CONTINUOUSLY IMPROVING IN TOUGH TIMES:
OVERCOMING RESOURCE CONSTRAINTS WITH POSITIVE PSYCHOLOGICAL RESOURCES

by

Ingrid C. Chadwick

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ABSTRACT

Individuals and organizations must continuously improve to succeed in today’s competitive economic climate, yet a major dilemma in tough economic conditions is that the resources needed to support such proactive improvement behaviors are limited. Existing theories on organizational resources, stressors, and continuous improvement are relevant yet insufficient for answering the important question of how individuals remain motivated to pursue continuous improvement activities despite minimal organizational resources to support them. Therefore, the goal of this dissertation was to build and test theory on this phenomenon. Inspired by full-cycle research, I began this program of research with a phenomenological study of employees in a manufacturing environment to better understand their appraisals regarding continuous improvement under resource-constrained conditions. The results highlighted the ways in which employees interpret constraints as either a threat or a challenge, and how positive psychological capital (PsyCap) guides these interpretations and subsequent continuous improvement. Informed by this rich data, I proposed a synthesized theoretical model which was tested in two separate contexts. First, I conducted a time-lagged survey study in another resource-constrained environment that demands continuous improvement, namely entrepreneurs launching a new business. To exert more control and to enhance the generalizability of this research, I then conducted an online experiment with participants from various industries and backgrounds. The results of these studies largely supported the theoretical model, documenting in particular the importance of individuals’ challenge appraisals for their ensuing continuous improvement behaviors. The benefits of individuals’ positive psychological resources as a way to enhance the perceived learning opportunities from resource constraints (i.e., challenge appraisal) were also illustrated. Threat appraisals did not produce the expected effects in this context of continuous
improvement, and as such, the theoretical model was refined further. Collectively, this research provides answers to the important question of how individuals can find ways to proactively improve in the face of resource constraints, which is a timely and relevant topic across contemporary organizational contexts today.
CO-AUTHORSHIP

Jana Raver is gratefully acknowledged as a co-author on the manuscripts resulting from this dissertation. Manuscript 1, titled “Continuously Improving in Tough Times: Overcoming Resource Constraints with Psychological Capital”, was presented at the Academy of Management 2013 Annual Meeting and was published in the Best Paper Proceedings.
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STATEMENT OF ORIGINALITY

I hereby certify that all of the work described within this thesis is the original work of the author. Any published (or unpublished) ideas and/or techniques from the work of others are fully acknowledged in accordance with the standard referencing practices.

Ingrid C. Chadwick

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CHAPTER 1
INTRODUCTION AND THEORETICAL BACKGROUND

Today’s global economy continues to reach unprecedented levels of complexity and turbulence (Kim, Hornung, & Rousseau, 2011). To remain competitive in this dynamic and uncertain business environment, individuals need to continuously improve, regardless of whether they are employees of a large multinational corporation or entrepreneurs operating a small business (Edmondson, 2008; Grant & Parker, 2009; Lee, 2004; Teece, 2007). By seeking out ways to improve themselves and their work on an ongoing basis, individuals are able to proactively adapt to and capitalize on critical changes around them in ways that are not necessarily captured by formal job requirements (Griffin, Neal, & Parker, 2007). However, a major obstacle to individuals’ motivation and even ability to continuously improve is a lack of resources, such as inadequate training, a lack of supportive organizational structures, and insufficient social networks (e.g., Fuller, Marler, & Hester, 2006; James, 2002; Oliver, 2009; Schaufeli & Salanova, 2006). This is highly concerning as resources typically are limited or even absent during tough economic conditions, thereby making individuals less likely to engage in continuous improvement activities when they are needed the most. In light of this paradox, the aspiration behind this research was to understand what motivates people to pursue continuous improvement activities despite minimal resources to support them. That is, how and why do individuals find ways to improve in the face of adversity?

Despite the importance of this question, there is currently a lack of theory or research that can answer it. Continuous improvement as a field of research has garnered much attention, yet it has mainly been studied as a macro phenomenon (e.g., Bhuian & Baghel, 2005) and scholars have argued for the necessity of supportive resources (e.g., Berling, 2000; Senge, 1990). Work in
this area therefore has the tendency to overlook individual cognition and motivation as the basis for the success of continuous improvement activities, and it offers recommendations that are economically unrealistic. Likewise, theory has outlined the detrimental individual reactions to resource losses and scarcity (e.g., Hobfoll, 2001), yet this work pays less attention to the mechanisms through which individuals may overcome expected detrimental effects. In a similar vein, the literature on organizational stress suggests that stressors such as resource constraints are subjectively perceived and thus can generate a variety of responses as a function of whether the stressor is appraised as a threat (containing the possibility of harm or loss) or as a challenge (holding the possibility of mastery or benefit) (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). However, there is minimal theory or evidence that speaks to the issue of why individuals respond differently to the same stressor or what the implications of such differential appraisals are for continuous improvement behaviors. Therefore, although the existing literature is relevant, it is insufficient for answering the critical question of how individuals remain motivated to pursue continuous improvement activities despite minimal resources to support them.

The goal of this PhD dissertation was to build and test theory on individuals’ continuous improvement behaviors in resource-constrained contexts. Inspired by “full-cycle” research (Chatman & Flynn, 2005; Cialdini 2001), I engaged in an iterative research process that began with theory building through qualitative inquiry, followed by theory testing with quantitative methods in two unique contexts. More specifically, I first conducted a phenomenological interview study of employees in a manufacturing environment to better understand their appraisals regarding continuous improvement under resource-constrained conditions. Informed by this rich data, I proposed a synthesized theoretical model which illustrates how employees’
cognitive appraisals of resource constraints affect their motivation for continuous improvement as a function of their positive psychological capital (PsyCap; Luthans & Youssef, 2004) and personal resources. I then proceeded to quantitatively test this theoretical model in another resource-constrained environment that demands continuous improvement, namely entrepreneurs launching a new business. This study allowed me to test my proposed model in a naturalistic setting through the use of a time-lagged survey design. Finally, to build on this longitudinal study in ways that allowed me to exert more control and to enhance the generalizability of the results, I conducted an online experiment with a sample of individuals with work experience from a diverse set of occupational backgrounds. Through this experiment, I was able to test additional aspects of my model that were less relevant in the entrepreneurial context and it also helped me carve out new directions for future research.

Collectively, this research provides answers to the important question of how individuals can find ways to proactively improve in the face of resource constraints. This is a timely and relevant topic across contemporary organizational contexts, and as such, this dissertation contributes to organizational scholarship in several ways. First, I conceptualize continuous improvement as a proactive type of learning oriented work behavior aimed at improving the organization on a continuous basis, and as such, I highlight the micro-foundation of the continuous improvement phenomenon. This micro-perspective offers a novel and complementary viewpoint to the more prevalent macro-organizational approach used within the organizational literature to date (e.g., Bhuian & Baghel, 2005). Considering the increased awareness regarding the essential role of individuals’ engagement for the success of continuous improvement activities (e.g., Kim et al., 2011), this individual perspective deserves more scholarly attention and can help us better understand how to promote such improvement.
activities from an emergent perspective. Second, this research provides sought after empirical support for the cognitive processes through which individuals respond to stressors (i.e., research constraints here), including important factors that influence such interpretations (e.g., Feldman, Cohen, Hamrick, & Lepore, 2004; Weick, Sutcliffe, & Obstfeld, 2005). In particular, these results demonstrate (a) how subjective this cognitive process can be as a function of individuals’ positive psychological resources, and (b) how this process can lead to not only negative but also positive outcomes such as continuous improvement. Third, where previous research has demonstrated how to promote continuous improvement under ideal circumstances that include sufficient resources, this research offers a more realistic perspective from which to build knowledge given that organizations rarely have all the resources and support needed. Accordingly, this research offers suggestions for how organizations can motivate their employees to continuously improve in more cost-effective ways than initially predicted by previous research and theory. Finally, the research process for this dissertation was inspired by full-cycle research whereby I drew theoretical insights from one setting and then applied them to another. As a result, this process helps to enhance both internal and external validity of the findings (Singleton & Straits, 1999).

This dissertation is organized into five main components. The rest of this chapter is devoted to providing a description of the theoretical background for my research. I then present the results of an inductive, qualitative research study, based upon which I propose a synthesized theoretical framework. Next, I provide the results of two deductive, quantitative studies that investigate important and distinct features of the proposed theoretical model. Finally, I end with an overall discussion of my three studies and their scholarly and practical implications.

THEORETICAL FOUNDATIONS
In this section I review the existing literature on continuous improvement behaviors in the face of resource constraints as a foundation for my dissertation. Since my conceptualization of continuous improvement as an individual behavior has received limited scholarly attention, I draw from several sets of literature to delineate promising information on the effects of and antecedents to continuous improvement behaviors. Based on this review, I outline what we currently know and what critical questions remain regarding how to promote continuous improvement behaviors in today’s resource constrained organizations.

**Continuous Improvement from a Macro Perspective**

From a macro perspective, continuous improvement is viewed as the active pursuit of incremental and innovative improvements of processes, products, and services (Anand, Ward, Tatikonda, & Shilling, 2009; Anderson, Rungtusanatham, & Schroeder, 1994; Berling, 2000). Stemming from the Japanese industrial revolution, it is an extensively studied and theorized topic that originally emerged from the manufacturing industry (Zangwill & Kantor, 1998). As such, it is most frequently associated with the improvement of quality through streamlining and reducing variability. However, continuous improvement also incorporates innovation as an integral part to its success although innovation in this regard is viewed as a process of "reinvention, proliferation, reimplementation, discarding, and termination actions" (Van de Ven, Angle, & Poole, 1989: 11) rather than one-time breakthroughs.

To date, scholars have mainly studied continuous improvement as a macro phenomenon, such as an organizational strategy, culture, or dynamic capability that involves everyone working together to make improvements without necessarily making huge capital investments (e.g., Anand et al., 2009; Bhuian & Baghel, 2005). Rather than representing one specific activity, continuous improvement is achieved through the long-term application of a number of different
tools and techniques aimed to increase successes and reduce failures (Bessant & Francis, 1999; Imai, 1986). Continuous improvement thus becomes a way of life in organizations where organizational members share expectations that improvement is an important part of everyday work activities (Miktki, Shani, & Meiri, 1997; Nonaka, 1991; Tracey, Tannenbaum, & Kavanagh, 1995).

The organizational ability to systematically seek out and apply new and improved ways of conducting work has become a key to success in today’s progressively competitive environment (Fuller, Marler, & Hester, 2006). Research has correspondingly shown that continuous improvement programs and activities can generate a host of positive organizational outcomes, such as enhanced organizational competitiveness, flexibility, quality improvement, customer satisfaction, cost-savings, and even organizational learning overall (Bessant & Francis, 1999; Carman et al., 1996; Garvin, 1993; Mitki et al., Nonaka, 1991). Having said that, it is critical to point out that these important outcomes can only be achieved when organizations are able to build on the proactive input and commitment of their employees who are typically the ones most in tune with the daily business operations. It is employees’ collective participation in continuous improvement behaviors that motivate positive and ongoing change and adaptability in organizations, and as such, continuous improvement has been argued to stand and to fall with the input and engagement of individual employees (Kim et al., 2011; Weick & Quinn, 1999). Accordingly, the culprit behind why many, if not most, organizational attempts to foster continuous improvement do not succeed is a lack of employee engagement (e.g., Hook & Stehn, 2008; Mitki et al., 1997; Oliver, 2009; Reger, Gustafson, DeMarie, & Mullane, 1994; Robinson & Schroeder, 2009).

**Continuous Improvement from a Micro Perspective**
Considering the importance of continuous improvement for organizational success and the critical role of individual employees for such success (or lack thereof), it is essential that scholars better understand continuous improvement from an individual perspective. This micro-focus of continuous improvement is a key area of research that to date has received far less attention than its macro-counterpart. For the purposes of this research, therefore, I define *continuous improvement* at the individual level as a proactive type of learning oriented work behavior aimed at improving the organization on a continuous basis. Individuals’ continuous improvement involves the recognition of and perceived responsibility for participating in change and learning activities, and as such, it requires a broader and more flexible work orientation (Lee, 2004; Parker, Wall, & Jackson, 1997; Van Dyne, Cummings, & Parks, 1995). Similar to other proactive types of behaviors, continuous improvement involves anticipatory, self-initiated actions that require control-taking (Parker, Williams, & Turner, 2006). Rather than passively fulfilling role requirements, continuous improvement is about anticipating, and actively seeking out opportunities to improve on practices in line with daily business operations and customer needs. In view of that, continuous improvement requires individuals’ to be in tune with their organization’s goals and strategies to be able to behave in ways that generate various levels of improvement over time. Since continuous improvement emphasizes the need for proactive improvement behaviors to take place on an ongoing basis, it also requires individuals to seek out ways to learn how to be able to do so through training, networking, and feedback-seeking activities among others. Examples of continuous improvement behaviors in an organization include an employee investigating how to make a time-consuming work process more convenient in anticipation of future changes that will require extra time and attention. Outside of a more traditional organizational context, continuous improvement can also include
entrepreneurs searching for creative solutions to a problem, taking a course on regulatory
changes, or revising their business plans based on newly learned information.

In line with this conceptualization, continuous improvement can be categorized as a more
specific form of proactive work behavior that aims to make improvements to processes and/or
products in ways that benefit the workplace over time. While it is similar to other proactive
behaviors like voice (e.g., van Dyne & LePine, 1998), taking charge (Morrison & Phelps, 1999),
and individual innovation (Scott & Bruce, 1994), continuous improvement can be distinguished
from these other construct in the following ways. First, unlike voice that is an extra-role behavior
aimed at changing objectionable states of affairs through the expression of dissent (van Dyne &
LePine, 1998), continuous improvement entails not only challenging but also cooperative
behaviors, and it involves not only the expression of improvement challenges but also the
behavioral enactment of such ideas. Additionally, it is important to recognize that voice
behaviors seek to make improvements that will eliminate personal dissatisfaction as the main
objective (Withey & Cooper, 1989), while continuous improvement behaviors aim to make
improvements that will benefit the organization first and foremost. Although continuous
improvement behaviors can lead to benefits for the individual as well, this is not necessarily the
driving motivation behind such behaviors.

Continuous improvement can also be distinguished from individual innovation in that its
main focus is on making ongoing improvements through exploitative rather than explorative
behaviors (March, 1991). That is, while individual innovation focuses on creative idea
generation and implementation that stems from risky work behaviors (Janssen, van de Vliert, &
West, 2004), continuous improvement emphasizes incremental improvement of current
organizational ideas more so than the generation of one-time breakthrough ideas (Bessant &
Antecedents to Continuous Improvement Behaviors

Continuous improvement behaviors enable individuals to become more adaptive, both alone and in the collective (e.g., Arca & Prado, 2008; Kim et al., 2011). As alluded to above, these types of behaviors are critical to promote not only individual but also organizational success in today’s dynamic and highly uncertain global economy. Since this individual-level conceptualization of continuous improvement has received limited scholarly attention, there is little direct evidence regarding what motivates such important behaviors. However, we know more about what motivates individuals’ proactive behaviors more broadly. In the following section, therefore, I draw from several sets of literature - mostly focusing on proactivity, change, organizational learning and citizenship behaviors - to delineate some promising information on the antecedents to continuous improvement behaviors. These antecedents can be categorized in
terms of (a) contextual influences, such as organizational commitment, identification, structure, autonomy, and support, and (b) individual differences, such as ability and efficacy.

Since continuous improvement is not typically required for individuals’ daily performance (i.e., it tends to focus on making improvements to work processes for better organizational performance in the future) and is not always formally enforced, it can be difficult to maintain on an ongoing basis (Haworth & Levy, 2001; Organ, Podsakoff, & MacKenzie, 2006). Similarly, research on organizational citizenship behaviors as a form of discretionary proactive behaviors suggests that such behaviors are deliberate responses to organizational contexts, where individuals only engage in them when they feel satisfied, committed, and supported in their efforts (e.g., Lee, 2004; Podsakoff, MacKenzie, Paine, & Bachrach, 2000).

Two separate studies on continuous improvement behaviors offer support for this view. First, based on numerous interviews and observations in more than 300 organizations in 25 countries, Robinson and Schroeder (2009) found that those employees who were motivated and committed to their jobs and their company’s continuous improvement initiative were indeed more likely to want to make positive changes to their work environment by offering improvement ideas. Along these lines, employees’ organizational identification, defined as “the perception of oneness with, or belongingness to the organization” (Ashforth & Mael, 1989: 22) has also shown to predict continuous improvement. Employees who define themselves in terms of their organizational membership tend to be motivated toward pursuing activities that benefit the organization as a whole (Dutton, Dukerich, & Harquail, 1994). These employees feel they share the same fate as their employer and are accordingly more likely to exert extra effort in making the organization succeed. This view has been empirically supported by Lee (2004) who surveyed 490 employees of a Korean-US high-tech manufacturing company to find that employees’ levels of
organizational identification had a strong and positive effect on their continuous improvement participation.

Pulling from work on related constructs, research on organizational learning suggest that another antecedent to continuous improvement behaviors is a supportive organizational structure that systematically encourages learning and change activities (Tracey et al., 1995). In particular, it has been argued that a paradigm shift away from hierarchical structures to decentralized structures that emphasize self-management is important for employees to be motivated toward continuous learning and improvement behaviors (James, 2002; Mitki et al., 1997). These flatter structures reduce power differences and allow employees to network with relevant coworkers across roles and levels, which is likely to facilitate continuous improvement behaviors. Building on this, scholars have argued for the necessity of a learning infrastructure, including standardized practices like information sharing policies and error-detection awards, to embed continuous learning and improvement behaviors into the culture of an organization (Anand et al., 2009; James, 2002; Lipshitz, Popper, & Friedman, 2002; Oliver, 2009). Such an infrastructure both encourages and rewards employees to continuously improve on their work.

In addition to structure, employees’ level of empowerment is also important for their continuous improvement behaviors. Autonomous employees have indeed shown to be more proactive as they have more flexibility, control, and even support for investigating and initiating constructive change (Parker et al., 1997; 2006). For example, Parker et al. (1997) found in their study of assembly employees within a car manufacturing environment that employees were more likely to adopt a broader and more proactive approach to their roles when they felt more autonomous.
Employees’ perceived social support (POS; Eisenberger, Huntington, Hutchison, & Sowa, 1986) for their continuous improvement efforts is another important antecedent to such behaviors. More generally, employees who perceive their organizations to value and care about their contribution are more likely to perform higher and be motivated to stay with the organization as a form of social exchange (Rhoades & Eisenberger, 2002). Organizational support theory (Eisenberger et al., 1986) further postulates that individuals’ POS generates reciprocal behaviors, including more discretionary behaviors such as continuous improvement in this case. In contrast, employees who do not perceive their organization to support them at all (i.e., low levels of POS) are more likely to withhold discretionary behaviors as a way to get back at their organization for not caring about them or their contribution.

Building on this notion of social support, scholarship has addressed the importance of leadership support for the success of learning initiatives in general, and for change oriented efforts in particular (Anderson et al., 1994; Edmondson, 1999; Vera & Crossan, 2004). Leaders provide meaning to their employees about how to approach their work (Bandura, 1986), and as such, they can instill either confidence and motivation or uncertainty and disinterest for change and improvement depending on the types of behaviors they encourage and reward. For example, Edmondson (1999; 2002; 2003) has established based on several field studies that leaders are important for whether or not work groups develop psychological safety, which is a sense of confidence that coworkers will not reject or punish someone for speaking up. This research further reveals that psychological safety is positively associated with learning and performance behaviors, and as such, leaders can encourage groups to learn and change by highlighting the importance of change while minimizing concerns about power and status differences in the group. In short, employees who work for leaders who consistently promote continuous
improvement and who make them feel safe about engaging in such behaviors are more likely to participate in continuous improvement overall. This view has received empirical support from studies showing that managers who are open to suggestions and change encourage their employees to participate in voicing and initiating change where possible (e.g., Detert & Burris, 2007; Morrison & Phelps, 1999).

