al.*, 1997). Consequently, high positive/negative control beliefs are likely to amplify the functional effects of entrepreneurial self-efficacy goal beliefs during the business start-up processes. In other words, we suggest that the positive/negative control ESE beliefs moderate the effects of ESE goal beliefs on completion of stages of entrepreneurship start-up processes discussed earlier. Specifically, we suggest that the combination of high positive and high negative control beliefs will lead to the highest amplification effects, high positive control beliefs and low negative control beliefs will result in moderate amplification, and low positive and negative control beliefs will diminish the functional effect of task/outcome self-efficacy beliefs. We recognize that little theoretical and empirical work is forthcoming from the literature to support such arguments. Empirical work is needed to determine whether these proposed moderation effects are accurate. We posit:

- P5a.* High positive control efficacy beliefs will significantly moderate the relationship between ESE goal beliefs and successful completion of each stage of business start-up.
- P5b.* High negative control efficacy beliefs will significantly moderate the relationship between ESE goal beliefs and successful completion of each stage of business start-up.

## Discussion

The aim of this study is to propose a multidimensional definition of the ESE construct that is grounded in social cognitive theory and to show its relevance during sequential phases of a business start-up process. We first review the contributions of this approach and discuss areas for future research.

In this paper, we propose that there may be practical value and relevance if entrepreneurial self-efficacy is conceptualized as a multidimensional construct. We show that dimensions of ESE may include two distinct types of beliefs: goal beliefs and control beliefs. An entrepreneur’s goal beliefs are assessments of one’s capabilities to engage in activities that will lead to successful task or outcome completion during business start-up. Control beliefs are an entrepreneur’s beliefs about his/her capabilities to control negative thoughts and bolster positive thoughts during goal pursuit. We outlined when and why a specific type of entrepreneurial belief plays a significant role during the business start-up process. In so doing, we are able to answer questions such as “Why do some entrepreneurs get stuck in the new venture creation process, such as by succeeding at identifying opportunities but failing to go further in capitalizing on those opportunities?” Our multidimensional view of self efficacy suggests that an important source of insight is paying separate attention to the individual dimensions of ESE that entrepreneurs hold at specific phase of the business start-up process. In general, we expect that task and outcome goal beliefs are

non-redundant, implying that individuals who possess high levels of task self-efficacy will not necessarily possess high levels of outcome self-efficacy, and vice versa.

The inclusion of the control dimension of self-efficacy and consideration of its moderating effects holds the potential for additional substantive insights. Why do apparently efficacious and successful entrepreneurs let negative feedbacks from doubters inhibit their progress through the business start-up process? Even entrepreneurs with strong entrepreneurial self-efficacy beliefs about goals may become de-motivated, disengage from goal pursuit, and prematurely abandon their aspirations for starting a business if they do not believe in their capabilities to control their thoughts under difficult circumstances. Because individual entrepreneurs vary on these dimensions, adopting the proposed ESE construct may unveil sources of success and failure with higher probability and precision than was previously possible.

### **Future research**

We see two primary areas for future research on entrepreneurial self-efficacy:

- (1) empirical testing of ESE dimensions and impact; and
- (2) training entrepreneurs and future entrepreneurs to develop their ESE.

We discuss each in turn.

#### *Empirical testing of ESE*

The proposed multidimensional definition of ESE offers several empirical payoffs, such as higher empirical predictability of the phenomenon. Research findings that are robust enough to be generalized into meaningful conclusions are obviously a precursor for transfer of scientific knowledge into practice. However, one significant challenge for further research is designing a new scale of ESE to reflect the goal belief and control belief dimensions outlined above. While conventional scale development procedures can be utilized to operationalize the ESE construct (for example, Law *et al.*, 1998; DeVellis, 2003), several issues that are especially relevant for the proposed ESE construct need to be considered.