With regard to the influence of individual differences, theoretical perspectives suggest that individuals need to be sufficiently knowledgeable and confident to be able to engage in continuous improvement behaviors (Anderson et al., 1994; Mehta & Shah, 2005). On the one hand, if employees do not have the skills and knowledge necessary to improve current processes and products in the organization, they are simply unable to do so. On the other hand, if employees have sufficient skills and knowledge yet do not feel confident to use them, they are unlikely to engage in discretionary behaviors aimed to improve their work as they believe doing so is not possible. In terms of the role of knowledge, Gagnon, Jansen, and Michael’s (2008) survey study of production employees in three plants of a US manufacturing organization (data was collected at two points in time approximately one year apart) suggests it is a predictor of continuous improvement. Specifically, this study found that employees’ global strategic knowledge enhanced their commitment to participate in lean-congruent behaviors as part of their organization’s lean strategy requiring proactive actions to improve quality and workflow overall. In terms of self-efficacy, both laboratory and field studies have shown that individuals with higher levels of generalized self-efficacy are more likely to provide input and aim to create change (Avery, 2003; LePine & Van Dyne, 1998; Morrison & Phelps, 1999).

Collectively, the theory and research to date suggests there are several ways to encourage individuals to pursue continuous improvement behaviors, and most of them center on the
importance of having sufficient support and organizational resources available. When individuals believe they are not supported with relevant resources to engage in continuous improvement (e.g., in the face of low organizational or leadership support or when there is insufficient knowledge or training available), they are likely to withhold such efforts either as a form of reciprocation or due to their real or perceived inability to do so. These types of resource constraints represent a form of workplace stressor that can have a host of negative consequences that defeat the purpose of continuous improvement altogether. As a result, I now turn to a discussion of resource constraints and what they mean for individuals in general and for their continuous improvement efforts in particular.

Organizational Resource Constraints

Organizational resources are situational aspects of the work environment that provide individuals with the means and motivation to obtain important outcomes, including enhanced performance and learning (Hobfoll, 2002; Schaufeli & Bakker, 2004). The most commonly studied types of organizational resources have been categorized as job-related information, tools and equipment, materials and supplies, budgetary support, required services and help from others, task preparation, time availability, and work environment (Peters & O’Connor, 1980). This is a relatively long and diverse list of resources, which speaks to the relevance of different types of resources for different types of contexts. As a result, it is important to note that scholars need to tailor the type of resources studied to their specific research context where, for example, large versus small organizations and service versus production industries may have distinct resource needs and preferences.

Having access to relevant organizational resources may help to bolster individuals’ personal psychological resources that they can draw from when they are faced with challenging
job demands (de Jonge & Dormann, 2006). For instance, being able to turn to a technical support person when a computer or printer breaks down can help employees save much time, not to mention stress and frustration. Accordingly, when these types of resources become scarce or disappear altogether, they turn into resource constraints, which represent situations or obstacles that interfere with individuals’ ability and motivation to effectively perform and learn at work (i.e., stressor-strain relationship; Cooper, Dewe, & O’Driscoll, 2001; Spector & Jex, 1998; Taris & Feij, 2004).

The negative implications of scarce or absent resources have received much attention in the organizational literature (e.g., Hobfoll, 2002; Schaufeli & Bakker, 2004). According to the conservation of resources (COR) theory (Hobfoll, 1989), individuals experience stress when their resources are threatened or lost or when access to new resources fail. A main principle of this theory is that a loss or a lack of resources is more salient than a resource gain (Hobfoll, 1998), suggesting that resource constraints are particularly likely to trigger direct negative effects on individuals. Since COR theory is primarily socioculturally framed, individuals who are exposed to the same resource-constrained conditions are expected to react in similar negative ways (e.g., Hobfoll, 1988, 1998). As a result, this theory proposes that individuals who possess resources are more capable of solving the problems associated with demanding circumstances, while individuals faced with resource constraints are less likely to effectively deal with a challenging work environment and thus more likely to suffer from stress in the process. In support of the COR view, the more recent job demands-resources model (JD-R; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) claims that employees need sufficient resources to meet the demands of their jobs; if they do not, they are likely to suffer from burnout. The JD-R model offers a more balanced perspective in that it looks at resources in the face of demands placed on
employees such that resource constraints mainly generate negative outcomes when they occur simultaneously with high work demands; this scenario creates negative work conditions that are especially difficult for employees to deal with (Bakker & Demerouti, 2007).

Based on these theoretical perspectives, organizational resource constraints can drain individuals’ personal resources necessary for effectively handling job challenges, and under such circumstances, individuals are forced to make calculated choices about where to spend their time and effort. In the face of resource constraints, therefore, employees tend to prioritize short-term core job responsibilities and behaviors that are formally recognized and rewarded by their organization, leading to the reduction of broader, proactive, and learning-oriented behaviors such as continuous improvement (Borman & Motowidlo, 1997; Jex, Adams, Bachrach, & Sorenson, 2003; Motowidlo & Van Scotter, 1994; Muraven, Shmueli, & Burkley, 2006). However, these theoretical perspectives have paid less attention to how individuals can overcome these types of resource constraints in ways that promote proactive improvement behaviors. This is a critical omission in light of work by Sonnentag and colleagues regarding the positive role of workplace stressors, such as time constraints, for proactive behaviors (Fay & Sonnentag, 2002; Fritz & Sonnentag, 2009; Ohly, Sonnentag, & Pluntke, 2006, Sonnentag, 2003). These counter-intuitive findings suggest that stressors can serve as a signal indicating that something is wrong and needs to be overcome (a discrepancy between reality and a desired state), which in turn can promote extra-role, proactive behaviors as a way to resolve that issue. This research can help us understand how stressors such as resource constraints can indeed encourage individuals to continuously improve, yet it goes against a host of studies predicting the opposite relationship as discussed above. Accordingly, it is essential that we further explore the underlying reasons for why individuals may indeed respond positively rather than negatively to resource constraints in
terms of their continuous improvement behaviors. To do so, it is important to incorporate an individual perspective to the study of resource constraints, which proposes that stressors are subjective and thereby hold the potential for generating variation in responses (Lazarus & Folkman, 1984). Explicitly, individuals may respond differently to the same type of resource constraints depending on how they are interpreted, and as such, their engagement in continuous improvement behaviors may not necessarily decrease but rather increase under resource constrained conditions. This stress appraisal process and its consequences is accordingly imperative to understand for a more nuanced grasp of this phenomenon as a whole.

**Cognitive Appraisals of Resource Constraints**

The transactional model of stress and coping (Lazarus & Folkman, 1984) offers a complementary perspective to the above-reviewed resource theories by proposing that stressors are subjectively appraised and therefore can generate a diverse range of responses. According to Lazarus and Folkman (1984), individuals engage in a cognitive appraisal process of stressors, which includes a primary and a secondary appraisal that tend to occur concurrently and interactively. In the primary appraisal process, individuals evaluate and give meaning to the stressor in terms of its potential impact on them. In the secondary appraisal process, individuals assess their coping resources available to deal with the stressor in terms of their ability to either reduce the potential for harm or improve the chances for benefit. This appraisal model accordingly recognizes that individuals’ responses to the same stressor can vary to a great extent as a function of whether that stressor is appraised as a threat (containing the possibility of harm or loss) or as a challenge (holding the possibility of mastery or benefit; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). While the study of stressor-strain relationships in the stress literature is based on the notion of misfit or imbalance regarding what individuals have
and what the workplace demands, this transactional model of stress and coping suggests that such an imbalance will only lead to de-motivation and strain if individuals appraise it as a threat (Cooper et al., 2001; Lazarus & Folkman, 1984). This important process can be traced back to the work by Albert Ellis, the father of cognitive-behavioral therapy (e.g., 1958), who stated in his *ABC theory* that adversity (A) does not generate consequences (C) on its own; rather, it is individuals’ beliefs (B) about the adversity that do so.

This cognitive appraisal process of workplace stressors can be further informed by *sensemaking theory*. Sensemaking is a process of social construction that is triggered when discrepant cues interrupt individuals’ ongoing activity (Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005). Based on individuals’ interpretations of external cues, sensemaking involves the retrospective development of plausible meanings that rationalize what people are doing under particular circumstances (Maitlis & Sonenshein, 2010). These interpretations of external cues are based on individuals’ salient frames such that sensemaking is the connection of cues and frames to create an account of what is going on. Not surprisingly, individuals are likely to engage in sensemaking when they encounter challenging experiences at work (Weick, 1995); challenges tend to interrupt well-rehearsed patterns of action that require individuals, alone or in the collective, to redefine or possibly even alter the meaning of their environments (Fine, 1996). Similar to Lazarus and Folkman’s (1984) appraisal process, individuals make sense of stressors in terms of the significance they have for them and their particular situation, albeit in a more retrospective fashion. Since a lack or loss of resources can create particularly demanding experiences, this is likely to lead individuals to interpret and try to make sense of the meaning of such resource constraints for their own and their organization’s functioning. The type of sensemaking that ultimately takes place, such as the appraisal of the situation as either a
challenge or a threat, will provide a strong influence on the ensuing actions individuals choose to take.

**Summary and Synthesis of Literature**

Based on my review of the literature above, I propose that resource constraints can trigger differential reactions in individuals that in turn can encourage them to engage in either advantageous or detrimental behaviors for themselves and their organization as a whole. With regard to the current research question on what motivates individuals to pursue continuous improvement despite minimal resources to support them, the above-reviewed theories would suggest that individuals who interpret resource constraints as a challenge from which they can grow are more likely to engage in continuous improvement behaviors as they hope to not only overcome but actually learn from such experiences. In contrast, individuals who interpret resource constraints as a threat with which they are unable to cope are less likely to participate in continuous improvement activities as they become cognitively overloaded from the stress and anxiety associated with those constraints. These individuals view the constraints as harmful to their ability to perform, and not surprisingly, become less motivated to engage in any proactive behaviors that may take away further from their ability to meet job expectations.

To illustrate this prediction with an example, administrative coordinators who interpret the introduction of severe budget cuts to their office supplies as a threat that will keep them from performing effectively will feel stressed by these potential negative ramifications in ways that make them less likely to think of ways to overcome those constraints. Administrative coordinators who see those same budget cuts as a challenge, however, are more likely to feel motivated to find a way to perform despite the lack of resources, such as by encouraging double-sided printing to use their budget more cost-effectively while simultaneously becoming more
environmentally friendly. Depending on how they are interpreted, therefore, resource constraints may not only de-motivate but actually trigger individuals to capitalize on their lack of appropriate resources in creative ways (e.g., Chakravorti, 2009). Put differently, positive appraisals of resource constraints may guide employees to pursue continuous improvement activities despite these constraints or perhaps even because of those constraints as per Sonnentag and colleagues’ work reviewed above.

Unfortunately, what is not currently clear from this literature is what factors influence individuals to interpret resource constraints in a more positive manner, such that they are perceived as challenges rather than threats. Considering the importance of individuals’ continuous improvement behaviors for their own and their organizations’ adaptability and considering how potentially detrimental resource constraints can be for such behaviors, there is a need for more research on the process through which individuals appraise resource stressors and their consequences to help us understand why individuals choose to improve under resource-constrained conditions.

OVERVIEW OF STUDIES

The goal of this dissertation was to build and test theory on individuals’ continuous improvement behaviors in resource-constrained contexts with the ambition to better understand what motivates people to pursue continuous improvement activities despite minimal resources to support them. The absence of knowledge in this area provided me with an important opportunity to build theory so I set out to first conduct a phenomenological study that would shed light on the circumstances under which employees cognitively reframe organizational resource constraints in a positive light. Since the focus on continuous improvement as an organizational strategy has its roots in the manufacturing industry (Bhuian & Baghel, 2005), I investigated my question of
interest based on a combination of observations, archival documents, surveys, and interviews within a multinational manufacturing organization. The manufacturing industry is known for its fiercely competitive environment where companies must continuously adapt to diverse market needs with increasingly scarce resources, making it a central context in which to investigate employees’ continuous improvement behaviors when faced with resource constraints. Based on the results of this study, I arrived at new theoretical insights that allowed me to develop testable hypotheses regarding the influence of individuals’ PsyCap for their interpretations of resource constraints and ultimate pursuit of continuous improvement.

To test the synthesized theoretical framework that emerged from the first study, I next conducted a time-lagged field survey study of nascent entrepreneurs. Entrepreneurs represent a valuable sample for research on continuous improvement as they must create the foundation for organizational success by overcoming barriers on an ongoing basis; thus, coping with stressors is a central part of their job, including resource constraints such as a lack of funding and appropriate networks (Hmieleski & Carr, 2008). Moreover, effective entrepreneurs are often described as creative and motivated by improvement, thereby making continuous improvement essential for entrepreneurial success. Finally, and for the purposes of adding to the entrepreneurship literature, the study of cognitive appraisals in entrepreneurs responds to a call for research on the interpretative processes through which entrepreneurs are able to capitalize on opportunities (Barreto, 2012). This quantitative study thereby allowed me to test the theoretical framework in a different setting where resource constraints are prevalent yet continuous improvement activities remain essential.

As a complement to my above studies, I lastly conducted an online experiment of a random sample of adults with work experience from a variety of industries to test my theoretical
framework in a more controlled manner using a more generalizable sample. This experiment allowed me to quantitatively test parts of the model that were not possible in the second study, and it also allowed me to test the notion that the benefits of positive psychological resources may extend beyond PsyCap. This study was accordingly designed to both confirm important aspects of the proposed model and to inspire new directions of research on ways to enhance the perceived challenge (rather than threat) of resource constraints and to ultimately promote continuous improvement. Collectively, my studies provide answers to the important question of how individuals can find ways to continuously improve in the face of resource constraints. These answers in turn offer theoretical and practical implications for both scholars and practitioners moving forward.
CHAPTER 2

STUDY 1 OVERVIEW AND RESEARCH SETTING

Guided by my broad research question regarding how people can remain motivated to pursue continuous improvement activities despite minimal resources to support them, as well as the literature reviewed in my first chapter, I designed a phenomenological interview study to develop theory in this domain. According to the phenomenology research paradigm, researchers seek to understand social and psychological phenomena from the perspectives of the people involved (Groenewald, 2004). Phenomenological research studies focus on the descriptions of human experience and what it means for those who have had that experience (Creswell, 2005; Moustakas, 1994; Patton, 1990). Based on such individual descriptions, general meanings can be derived to help depict the essences or structures of the experience under investigation (Giorgi, 1994). Accordingly, a phenomenological research study is an excellent mechanism for understanding employees’ cognitive appraisals, and as such, it is a perfect avenue for investigating my research question. It is important to note that while this process of seeking to develop theory also fits with a grounded theory approach (Glaser & Strauss, 1967), I do not describe my research as being grounded theory for the following reasons. First, grounded theory is less interested in subjective experiences of participants and more interested in the causal relationships between individuals. Second, grounded theory requires a process of constant comparison -- a cyclical, ongoing process of collecting and coding data -- which was not possible in this study context due to limited, ongoing access to participants. Third, and finally, grounded theory endorses the importance of observations along with multiple forms of data collection (e.g., interviews, archival data), whereas I was interested in understanding employees’ appraisals through interviews as the main source of data (Glaser, 2006).
To better understand individuals’ perspectives about the phenomenon of continuous improvement under resource constrained conditions, I set out to conduct interviews with employees working in the manufacturing industry. The manufacturing industry is an ideal context for pursuing this type of phenomenological study for two reasons. First, manufacturing employees are likely to be familiar with resource constraints as their industry is very cost-driven such that only those operations that can maintain efficiency under low costs stay in business while others are outsourced (leading to frequent resource losses and/or threats to resource losses). Second, continuous improvement is a relatively common strategy in manufacturing organizations (as described in Chapter 1), thereby making employees within such organizations familiar with the associated expectations to participate in continuous improvement behaviours. For these reasons, I formed a research partnership with a manufacturing organization in which I could find research participants who had experiences relating to the phenomenon of interest. That is, I expected the employees within this manufacturing organization to have experiences and knowledge about continuous improvement activities and how a lack of resources might influence such activities.

The host organization for this research was a multinational manufacturing organization operating in two separate plants. Collectively, these plants employed 160 individuals, most of whom were blue-collar employees. The first plant utilized mostly manual labour processes that required low levels of technical expertise, while the second plant included more complex, automatic processes for which employees needed at least a college degree. Although the plants had separate plant managers, they shared the same leadership team as well as much of their technical and administrative support (e.g., key engineers collaborated on tasks across the plants, and both plants shared the same health and safety expert and the same HR manager).
the organization was relatively male-dominated (80% were men) and two thirds of the workforce had at least a college degree or higher. The average employee was 43 years old and had been with the organization for 11 years.

At the time of my data collection, this organization faced economic challenges due to global competition, the economic climate, and a decreased demand for their production. These challenges led employees to experience resource constraints including little financial support for changes, some outdated equipment, a salary freeze, and relatively low supervisory support in some work groups. At the same time, the plant managers had recently implemented a continuous improvement initiative aimed at encouraging employees to engage in organizational learning activities (e.g., offering and implementing ideas for ongoing improvement and efficiencies). In other words, employees were asked to go above and beyond their current work responsibilities with already limited resources available to them. Since this particular environment consisted of high resource constraints coupled with high demands for employees’ participation in continuous improvement, therefore, this organization represented a highly relevant setting in which to investigate and build theory associated with my research question of interest.

**STUDY 1 METHODS**

**Data Sources**

To explore my research question in this manufacturing context, I drew from several data sources. First, I visited the different plants to gain a deeper understanding of the organizational setting. These visits included plants tours and meetings with the plant managers. I also participated in conference calls with the broader management team to follow up on questions I had and to better understand their vision and expectations of their current business situation and continuous improvement initiative. Second, I read general company reports as well as more
specific company presentations about the continuous improvement initiative; some of this documentation included detailed picture evidence of continuous improvement activities in the different plant areas. As the main focus of my research, I then conducted in-depth interviews with a quarter of the workforce (see more below). All the data was collected over a period of eight months. However, I have been able to keep in touch with this organization since this time; this ongoing relationship has allowed me to not only verify issues along the way, but I have also been able to witness some important changes that the organization has gone through in general, and as a result of the findings of this research in particular [1].

**Interview Informants**

I interviewed at least four members of each work group in the two plants for a total of 39 interviews (11 women, 28 men). The informants were individuals across all functional work groups of the organization, including manufacturing employees (e.g., line workers, maintenance crew members, and shift supervisors) and salaried support staff (e.g., engineers and accountants). To select informants, the organization’s HR department provided me with lists of all employees from which I randomly picked five or six individuals per work group depending on the size of the group (random sampling was selected as all groups in the organization appeared to be similarly affected by the new initiative). I then sent out individual invitations to the selected employees to invite them to participate in an interview about continuous improvement during work hours. In addition to this random sampling, I invited the plant managers and operations managers at both plants to participate in my interviews due to their unique perspective as leaders and drivers of the continuous improvement initiative. 66% of the invited employees chose to participate in my interviews (39/59).

**Interview Questions**
I used a semi-structured interview protocol in which employees answered questions about (a) what continuous improvement meant to them, (b) their own and others’ levels and types of continuous improvement engagement, and (c) the factors that motivated versus de-motivated them to engage in continuous improvement activities (see Appendix A for the full interview protocol). The average interview lasted 30 minutes. The interviews were audio-recorded and transcribed verbatim, with the exception of five interviews during which the informants preferred to have detailed notes taken instead. My thesis supervisor attended these interviews with me; while I asked all the questions, she took detailed notes that were particularly helpful during those interviews where the informants did not want to be audio-recorded.

**Analyses**

I analyzed my data following the procedural steps for phenomenological data analysis identified by Moustakas (1994). For the purposes of this dissertation, it was important for me to conduct the analysis of my data predominantly on my own; however, I carefully exercised a process of triangulation by comparing my emergent interview themes with other data sources as well as with my supervisor (who attended all the interviews) and members of the management team as elaborated upon below. Specifically, I first read through all the interview transcriptions and my accompanying notes several times to familiarize myself with the data. I then began to identify significant statements that captured the meaning of continuous improvement within this resource constrained organization (i.e., extraction of statements that illuminated the researched phenomenon). By analyzing these statements within the context of where, how, and by whom they were expressed, I reduced these statements into themes that portrayed recurrent and central ideas in this organizational context, both within and across the interviews (Creswell, 2005). I extracted only those themes that were expressed in at least 25% of the interviews and that
emerged from across the organization rather than from a unique subgroup only (i.e., at least 10 of the informants had to support a theme for it to be retained). Throughout this process, I carefully compared these emergent interview themes with the other sources of data such that I maintained only those themes that were also supported by the survey results collected prior to the interviews and my detailed notes from my observations, meetings, and visits with different members of this organization. Any coding discrepancies I encountered were resolved through discussions with my supervisor to ensure the themes appropriately reflected the employees’ attitudes and behaviors in this context; in some instances this led to some re-coding where necessary. Using a contact summary sheet, I recorded the retained themes and then recoded the interview data onto them. In line with these steps, I went back and forth between my data, my theoretical framework, and the current literature in an iterative fashion to help me understand and appropriately analyze my data (Holloway, 1997; Miles & Huberman, 1994).