First, the nature of tasks and outcomes varies across new business formation processes, and such variety needs to be accounted in the construct's operationalization. Researchers will have to be careful to match the content of goal beliefs to the specific entrepreneurship goal considered. For example, self-efficacy items including outcome goals in business start-up process might read as: "I am confident that if I work hard, I can successfully start a business" whereas self-efficacy items including task goals might read as "I am confident that I can put in the effort and perform activities needed to start a business." By contrast, control beliefs are not specific to the goal type. They are specific to the valence – negative or positive – of cognitions. An example of a control belief measure might be "I am confident that I will be able to turn off scary thoughts if activities during business start-up do not go as planned."

Second, in developing measures of the proposed ESE construct, we recommend that researchers reject both overly general and too specific operationalizations of goal and control beliefs and try to operate at an intermediate level of specificity. Overly abstract operationalizations are likely to compromise discriminant validity among the posited sub-dimensions of goal and control beliefs and threaten the definition of ESE as distinct from generalized beliefs of self-esteem. Overly specific operationalizations are less likely to travel across different business start-up contexts, require significant

---

developmental effort for each context, and hurt the potential for accumulation of research findings. At the intermediate level, operationalizations can be both consistent with the ESE conceptualization and conducive to accumulation and comparison of research findings across contexts.

Experiences from psychology indicate that intermediate level measures of self-efficacy for a class of performances can be construed if they happen under conditions sharing common properties (Bandura, 2003, pp. 49). That is, in developing intermediate measures of (for instance) goal beliefs, we recommend that researchers conduct grounded work in multiple business start-up contexts to identify challenging tasks (outcomes) relevant to entrepreneurs at different stages of the process, and how entrepreneurs construe their beliefs about successfully tackling these challenges. In developing the items, measure content should focus on can do rather than statements because “can” is a judgment of capability as opposed to “will” which is a statement of intention.

In addition, sample choices for ESE operationalization require specific attention. In much past research, entrepreneurial self-efficacy is operationally developed and measured using student samples, preferably senior graduate students close to the career choice decision. This approach has inherent problems because such populations are removed from real life business contexts and can only report their expectancies based on de-contextualized knowledge. A reasonable example of using a contextualized sample is the study by Gatewood *et al.* (1995) who utilized pools of entrepreneurs participating in the local business development centre entrepreneurship training program to examine cognitive beliefs. We recommend similar approaches for sample choices in operationalizing the ESE construct. We suggest that by adopting a more precise conceptualization of the ESE construct, substantive and empirical pay-offs may accrue.

#### *Pedagogical implications*

By understanding the nature of entrepreneurial self-efficacy and mechanisms through which it affects entrepreneurial outcomes, we obtain insights into the effectiveness of business start-up processes and can thus provide practical implications on skill-building exercises for individuals that aspire to become successful entrepreneurs. Thus the proposed ESE construct offers pedagogical payoffs that need attention in further research.

Specifically, this definition of ESE focuses on the need for entrepreneurs to develop beliefs to control negative thinking. Several researchers have identified that entrepreneurship teaching and training likely ignore important elements that could facilitate entrepreneurial learning (Katz, 2003), oftentimes due to the lack of focus on social-cognitive, psycho-cognitive and ethical perspectives in entrepreneurship education (Béchar and Grégoire, 2005). Indeed research in management (see Locke and Latham, 2004 for a review) has shown that work productivity can be substantially enhanced through cognitive training methods that teach people how to reframe dysfunctional thoughts in the face of failure. Such reframing techniques are essentially directed at enhancing the cognitive control beliefs. Additionally, a cumulative body of research is supporting the premise that failure is often more important than success for learning (Sitkin, 1992) and that the process of learning from business failure benefits subsequent businesses and society at large (McGrath, 1999; Shepherd, 2003).

In transferring findings to teaching entrepreneurship Honig (2004) and DeTienne and Chandler (2004) provided several examples of experiential and contingency based

approaches to facilitate movement of entrepreneurship education beyond analytical skill development to teaching self-confidence and motivation when confronted with failure. Entrepreneurship students are exposed to a series of techniques to learn how to obtain new skills, how to thrive in the unstructured environments and how to become perceptive to new challenges through failure (DeTienne and Chandler, 2004).