**STUDY 1 RESULTS**

**Nature of Resource Constraints**

Consistent with what I had heard from management and seen throughout these plants, the first overarching theme that emerged was that resource constraints were highly salient in this manufacturing organization. Indeed, ninety-five percent of the informants commented on the existence of resource constraints even though my interview questions did not directly prompt them to do so. As seen in Table 1, the nature of these constraints varied, including little financial support for change initiatives, much of their manufacturing equipment was outdated, and they faced long-term salary and hiring freezes. For example, one informant complained that “since the recession started, it’s been about three years since we've gotten a raise or anything like that.” Another said “I think definitely for years now we've been understaffed and a few extra people
would make stuff like this [continuous improvement] a lot easier.” Regardless of these employees’ backgrounds, positions, or areas of work in the organization, it became clear that they were forced to deal with various types of resource constraints on a regular basis. Since the recent implementation of the continuous improvement initiative asked employees to go above and beyond their typical work requirements without any additional resource support provided, it appeared as if this initiative had actually triggered the salience of the organizational resource constraints.

Cognitive Appraisals of Constraints and Continuous Improvement

In line with the predictions from the transactional model of stress and coping (Lazarus & Folkman, 1984), these informants revealed two distinct patterns of interpreting resource constraints. While almost every informant described resource constraints as salient and influential for their work, their appraisals of these constraints were quite diverse and affected their interpretations of continuous improvement in critical ways.

Resource Constraints as a Threat to Continuous Improvement. In light of these salient resource constraints, 33% of the informants interpreted the constraints as threatening to their continuous improvement motivation and involvement. That is, these informants portrayed the resource constraints they faced as the reason for their demotivation, frustration, and even fear more broadly. For example, one informant described the resource constraints as a potential threat to the long-term success of the organization’s continuous improvement initiative: “It’s always the same; there’s no money for that, we can’t do that, we’re not allowed to do that. … I’ll put it this way; I’d be shocked to see anybody actually want to continue.” Another informant even
questioned whether the constraints were a risk to the organization’s survival: “Whether they’ll keep this plant or not is a question. The upgrades that they’re doing are raising questions. They’re not putting in new equipment. They’re just repairing what they have. Maybe in five years there is going to be a closure.” Collectively, these employees were troubled by the resource constraints and what they meant for their continuous improvement in particular and their future work in general (see Table 2 for more examples).

Those individuals who interpreted their resource constraints as a threat were also more likely to view continuous improvement as a work requirement they were forced to participate in, despite the leadership team’s assurance that it was a voluntary initiative (based on my observations, this initiative did seem to be voluntary albeit strongly encouraged; for some of the engineers in the organization, it appeared to be expected). One informant described it as an activity they had to participate in or they would face negative consequences: “There’s pressure right from the top down that this is what we’re doing, you better jump on board.” Another informant complained that he felt he was forced to not only participate in continuous improvement, but to also track others’ efforts in a way that damaged employee relations:

“And so they started this initiative, and I just found that it was sort of passing-the-buck to the employees instead of a manager doing his job, coming out on the floor and say, ‘This has to be done, do it please.’ They made it so now it was a self-policing initiative and you, now you have this sign; you’re responsible. Now I’m responsible for getting my co-workers to do something, right? I don’t think that’s my job. This all might sound kind of negative, but I think that’s, there’s that vibe right now.”

Not unexpectedly, this group of employees was visibly unmotivated and even frustrated with the idea of continuous improvement as a whole. They interpreted the resource constraints as a lack of organizational support, thereby making them less likely to want to support their organization.
through continuous improvement efforts in return. Simply put, these informants were unwilling to go above and beyond for a company that was unwilling to do so for them.

**Resource Constraints as a Challenge to Continuous Improvement.** In contrast to the above interpretations, 46% of the informants interpreted their resource constraints as more of a challenge that they could overcome, and possibly even grow from. One informant said, “So trying to get money to do things has been tough, so in that sense it's been a struggle. We've been turned down an awful lot in the last couple of years. They just say, ‘No, not now, can you delay it?’ Well, of course you can, there's nothing to say you can't, it's not going to shut us down if we do.” These individuals did not appear naïve or unaware of the current resource constraints, but rather interpreted them in a more positive light. For example, another informant explained how the lack of communication between the different workgroups could be frustrating, yet employees found a way to support each other despite these constraints: “We’re the mushrooms of [this] plant, kept in the dark. When we come in on a Sunday night, we might have found out that there were changes made on a Saturday… It’s frustrating. Not all the time, but the communication is an issue. Still, 100% of us are willing to help each other out as need be, which is very encouraging.” Collectively, these challenge-oriented informants viewed the constraints as an inevitable part of their work that they had to figure out a way to overcome; these interpretations in turn affected their views of continuous improvement overall (see Table 3 for additional examples).

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In particular, this group of employees viewed continuous improvement as discretionary contributions that took place in addition to their required tasks. They described their continuous
improvement behaviors as important for them to help their organization become a better and more enjoyable place to work. One informant expressed it as follows: “I go back to the fact of trying to make my workplace a better place. I have to spend a lot of time here. I want it to be clean, I want it to be healthy, and I want it to be able to provide for a sustained amount of time.” Similarly, another employee said: “Basically it's to find things where we could improve on the plant or in what we do to improve either the way we do it to make it quicker/easier/more efficient or to even improve the nature of how we do it so it's more satisfying for each other and the employees to do it so that it's not like, ‘Oh, I have to go and do this today’, but it's more like, ‘Okay, now it's not so bad’.” Interestingly, these employees viewed continuous improvement not only as a way to help the organization succeed, but also as a form of empowerment and development for themselves and others to be able to succeed in the organization. For example, one informant stated: “I think a lot of people see continuous improvement as a means through which they can develop in the company. I think maybe half of the people would say they care enough about the company where they realize that this sort of thing helps the company. So I think a lot of people would realize that this is for something, not that you have to do, but you should do in order to make sure that if your company is successful, then you should be successful and looked after as well.” These informants saw continuous improvement as an opportunity for them to learn, which some explained became a way to make an otherwise dull job more interesting while others described it as the foundation for their career progression (both in their current organization and possibly even in future organizations considering the economic climate). Collectively, these interpretations of resource constraints as challenging (rather than threatening) and of continuous improvement as discretionary, learning-oriented behaviors (rather
than forced work tasks) made these employees express higher levels of motivation and involvement in continuous improvement activities.

*Fostering Challenge Appraisals.* Given that my research goal was to explore how employees can interpret resource constraints in ways that promote their continuous improvement participation, I analyzed my data to understand the conditions under which challenge appraisals rather than threat appraisals were more like to occur. My data pattern revealed that those individuals who appraised constraints as challenges and who accordingly were more motivated toward continuous improvement, also expressed more positive states, such as resilience, hope, and optimism. In terms of hope and optimism, 61% of these challenge-oriented individuals described their circumstances as carrying the potential for leading to positive outcomes (versus 15% of the threat-oriented informants). For example, one informant excitedly stated: “There’s an idea out there that’s gonna turn us around; we’ve just got to find it. We haven’t found it yet, but we’re gonna find it.” Another explained, “I hope to work here for another 20 years. I want it to get better. The ownership is there and we want it to stay as a great place to work.” Rather than becoming victims of their constrained circumstances, these individuals appeared energized by them and made positive attributions about succeeding despite them (see Table 4A for more examples).

In terms of resilience, these interviewees also expressed a determination to help the organization overcome its challenges, even if doing so came with its own costs (see Table 4B for examples). For example, one informant explained employees’ reactions to the organization’s financial constraints in the following way: “Because we – everything the managers ask us to do
in terms of making the place better, contributing ideas – everybody does it. It's not gonna be like, nobody’s gonna say, ‘No, we don’t wanna do that because you guys aren’t giving us money.’ We’ll still do the jobs even when they take the money away from us. People still do it because people have pride in their jobs, what they’re working at.” This state of resilience is further illustrated by another informant’s description of his attitude toward their long-term salary freeze: “I’ve had three promotions basically with no compensation. I'm not the kind of person who I will quit. I'll keep going and I'll keep doing whatever, but I don't think there's too many people out there that would do that.” Contrary to this informant’s description of resilience as a unique state, our interviews revealed that 39% of these challenge-oriented informants expressed resilience in the face of the organizations’ resource constraints (versus 8% of the threat-oriented informants). Even though the survey results I collected prior to the interviews correspondingly indicated that employees were engaging in relatively high levels of continuous improvement despite the resource constraints, I was surprised by these employees’ high levels of motivation and positive states in the face of this organization’s demanding resource constraints.

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**Iteration between Data and Theory**

To help me better understand the data and to inform my findings within the existing literature, I began a process of iterating between my data and my emerging theoretical understanding of the situation (Miles & Huberman, 1994). In particular, in my review of the literature, I found that these positive states of hope, optimism, and resilience have been linked to better health and coping in the face of stressful situations (e.g., see Caza & Milton, 2011; Lai, 2009; Scheier & Carver, 1992; Schok, Kleber, & Lensvelt-Mulders, 2010). These states generate
positive expectancies that in turn motivate individuals to pursue more constructive goals and behaviors (e.g., Carver, Scheier, & Segerstrom, 2010; Major, Richards, Cooper, Cozzarelli, & Zubek, 1998; Schaubroeck, Riolli, Peng, & Spain, 2011). The notion of positive expectancies when faced with adversity parallel my findings from my interviews in that these states of hope, optimism, and resilience were associated with individuals’ challenge appraisals under resource constrained circumstances; challenge appraisals can be viewed as a form of positive expectancy in that they refer to the potential for growth, mastery, or gain (Lazarus & Launier, 1978). In looking for the particular influence of hope, optimism, and resilience on individuals’ cognitive appraisals, I discovered empirical support for the negative influence of resilience on individuals’ appraisals of threat (Tugade & Fredrickson, 2004), of the positive influence of optimism on the use of positive reappraisal as a coping strategy (Bryant & Cvengros, 2004), and of the positive influence of hope on individuals’ positive growth initiative as a cognitive process of growth and change (Shorey, Little, Snyder, Kluck, & Robiteschek, 2007). Collectively, this research provided me with confidence that these positive states can indeed foster more constructive cognitive appraisals in the face of adversity.

Based on this iteration between my data and literature review, I concluded that individuals’ hope, optimism, and resilience influence their cognitive appraisals of resource constraints in constructive ways while facing adversity. At the same time, however, my interviews suggest that these states tend to co-occur in individuals, such that those who expressed higher levels of hope also appeared more resilient and optimistic. In pursuing this idea further, I discovered that the resource literature suggests that some psychological constructs are best conceptualized as manifestations of a larger underlying resource due to their contagion and interactive effects (Hobfoll, 2002; Winkel, Wyland, Shaffer, & Clason, 2011). That is, the whole
becomes greater than the sum of its parts due to synergistic effects. Correspondingly, I found that my findings regarding the relevance of resilience, hope, and optimism for these informants’ challenge appraisals and continuous improvement motivation were reflected in the higher-order multidimensional construct of *psychological capital* (*PsyCap*; Luthans, Avolio, Avey, & Norman, 2007; Luthans, Youssef, & Avolio, 2007; Luthans, Avey, Avolio, & Peterson, 2010).

*PsyCap* is defined as “an individual’s positive psychological state of development that is characterized by (a) having confidence (efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (b) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; (c) making a positive attribution (optimism) about succeeding now and in the future; and (d) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success” (Luthans et al., 2007: 3).

Similarly, I found that those interview informants who were more challenge-oriented appeared more hopeful that their efforts would help the company succeed (hope), they were more optimistic about the future of their company overall (optimism), and they gave several examples of being able to overcome obstacles in constructive ways (resilience). Since efficacy did not emerge as a major theme in my data, I went back to my interviews to see if it was mentioned under any circumstances. In doing so, I found that efficacy did come up in interviews with employees who conducted more complex work in this organization (e.g., engineers). I interpreted this to be a function of this particular organizational context, in which the majority of employees conducted mostly repetitive work that did not require much challenge that would make self-efficacy highly relevant.

*PsyCap* has shown to be important for individual and organizational performance outcomes above and beyond the effects of the individual components alone (Luthans, Avolio, et
al., 2007; see also Luthans et al., 2005), making it an interesting variable for my research. PsyCap has also provided promising results for its negative effects on stress and anxiety, indicating that it may act as a suppressor of such reactions (Avey, Luthans, & Jensen, 2009). For example, research by Schaubroeck, Riolli, Peng, and Spain (2011) reveals that PsyCap may help individuals cope with stress through its effects on individuals’ appraisal of stressors, while Chen and Lim (2012) have found that individuals with higher levels of PsyCap engage in more constructive coping behaviors when faced with difficult situations such as job loss. These findings align with Fredrickson’s *broaden and build theory* (1998, 2001), which states that being in a positive state broadens individuals’ cognitive abilities in ways that leave them more adaptive and resourceful. In addition to this, PsyCap has also shown to be an important predictor of behaviors, including its positive effects on organizational citizenship behaviors (Avey, Luthans, & Youssef., 2010; Gooty, Gavin, Johnson, Frazier, & Snow, 2009) and creativity (Rego, Sousa, Marques, & Pina e Cunha, 2012). These empirical findings accordingly suggest that being in a state of hope, optimism, efficacy, and resilience both motivates and enables individuals to (a) cope with difficult circumstances such as resource constraints on the one hand and to (b) participate in positive, and oftentimes discretionary, behaviors such as continuous improvement on the other hand.

Based on my review of this literature, I determined that PsyCap as an encompassing resource that accounts for the contagion and interactive effects of individuals’ optimism, hope, resilience, and efficacy captured the themes I discovered in my interviews. In particular, the documented positive effects of PsyCap for individuals’ cognition and behaviors parallel my findings from my interviews. By drawing from this depiction of PsyCap as a positive psychological resource, I was able to explicate my findings further. That is, studying PsyCap as a
personal resource in the context of organizational resource constraints illustrates the concept of resource substitution in that individuals may be able to substitute for missing resources with resources from other resource domains, such as their own psychological resources (Frese & Zapf, 1988; Hobfoll, 2001). The resource substitution hypothesis is a component of COR theory (Hobfoll et al., 1990; Hobfoll, 2001), which depicts resources as malleable (Hobfoll & Lilly, 1993). While resource substitution generally has been an overlooked theoretical framework in research on stressor-strain relationships (Hobfoll, Freedy, Lane, & Geller, 1990), this process helps explain how organizational resource constraints can generate positive rather than negative outcomes in cases where individuals are able to find other positive psychological resources that, in a sense, act in their place.

Considering its positive outcomes, including its effect on individuals’ interpretation of resource constraints as a challenge rather than a threat here, I went back to the data to examine the interviews for insights regarding the antecedents of PsyCap.

**Investigating PsyCap Antecedents in the Data.** To date, PsyCap has been described in the literature as stemming from workplace interventions and proactive, supportive management (e.g., Luthans & Youssef, 2004). The importance of supervisory support emerged within my data, although those interviewees who expressed higher levels of hope, optimism, and resilience described the importance of such support as coming from both supervisors and peers. For example, one informant praised their plant manager for encouraging employees to think of new improvement ideas by going outside of their own business environment. “One thing that [our plant manager] does really well, above anything, is we’ve gone to other plants and other plants have come here and you can pick up an idea somewhere and we don’t know where the next idea’s gonna come from. The next idea for this plant may not come from here, but [our plant
manager] has set up where we go to other companies and so we go there with eight eyes open looking for that next idea and that’s important.” Another informant described how much he valued a peer for taking leadership responsibility for continuous improvement efforts in their work groups. “[He] is a hard worker so he’s established respect in the workers minds. He’s a good choice for that position and then… everyone just followed his lead. It’s been great.”

In addition to this type of leadership support, informants with higher levels of PsyCap attributes also reflected some other important characteristics along with their hope, optimism, and resilience. In particular, many explained that they were “just that kind of person” who enjoyed learning and growing in their jobs. For example, one informant illustrated this natural urge to want to learn by stating: ‘When things don't work out the way they should, I kind of wanna figure out why and make changes to that.” Similarly, one informant explained his interest in learning by describing the types of training and mentorship opportunities he had been able to find over the past year. “So I've had quite a bit of training, outside training from [another company]. And also I do my own reading and stuff like that online and, yeah, quite a bit of training. I'm trying to think, [the manager at a different facility] has actually been kind of like a mentor, I guess. [He] has had quite a bit of experience with this stuff. So I've had a few sit downs with him, we've done a few tours of other companies to see what they're doing. So that's a good way to learn as well.”

Finally, these individuals also expressed higher levels of organizational identification (i.e., an affective attachment and pride in their organization; Dutton, Roberts, & Bednar, 2010). One employee expressed this organizational connection in the following way: “I love my job so I enjoy coming into work every day. I’m very happy to be here. I like the company a lot. It’s one of the best I’ve worked for. They take it very seriously; that’s important. When I’m out there, I
take it very seriously [too] and I enjoy my job very much.” This organizational identification was also illustrated by the informants’ statements about the importance for them to help the organization, and thus themselves, to succeed. For example, one informant said, “The competitors are out there making improvements. If we don't do things to reduce our unit costs we're gonna lose no question. So I wanna keep a job, I wanna make sure other people in the plant keep their job and it's a case of you've got to improve to do that.” In summary, the informants who expressed higher PsyCap through their resilience, hope, and optimism suggested that the foundation for these positive states was their high organizational identification, learning orientation, and/or support from leaders and peers.

**STUDY 1 DISCUSSION AND SYNTHESIZED THEORETICAL MODEL**

The goal of this study was to better understand and develop theory on what motivates individuals to pursue continuous improvement activities despite minimal resources to support them. Informed by the rich data from this phenomenological interview study in a multinational manufacturing organization (that was facing high resource constraints coupled with high demands for employees’ participation in continuous improvement), I arrived at new theoretical insights regarding how individuals can cognitively reframe organizational resource constraints in a positive light. My proposed synthesized theoretical model informed by Study 1 can be seen in Figure 1. First, my results demonstrated that employees interpreted resource constraints as either a threat (i.e., individuals anticipated the stressor to have negative effects for their well-being and capacities) or as a challenge (individuals anticipated to gain or grow from the experience), which affected their motivation for continuous improvement in critical ways. This led me to propose that the relationship between resource constraints and continuous improvement is mediated by individuals’ cognitive appraisals of the constraints, such that their challenge and threat appraisals
influence their continuous improvement behaviors in positive and negative ways respectively (Proposition 1). This proposition goes against the stressor-strain and resource literatures, which predict that resource constraints as a potent stressor can generate strain and even burnout in employees, which in turn has shown to leave them de-motivated or even unable to effectively perform and learn at work (e.g., Demerouti et al., 2001; Hobfoll, 1988; Maslach, Shaufeli, & Leiter, 2001; Penney & Spector, 2005; Spector & Jex, 1998; Taris & Feij, 2004). This proposition also contradicts work by Sonnentag and colleagues, who expect resource constraints to promote proactive behaviors as a way to overcome the constraints (Fay & Sonnentag, 2002; Fritz & Sonnentag, 2009; Ohly et al., 2006, Sonnentag, 2003). My research suggests that this relationship between resource constraints and continuous improvement is not direct but is rather a result of the underlying mechanism through which individuals respond to such stressors. This perspective corroborates the stress-transaction theory’s (Folkman et al., 1986; Lazarus & Folkman, 1984) view that individuals’ cognitive appraisals of resource constraints can generate wide variation in the types of outcomes they produce. It is important to note that these sensemaking mechanisms have received little attention in terms of how they can generate positive rather than negative outcomes in the face of adversity (e.g., Anshel et al., 2001; Bacon, Milne, Sheikh, & Freeston, 2009). My findings thus offer a deeper understanding of individual variation in response to workplace stressors.