In designing such curricula, the proposed multidimensional conceptualization of the ESE construct provides both a theoretical foundation to embed such pedagogical efforts and an operational device to monitor the success of such teaching and training programs for enhancing the self-efficacy of entrepreneurs along specific and well defined dimensions. We recommend paying specific attention to this issue in further research. If “starting a new business is similar to going into battle, whereby the entrepreneur must allocate sufficient resources and a workable strategy capable of overcoming competitive and hostile adversaries” (Honig, 2004, p. 263), understanding how capabilities along different dimensions of ESE are created and nurtured may unveil what it takes to enter and prevail in such combat. We encourage additional research in this area.

### References

- Audia, G., Locke, E.A. and Smith, K. (2000), “The paradox of success: an archival and laboratory study of strategic persistence following a radical environmental change”, *Academy of Management Journal*, Vol. 43 No. 5, pp. 837-54.
- Bandura, A. (1982), “Self-efficacy mechanism in human agency”, *American Psychologist*, Vol. 37 No. 2, pp. 122-47.
- Bandura, A. (1997), *Self-efficacy: The Exercise of Control*, Freeman, New York, NY.
- Bandura, A. (2001), “Social cognitive theory: an agentic perspective”, *Annual Review of Psychology*, Vol. 52 No. 1, pp. 1-26.
- Bandura, A. (2003), *Self-efficacy: The Exercise of Control*, Freeman, New York, NY.
- Baron, R.A. (1998), “Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people”, *Journal of Business Venturing*, Vol. 13 No. 4, pp. 275-94.
- Baron, R.A. (2004), “The cognitive perspective: a valuable tool for answering entrepreneurship’s basic ‘why’ questions”, *Journal of Business Venturing*, Vol. 19 No. 3, pp. 221-39.
- Baron, R.A. and Markman, G.D. (1999), “Cognitive mechanisms: potential differences between entrepreneurs and non-entrepreneurs”, *Frontiers of Entrepreneurship Research 1999*, available at: [www.babson.edu/entrep/fer/papers99/III/III\\_A/IIIA%20Text.htm](http://www.babson.edu/entrep/fer/papers99/III/III_A/IIIA%20Text.htm)
- Barone, D.F., Maddux, J.E. and Snyder, C.R. (1997), *Social Cognitive Psychology: History and Current Domains*, Plenum Press, New York, NY.
- Baughn, C.C., Cao, J.S., Linh, T.M.L., Lim, V.A. and Kent, E.N. (2006), “Normative, social and cognitive predictors of entrepreneurial interest in China, Vietnam and Philippines”, *Journal of Developmental Entrepreneurship*, Vol. 11 No. 1, pp. 57-77.
- Baum, J.R. (1994), “The relation of traits, competencies, vision, motivation, and strategy to venture growth”, doctoral dissertation, University of Maryland, College Park, MD.
- Baum, J.R., Locke, E.A. and Smith, K.G. (2001), “A multidimensional model of venture growth”, *Academy of Management Journal*, Vol. 44 No. 2, pp. 292-304.
- Béchar, J.P. and Grégoire, D. (2005), “Entrepreneurship education research revisited: the case of higher education”, *Academy of Management Learning and Education*, Vol. 4 No. 1, pp. 22-43.