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Insert Figure 1 about here

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Second, my results illustrated that employees’ PsyCap, as a collection of positive states, broadened their cognitive capacities in ways that helped them interpret resource constraints as a
challenge instead of a threat, as well as continuous improvement as proactive and discretionary rather than required work behaviors (in line with Fredrickson’s broaden and build theory (1998, 2001)). Correspondingly, I proposed that individuals’ cognitive appraisal of resource constraints is moderated by their PsyCap such that individuals with high levels of PsyCap are more likely to appraise resource constraints as a challenge than a threat (Proposition 2). Building on this, I also proposed that individuals’ PsyCap moderates the mediated relationship between resource constraints and continuous improvement such that individuals with high levels of PsyCap are more likely to cognitively appraise the constraints in ways that encourage their continuous improvement participation (Proposition 3). These propositions regarding PsyCap’s role for individuals’ cognitive and behavioral reactions to resource constraints suggest that this positive psychological resource can act as a resource substitute for missing resources in other domains (Hobfoll et al., 1990; Hobfoll, 2001). Accordingly, this process depicts how and why organizational resource constraints can generate positive versus negative outcomes.

Finally, my results highlighted some important antecedents to individuals’ PsyCap within resource constrained conditions. To date, scholars have mainly focused on the impact of leadership and training interventions for the development of PsyCap (Avey, Reichard, Luthans, & Mhatre, 2011; Luthans et al., 2010), which means we currently know little about how PsyCap develops through other means in organizations, including interpersonal dynamics and relationships. In terms of social support, prior studies have shown that leaders who communicate and behave in confident, hopeful, optimistic, and resilient ways will accordingly motivate their employees to adopt similar states and behaviors (Avey et al., 2011). My results indicate that this type of leadership effect can also be extended to employees’ peers, who exert a strong influence over each other through their established norms. This finding led me to propose that individuals’
PsyCap develops as a function of their perceived social support from leaders and peers 
(*Proposition 4a*). Building on this, my research suggests that employees who strongly identify 
with their organizations have higher levels of PsyCap as they want to help their organization 
succeed despite challenges; this social identification has been linked to resilience in prior studies 
(Dutton et al., 1994). Accordingly, I also proposed that individuals’ PsyCap develops as a 
function of organizational identification (*Proposition 4b*). Finally, my investigation of PsyCap 
antecedents here revealed that individuals’ learning goal orientation, i.e., their beliefs about 
ability as dynamic and amenable to improvement through effort (Dweck, 2000), enhances their 
PsyCap as such learning oriented individuals are hopeful and believe in their ability to persevere 
and improve over time. My last proposition, therefore, states that individuals’ PsyCap develops 
as a function of their learning goal orientation (*Propositions 4c*). Considering the potential 
benefits for organizations to enhance the PsyCap of their workforce, this is an important avenue 
of research to shed light on further to help organizations find the most appropriate and cost-
effective ways to encourage their employees to develop higher levels of PsyCap where possible.

PsyCap has received both conceptual (Luthans & Youssef, 2004; Luthans, Youssef et al., 
2007) and empirical support (Luthans, Norman, Avolio, & Avey, 2008; et al., Avolio, 2007) as a 
higher order core construct, however, it is nonetheless a relatively new construct that deserves 
further attention and validation (see Dawkins, Martin, Scott, & Sanderson, 2013). While the 
different dimensions of PsyCap are conceptually independent and have demonstrated to have 
construct validity offering unique contributions to the multidimensionality of PsyCap (e.g., 
Bryant & Cvengros, 2004; Carifio & Rhodes, 2002; Magaletta & Oliver, 1999; Youssef & 
Luthans, 2007), these constructs share common processes as drivers of cognition, motivation and 
behavior (i.e., internalized agency, perseverance, and success expectancies in the face of
challenges; Luthans, Youssef et al., 2007). As a higher-order core construct, therefore, PsyCap represents the common source of variance connecting its underlying four facets such that the whole becomes greater than the sum of its parts.

It is also important to highlight what sets PsyCap apart from other similar constructs in the literature. In particular, PsyCap is conceptually characterized as having a state-like nature, and as such, it is distinct from (a) more stable traits and characteristics such as Core Self Evaluations (CSE: Judge & Bono, 2001) and the Big Five personality traits (Barrick & Mount, 1991) on the one hand, and (b) pure states such as moods and emotions on the other hand. In light of these distinctions, there is some growing empirical support indicating that individuals’ PsyCap can indeed change over time (Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011) and is open to development through brief interventions unlike more stable traits (Luthans, et al., 2010). At the same time, PsyCap has also shown to be more stable across time compared to transitory affect (Luthans, Avolio, Avey, & Norman, 2007).

PsyCap is conceptualized as a form of competitive advantage that builds on the more traditional use of the term capital, such as financial capital (i.e., what you have), human capital (i.e., what you know), and social capital (i.e., who you know) (Adler & Kwon, 2002; Luthans & Youssef, 2004). As such, PsyCap represents “who you are” in terms of individuals’ strengths, perceptions, attitudes toward work, and general outlook on life (Avolio & Luthans, 2006; Luthans, Youssef, et al., 2007), which is considered critical to human motivation and cognitive processing necessary for organizational success (e.g., Luthans et al., 2010; Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011). For the purposes of my research, this depiction illustrates that PsyCap can influence how individuals perceive and respond to stressors in their
organizational environment, possibly leaving them more rather than less resourceful under challenging circumstances.

While this phenomenological investigation of individuals’ perspectives about continuous improvement under resource constrained conditions allowed me to inductively build theory on an important and overlooked phenomenon, this study is not without limitations. In particular, even though I did cross-validate my findings across other data collected, these findings still rely mostly on interviews of individuals within a particular organizational setting. As with most qualitative research, therefore, generalizability is a concern and needs to be further investigated across contexts.

Finally, it is important to note that due to the nature of my research partnership with this manufacturing organization, my data collection has and continues to help its management team better understand the employees’ goals and concerns moving forward with their continuous improvement efforts. Put differently, this research has benefited not only my research progress as part of this dissertation, but it has also generated critical information for the host organization of this study to build on.

In summary, the overarching goal of this dissertation research was to build and test theory on individuals’ continuous improvement behaviors in resource-constrained contexts. In this first study, I derived at a theoretical model that illustrates the important role of individuals’ PsyCap for how they interpret resource constraints in ways that can promote their continuous improvement behaviors. This model has wide implications, and as a result (in line with the second part of my research goal and to address limitations with this first study), I wanted to quantitatively test it in different organizational contexts using methods that would allow me more statistical control over the mediating mechanism of cognitive appraisals and the moderating
impact of PsyCap. I therefore proceeded to next test my model through a multi-survey study in another resource-constrained environment that demands continuous improvement, namely entrepreneurs launching a new business.
### Table 1: Study 1 Illustrative Quotes on the Nature of Resource Constraints

<table>
<thead>
<tr>
<th>Theme</th>
<th>Employee Quote</th>
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| Personnel   | “For the majority of last year it was just me and another engineer… one person went back to school. So, we were short handed for most of the year until just the end of January, we found another replacement”  
“…My opinion is that there's not enough to technical expertise to execute some projects. We are getting loads of requests. It's good ideas coming in from the departments that are feeding it in, but there's only two – well, three now – that can actually do it because they don't have the electrical experience or the actual technical experience to get those changes done.” |
| Pay         | “Everyone likes a thank you every now and then, but you know, money is why we’re here so, so that would definitely help if there is some type of financial incentive. But it’s hard with the economy and the way business is now.”  
“It’s been 3 years, no raises, no recognition. We get blamed when anything goes wrong, so if we’re doing something right please appreciate us for it.” |
| Time        | “I mean, within our group, we need to find the time, but we need to be given the time, so I don’t know how that would work.”  
“Sometimes that day that [the machine] was down something else comes up and just takes over the day. Time is a struggle.” |
| Equipment   | “I know fiscal issues prevent it, but it would be nice if you could get the funding for either equipment or trials, or approval, or things like that.”  
“The plant is [many] years. A lot of the equipment is [many] years old. It is tough to implement those changes when you don't have the equipment available to make the changes.” |
| Management  | “Supervisors are the ones that should be telling staff what to do and where to go and – so I think it's the biggest downfall with the whole program. The supervisory staff that I appreciate are the ones that take an interest and are actually out on the floor keeping on things. Without that, putting the pressure on the other full-time staff to insure that things are getting done, I don’t think is fair.”  
“Leadership has to be more visible. Leadership is inherently leadership. You don’t lead from behind. Anyone can go out and say ‘do this’. You have to be seen doing it. And if you’re not, forget it. It’s not going to work.” |
Sleep  “A lot of people on nights, they come and they’re really super tired because they haven’t gotten good sleep. So their body’s kind of like a little resistant to actually getting up and being motivated.”

“You know the shift work definitely adds to it on nights. For me on days I, I’m not really that great with days. I’m kind of like drowsy and stuff in the morning. I don’t get enough sleep.”
Table 2: Study 1 Illustrative Quotes on Threat Appraisals of Resource Constraints and Continuous Improvement

<table>
<thead>
<tr>
<th>Resource Constraints as a Threat</th>
<th>Continuous Improvement as Requirement</th>
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<tr>
<td>“I’m sorry, they’re taking, they’re not giving. They want the results, but they want to put it in every nook and cranny of your personal time. If they could they would try to say could you do this on your break. That’s not going to work with us…”</td>
<td>“I think what happens is that the plant manager talks to our supervisor or a general supervisor, and it kind of trickles down to operations kind of like the bottom of the barrel here, so when we get the information, we’re told it’s so important, you have to do it.”</td>
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<td>“I hate to keep using the word frustrating but when I know [getting new equipment is] the best move and my managers know that’s the best move for us and we get turned down, how can you improve if they don't give you the funds to do it?”</td>
<td>“&lt;We&gt; have to be onboard, when it comes down to it. If you don’t do it, you’ll be spoken to and asked to come onboard.”</td>
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<td>“We’re the ones in the line of fire... So it’s discouraging that the priority is the product to them, but our priority is safety. A lot of the times those two conflict. So we either think of our job or think of our safety, and a lot of us have to think of our job. We have to do it because we work here, we have to do what we’re told to do, I just can't go home and say I can't do it because if I don’t do it, someone else will do it.”</td>
<td>“Empowerment dies the minute we walk in the plant... We don’t choose what we’re running. We don’t choose where we are. We don’t choose what station we’re at. We don’t choose what product we’re running. Where’s the empowerment? Oh, I can choose if I wanna open up a box now, or wait three seconds. Okay, yeah, I’m empowered. I’m gonna wait three seconds before I open that box of bottles, because I feel empowered right now… The only time people participate now, is when they’re told.”</td>
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<td>“We got things cut from our contract, and none of those things have come back, or have been offered to come back. Some of them have come back but for the most part, no. I don’t know, words don’t cut it in my opinion. If you’re, if you expect us to go above and beyond, then I think you have to as well, as a large corporation like this.”</td>
<td>“They just come up with a checklist and said, ‘This is what you're doing.’ Well, they might know briefly about every area but they don't know it intimately. Also management doesn't know how to check. They walk in the room and look around and say, ‘Good,’ but they're not knowing where to check and what to check.”</td>
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Table 3: Study 1 Illustrative Quotes on Challenge Appraisals of Resource Constraints and Continuous Improvement

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<thead>
<tr>
<th>Resource Constraints as a Challenge</th>
<th>Continuous Improvement as Discretionary</th>
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<tr>
<td>“There’s nothing discouraging, I find. It’s just that you have to do extra work mostly. I think that’s some days you can’t do it, like if our shift’s short or, just sometimes you can’t fit it in … just time restraints. I think money restraints as well. But I don’t think there’s like anything really discouraging about it; it’s a very positive thing.”</td>
<td>“I’d like to think that everybody would want to try and improve their daily work environment, and try to save money. I guess not everybody’s gonna have the same – nobody’s forced to address the issue, right? Nobody is forced to do that.”</td>
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<td>“No, we don’t really have like a bonus thing like that. That’s sort of gone by the wayside for now, bonuses and incentives. No, we’re just here to make the product and we’re doing a lot of it which is good. We’re still working so we appreciate that too.”</td>
<td>“The competitors are out there making improvements. If we don’t do things to reduce our unit costs we're gonna lose no question. So I wanna keep a job, I wanna make sure other people in the plant keep their job and it's a case of you've got to improve to do that.”</td>
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<td>“[Continuous improvement is about] trying to make our products more streamlined and add value to our product, right. I mean some of the operators don’t understand that. So, personally like I have encountered a lot of resistance to it. Because people see it as being, you know, more work, you’re doing more work. But it’s, it’s not really, it’s like doing stuff to make your job easier.”</td>
<td>“Well, we strive to basically, to make the best product we can. If there are ways, we improve our process, or the work that we’re doing around the process to minimize down time. Allows to get production out quicker. Just little changes that are ongoing, that will help production, and speed up the job, make it easier for everyone.”</td>
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<td>“There's a lot of things on our plate right. Some are hot pressing items. Some are long term things, but if you don't do them now you'll never. Because we do a lot of projects. It could be you plan it now, it doesn't materialize until a year down the road. But if you don't start it, it never gets done.”</td>
<td>“I guess the one thing it has – one thing we have done is give people more ownership of their daily work through [continuous improvement]. We implemented – we have implemented what we call a Lean [expert] on each shift, who is responsible for – they go through a checklist, look at areas of the plant, make sure they are kept nice and tidy, and what not. So they’ve really embraced it. It’s given them added responsibility, a sense of accomplishment.”</td>
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Table 4A: Study 1 Illustrative Quotes on Hope and Optimism

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<tr>
<th>Theme</th>
<th>Employee Quote</th>
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<tbody>
<tr>
<td>Hope/Optimism</td>
<td>“I love my job so I enjoy coming into work every day. I’m very happy to be here. I like the company a lot. It’s one of the best I’ve worked for. They take it very seriously; that’s important. When I’m out there I take it very seriously and I enjoy my job very much.”</td>
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<td></td>
<td>“I want to know my life gets better, get us all as a group, and speak about the improvement and also what we have achieved by doing, following the [continuous improvement initiatives], and if we learn that way, we will be responsible in making it a better place, not just here, but on the whole.”</td>
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<td></td>
<td>“I just want to come to work and then be happier I guess, just to have an easier day flow I guess. I don’t have to think, ‘oh my god, I have to go to work again’.”</td>
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<td></td>
<td>“I only hope [my peers] keep up the good job they are doing. That’s all I hope, and I hope it continues to be.”</td>
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<td></td>
<td>“I don’t know if I like it or not until I change, so why not? Then at least you can make an educated decision on it.”</td>
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<td></td>
<td>“I have my own vision, but I don't know if it's necessarily what [my manager] wants. So it'll be interesting to see what he has to say and hopefully whatever he wants I can give to him.”</td>
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<td></td>
<td>“Lots of things are a lot better than they were. Lots of simple things, right. I think too, if people I guess, if people are more aware of the types of ideas that are getting implemented, they might realize that even just the simplest ideas can help.”</td>
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<td></td>
<td>“We have tremendous potential in our people here.”</td>
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**Table 4B: Study 1 Illustrative Quotes on Resilience**

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<tr>
<th>Theme</th>
<th>Employee Quote</th>
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<tr>
<td>Resilience</td>
<td>“There's promise but it needs to be tweaked and I'm no quitter. I always figured if it's one year or it's ten years, if you improve it, it's improved forever. So no matter how long it takes you just keep on plugging.”</td>
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<td></td>
<td>“So we get delayed over and over and over. And it's rather frustrating because it's a waste of time to keep applying year after year and then you get to a point of you think you've got it and it goes right up to the top person after ten signatures and they say no... So it's really frustrating at that point because then I've gotta do the same thing the next year. Try again…. So I make notes and I try to prioritize and I go back to them and say, ‘By the way, we didn't get a chance to do this,’ or, ‘We can't get money this year, we'll try again. But your idea's good.’”</td>
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<td></td>
<td>“Something that we don’t do that we should do is incentive. I buy into it; I have for the past 20 years. I don’t need incentive. But, some of the people need to have a reason to do it.”</td>
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<td></td>
<td>“So like, that’s why, again why I took the Green Belt [continuous improvement training]; it is because I did want to empower myself. I don’t want to have to go and get all these approvals. I’m going to, I’m going to go get the approvals myself.”</td>
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<td></td>
<td>“Our supervisor’s totally against it. I mean we have, in the training records there are like eight big resistances to lean and continuous improvement. One of them is, ‘if it’s not broke why fix it’. So I’ve heard that person [say] so. I mean it’s, it would be a little discouraging because you know a supervisor is saying that. You know I’m not behind this but I, I can’t tell you why he would be against it or not seeing the value in it so. I don’t know what to tell you honestly. I don’t care like I’m doing it because, because of the, the improvement to the plant, job security a little bit for all of us. Nobody’s going to step up, I’m going to step up and you know, even for a little bit of recognition that’s good too so.”</td>
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FIGURES

Figure 1: Research Framework for Continuous Improvement in the Face of Resource Constraints
1. As part of this data collection, and before I conducted my interviews, I also invited all employees to respond to a survey that asked about their levels of resource constraints and continuous improvement activities (n=113, 71% response rate). The aim of this survey was to validate the conditions of the data collection site from the employees’ perspective as I had mostly received information from managers and white collar employees up until that point. The survey results affirmed that employees perceived their organizations to place resource constraints on them, particularly in the form of relatively low levels of support for growth and improvement more generally (mean = 2.81/6; std = .99; 28.4% of employees expressed that this support was almost never in place while 2.8% believed it was almost always in place) but also in terms of relatively low levels of organizational support in the form of policies and practices (mean = 2.57/5; std = .80; 31.2% of employees disagreed while 3.7% agreed that this support was in place) and to a smaller extent leadership support (mean = 3.00/5; std = .87; 14.7% of employees disagreed while 15.6% agreed that this support was in place) for continuous learning and improvement. At the same time, the continuous improvement participation was moderately high (continuous improvement mean = 3.84/5; std = .64; 51.4% of employees agreed that they participated in continuous improvement while 1.8% disagreed). These results indicated that the employees were on average able to cope with the resource constraints in ways that kept them engaged and motivated toward helping the organization improve. In short, the quantitative data from the surveys provided important foundational evidence to support the conclusion that many employees were able to remain motivated and engaged in continuous improvement under the strained conditions.
CHAPTER 3

STUDY 2 OVERVIEW AND RESEARCH SETTING

The goal of my second study was to test the research model that emerged from Study 1 and the literature (Figure 1). More specifically, I wanted to better understand whether individuals’ PsyCap influences their cognitive interpretations of resource constraints in ways that enable them to creatively adapt to those challenges on an ongoing basis. If PsyCap enables individuals to re-appraise resource constraints in positive ways, this should be applicable across contexts and types of constraints. To test this principle, I designed a time-lagged, multi-survey study that enabled me to quantitatively assess this moderated, mediated relationship between individuals’ resource constraints and their continuous improvement behaviors.

I chose to recruit aspiring entrepreneurs as my participants. Entrepreneurs are defined as those individuals who recognize and exploit new business opportunities by founding new ventures (Shane & Venkataraman, 2000), and as such, they represent a valuable sample for this research for three key reasons. First, successful entrepreneurs are considered to be creative and motivated by change and improvement, making continuous improvement activities highly relevant for this group of individuals (Koellinger, 2008; Shane & Venkataraman 2000). Second, entrepreneurs must create the foundation for success by overcoming barriers, and thus, coping with stressors is a central part of their job, including resource constraints such as a lack of funding, information, and appropriate networks (Barretto, 2012; Hmieleski & Carr, 2008). Third, and for the purposes of adding to the entrepreneurship literature reviewed below, the study of cognitive appraisals in entrepreneurs responds to call for research on the interpretative processes through which entrepreneurs are able to capitalize on opportunities (Barreto, 2012). In the
following section, I elaborate upon the relevance and importance of my research within an entrepreneurial context.