- 
- Bird, B. (1988), "Implementing entrepreneurial ideas: the case of intentions", *Academy of Management Review*, Vol. 13 No. 3, pp. 442-54.
- Boyd, N.G. and Vozikis, G.S. (1994), "The Influence of self-efficacy on the development of entrepreneurial intentions and actions", *Entrepreneurship Theory and Practice*, Vol. 18 No. 4, pp. 63-90.
- Brown, T.E. and Kirchoff, B.A. (1997), "The effects of resource availability and entrepreneurial orientation on firm growth", *Frontiers of Entrepreneurship Research 1997*, available at: [www.Babson.Edu/Entrep/Fer/Papers97/Kirtchoff/Kir3.Htm](http://www.Babson.Edu/Entrep/Fer/Papers97/Kirtchoff/Kir3.Htm) (accessed June 2005).
- Byrant, P. (2007), "Self-regulation and decision heuristics in entrepreneurial opportunity evaluation and exploitation", *Management Decision*, Vol. 45 No. 4, pp. 732-45.
- Cardon, M.S. and McGrath, R. (1999), "When the going gets tough...toward a psychology of entrepreneurial failure and re-motivation", *Frontiers of Entrepreneurship Research 1999*, available at: [www.Babson.Edu/Entrep/Fer/Papers99/I/I\\_B/I\\_B%20text.Htm](http://www.Babson.Edu/Entrep/Fer/Papers99/I/I_B/I_B%20text.Htm)
- Carter, N.M., Gartner, W.B., Shaver, K.G. and Gatewood, E.J. (2003), "The career reasons of nascent entrepreneurs", *Journal of Business Venturing*, Vol. 18 No. 1, pp. 13-40.
- Casson, M. (1982), *The Entrepreneur. An Economic Theory*, Martin Robertson, Oxford.
- Chandler, G.N. and Jansen, E. (1992), "The founder's self-assessed competence and venture performance", *Journal of Business Venturing*, Vol. 7 No. 3, pp. 223-36.
- Chen, C.C., Greene, P.G. and Crick, A. (1998), "Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?", *Journal of Business Venturing*, Vol. 13 No. 4, pp. 295-316.
- Choi, Y.R. and Shepherd, D.A. (2004), "Entrepreneurs' decisions to exploit opportunities", *Journal of Management*, Vol. 30 No. 3, pp. 377-95.
- Chrisman, J.J. and McMullan, W.E. (2004), "Outsider assistance as a knowledge resource for new venture survival", *Journal of Small Business Management*, Vol. 42 No. 3, pp. 229-44.
- Cooper, A.C., Dunkelberg, W.C. and Woo, C.Y. (1988), "Entrepreneurs' perceived chances for success", *Journal of Business Venturing*, Vol. 3 No. 2, pp. 97-109.
- De Noble, A., Jung, D. and Ehrlich, S. (1999), "Initiating new ventures: the role of entrepreneurial self-efficacy", *Frontiers of Entrepreneurship Research 1999*, available at: [www.Babson.Edu/Entrep/Fer/Papers99/I/I\\_C/Ic.Html](http://www.Babson.Edu/Entrep/Fer/Papers99/I/I_C/Ic.Html) (accessed June 2008).
- de Pillis, E. and Reardon, K. (2007), "The influence of personality traits and persuasive messages on entrepreneurial intention: a cross-cultural comparison", *Career Development International*, Vol. 12 No. 4, pp. 382-96.
- DeTienne, D.R. and Chandler, G. (2004), "Opportunity identification and its role in the entrepreneurial classroom: a pedagogical approach and empirical test", *Academy of Management Learning and Education*, Vol. 3 No. 3, pp. 242-57.
- DeVellis, R. (2003), *Scale Development: Theory and Application*, Sage Publications, Thousand Oaks, CA.
- Dweck, C.S. and Leggett, E.L. (1988), "A social cognitive approach to motivation and personality", *Psychological Review*, Vol. 95 No. 2, pp. 256-73.
- Eisenberg, N., Fabes, R.A., Guthrie, I.K. and Reiser, M. (2000), "Dispositional emotionality and regulation: their role in predicting quality of social functioning", *Journal of Personality and Social Psychology*, Vol. 78, pp. 136-57.
- Gartner, W.B. (1990), "What are we talking about when we talk about entrepreneurship", *Journal of Business Venturing*, Vol. 5 No. 1, pp. 15-28.
- Gartner, W.B. (2001), "Is there an elephant in entrepreneurship? Blind assumptions in theory development", *Entrepreneurship Theory and Practice*, Vol. 25 No. 4, pp. 27-39.