**Entrepreneurship: A Research Foundation**

Our business environment is said to be shifting from a managerial to an entrepreneurial economy in line with the emergence of a growing number of small and medium sized enterprises across industries (Drucker, 1985; Rauch & Frese, 2000). This entrepreneurial environment has an extensive impact on the economic growth in industrialized countries (Reynolds et al., 2005; Sternberg & Wennekers, 2005), and as a result, it has increased the momentum of entrepreneurship research (Wiklund, Davidsson, Audretsch, & Karlsson, 2011). A major topic of interest within this literature is the existence, discovery, and exploitation of entrepreneurial opportunities (Barreto, 2012; Shane & Venkataraman, 2000). In particular, since the context of new venture creation and development is filled with an abundance of environmental stressors leading most new ventures to fail (Baron, 1998; Baron & Shane, 2008; Hmieleski & Carr, 2008), scholars are turning their attention to the factors and processes that enable entrepreneurs to successfully capitalize on entrepreneurial opportunities within such constrained environments.

While the reasons for successful entrepreneurial emergence oftentimes are complex and multifaceted, the characteristics and behaviors of individuals pursuing new ventures are likely to play a role for their success (e.g., Davidsson & Honig, 2003). Still, there is scepticism in the entrepreneurship literature regarding the link between personal characteristics and entrepreneurial success (Rauch & Frese, 2007). This scepticism stems from poor and inconsistent results in personality research within the field of entrepreneurship in the past, which has led entrepreneurship scholars to “concentrate on almost anything except the individual” (Shaver & Scott, 1991: 39). Macro forces such as economic, social, financial, and cultural circumstances
indeed matter for the emergence and success of entrepreneurship; however, a new venture will only emerge once an individual decides to capitalize on those circumstances (Frese, 2009; Rauch & Frese 2000, 2007). In line with this reasoning, “calls to action” have been issued for a psychological perspective on new venture creation that addresses individual entrepreneurs’ behaviors, cognitions, and characteristics (e.g., Frese, 2009; Hisrich, Langan-Fox, & Grant, 2007). Above and beyond the importance of testing the theoretical model I developed in Study 1, my research on entrepreneurs’ continuous improvement behaviors in the face of resource constraints, as well as the individual factors that influence these behaviors, accordingly responds to this important call for research.

**Continuous Improvement among Entrepreneurs.** While continuous improvement originally gained momentum in the manufacturing industry, it has since become a popular strategy in organizations of all sizes and across all industries (e.g., Bhuian & Baghel, 2005). Based upon the evidence on the benefits of continuous improvement, it appears reasonable to predict that entrepreneurs who engage in continuous improvement behaviors will be more flexible when faced with unexpected events and more likely to allocate scarce resources in appropriate ways. Supporting this prediction, different types of continuous improvement behaviors have been described as an important source of success for entrepreneurs (e.g., Frese et al., 2007) as elaborated upon below.

In line with my definition of continuous improvement as a proactive form of learning-oriented behavior aimed at making improvements to work processes and outcomes (see more details in Chapter 1), these types of behaviors include active and ongoing planning, initiative, and strategizing for change, which in turn have been linked to enhanced entrepreneurial performance (e.g., Frese et al., 2007). Planning, the process of developing a sequence of
behaviors needed to turn individual resources into actions for goal attainment (Gollwitzer, 1996; Shank & Abelson, 1977), is important because entrepreneurs who plan are more likely to achieve their goals and to be more persistent and ready to seize opportunities as they arise (Diefendorff & Lord, 2004). For example, Dimov (2010) found that nascent entrepreneurs’ early planning positively influenced venture emergence in that this type of active exploration helped them make more informed judgments. Similarly, Frese and colleagues (2007) found that entrepreneurs’ elaborate and proactive planning was substantially related to the size of their business and to an external evaluation of their business success. Rather than focusing on formal plans, such as annual business plans (e.g., Schwenk & Shrader, 1993), planning here fits with my conceptualization of continuous improvement as proactive and ongoing behaviors intended to make improvements to business processes and outcomes. Despite its importance for entrepreneurial adaptation and performance and despite calls for more research, this type of frequent, ongoing planning has received little attention in the entrepreneurial literature to date (Frese, 2007; Sarasvathy, 2001).

Rather than passively fulfilling role requirements, continuous improvement here is about actively seeking out opportunities to improve on current and future practices. For entrepreneurs this means that they cannot passively adapt to their environment; to thrive they need to proactively defend and build on their market niche in an ongoing manner (Frese, 2007; Krauss, Frese, & Friedrich, 2003). By actively adjusting their tasks to their capabilities and environmental demands, entrepreneurs are able to drive important change rather than merely react to it. This active approach has been studied in the form of personal initiative in the entrepreneurship literature, defined as proactive, self-starting, and persistent behavior (Frese, Fay, Hilburger, Leng, & Tag, 1997). Entrepreneurs who have personal initiative both anticipate
and prepare for future opportunities and threats (Frese et al., 1997; Frese & Fay, 2001), which research indicates help lead to entrepreneurial success in small businesses (Crant, 1995; Koop, De Reu, & Frese, 2000).

Collectively, this emerging set of research suggests that continuous improvement behaviors are indeed essential in an entrepreneurial context. To succeed in this complex environment that is fraught with resource constraints, entrepreneurs need to go above and beyond their day-to-day required tasks and think about how to conduct such tasks in more efficient and innovative ways moving forward. At the same time, however, these resource constraints can be extremely taxing for entrepreneurs, thereby discouraging them from engaging in continuous improvement behaviors in the first place. That is, entrepreneurs who face resource constraints, such as a lack of funding, information, or time, are forced to focus on more immediate priorities and thus become less likely or even able to think of the long-term ramifications for their business. The important question thus becomes, as per the focus of my dissertation, what drives entrepreneurs to pursue continuous improvement activities despite a lack of resources to support them? This question remains unanswered. As a result, I draw from scholarship on entrepreneurship cognition, which can help us understand how the way entrepreneurs interpret their environment influence the extent to which they engage in continuous improvement behaviors.

**Entrepreneurial Opportunity Formation: A Cognitive Perspective.** The two dominant perspectives of how entrepreneurs form and decide to exploit opportunities are the discovery view versus the creation view (Alvarez & Barney, 2007). The *discovery view* includes opportunities that emerge from exogenous shocks such as regulatory or demographic changes (Shane, 2003). In contrast, the *creation view* includes opportunities that are socially constructed
by the entrepreneurs’ efforts (i.e., endogenous shocks; Sarasvathy, 2001). Building on these views, Barreto (2012) recently introduced a third view, the interpretation view, through the development of the entrepreneurial interpretation theory. This theory assumes that entrepreneurs capitalize only on those opportunities, exogenous or endogenous shocks, which they attend to and give meaning to in line with the information available and their own knowledge structures (see Dutton & Jackson, 1987). The meaning entrepreneurs provide to such opportunities in turn guides their efforts and motivation for how they exploit them (Palich & Bagby, 1995).

In line with Barreto’s (2012) entrepreneurial interpretation theory, the study of entrepreneurial cognition has been labeled as a key area of interest in the entrepreneurship literature (Baron, 2004; Hisrich et al., 2007). Entrepreneurial cognition is defined as “the knowledge structures that people use to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth” (Mitchell, Busenitz, Lant, McDougall, Morse, & Smith, 2002: 97). Empirical evidence in this domain indicate that the cognitive underpinnings of opportunity recognition indeed matters (Grégoire, Barr, & Shepard, 2010) such that entrepreneurs, in contrast with non-entrepreneurs, tend to engage in unique cognitive categorization processes that enable them to identify opportunities that others fail to recognize (Shane, 2003). For example, entrepreneurs have shown to perceive and frame information in a more positive light than non-entrepreneurs (Palich & Bagby, 1995; Shane & Venkataraman, 2000).

By recognizing that the way entrepreneurs interpret potential opportunities will have implications for if, how, and why they pursue new ventures, this cognitive perspective aligns with my model derived from Study 1 (see Figure 1). In particular, I argue that individuals’ cognitive appraisals are the key to our understanding of their behaviors in the face of resource
constraints (in line with the transactional model of stress; Lazarus, 1993; Lazarus & Folkman, 1984, 1987). For nascent entrepreneurs who face stressful contexts that are characterized by resource constraints such as equivocal and incomplete information (Barreto, 2012), I expect that their interpretation of those constraints as a potential opportunity rather than a threat will motivate them to pursue proactive, growth behaviors needed to generate successful new ventures, i.e., continuous improvement. Accordingly, I set out to test the following hypothesis:

**Hypothesis 1: The relationship between resource constraints and continuous improvement is mediated by individuals’ cognitive appraisals of those constraints, such that (a) challenge appraisals and (b) threat appraisals influence continuous improvement in positive and negative ways, respectively.**

Considering the importance of these appraisals for entrepreneurs’ ability to capitalize on potential opportunities, it is essential that we also seek to understand the factors that motivate entrepreneurs to interpret resource constraints in more productive ways, such as the impact of their individual characteristics.

**The Role of Individual Characteristics in Entrepreneurship.** There is growing scholarly interest in the role of individuals and their states and traits in entrepreneurship (Ciavarella, Buchholtz, Riordan, Gatewood, & Stokes, 2004; McMullen & Shepherd, 2006; Zhao, Seibert, & Lumpkin, 2010). Meta-analytic evidence regarding the importance of personal characteristics for entrepreneurial effectiveness has correspondingly begun to emerge (Rauch & Frese, 2007; Zhao & Seibert, 2006; Zhao et al., 2010). In particular, research suggests that there are small to moderate relationships between personality traits such as emotional stability, extraversion, openness to experience, conscientiousness, risk propensity, passion, high need for achievement, innovativeness, autonomy, locus of control, and self-efficacy, and successful entrepreneurship (Rauch & Frese, 2007; Zhao et al., 2010). While research on more transient characteristics such as individual states and emotions are less common (Mitchell et al., 2007), Baron (2008) suggests
that emotions may play a significant role in how entrepreneurs process information and react to circumstances that are typically characterized by high uncertainty; in these environments individuals are more likely to use emotions as cues for their actions. Building on this, Foo (2011) explored the role of positive and negative emotions on entrepreneurs’ perception of risk and found that positive emotions such as happiness can make individuals less risk-averse.

Building on this research and more central to the purposes of this dissertation, there is also some emerging support for the role of PsyCap as a collection of positive states (i.e., self-efficacy, resilience, optimism, and hope) for entrepreneurial performance (Hmieleski & Carr, 2008). Specifically, Hmieleski and Carr (2008) found that entrepreneurs’ PsyCap was positively related to the performance of their new ventures, and that it explained a significant amount of variance above and beyond more traditional sources of capital (i.e., human, social, and financial capital). This study further found that PsyCap is especially important for entrepreneurs within dynamic industry environments, indicating that PsyCap may help entrepreneurs persevere in the face of stressors while developing new ventures. Given that my theoretical model predicts that PsyCap may play an important role for individuals’ behaviors in resource constrained environments (Figure 1), this research offers support for the relevance of my model in an entrepreneurial context. Since PsyCap is state-like and has shown to be open to development, this research direction is particularly promising and deserves further attention.

While this literature suggests that individuals’ characteristics are related to entrepreneurial behaviors and success, we know less about why and how these individual states and traits matter for entrepreneurial performance. More specifically, current evidence does not illuminate the processes through which entrepreneurs are able to draw from such personal resources to successfully capitalize on entrepreneurial opportunities. By merging the
psychological perspective of entrepreneurship with the cognitive interpretation view reviewed above, I suggest that we may better understand these processes based on entrepreneurs’ interpretations of their environments as well as the factors that influence such interpretations. More specifically, and in line with my theoretical model, I hypothesize that entrepreneurs’ PsyCap can broaden their cognitive capacities and make them more proactive when exploring potential opportunities in ways that make them more likely to interpret resource constraints as a challenge instead of a threat (see Fredrickson’s Broaden and Build theory, 1998; 2001; and Parker et al., 2006). Put differently, I expect PsyCap to act as a moderator of the relationship between resource constraints and cognitive appraisals. When considered in conjunction with the first hypothesis above, this qualifying role of PsyCap creates a moderated-mediation model such that individuals’ PsyCap moderates the mediated relationship between resource constraints and continuous improvement; entrepreneurs with high levels of PsyCap are more likely to cognitively appraise the constraints in ways that encourage them to engage in continuous improvement behaviors. These predictions make up my second and third hypotheses:

**Hypothesis 2:** Individuals’ cognitive appraisal of resource constraints is moderated by their PsyCap such that individuals with high levels of PsyCap are (a) more likely to appraise resource constraints as a challenge and (b) less likely to appraise resource constraints as a threat.

**Hypothesis 3:** Individuals’ PsyCap moderates the mediated relationship between resource constraints and continuous improvement such that individuals with high levels of PsyCap are more likely to cognitively appraise the constraints in ways that encourage their continuous improvement participation.

**PsyCap Antecedents.** Considering the influence of PsyCap for entrepreneurs’ cognition and behaviors, further research is needed to shed light on how to promote such resources within an entrepreneurial context. As seen in Figure 1, my model proposes that individuals’ (a) perceived social support, (b) organizational identification, and (c) learning goal orientation are
antecedents to their PsyCap. To test the validity of these propositions in an entrepreneurial sample, it is important to note some unique characteristics of the entrepreneurial context. First, it is plausible that entrepreneurs’ learning orientation will enhance their PsyCap as learning oriented individuals tend to be more confident in their ability to persevere and improve over time. Since learning oriented individuals tend to reflect on their past experiences as a way to help them evaluate and further develop their capabilities for future achievement tasks (Farr, Hofmann, & Ringenbach, 1993; Payne, Youngcourt, & Beaubien, 2007), they are also more likely to develop resilience as a component of PsyCap. In contrast, however, the other proposed antecedents detailed in Figure 1 may be less relevant or take different forms in this context. Even though perceived social support is likely to help entrepreneurs build higher levels of efficacy, hope, optimism, and resilience as they set out to develop new ventures, this support must be conceptualized more broadly than support from leaders and peers. Entrepreneurs are often their own and only employee in the early stages of business development, making support from leaders and peers less relevant if even possible. Instead, these individuals can benefit more from support from friends, family, and significant others in helping them build the positive states of PsyCap (e.g., Bruederl & Preisendoerfer, 1998). Moreover, since entrepreneurs are their own organization, at least initially, it does not make sense to test the impact of their organizational identification in this study. In line with this reasoning, my last hypothesis includes two antecedents:

_Hypothesis 4: Individuals’ PsyCap is positively related to their (a) perceived social support and (b) learning goal orientation._

In summary, the goal of my second study was to test my research model in an entrepreneurial sample that would help me shed light on how PsyCap influences entrepreneurs’ cognitive interpretations of resource constraints in ways that enable them to continuously
improve on their new ventures. As per my review above, entrepreneurs represent an important context for this research due to their resource constrained settings and high need for continuous improvement. Moreover, by testing my model with an entrepreneurial sample, my research offers an important opportunity to contribute to the entrepreneurship literature in line with recent calls for more research on the effects of entrepreneurs’ cognition (Barretto, 2010; Hisrich et al., 2007) and individual states (Mitchell et al., 2007; Foo, 2011) for new venture emergence and success. In the next section I describe the methods for this study.

**STUDY 2 METHODS**

**Participants and Procedures**

Participants in this research were 108 nascent entrepreneurs (i.e., individuals who recognize and exploit new business opportunities by founding new ventures; Shane & Venkataraman, 2000). To recruit these entrepreneurs for this research, I formed a partnership with a Canadian government-funded entrepreneurship program that trains and supports entrepreneurs during their first year of business development. This program is offered through various program providers across Canada. Each location has the mandate and financial backing to support currently unemployed individuals who have strong business ideas during their first year of business development through different forms of training, networking, and funding.

I collaborated with the program providers at ten geographical locations in Ontario. The program administrators and/or trainers at these locations introduced me to the program participants on their first day of the program. I then had the opportunity to explain the purpose and process of my research and to invite them to participate by responding to three surveys during their participation in this entrepreneurship program. For those who were interested in doing so (approximately 95% of the invitees), the first survey was administered during their first
week in the program when they had a business idea but no training or experience yet (i.e., they were not yet operating their business). The second survey was administered once they had received all their formal training and had finalized their business plan and/or launched their business (on average 8 weeks later). At this point 34% of the participants had launched their business; the others were in the final steps before launching it. The third and final survey was administered approximately six to seven months later (on average 6.7 months), when the participants were in the midst of running their new business. To capture participants who were absent during my site visits, I gave participants two options to fill out the surveys: either online or using paper-and-pen surveys. The majority preferred to complete the survey in paper format, namely 96.5% for survey one, 93% for survey two, and 66% for survey three. The online survey format was more popular at Time 3 because several of the program providers did not have regular meetings at this point in the program while the entrepreneurs were working independently on their businesses. Each survey took approximately 30 minutes to fill out, and the participants received $10 per survey as a token of appreciation. 195 participants responded to survey one, 160 responded to survey two (82% of original sample), and 118 responded to survey three (61% of original sample). A total of 108 participants responded to all three surveys (55% of original sample), which was the final sample used for all analyses.

The demographic distribution of the final sample was 50 percent women and 87 percent Caucasian. The average age was 42 years and the participants had an average work experience of 20 years. In terms of education, 62.5 percent of the participants had at least a two-year college degree or higher. The new ventures were quite diverse, including hair salons, lawn mowing companies, IT consulting services, accounting services, healthcare support, dog groomers, boat renovation support, communication services, yoga studios, and wedding planners among others.
To ensure the final sample was no different than the original sample, I conducted t-tests on all the major variables of interest to my model, including demographics. No meaningful differences emerged such that all p-values were greater than 0.05, meaning that any differences between the samples are likely due to chance alone.

**Measures**

To ensure construct validity and to reduce common method bias, I measured my variables of interest at different time points. Specifically, perceived social support and learning goal orientations (the hypothesized predictors of PsyCap) were measured at Time 1 when the participants had just started the first week of their training program intended to help them start their business. The participants’ resource constraints and PsyCap were measured at Time 2, approximately two months later, when they had completed their formal training and business plan and were in the beginning phases of opening their business. At this point, they were aware of the types of constraints they were facing as new entrepreneurs and also had developed the particular level of hope, optimism, resilience, and efficacy with which they would be beginning their new business. Lastly, I measured participants’ cognitive appraisals of their resource constraints as well as their continuous improvement behaviors at Time 3. At this point, approximately seven months later, they were in the middle of operating their new business and had arrived at conclusions regarding the challenge versus threat that the resource constraints posed to them personally, and could also report on their continuous improvement behaviors. I elaborate upon these measures in more detail below.

**Learning Goal Orientation.** At Time 1, I measured participants’ learning orientation based on VandeWalle’s (2001) goal orientation scale consisting of 4 items. Participants were asked about the extent to which they agreed with statements such as, “I often look for
opportunities to develop new skills and knowledge”, and “For me, further development of my work ability is important enough to take risks.” Participants’ response options ranged from 1 ("strongly agree") to 7 ("strongly disagree"). The coefficient alpha was .85.

**Perceived Support.** Also at Time 1, I measured the entrepreneurs’ perceived level of support using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, & Zimet, 1988). Example items include “There is a special person around when I am in need” and “My family really tries to help me.” Participants were asked to respond based on a scale ranging from 1 ("very strongly disagree") to 7 ("very strongly agree"). The coefficient alpha was .93.

**Psychological Capital (PsyCap).** PsyCap was measured with previously validated scales for each of its four components. Specifically, efficacy was measured with six items from Parker’s (1998) role-breadth efficacy scale, including items such as “I feel confident helping to set targets/goals in my work area”. Hope was measured with Snyder et al.’s (1996) six-item state hope scale, which asks participants to rate the extent to which they agree with statements such as “I can think of many ways to reach my current work goals”. For resilience, I used six items from Wagner and Young’s (1993) scale that were specifically tailored to the work context, including items like; “I can get through difficult times at work because I’ve experienced difficulty before”. Finally, I used six items from Scheier and Carver’s (1985) optimism scale, again focusing on optimism at work, including statements like “I always look on the bright side of things regarding my job”. The common anchors for these four measures were from 1 (“strongly disagree”) to 6 (“strongly agree”). Because of the centrality of this construct for my research and the relatively little published evidence validating the measurement of PsyCap, I conducted a confirmatory factor analysis (CFA) on this higher-order construct and evaluated its dimensionality and items.
Please see the results section for additional detail. Based on the CFA results, I used a condensed 14-item version of this combined scale with items that were more applicable to the entrepreneurial context. Due to its relevance for my research and the state-like nature of the construct, I measured PsyCap at each time for exploratory purposes. The coefficient alpha for this scale was .86, .89, and .90 for Time 1, 2, and 3 respectively. PsyCap Time 1 and PsyCap Time 2 were correlated at .57 \( (p<.01) \); PsyCap Time 2 and PsyCap Time 3 were correlated at .53 \( (p<.01) \); and PsyCap Time 1 and PsyCap Time 3 were correlated at .63 \( (p<.01) \). I used the PsyCap Time 2 measure for testing my model because the level of PsyCap at business launch was expected to have the highest relevance for subsequent cognitions and behaviors while running the business.

**Resource Constraints.** To measure entrepreneurs’ resource constraints as they started up their new ventures (Time 2), I administered the Organizational Constraints Scale (Spector & Jex, 1998) that consists of 11 items that are preceded by the question; “How often do you find it difficult or impossible to do your job because of...?” Sample items include “Poor equipment or supplies” and “Organizational rules and procedures.” Since research suggests that models of stress should be specific to the context under investigation (Dollard, Dormann, Boyd, Winefield, & Winefield, 2003; Sparks & Cooper, 1999), such that occupation- and industry-specific stress scales have shown to be more reliable and valid than more general stress scales (Gillespie, Walsh, Winefield, Dua, & Stough, 2001), I added 12 constraints that were specifically tailored to entrepreneurial experiences. More specifically, I wrote these additional items based on an investigation of different types of factors that are described as inhibiting new entrepreneurs’ success in the entrepreneurship literature. In addition, I interviewed several administrators and participants from the entrepreneurship program beforehand to get a better sense of what they
perceived to be typical challenges while starting up a new business. Based on this process, I came up with examples of entrepreneurial constraints such as “Lack of funding/capital”, “Government regulations”, and “Insufficient networks.” The response options ranged from 1 ("less than once per month or never") to 5 ("several times per day"). The results were similar across both versions of the resource constraints scale, but the entrepreneurial constraints were more construct valid in this context, so I used the entrepreneurial version of this scale for my model testing. The coefficient alpha was .84.

**Cognitive Appraisals.** Peacock and Wong’s (1990) Stress Appraisal Measure (SAM) was used to measure participants’ threat and challenge appraisals of resource constraints at Time 3. This scale asked participants to “Consider the challenges you are facing as part of starting up your own business. Please rate your perceptions of these challenges below” on a scale from 1 ("not at all") to 5 ("extremely"). Sample items of the challenge and threat appraisal scales include: “To what extent can I become a stronger person because of this problem?” (challenge appraisal) and “Is this going to have a negative impact on me?” (threat appraisal). The coefficient alphas for these challenge and threat appraisal scales were .84 and .81 respectively.

**Continuous Improvement.** At Time 3, entrepreneurs’ engagement in continuous improvement behaviors was assessed with an eight-item scale that combined questions from two previously validated scales. The first set of questions stemmed from a 4-item continuous improvement scale by Lee (2004); this survey focuses mainly on exploitative and incremental change and improvement behaviors where participants are asked to rate the extent to which they agree with statements such as, “I am always monitoring if there is any room for improvement in the work I do.” Since this scale only assessed a portion of the larger continuous improvement construct as it has been conceptualized, I supplemented it with four items from Zhou and
George’s (2001) scale, which focuses on more explorative behaviors such as the proactive development of innovative ideas and their implementation. An example item is “I come up with creative solutions to problems.” This scale uses a 5-point response scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). A confirmatory factor analysis (reported below) indicated that this combined scale was best represented by a single factor. The coefficient alpha was .93.

Continuous Improvement Planning. Entrepreneurs’ participation in continuous improvement planning activities was assessed with a previously-validated eight-item scale on planning (Brown, Cron, & Slocum. 1997; Vandewalle, Brown, Cron, & Slocum, 1999). The item referents were edited to refer to entrepreneurs. More specifically, participants were asked to rate the extent to which they agreed with statements such as “In the past three months, I have spent a good deal of time thinking about my strategy for my business” and “I have sought out new and innovative ideas to help my business succeed.” This scale uses a 5-point response scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). A confirmatory factor analysis (reported below) suggested that a one-factor solution fit well and the coefficient alpha was .82.

Please see attached for a copy of the survey items in their entirety (Appendix B).

STUDY 2 RESULTS

Analytic Strategy

As seen in Figure 1, I proposed that resource constraints would negatively affect continuous improvement through threat appraisals and positively affect continuous improvement through challenge appraisals. I also expected PsyCap to moderate (a) the relationship between resource constraints and cognitive appraisals, making individuals more likely to view their constraints as more of a challenge than a threat, and (b) the mediated relationship between
resource constraints and continuous improvement. As a complement to this core model, and for the purpose of adding to the currently limited literature on PsyCap antecedents, I also proposed that individuals’ perceived social support and learning orientation would be positively related to their levels of PsyCap. To test this model, I began by validating the factor structure of my measures. I then evaluated the hypothesized mediation, moderation, and moderated mediation relationships based on Hayes and colleagues’ recommendations using the PROCESS macro within SPSS (Hayes, 2012; 2013; Hayes & Preacher, 2012). Since PROCESS cannot account for additional exogenous variables, the relationships between individuals’ PsyCap and the proposed antecedents of learning goal orientation and perceived social support were then evaluated with multiple regressions. As a final step, and for a more comprehensive test of my model, I evaluated the model fit with Mplus version 7 (Muthen, & Muthen, 1998-2012).

Scale Validation

I conducted a series of confirmatory factor analyses (CFA) in Mplus to examine the factor structure of those scales in my research that had not been validated or were novel and minimally evaluated (e.g., PsyCap) in previous studies. In line with recommendations for scholars to use multiple statistics to help make decisions about the adequacy of model fit, I used four measures of model fit including the Chi-square value and its associated degrees of freedom, the comparative fit index (CFI), the root mean square error of approximation index (RMSEA), and the standardized root mean squared residual (SRMR) index. The chi-square statistic assesses the magnitude of discrepancy between the sample and fitted covariance matrices, however, it is biased against large sample sizes and large correlations in the model. The CFI is an incremental fit index that compares the model against a null model. CFI values range from 0 (worst fit) to 1 (best fit), where values greater than .95 are typically considered acceptable fit. The RMSEA is an
absolute fit index that assesses how well a particular model reproduces the sample data. The RMSEA compensates for the effect of the model’s complexity and ranges from 0 to 1, where values closer to 0 indicate better model fit (acceptable models are typically less than .06; Hu & Bentler, 1999). Finally, the SRMR statistic is another absolute fit index, however, it reflects a different conceptual approach to assessing absolute fit than RMSEA and it has an ability to detect misspecified models. SMRM values less than .08 are typically considered appropriate for acceptable model fit (Hu & Bentler, 1999). All CFA results reported below can be seen in Table 5.

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I first examined the factor structure of PsyCap. I measured PsyCap in all three surveys, and I accordingly evaluated model fit at all these times to produce a scale that fit the entrepreneurs’ data regardless of survey number. After inspecting the factor loadings, there were several problematic items that reduced fit. Upon inspection, it appeared that some of these items may have been problematic because they were not highly applicable to these entrepreneurs. For example, “I feel confident in representing my work area in meetings with management” may have been misinterpreted, leading to its poor loading. Some reverse-coded items also had low loadings (e.g., “When I have a setback at work, I have trouble recovering from it, moving on”). I therefore proceeded to remove these low-loading items, consistent with some prior evidence on PsyCap measurement concerns (see review by Dawkins, Martin, Scott, & Sanderson, 2013). After removing 10 of these 24 items (i.e., items 1, 2, 7, 8, 9, 13, 14, 15, 20, 23) a higher-order four-factor model showed acceptable fit across the first two time points (Time 1: RMSEA=.07; CFI =.93 ; SRMR =.05; Time 2: RMSEA=.05; CFI =.98; SRMR =.05). The fit at Time 3 was
less appropriate (RMSEA=.08; CFI=.88; SRMR=.05), which will be discussed in greater detail in the limitations section. In addition, I conducted a competing models analysis to examine this higher-order four-factor model of PsyCap to one-, two-, and three-factor models. By conducting a chi-square significance test of difference, I found that the higher-order four-factor model fit the data the best as expected (see Table 6 for PsyCap Time 2 results).

Insert Table 6 about here

Next, I conducted confirmatory factor analyses for the continuous improvement scales that I had edited for the purposes of this research. The first continuous improvement scale regarding general continuous improvement behaviors (Lee, 2004; Zhou & George, 2001) had acceptable fit once I removed one low-loading item (item 1; RMSEA=.10; CFI=.98; SRMR=.03. Two of the three indices reported good fit for this scale, so I concluded that this scale had acceptable fit for using in my hypothesis testing. I also conducted a confirmatory factor analysis of the continuous improvement planning scale (Brown et al., 1997; Vandewalle, 1999). This analysis revealed three items with low loadings, so they were thus removed (items 2-4), leading to a scale with acceptable fit (RMSEA=.07, CFI=.97, SRMR=.06). Accordingly, I concluded that this reduced scale also had acceptable fit for using in my hypothesis testing. All other constructs in this research were assessed with previously validated scales.

**Hypothesis Testing and Model Evaluation**

Descriptive statistics and correlations for all variables are presented in Table 7. To test the proposed model regarding the mediated (Hypothesis 1), moderated (Hypothesis 2), and moderated-mediated (Hypothesis 3) relationships between resource constraints and continuous improvement, I first conducted path analysis using the PROCESS macro for Model 7 in SPSS.
(Hayes, 2013). First, Hypothesis 1 predicted that resource constraints would be (a) positively related to continuous improvement through challenge appraisals and (b) negatively related to continuous improvement through threat appraisals. Consistent with Hypothesis 1a, I found that resource constraints positively influenced both continuous improvement generally as well as planning behaviors through challenge appraisals ($\beta=.22$ and $.32$, $p<.05$), respectively. However, there was no support for the presence of an indirect effect (mediation) through threat appraisals ($\beta=-.06$ and -.10, $p=ns$), so Hypothesis 1b was not supported.

Hypothesis 2 proposed that PsyCap moderates the relationship between resource constraints and cognitive appraisals, making individuals (a) more likely to view their constraints as a challenge and (b) less likely to view their constraints as a threat. Consistent with this hypothesis, PsyCap qualified this relationship between resource constraints and challenge appraisals ($\beta=.52$, $p<.01$). This interaction was plotted according to recommendations of Aiken and West (1991), as seen in Figure 2 (i.e., at one standard deviation above and below the mean of PsyCap). This figure shows that the relationship between resource constraints and challenge appraisals is only positive for those people who have high PsyCap ($p<.01$). That is, entrepreneurs with higher levels of PsyCap when they launched their business were more likely to view their resource constraints as challenging than those with lower levels of PsyCap. In contrast, PsyCap did not qualify this relationship between resource constraints and threat appraisals ($\beta=-.16$, $p=ns$). Therefore, Hypothesis 2a was supported but Hypothesis 2b was not.
Hypothesis 3 proposed that PsyCap would qualify the mediated relationship between resource constraints and continuous improvement (i.e., moderated mediation). Accordingly, I conducted a test of the conditional indirect effect, which establishes whether the strength of mediation differs across levels of a moderator and is conducted using bootstrapping analysis (Preacher, Rucker, & Hayes, 2007). Following Preacher et al.’s (2007) recommendations, I operationalized high and low PsyCap as one standard deviation above and below the mean and used 5000 iterations of bootstrapping. My results showed that the conditional indirect effect of resource constraints on continuous improvement through challenge appraisals was significant when PsyCap was high (boot indirect effect=.10; SE=.06, \( p<.01 \) for continuous improvement; boot indirect effect=.15; SE=.07, \( p<.01 \) for continuous improvement planning), but it dropped to non-significance at low levels of PsyCap (boot indirect effect=-.05, SE=.05, \( ns \) for continuous improvement; boot indirect effect=-.07, SE=.06, \( ns \) for continuous improvement planning). This supports moderated mediation (Preacher et al., 2007) and Hypothesis 3.

In addition to this, Hypothesis 4 proposed that learning goal orientation and perceived social support would be positively related to PsyCap. While these constructs independently had positive relationships with PsyCap, only learning orientation (\( \beta=.30, \Delta R^2=.14, p<.01 \)) and not social support (\( \beta=.15, ns \)) was related to PsyCap when assessed collectively through multiple regression. Thus, Hypothesis 4b but not 4a was supported.

For a more comprehensive test of my hypothesized relationships, I lastly conducted an assessment of the overall fit of my model using Mplus version 7 (Muthen, & Muthen, 1998-2012). With the goal of consistency and model parsimony, I assessed the same relationships as I did using PROCESS (i.e., excluding PsyCap antecedents) as seen in Figure 3. This assessment indicated good fit statistics (RMSEA=.09; CFI=.95; SRMR=.05), including a non-significant
chi-square (12.57(7)). Based on the results for the standardized path estimates in my model (see Figure 3), Hypothesis 1a, 2a, and 3 were supported similar to the above-reported results using PROCESS. Please note that the path coefficients for resource constraints, while standardized, are greater than 1.0 due to a high correlation between resource constraints and the interaction term between resource constraints and PsyCap; this often occurs when interaction terms are highly correlated with their constituent parts, but these results should be interpreted as normal (see Deegan, 1978; Hayes, 2009). Collectively, these results indicate the hypothesized model fit the data well and the relationship between resource constraints and continuous improvement was supported through challenge appraisals. PsyCap qualified this relationship between resource constraints and challenge appraisals as well as the mediated relationship between resource constraints and continuous improvement.

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Insert Figure 3 about here

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STUDY 2 DISCUSSION

The goal of my dissertation research was to understand what motivates people to pursue continuous improvement activities despite minimal resources to support them. Based on the results of this time-lagged field survey study of nascent entrepreneurs, I found support for several aspects of the proposed model linking resource constraints to continuous improvement through cognitive appraisals. In particular, this study suggests that entrepreneurs are able to continuously improve on their new ventures, despite facing severe resource constraints, when they interpret those constraints as challenging. Put differently, entrepreneurs who view their constraints as opportunities to grow and learn are more likely to act in ways that benefit their business. Building on this, I also investigated how the entrepreneurs’ positive states of PsyCap
during their business launch influenced their cognitive appraisals and behaviors approximately seven months later. My results suggest that nascent entrepreneurs who express higher levels of PsyCap during the early stages of their new business are more likely to view their resource constraints in more challenging ways during their later business stages. In short, entrepreneurs’ PsyCap can help them frame adversity as opportunities from which they can become stronger, which makes them more proactive in improving on their business. Given how critical continuous improvement behaviors are for entrepreneurial success, particularly in the early stages of business development, this research not only provides support for my overall research model, but it also helps shed light on how to encourage nascent entrepreneurs to succeed through their cognitive appraisal processes.

This theory testing provides important support for my model across contexts since the first study in which I developed the theoretical model was set in a very different research setting than this second study (i.e., entrepreneurial versus manufacturing). While the qualitative data in Study 1 suggested that individuals are more or less motivated toward continuous improvement behaviors as a function of their challenge versus threat appraisals of resource constraints, this study only offered support for the importance of challenge appraisals. The results for threat appraisals were not significant in this study, indicating that the relationship between entrepreneurs’ constrained conditions and their ensuing behaviors are more likely to be driven by perceptions of the degree of challenge instead of threat. It is possible that threat appraisals are still important but more so for their relationship with variables of interest other than continuous improvement (e.g., stress and wellbeing). Threat appraisals may in other words be less relevant than challenge appraisals for predicting continuous improvement behaviors. Having said that, it is also possible that the entrepreneurial sample may have reduced the effects of threat appraisals
such that entrepreneurs may be less threat-adverse and thus may interpret resource constraints as threatening *without* letting such appraisals affect their continuous improvement behaviors. This finding is important to follow-up on in a different setting to ensure the proposed model is generalizable.

The results of this study also suggest that PsyCap can act as a personal resource that substitutes for other missing resources in an entrepreneurial setting. These results provide support for Hobfoll’s resource substitution theory (2001), thereby shedding light on the process through which resource constraints can generate positive rather than negative outcomes. More specifically, this study illustrates that nascent entrepreneurs facing numerous resource constraints as they develop their business can substitute for those constraints with resources from their own psychological domain, thereby making them less vulnerable to their contextual constraints overall. Since most new ventures tend to fail in a context filled with an abundance of environmental stressors, including a lack of sufficient resources (Baron, 1998; Baron & Shane, 2008; Hmieleski & Carr, 2008), this research offers a more hopeful perspective on how to develop more proactive entrepreneurs who are accordingly in a better situation to succeed.

Given PsyCap’s qualifying role for individuals’ constructive appraisals of their resource constraints, this research also aimed to shed light on antecedents to this construct in line with my hypothesis regarding the effect of individuals’ learning goal orientation and levels of perceived social support. Confirming propositions from Study 1, I found that individuals’ learning goal orientation acted as an antecedent to their PsyCap. This finding suggests that individuals who are more learning oriented are also more likely to be resilient, hopeful, confident, and optimistic in tackling new challenges. In contrast, this study did not find support for the hypothesized relationship between perceived social support and individuals’ PsyCap, indicating that
entrepreneurs benefit more from a learning orientation than support from friends and family in developing such a positive psychological resource. Perceived social support may still be important for other reasons, such as helping entrepreneurs deal with stress or become more challenge oriented directly, but in this context they were not associated with PsyCap. Collectively, these results contribute to the currently limited literature on antecedents to PsyCap.

Due to my particular sample for this study, this research contributes to the emerging literature on entrepreneurial cognition and affective states (Barretto, 2010; Hisrich et al., 2007; Mitchell et al., 2007). In terms of the nature of the cognitive process underlying opportunity recognition and exploitation (Barretto, 2010; Hisrich et al., 2007), this study illustrates the positive effects of entrepreneurs’ challenge appraisals for their continuous improvement behaviors. This research direction is critical for helping us understand what sets more proactive entrepreneurs apart from others in a resource constrained environment, shedding light on the importance of entrepreneurs’ cognitive strategy and the factors that influence it. In particular, and related to calls for research on entrepreneurs’ states, this study indicates that PsyCap as a positive state-like construct encourages entrepreneurs to become more challenge-oriented in their interpretations of adversity, which has positive implications for their continuous improvement behaviors needed for success. Collectively these findings suggest there is much promise in studying entrepreneurial cognition and state-like characteristics for overall new venture processes and outcomes.

This study’s time-lagged, multi-survey design provides a robust test of my model using a sample of individuals to whom continuous improvement under resource constrained circumstances is highly relevant. Still, this research is not without its limitations. In particular, I used a resource constraints scale and two continuous improvement scales that have not been used
in this particular form before. The reason for my adjusted resource constraints scale was to include questions that were more relevant to the particular audience (i.e., new entrepreneurs in Study 2). This is important as prior research has established that occupation- and industry-specific stress scales have shown to be more reliable and valid than more general scales (Gillespie et al., 2001). In terms of my continuous improvement scales, I made minor adjustments to already established scales to ensure relevance and reliability within my research context. For my general continuous improvement scale, I incorporated two current scales on exploitative and explorative improvement activities to ensure I addressed both types of logics for a complete representation of the continuous improvement phenomenon (in line with organizational learning recommendations; e.g., Crossan, Lane, & White, 1999). For my continuous improvement planning scale, I edited the referents to refer to tasks relevant to my research settings. While these scales have not been used or validated in this particular form, they nonetheless demonstrated good reliabilities, they were related to other constructs in expected ways, and they showed high confirmatory factor loadings. Another limitation of this study is the use of self-reports. Although I collected data through three separate surveys over time to reduce common-methods bias, the use of different methodologies and research designs would be an important complement to this research. Finally, it is also important to note that the confirmatory factor analysis results for PsyCap at Time 3 was not as acceptable as compared to Time 1 and 2. While I only used the construct from Time 2 in my analysis, this deserves further attention. In particular, the first two surveys were mainly administered in person, where I was able to address questions and concerns about items such as the referral to “work” and “my job” for entrepreneurs (as frequently seen in the four subscales of PsyCap -- many participants were unemployed and thus saw their business development as a project or opportunity rather than a job). For the third
survey, many of the entrepreneurs responded online and thus it is possible that they felt unsure about the applicability of some of these questions for them during this particular time in life.