- Gatewood, E.J., Shaver, K.G. and Gartner, W.B. (1995), "A longitudinal study of cognitive factors influencing start-up behaviours and success at venture creation", *Journal of Business Venturing*, Vol. 10 No. 5, pp. 371-91.
- Gatewood, E.J., Shaver, K.G., Powers, J.B. and Gartner, W.B. (2002), "Entrepreneurial expectancy, task effort, and performance", *Entrepreneurship Theory and Practice*, Vol. 27 No. 1, pp. 187-207.
- Herron, L., Sapienza, H.J. and Smith-Cook, D. (1991), "Entrepreneurship theory from an interdisciplinary perspective", *Entrepreneurship Theory and Practice*, Vol. 16 No. 2, pp. 7-12.
- Hmieleski, K.M. and Corbett, A.C. (2008), "The contrasting interaction effects of improvisational behavior with entrepreneurial self-efficacy on new venture performance and entrepreneur work satisfaction", *Journal of Business Venturing*, Vol. 23 No. 4, pp. 82-96.
- Honig, B. (2004), "Entrepreneurship education: toward a model of contingency-based business planning", *Academy of Management Learning and Education*, Vol. 3 No. 3, pp. 258-73.
- Katz, J.A. (2003), "The chronology and intellectual trajectory of American entrepreneurship education 1876-1999", *Journal of Business Venturing*, Vol. 18 No. 2, pp. 283-300.
- Kickul, J., Wilson, F., Marlino, D. and Barbosa, S.D. (2007), "Are misalignments of perceptions and self-efficacy causing gender gaps in entrepreneurial intentions among our nation's teens?", *Journal of Small Business and Enterprise Development*, Vol. 15 No. 2, pp. 321-45.
- Kolvereid, L. (1996), "Prediction of entrepreneurial employment status choice intentions", *Entrepreneurship Theory and Practice*, Vol. 21 No. 1, pp. 47-57.
- Korunka, C., Frank, H., Lueger, M. and Mugler, J. (2003), "The entrepreneurial personality in the context of resources, environment, and the start-up process – a configurational approach", *Entrepreneurship Theory and Practice*, Vol. 28 No. 1, pp. 23-42.
- Kropp, F., Lindsay, N. and Shoham, A. (2008), "International Entrepreneurial orientation and international entrepreneurial business venture startup", *Journal of Entrepreneurial Behaviour & Research*, Vol. 14 No. 2, pp. 102-17.
- Krueger, N.F. (2000), "The cognitive infrastructure of opportunity emergence", *Entrepreneurship Theory and Practice*, Vol. 24 No. 3, pp. 5-23.
- Krueger, N.F. (2003), "The cognitive psychology of entrepreneurship", in Acs, Z. and Audretsch, D.B. (Eds), *Handbook of Entrepreneurial Research*, Kluwer Law International, London, pp. 105-40.
- Krueger, N.F., Reilly, M.D. and Carsrud, A.L. (2000), "Competing models of entrepreneurial intentions", *Journal of Business Venturing*, Vol. 15 Nos 5-6, pp. 411-32.
- Law, K.S., Wong, C.S. and Mobley, W.H. (1998), "Toward a taxonomy of multidimensional constructs", *Academy of Management Review*, Vol. 23 No. 4, pp. 741-55.
- Locke, E.A. and Latham, G.P. (2004), "What should we do about motivation theory? Six recommendations for the twenty first century", *Academy of Management Review*, Vol. 29 No. 3, pp. 388-403.
- Luthans, F. and Ibrayeva, E.S. (2006), "Entrepreneurial self-efficacy in Central Asian transition economies: quantitative and qualitative analysis", *Journal of International Business Studies*, Vol. 37, pp. 92-110.
- Luthans, F., Stajkovic, A.D. and Ibrayeva, E. (2000), "Environmental and psychological challenges facing entrepreneurial development in transitional economies", *Journal of World Business*, Vol. 35 No. 1, pp. 95-110.
- McGrath, R. (1999), "Falling forward: real options reasoning and entrepreneurial failure", *Academy of Management Review*, Vol. 24 No. 1, pp. 18-31.