This study also offers some practical implications. Since the current literature has mainly established that PsyCap can be enhanced through training and leadership support, these findings provide another option for organizations looking to develop a more resilient and challenge-oriented workforce. That is, helping employees become more learning oriented is likely to also help them develop higher levels of positive psychological resources, which is important in line with Hobfoll’s resource substitution possibilities. Based on the entrepreneurial sample of this study, and due to my partnership with this particular entrepreneurship program, this research suggests that future entrepreneurship training programs may want to look at ways to enhance nascent entrepreneurs’ continuous improvement behaviors by developing their challenge appraisals either directly or through the development of a learning goal orientation and/or PsyCap. This information, in addition to other data I collected through my surveys in line with the program providers’ needs and interests, will be used to help evaluate and improve on this particular program moving forward.

In summary, the results of this second study offers support for several aspects of the proposed model from Study 1; however, additional work needs to be done to extend these findings and test additional elements of the core theoretical model. Since I did not find any support for the effects of individuals’ threat appraisals in this study, further investigation of the hypothesized relationships is still important. To build on the results of this study, I therefore wanted to test the theory a second time in (a) a different setting and (b) with a different methodology that would allow me to manipulate the variables of interest in an experimental setting, thereby allowing me to draw even stronger conclusions about my hypothesized
relationships. In addition, and since the results of my first two studies indicate that PsyCap influences individuals’ sensemaking and continuous improvement behaviors in constructive ways, it is important to assess additional antecedents to PsyCap. It is also important to investigate the impact of other positive psychological resources that may help people overcome resource constraints more effectively; this would help me to further enhance the theoretical and practical implications of my model for employees facing a lack of organizational resources. In my next study, I accordingly set out to test my model, including additional elements, using a different methodology and research setting than my first two studies.
<table>
<thead>
<tr>
<th>Scale</th>
<th>Alpha reliability</th>
<th>Items</th>
<th>Factors / Structure Confirmed</th>
<th>Chi-Square (df)</th>
<th>Chi-Square / df Ratio</th>
<th>RMSEA</th>
<th>CFI</th>
<th>SRMR</th>
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<tbody>
<tr>
<td>PsyCap (T1)</td>
<td>.86</td>
<td>14</td>
<td>4</td>
<td>135.45 (73)</td>
<td>1.86</td>
<td>.07</td>
<td>.93</td>
<td>.05</td>
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<td>PsyCap (T2)</td>
<td>.90</td>
<td>14</td>
<td>4</td>
<td>90.37 (73)</td>
<td>1.24</td>
<td>.05</td>
<td>.98</td>
<td>.05</td>
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<tr>
<td>PsyCap (T3)</td>
<td>.89</td>
<td>14</td>
<td>4</td>
<td>122.35 (73)</td>
<td>1.68</td>
<td>.08</td>
<td>.88</td>
<td>.08</td>
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<tr>
<td>Continuous Improvement Behaviors (T3)</td>
<td>.93</td>
<td>7</td>
<td>1</td>
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<td>1.82</td>
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<td>.03</td>
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<td>Continuous Improvement Planning (T3)</td>
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<td>5</td>
<td>1</td>
<td>7.16 (5)</td>
<td>1.43</td>
<td>.07</td>
<td>.97</td>
<td>.05</td>
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<td>Models</td>
<td>Factors</td>
<td>$\chi^2$</td>
<td>df</td>
<td>$\Delta \chi^2$</td>
<td>RMSEA</td>
<td>CFI</td>
<td>SRMR</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Baseline Model 1* (higher-order model)</td>
<td>4 (1. hope, 2. efficacy, 3. resilience, 4. optimism)</td>
<td>90.37</td>
<td>73</td>
<td></td>
<td>.05</td>
<td>.98</td>
<td>.05</td>
<td></td>
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<tr>
<td>Model 2</td>
<td>3 (1. hope and optimism, 2. efficacy, 3. resilience)</td>
<td>106.61</td>
<td>74</td>
<td>16.24*</td>
<td>.06</td>
<td>.96</td>
<td>.06</td>
<td></td>
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<tr>
<td>Model 3</td>
<td>2 (1. hope and optimism, 2. efficacy and resilience)</td>
<td>121.14</td>
<td>76</td>
<td>30.77*</td>
<td>.07</td>
<td>.94</td>
<td>.06</td>
<td></td>
</tr>
<tr>
<td>Model 4</td>
<td>1</td>
<td>129.94</td>
<td>77</td>
<td>39.57*</td>
<td>.08</td>
<td>.93</td>
<td>.06</td>
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* Significant at $p < .01$. 

Table 6: Study 2 Comparison of Psychological Capital (PsyCap) Factor Structure
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
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<tbody>
<tr>
<td>1. Continuous improvement</td>
<td>4.26</td>
<td>.52</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Continuous improvement planning</td>
<td>4.03</td>
<td>.59</td>
<td>.57**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Resource constraints</td>
<td>1.65</td>
<td>.59</td>
<td>-.10</td>
<td>-.11</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Challenge appraisal</td>
<td>4.03</td>
<td>.71</td>
<td>.32**</td>
<td>.42**</td>
<td>-.14</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Threat appraisal</td>
<td>2.32</td>
<td>.87</td>
<td>-.17</td>
<td>-.23*</td>
<td>.33**</td>
<td>-.22*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Psychological capital</td>
<td>5.01</td>
<td>.65</td>
<td>.20*</td>
<td>.36**</td>
<td>-.28**</td>
<td>.34**</td>
<td>-.11</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Learning goal orientation</td>
<td>6.23</td>
<td>.74</td>
<td>.32**</td>
<td>.33**</td>
<td>-.08</td>
<td>.15</td>
<td>-.04</td>
<td>.34**</td>
<td>1.00</td>
<td></td>
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<tr>
<td>8. Perceived social support</td>
<td>5.85</td>
<td>1.02</td>
<td>.13</td>
<td>.19</td>
<td>-.28**</td>
<td>.49**</td>
<td>-.17</td>
<td>.22*</td>
<td>.23*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note. *p < .05 , **p < .01*
FIGURES

Figure 2: Study 2 Psychological Capital by Resource Constraints Interaction
Figure 3: Study 2 Full Model Evaluation in Mplus

Note: Values on paths are standardized coefficients. * $p < .05$, ** $p < .01$

Fit indices were as follows: RMSEA=.09; CFI=.95; and SRMR=.05.
CHAPTER 4

STUDY 3 OVERVIEW AND RESEARCH SETTING

The goal of my third study was to conduct another test of the emergent theoretical model (Figure 1) in ways that would extend our understanding of the phenomenon of continuous improvement in the face of resource constraints. Since this dissertation research was inspired by full-cycle research, I first built theory through qualitative inquiry in Study 1, followed by theory testing with quantitative methods in Study 2. As a final step in this process, therefore, this third study was designed to further evaluate the generalizability of my model using a different methodology and research setting than my first two studies. In particular, I wanted to use a methodology that would allow me more control over the level of resource constraints and the determinants of PsyCap to enable me to draw stronger conclusions about the theorized relationships with cognitive appraisals and continuous improvement. These critical relationships among resource constraints, individuals’ positive psychological resources, and cognitive appraisals are key for helping us better understand how individuals can remain motivated to pursue continuous improvement activities despite minimal resources to support them. Thus, I conducted an online experiment with working adults to evaluate the theoretical model and provide additional confidence that challenge appraisals and continuous improvement are indeed being driven by the theorized antecedents (cf., Shadish, Cook, & Campbell, 2002).

Since resource constraints represent a detrimental stressor from which few organizations are immune, especially within a highly competitive and cost-driven economy, I wanted to assess whether the hypothesized effects would generalize to a population of individuals with diverse professional backgrounds. That is, while my previous two studies provided support for my theoretical model in particular organizational settings (i.e., a manufacturing and small business
context) with employees for whom continuous improvement was highly relevant, this online experiment allowed me access to research participants from different industries and with different backgrounds, thus providing evidence for generalizable results as these are less likely to be influenced by a particular population.

In addition to assessing the robustness of my model using a different methodology and research setting than my first two studies, this final study of my dissertation was also designed to test additional elements of my model that were less relevant in the entrepreneurial context of Study 2, and to also carve out new directions for future research. Specifically, the results from my first two studies revealed that individuals’ challenge appraisals are important for their proactive continuous improvement behaviors under resource constrained conditions, and that PsyCap can help to foster these challenge appraisals. In this study, I wanted to also examine other ways to bolster positive psychological resources and encourage challenge appraisals. Since PsyCap is a state that develops as a function of antecedent conditions, I took a step back in the causal sequence to focus on factors that emerged as antecedents to this construct. In particular, I found in Study 1 that individuals’ organizational identification and perceived levels of support were associated with their PsyCap and challenge appraisals of their constrained circumstances. Due to the unique sample of nascent entrepreneurs who were in the process of starting up their own organization in Study 2, I was unable to measure their organizational identification as well as their support from coworkers specifically. For this experiment, therefore, I set out to investigate the influence of individuals’ levels of organizational identification and coworker support for their continuous improvement behaviors under resource constrained circumstances.

**Hypothesis Development**
Dutton and colleagues have argued that employees’ positive identification with their organization can enhance their functioning and well-being overall (Dutton et al., 2010). This type of belongingness to an organization (Ashforth & Mael, 1989) has also shown to predict continuous improvement behaviors (Lee, 2004), making it an important variable of interest in the context of my research model. In particular, the extent to which individuals highly identify with their organization seems likely to make them feel more positive and capable in the face of adversity. Put differently, employees can gain strength by defining themselves with their organization, which motivates them to become more adaptive in the face of adversity, both directly and as a way to help them protect that identity (i.e., employees with high organizational identification feel they share the same fate as their employer and are accordingly more likely to exert extra effort in making the organization succeed). Accordingly, I set out to investigate individuals’ levels of organizational identification as a possible antecedent to PsyCap and as a positive psychological resource in its own right. This lead to my first hypothesis:

**Hypothesis 1:** Employees with high organizational identification are more likely to report high personal PsyCap than are employees with low organizational identification.

As a positive psychological resource, I also proposed that individuals’ organizational identification would influence their cognitive appraisals of resource constraints such that they play a similar role to PsyCap. By conceptualizing organizational identification as another positive resource for individuals, I predicted that it would buffer the effects of resource constraints on their interpretations of and ensuing continuous improvement motivation in the face of such constraints. Similar to my previous arguments about PsyCap’s role as a moderator of the relationship between individuals’ resource constraints and their appraisals of these, this argument fits with Hobfoll’s resource substitution hypothesis such that organizational identification can serve as a personal resource substitute for other organizational resource
constraints, making them more constructive in their appraisal and reactions to such constraints. Accordingly, I hypothesized a qualifying effect of individuals’ organizational identification on their appraisals of resource constraints such that those individuals who more strongly and positively identify with their organization would be more likely to appraise their constraints as challenges they can not only overcome but also grow from. This lead to my second hypothesis:

**Hypothesis 2:** The effect of resource constraints on cognitive appraisals is qualified by the level of organizational identification, such that employees with higher levels of organizational identification are (a) more likely to appraise resource constraints as a challenge and (b) less likely to appraise resource constraints as a threat than employees with lower levels of organizational identification.

Another finding from my first study that I wanted to pursue was the notion that individuals’ perceived levels of support could help them develop higher levels of PsyCap. While those participants in Study 1 who were challenge-oriented and expressed more optimism, hope, and resilience also spoke of their supportive leaders and peers, I did not find support for this effect of social support in Study 2. However, it is important to recognize that I measured this type of support differently in these studies in line with their different contexts. Since entrepreneurs typically do not have a leader or peers in their first year of business, I asked about their support from friends, family, and significant others (Zimet et al., 1988). The results from Study 2 indicated that this type of social support did not make entrepreneurs more likely to also have higher PsyCap. Having said that, in meeting with these entrepreneurs during my survey administration, many of them spoke of the importance of their peers in the training program and of the networks they were developing as a function of being part of this program. Accordingly, I wanted to assess the impact of a more supportive group environment for the development of PsyCap, thus conceptualizing this social support more in line with the findings in Study 1 upon which I built my theory.
Considering how influential group norms can be for individual motivation and performance (Salancik & Pfeffer, 1978), the influence of peers to support the development of individuals’ own levels of PsyCap as well as their appraisals seems an important research direction here. I conceptualized social support in the form of positive PsyCap group norms, which entail working with a group in which members communicate and support confidence, hope, optimism, and resilience. These norms have the potential to bolster one’s psychological resources because they become a contagious way for behaving and perceiving in that context. More specifically, I predicted that these supportive group norms would act as an antecedent to PsyCap directly, but also as a broad positive psychological resource that would enable them to substitute for other resource constraints in their environment, thereby making them more constructive in their appraisals of such constraints (Hobfoll, 2001). In other words, I expected group PsyCap norms to influence individuals’ own levels of PsyCap; I also expected these types of supportive norms to qualify the relationship between individuals’ resource constraints and their interpretations of them. This lead to my next set of hypotheses:

**Hypothesis 3:** Employees in groups with high positive psychological capital (PsyCap) norms are more likely to report high personal PsyCap than are employees in groups with low PsyCap norms.

**Hypothesis 4:** The effect of resource constraints on cognitive appraisals is qualified by the level of positive psychological capital (PsyCap) norms, such that employees in groups with high positive PsyCap norms are (a) more likely to appraise resource constraints as a challenge and (b) less likely to appraise resource constraints as a threat than employees with low positive PsyCap norms.

Finally, even though the main focus of this study was on the front-end of my model, I also set out to confirm whether the effect of resource constraints on continuous improvement is mediated through individuals’ challenge and threat appraisals. While my first study suggested that both these types of appraisals are important mediators, my second study only supported the
positive effects of resource constraints on continuous improvement through individuals’ challenge appraisals. Considering that challenge and threat appraisals are expected to produce important, opposite effects for individuals’ continuous improvement behaviors in the face of resource constraints, I wanted to ensure that the results from Study 2 were not a function of the particular sample where entrepreneurs may be less threat averse than the general population. In this online experimental study with a broader sample of participants from different industries and with different backgrounds, therefore, I expected individuals who interpreted their resource constraints as challenging to engage in more proactive behaviors while those who interpreted their constraints as more of a threat would engage in less proactive behaviors. Building on this, I also expected individuals’ positive psychological resources, conceptualized as organizational identification and positive PsyCap norms here, to moderate this mediated relationship by making individuals’ respond to their resource constraints in more constructive ways. These predictions led to my last set of hypotheses:

**Hypothesis 5:** The relationship between resource constraints and continuous improvement is mediated by individuals’ cognitive appraisals of those constraints, such that resource constraints (a) are positively related to continuous improvement through challenge appraisals and (b) are negatively related to continuous improvement through threat appraisals.

**Hypothesis 6:** Individuals’ (a) organizational identification and (b) positive psychological capital (PsyCap) norms moderate the mediated relationship between resource constraints and continuous improvement such that individuals in groups with high levels of organizational identification and with high positive PsyCap norms are more likely to cognitively appraise the constraints in ways that encourage their continuous improvement participation.

**STUDY 3 METHODS**

**Design**
I used a 2 (Resource Constraints: High, Low) x 2 (Supportive PsyCap Group Norms: High, Low) x 2 (Organizational Identification: High, Low) between-subjects vignette design to test my hypotheses. The study took participants approximately 20-30 minutes.

**Participants**

I recruited 196 adults in the U.S. with work experience through ClearVoice, which is an online participant panel that provides a platform for designing and distributing online surveys for behavioral research. Of the original number of participants, 26 participants were removed for taking less than 5 minutes to complete the experiment or for not responding to the questions. Four participants were removed for putting in the same response to all questions or for using the same pattern of responses to all questions (e.g., 1, 2, 3, 1, 2, 3, etc). Finally, seven participants were removed because they failed the manipulation check questions. The final sample therefore contained 159 adults for an 81% response rate.

The demographic distribution of this final sample was 49 percent women with an average age of 41 years and average work experience of 20 years. In terms of their racial background, 81% were Caucasian, 8% Black, 5% Hispanic, and 5% Asian. In terms of their educational background, 50% of the participants had obtained at least a Bachelor Degree or higher.

**Procedures**

Participants were asked to carefully read through a scenario that asked them to imagine themselves as a Senior Graphic Designer working for a multinational beverage company, ThirstyNoMore. First, all participants read about (a) ThirstyNoMore’s current business situation that included low sales numbers compared to competitors, (b) their own five-year career as a graphic designer within ThirstyNoMore, and (c) their team consisting of eight co-workers with different design and marketing backgrounds. The participants then read a description of their
experimental manipulations for their PsyCap group norms (high versus low) and organizational identification (high versus low) before going on to read about an upcoming task they were facing in this scenario. In short, this task required them to redesign the bottle and launch a new ad campaign for the sports drink, Grr2020. After reading this task description, the participants were exposed to a resource constraint manipulation (high versus low). Once they had finished reading the scenario, including the three manipulations, the participants were asked to respond to survey questions described below from the perspective of the person in the scenario.

Participants were randomly assigned a different scenario (please see Appendix C for a full description of each scenario). The cell sizes were 84 (high resource constraints), 75 (low resource constraints), 79 (high organizational identification), 80 (low organizational identification), 75 (low PsyCap group norms), and 84 (high PsyCap group norms). Please see Table 8 for more information.

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Manipulations

I manipulated organizational identification based on the literature of what that entails for employees (e.g., Ashforth & Mael, 1989; Dutton et al., 2010). In particular, I emphasized the extent to which the participants felt personally connected to the organization. Participants in the high organizational identification manipulation accordingly read: “You feel a strong sense of belonging to ThirstyNoMore. You take it personally if anyone ever criticizes the company in front of you. You intend to stay with the company as long as you can.” In contrast, the manipulation for participants in the low organizational identification condition stated: “You do not feel a strong sense of belonging to ThirstyNoMore. If anyone criticizes the company in front
of you, it does not bother you. You would not mind if a better job opportunity came up somewhere else.”

The group PsyCap norms manipulation was generated from the literature on PsyCap (Luthans et al., 2007), emphasizing the different components of optimism, hope, efficacy, and resilience in a group context. Participants in the high PsyCap norms manipulation read the following description of their group members:

Your team members are very positive and expect the best from every situation. They talk about the importance of your team’s abilities for the company’s growth and success. Your team members strongly believe that your team has what it takes to succeed at any task. While they are aware of the company’s current challenges, they are convinced that your team is able to overcome them.

Participants in the low PsyCap norms condition instead read the following:

Your team members can be pessimistic about the situations they face. They recognize the relevance of your team’s abilities for the company’s growth and success, but are not confident that they have what it takes to succeed. They are concerned about the challenges the company is currently facing and have doubts about whether your team will be able to overcome them.

Finally, I manipulated resource constraints for this particular scenario based on the literature of what that entails (Cooper et al., 2001; Peters & O’Connor, 1980), tailoring the constraints to the experimental scenario (i.e., constraints related to personnel, the timeline, and the type of design software available). The high resource constraints manipulation was as follows:

Personnel: Your team is not fully staffed as your lead designer has recently left the company. This will create a lot of extra pressure on everyone to be able to complete the current task successfully without jeopardizing the quality of your many other projects.

Timeline: Your team faces severe time pressure as the standard timeline for this task has been cut in half to try to improve the current sales figures as quickly as possible.

Software support: Your team’s current design software is outdated and does not offer the same features and support as the software many of your competitors are using.
In contrast, participants in the low resource constraints condition were exposed to the following manipulation:

Personnel: Your team is currently fully staffed, but there will be no new hires added to your team. You need to complete this new project without jeopardizing the quality of your many other projects.

Timeline: Your team faces the company’s standard timeline for this type of redesign task, which is aimed at improving the current sales figures.

Software support: Your team’s current design software is up to date and is comparable to the software that many of your competitors are using for these types of design tasks.