- Markman, G.D. and Baron, R.A. (2003), "Person-entrepreneurship fit: why some people are more successful as entrepreneurs than others", *Human Resource Management Review*, Vol. 13 No. 2, pp. 281-301.
- Markman, G.D., Balkin, D.B. and Baron, R.A. (2002), "Inventors and new venture formation: the effects of general self-efficacy and regretful thinking", *Entrepreneurship Theory and Practice*, Vol. 27 No. 2, pp. 149-66.
- Martin, L.L. and Clore, G.L. (2001), *Theories of Mood and Cognition: A User's Guidebook*, Lawrence Erlbaum Associates, Mahwah, NJ.
- Mellahi, K. (2005), "The dynamics of boards of directors in failing organizations", *Long Range Planning*, Vol. 38 No. 3, pp. 261-79.
- Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P., Morse, E.A. and Smith, J.B. (2002), "Toward a theory of entrepreneurial cognition: rethinking the people side of entrepreneurship research", *Entrepreneurship Theory and Practice*, Vol. 27 No. 2, pp. 93-104.
- Mueller, S. and Conway Dato-on, M. (2008), "Gender role orientation as a determinant of entrepreneurial self-efficacy", *Journal of Developmental Entrepreneurship*, Vol. 13 No. 1, pp. 3-20.
- Neck, C.P., Neck, H.M., Manz, C.C. and Godwin, J. (1999), "I think I can; I think I can' a self-leadership perspective toward enhancing entrepreneur thought patterns, self-efficacy, and performance", *Journal of Managerial Psychology*, Vol. 14 No. 6, pp. 477-501.
- Ozer, E.M. and Bandura, A. (1990), "Mechanisms governing empowerment effects: a self-efficacy analysis", *Journal of Personality and Social Psychology*, Vol. 58 No. 3, pp. 472-86.
- Phillips, J.M. and Gully, S.M. (1997), "Role of goal orientation, ability, need for achievement, and locus of control in the self-efficacy and goal-setting process", *Journal of Applied Psychology*, Vol. 82, pp. 792-802.
- Pyysiäinen, J., Anderson, A., McElwee, G. and Vesala, K. (2006), "Developing the entrepreneurial skills of farmers: some myths explored", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 12 No. 1, pp. 21-39.
- Rauch, A. and Frese, M. (2007), "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*, Vol. 16 No. 4, pp. 353-85.
- Rice, M. (2002), "Co- production of business assistance in business incubators: an explanatory study", *Journal of Business Venturing*, Vol. 17 No. 2, pp. 163-87.
- Scherer, R.F., Adams, J.S., Carley, S.S. and Wiebe, F.A. (1989), "Role model performance effects on development of entrepreneurial career – performance", *Entrepreneurship Theory and Practice*, Vol. 13 No. 3, pp. 53-71.
- Segal, G., Borgia, D. and Schoenfeld, J. (2002), "Using social cognitive career theory to predict self-employment goals", *New England Journal of Entrepreneurship*, Vol. 5 No. 2, pp. 47-56.
- Segal, G., Borgia, D. and Schoenfeld, J. (2005), "The motivation to become an entrepreneur", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 11 No. 1, pp. 42-57.
- Shane, S. and Venkataraman, S. (2000), "The promise of entrepreneurship as a field of research", *Academy of Management Review*, Vol. 25 No. 1, pp. 217-26.
- Shane, S., Locke, E.A. and Collins, C.J. (2003), "Entrepreneurial motivation", *Human Resource Management Review*, Vol. 13 No. 2, pp. 257-79.
- Shaver, K.G., Gartner, W.B., Crosby, E., Bakalarova, K. and Gatewood, E.J. (2001), "Attributions about entrepreneurship: a framework and process for analyzing reasons for starting a business", *Entrepreneurship Theory and Practice*, Vol. 26 No. 2, pp. 28-33.
- Shepherd, D.A. (2003), "Learning from business failure: propositions for grief recovery for self-employed", *Academy of Management Review*, Vol. 28 No. 2, pp. 318-28.

- Shook, C.L., Priem, R.L. and Mcgee, J.E. (2003), "Venture creation and the enterprising individual: a review and synthesis", *Journal of Management*, Vol. 29 No. 3, pp. 379-400.
- Sitkin, S.B. (1992), "Learning through failure: the strategy of small losses", *Research in Organizational Behavior*, Vol. 14, pp. 231-66.
- Stajkovic, A.D. and Luthans, F. (1998), "Self-efficacy and work-related performance: a meta-analysis", *Psychological Bulletin*, Vol. 124 No. 2, pp. 240-61.
- Tang, J. (2009), "Environmental munificence for entrepreneurs: entrepreneurial alertness and commitment", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 14 No. 3, pp. 128-51.
- Ucbasaran, D., Howorth, C.A. and Westhead, P. (2000), "Habitual entrepreneurs: human capital, opportunity search and learning", *Frontiers of Entrepreneurship Research*, available at: [www.babson.edu/entrep/fer/1/IF/IF.htm](http://www.babson.edu/entrep/fer/1/IF/IF.htm) (accessed 20 February 2009).
- Venkatraman, S. (1997), "The distinctive domain of entrepreneurship research: an editor's perspective", in Katz, J. and Brockhaus, R. (Eds), *Advances in Entrepreneurship, Firm Emergence, and Growth*, JAI Press, Greenwich, CT, pp. 119-38.
- Wilson, F., Kickul, J. and Marlino, D. (2007), "Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: implications for entrepreneurship education", *Entrepreneurship Theory and Practice*, Vol. 31 No. 3, pp. 387-406.
- Zhao, H., Seibert, S.E. and Hills, G.E. (2005), "The mediating role of self-efficacy in the development of entrepreneurial intentions", *Journal of Applied Psychology*, Vol. 90 No. 6, pp. 1265-72.

#### About the authors

Mateja Drnovšek (PhD, University of Ljubljana) is Associate Professor of Entrepreneurship at the Faculty of Economics, University in Ljubljana. Her research is immersed in cognitive aspects of entrepreneurship and their influence on formation of entrepreneurial intentions, new venture creation and overall entrepreneurial effectiveness. She has also done several studies of gender entrepreneurship, nascent entrepreneurship (with specific focus on nascent entrepreneurs among undergraduate students), technology-based entrepreneurship and research into correlates of regional and national small business development. Her recent work includes theoretical work on entrepreneurial self-efficacy and entrepreneurial passion. Mateja Drnovšek is the corresponding author and can be contacted at: [drnovsekm@gmail.com](mailto:drnovsekm@gmail.com)

Joakim Wincent (PhD, Luleå University of Technology) is Associate Professor at Luleå University of Technology, Luleå, Sweden. He is committed to research projects on the individual-, organization-, and system level. A main track has been multi-partner cooperation in strategic networks focusing on how firms can build competitiveness by aid of collective efforts. With regard to the individual, studies are on entrepreneurs' self-efficacy and passion, but also on the entrepreneurial role and role stress at new venturing.

Melissa S. Cardon (PhD, Columbia University) is Associate Professor of Management at Pace University's Lubin School of Business. Her research focuses on unleashing human potential within entrepreneurial firms, including a dual interest in HR practices that maximize employee potential, and the emotional, relational, and cognitive aspects of entrepreneurs that contribute to optimizing their behaviour and performance. Recent work of Melissa's includes a focus on entrepreneurial passion, entrepreneurial failure, and human resources systems within small firms.