A pilot study was conducted prior to the full data collection to verify that the procedures and manipulations worked as intended. For this purpose, a separate sample of 65 individuals who did not participate in the full experiment was used.

**Measures**

All the measures described below asked the participants to respond from the perspective of the person in the scenario that they had read as part of this study (i.e., as the Senior Graphic Designer at ThirstyNoMore).

**Manipulation checks.** The first set of questions was framed as a reading comprehension check that asked the participants’ about their understanding of the scenario and the described design task. Embedded in these questions were the manipulation checks. For the participants’ organizational identification manipulation check, I wrote five items that asked them how strongly they agreed/disagreed with statements such as “I feel a strong sense of belonging to ThirstyNoMore” and “I view ThirstyNoMore’s successes as my own successes.” The coefficient alpha for this scale was .95. In terms of the group norms manipulation check, I wrote five items that asked participants how strongly they agreed/disagreed with statements such as “Your team members make you feel positive about being able to take on this task” and “Your team members
encourage you to persist with tasks despite any challenges you face.” This scale had a coefficient alpha of .91. Finally, I wrote six items to assess the participants’ resource constraints manipulation (coefficient alpha was .87). Participants were asked how strongly they agreed/disagreed with statements such as “I feel constrained by the conditions my team is facing for this task” and “My team has enough personnel to handle this task” (reverse coded). All questions used a scale from 1 (“strongly disagree”) to 5 (“strongly agree”).

After the manipulation checks, the participants were asked to respond to the following sets of questions from the perspective of the role they held in the scenario:

**Psychological capital (PsyCap).** PsyCap was measured with previously validated scales for each of its four components of (efficacy, hope, resilience, and optimism (Parker, 1998; Scheier & Carver, 1985; Snyder et al., 1996; Wagner & Young, 1993). Based on the confirmatory factor analyses results from Study 2, and for reasons of both consistency and comparison across studies, I used the same shortened version of these scales for a combined measure of the higher-order PsyCap construct for this study. Sample items include “I feel confident helping to set targets/goals in my work area” (efficacy); “I can think of many ways to reach my current work goals” (hope); “I can get through difficult times at work because I’ve experienced difficulty before” (resilience); and “I always look on the bright side of things regarding my job” (optimism). The anchors for these measures were from 1 (“strongly disagree”) to 6 (“strongly agree”). The coefficient alpha was .93.

**Cognitive appraisal.** Peacock and Wong’s (1990) Stress Appraisal Measure (SAM) was again used to measure participants’ threat and challenge appraisals of resource constraints. This scale asked participants to “Consider the challenges you are facing as part of this design task. Please rate your perceptions of these challenges below” on a scale from 1 (“not at all”) to 5
Sample items of the challenge and threat appraisal scales include: “To what extent can I become a stronger person because of this problem?” (challenge appraisal) and “Is this going to have a negative impact on me?” (threat appraisal). The coefficient alpha for challenge and threat appraisals was .86 and .78 respectively (with 4 items each).

**Intended Continuous Improvement.** While the focus of this study was on participants’ cognitive appraisals and the impact of their personal resources on these, I also asked questions about their intended continuous improvement behaviors, such as effort and planning. To do so, I used previously validated scales used by both Brown et al., (1997) and Vandewalle et al. (1999). Participants’ intended effort was assessed with a 3-item scale that measured how much time, work intensity, and overall effort participants intended to put into the task compared to others in the same situation. The items used a 5-point response scale ranging from 1 (“much less than average”) to 5 (“much more than average”). The coefficient alpha was .86. In addition to effort, participants’ intended planning was assessed with a five-item scale (Brown et al., 1997; Vandewalle et al., 1999). The item referents were edited to refer to the task at hand. In particular, participants were asked to rate the extent to which they agreed with statements such as “I will spend a good deal of time thinking about my strategy for this task.” and “I will think about strategies I can fall back on if problems arise.” This scale used a 5-point response scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). This scale had a coefficient alpha of .85. As reported below, a confirmatory factor analysis supported the two-factor structure of these scales as expected.

Please see attached for a copy of the survey items in their entirety (Appendix C).

**STUDY 3 RESULTS**

**Analytic Strategy**
In line with my core research model (Figure 1), I expected resource constraints to affect individuals’ continuous improvement behaviors through their cognitive appraisals of the constraints. Building on this, and for the purposes of both testing and extending my model, I also expected to see group differences between those with high versus low levels of organizational identification and positive PsyCap norms for their (a) individual levels of PsyCap, (b) cognitive appraisals of resource constraints, and (c) intended continuous improvement behaviors. To evaluate these relationships, I began by validating the factor structure of the measures that I had edited for this research. I then conducted hypothesis testing through ANOVAs, multiple regressions, and the PROCESS macro within SPSS (Hayes, 2013). For a more comprehensive test of my model, I finally conducted path modeling using Mplus version 7 (Muthen, & Muthen, 1998-2012).

**Scale Validation**

I conducted confirmatory factor analyses on the two continuous improvement measures regarding intended effort and planning because these scales were tailored for this study. A two-factor model that allowed the factors to co-vary indicated good fit with a CFI value of .96, a SRMR value of .04, and an RMSEA value of .10 (Kline, 1998). All other constructs were assessed with previously validated scales as described below.

**Manipulation Checks**

I checked whether the manipulations were successful by examining the ratings participants provided on the questions that asked them to indicate their levels of organizational identification, group norms, and resource constraints. All three manipulations were successfully implemented. Specifically, participants perceived themselves as identifying more strongly with their organization in the high organizational identification condition ($M=4.28$, $SD=0.81$) as
compared to the low organizational identification condition \((M=2.17, SD=.94), t(157)=15.08, p<.001\). For positive PsyCap norms, participants perceived themselves as working in groups with higher PsyCap norms in the high positive PsyCap group norms condition \((M=3.83, SD=0.81)\) as compared to the low PsyCap group norms condition \((M=2.63, SD=.92), t(157)=8.74, p<.001\). In terms of resource constraints, participants perceived themselves as facing more resource constraints in the high resource constraints condition \((M=3.52, SD=0.73)\) as compared to the low constraints condition \((M=2.42, SD=.81), t(157)=8.98, p<.001\).

**Hypothesis Testing**

Descriptive statistics and correlations for all variables are presented in Table 9.

Hypothesis 1 proposed that individuals with high organizational identification would be more likely to report high personal PsyCap than individuals with low organizational identification. Similarly, Hypothesis 3 proposed that individuals with high positive PsyCap norms would be more likely to report high personal PsyCap than individuals with low positive PsyCap norms. Because these hypotheses shared the same dependent variable, I conducted an ANOVA with both organizational identification and PsyCap norms included as predictors of PsyCap.

Consistent with Hypothesis 1, this ANOVA showed significant group differences for the main effect of organizational identification \((F(1, 153) = 24.94, p < .01)\) such that those individuals with high organizational identification \((M=4.71, SD=.67)\) reported significantly higher levels of PsyCap than those with low organizational identification \((M=4.10, SD=.87)\). Similarly, the results for PsyCap norms revealed that those people with supportive coworkers with high PsyCap reported higher personal levels of PsyCap \((M=4.55, SD=.68)\) compared to those people whose coworkers had low PsyCap norms \((M=4.24, SD=.94), F(1, 153) = 6.24, p < .05)\.
Hypothesis 2a proposed that the effect of resource constraints on challenge appraisals is qualified by the level of organizational identification, such that employees with high levels of organizational identification are more likely to appraise resource constraints as a challenge than individuals with low organizational identification. Parallel to this hypothesis, Hypothesis 4a proposed that the effect of resource constraints on challenge appraisals is qualified by the level of positive PsyCap norms, such that employees in groups with high positive PsyCap norms are more likely to appraise resource constraints as a challenge than individuals with low positive PsyCap norms. To test these relationships, I conducted an ANOVA that included the main effects of resource constraints, organizational identification, and group PsyCap norms as well as the hypothesized interaction terms of resource constraints with organizational identification and of resource constraints with group PsyCap norms, respectively. Consistent with Hypothesis 2a, this ANOVA showed a significant interaction effect of organizational identification and resource constraints on challenge appraisals ($F(1, 150) = 4.11, p < .05$). This interaction is graphically portrayed in Figure 4; this graph illustrates how employees with high levels of organizational identification become significantly more challenge-oriented when faced with high resource constraints (i.e., they view the constraints as something they can grow and benefit from), compared to those with low organizational identification who instead become less challenge-oriented under high levels of resource constraints. In other words, organizational identification reverses the relationship between resource constraints and challenge appraisals such that it is positive and negative for those with high versus low organizational identification, respectively.
With regard to PsyCap norms, the results revealed that no significant interaction emerged \((F(1, 150) = .00, ns)\), so Hypothesis 4a was not supported.

Hypotheses 2b proposed that the effect of resource constraints on threat appraisals is qualified by the level of organizational identification, such that employees with high organizational identification are less likely to appraise resource constraints as a threat than employees with low levels of organizational identification. Likewise, Hypothesis 4b proposed that the effect of resource constraints on threat appraisals is qualified by the level of positive PsyCap norms, such that employees in groups with high positive PsyCap norms are less likely to appraise resource constraints as a threat than employees with low positive PsyCap norms.

Similar to my process for testing Hypothesis 2a and 4a above, I conducted an ANOVA that included the main effects of resource constraints, organizational identification, and group PsyCap norms as well as the interaction terms between resource constraints and organizational identification and between resource constraints and group PsyCap norms on threat appraisals. No significant interaction effects emerged for the interaction of organizational identification and resource constraints \((F(1, 150) = 3.20, ns)\) or for the interaction of PsyCap norms and resource constraints \((F(1, 150) = .39, ns)\) on threat appraisals. Hypotheses 2b and 4b were accordingly not supported.

Hypothesis 5 proposed that resource constraints would (a) positively affect continuous improvement through challenge appraisals and (b) negatively affect continuous improvement through threat appraisals. Building on this, Hypothesis 6 proposed that individuals’ (a) organizational identification and (b) positive psychological capital (PsyCap) norms would
moderate the mediated relationship between resource constraints and continuous improvement such that individuals in groups with high levels of organizational identification and with high positive PsyCap norms would be more likely to cognitively appraise the constraints in ways that encouraged their continuous improvement participation. Threat appraisal was not related to continuous improvement planning ($\beta= -.06, ns$) or effort ($\beta= .00, ns$), suggesting there was no mediating relationship through threat-oriented interpretations. Hence, Hypothesis 5b was not supported. While challenge appraisal had no direct relationship to resource constraints ($\beta= -.01, ns$, indicating that Hypothesis 5a was not supported), it did evidence a qualifying effect through organizational identification as per my results for Hypothesis 2. Challenge appraisal was also positively related to continuous improvement behaviors, including intended planning ($\beta= .45, p< .01$) and effort ($\beta= .41, p< .01$), reinforcing the importance of finding ways to promote such appraisals. Therefore, I tested for a moderated mediated relationship where individuals’ organizational identification would moderate the mediated relationship between resource constraints and continuous improvement as per Hypothesis 6a. I did so by conducting a test of the conditional indirect effect using bootstrapping analysis (i.e., 5000 iterations of bootstrapping; Preacher et al., 2007). My results showed that the conditional indirect effect of resource constraints on continuous improvement through challenge appraisals was not significant when organizational identification was high (boot indirect effect= .06; $SE= .05, ns$ for continuous improvement planning; boot indirect effect= .08; $SE= .06, ns$ for continuous improvement effort) or low (boot indirect effect= -.10; $SE= .06, ns$ for continuous improvement planning; boot indirect effect= -.12; $SE= .08, ns$ for continuous improvement effort), therefore not supporting Hypothesis 6a (Preacher et al., 2007) when this specific moderated-mediation path was tested. Hypothesis 6b similarly expected a moderated-mediation relationship to hold using group PsyCap norms as the
moderator; this Hypothesis was not supported as there was no evidence for mediation or moderation as reported above.

**Full Model Evaluation**

As a final step, and for a more comprehensive test of my model linking resource constraints to continuous improvement behaviors, I conducted path modeling using Mplus version 7 (Muthen, & Muthen, 1998-2012). Since the results for PsyCap group norms were non-significant in relation to this core model, I excluded this variable and only included organizational identification as a moderator (see Figure 5). An assessment of the overall fit of this model indicated good fit statistics (RMSEA=.00; CFI=.100; SRMR=.03), including a non-significant chi-square (5.82(7)). The results for the standardized path estimates in my model provide further support for my hypotheses, consistent with the univariate results above. In particular, the interaction of organizational identification and resource constraints was significant on challenge appraisals ($\beta=.68, p<.05$) but not on threat appraisals ($\beta=-.60, ns$), providing support for Hypothesis 2a. In contrast to my above results, this full model evaluation also found that resource constraints were negatively related to challenge appraisals ($\beta=-.48, p<.05$), and challenge appraisals were in turn positively related to both continuous improvement planning ($\beta=.40, p<.01$) and effort ($\beta=.45, p<.01$), therefore indicating a moderated mediated relationship through challenge appraisal as per Hypothesis 6a. While this Hypothesis was not supported using the PROCESS macro, the full model evaluation provides a more complete and simultaneous assessment with all the hypothesized variables included, suggesting support for Hypothesis 6a.

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Insert Figure 5 about here

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**STUDY 3 DISCUSSION**
The goal of my dissertation research was to understand how and why individuals become motivated to continuously improve in the face of adversity. Based on the results of this third study, I found support for several tenets in my model based on a sample of individuals with diverse backgrounds using an online experimental design. In particular, the results emphasize the important role of individuals’ challenge appraisals for their continuous improvement behaviors under resource constrained circumstances. This research also investigated the impact of individuals’ organizational identification and perceived support for their own levels of PsyCap. As hypothesized, this study found that individuals’ high levels of organizational identification and PsyCap group norms are related to their PsyCap. In addition to serving as an antecedent to PsyCap, my research also highlights the critical role that individuals’ organizational identification play in enabling them to interpret resource constraints in more challenging ways. This finding provides empirical support for Dutton and colleagues’ theoretical claims that employees’ positive identification with their work can enhance their functioning (Dutton et al., 2010). That is, similar to PsyCap, organizational identification may serve as a broad resource substitute to other resource constraints, thereby enabling individuals to become more challenge-oriented in their appraisals of such constraints. Organizational identification thus operates as a moderator of the relationship between resource constraints and cognitive appraisals here, helping individuals cope in the face of adversity. Collectively, these findings suggest that resource constraints can indeed trigger proactive behaviors when individuals view them as challenges from which they can benefit, and this challenge-oriented interpretation is more likely for individuals who more strongly identify with their organization than those who do not.

Since I am looking at organizational identification here as a factor that may ultimately help to promote continuous improvement behaviors in the face of adversity, it is important to
note that there is some level of disagreement about the role of organizational identity for learning and improvement behaviors under resource constrained and dynamic contexts (e.g., Fiol, 2001). On the one hand, Organizational Identity (OI) Theory predicts that employees who strongly identify with their organization will resist change and feel defensive and anxious when their organization is being constrained as they see such changes as a threat to their identity (Fiol, 1991; Reger, Gustafson, DeMarie, & Mullans, 1994); this type of defensiveness and anxiety would in turn hamper their continuous improvement behaviors. However, research has also shown that organizational identification is related to discretionary behaviors since individuals who feel oneness with their organization are more likely to act in ways that will benefit it, even if it is outside of the scope of their particular role (e.g., Ashford & Barton, 2007; Dutton et al., 1994; Lee, 2004). In line with this latter argument, my findings suggest that OI theory can help explain how employees who strongly identify with their organization become resilient and adaptive when they face resource challenges as a way to maintain and support that identity in the face of such adversity. This type of interpretation and proactive coping would in turn generate more rather than less continuous improvement behaviors.

While positive PsyCap group norms were positively related to individual PsyCap in this study, these types of supportive group norms had no effect on individuals’ cognitive interpretations of resource constraints. Even though group contexts can have strong effects on behaviors and attitudes, such that being surrounded by individuals who express PsyCap qualities becomes contagious and normative, this study suggests that such group influences may not necessarily affect individuals’ internal sensemaking, at least within this research context. This is a research direction that deserves more attention.
Similar to Study 2, this research did not find support for the mediating role of threat appraisals in the relationship between individuals’ resource constraints and their continuous improvement behaviors. When looking at these results in conjunction, therefore, it appears that threat appraisals are less relevant in the context of continuous improvement. As alluded to in my discussion of results in Chapter 3, this is not to say that such appraisals are not important for other variables. However, for the purposes of the theoretical model here, it is important to note that the proposed effect of threat appraisals that emerged from the results in Study 1 may have been context specific.

Compared to my first two studies, this study offers some particular strengths as a function of its design. First, this study allowed me to manipulate the participants’ perceptions of their level of resource constraints and positive psychological resources (both as determinants of PsyCap and as moderators of the relationship between resource constraints and cognitive appraisals), and as such, it enabled me to draw stronger conclusions about the theorized relationships with cognitive appraisals and continuous improvement. Second, the online nature of this study allowed me to test my model in a sample of participants from different industries and with different backgrounds, thereby providing evidence that the hypothesized relationships emerge in contexts that are less likely to be influenced by a particular population. Having said that, this study is not without its limitations. In particular, it is important to emphasize that my main focus in this study was on the front-end of my model in terms of the interaction between resource constraints and individuals’ psychological resources for how they cognitively appraise such constraints. While this experimental design allowed me to measure continuous improvement behaviors, these were only intended behaviors that may not produce the same effects as actual behaviors. This experiment is accordingly a good complement to the other
studies, which both assess actual continuous improvement behaviors. In addition, realism is always an issue when using a scenario study such as this. That is, this scenario study allowed me to manipulate participants’ *imaginations* of resource constraints, organizational identification, and group norms rather than their actual constraints, identification, and norms. Imagining an effect is unlikely to produce as strong effects as actually experiencing it would. This could explain my non-significant results for PsyCap norms in particular, where participants may have found it difficult to imagine how hypothetical group members may make them feel. Finally, another limitation here is the use of self-reports. While my main focus was on interaction results (common methods covariance between constructs cannot explain interactions that emerge), future research should assess this theoretical model using different methodologies and research designs such as social network analyses to advance our understanding of continuous improvement behaviors during resource constrained circumstances.

From a practical perspective, this study emphasizes that organizations may want to focus on fostering more positive and supportive group norms as well as stronger, more positive ties with their employees overall to help them develop PsyCap, which has shown to positively influence constructive coping behaviors in resource constrained organizational settings (as per the results from Study 1 and 2). This study accordingly offers support for more cost-effective ways to promote PsyCap in employees in today’s organizations, in contrast with the more labor-and cost-intensive, formal initiatives suggested in the literature to date. Given that the results for organizational identification also suggest that such an identity can promote productive reactions to resource constraints in organizations, it is important to note that Dutton and colleagues (2011) argue that organizations can encourage the development of positive organizational identification. For example, organizations can foster higher levels of organizational identification by routinizing
employees’ prosocial thoughts and behaviors through participation in institutionalized practices (e.g., providing options for employees to donate their vacation time or a portion of their pay to others in need; oftentimes the company will match such donations). When considering the potential outcomes of these types of activities aimed at developing employees’ organizational identification, i.e., PsyCap and challenge appraisals, they are likely to be cost-effective means for organizations to ultimately encourage higher levels of continuous improvement behaviors in their employees.
### Table 8: Study 3 Cell Sample Sizes and Group Means for All Conditions

<table>
<thead>
<tr>
<th>Resource Constraints</th>
<th>PsyCap Norms</th>
<th>Organizational Identification</th>
<th>Cell Sample Size</th>
<th>PsyCap Challenge Appraisal</th>
<th>Threat Appraisal</th>
<th>CI Effort</th>
<th>CI Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>18</td>
<td>4.02</td>
<td>3.27</td>
<td>2.47</td>
<td>3.54</td>
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<tr>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>15</td>
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<td>3.75</td>
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<td>4.11</td>
</tr>
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<td>High</td>
<td>Low</td>
<td>High</td>
<td>21</td>
<td>4.43</td>
<td>3.40</td>
<td>2.10</td>
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<td>High</td>
<td>Low</td>
<td>High</td>
<td>20</td>
<td>4.74</td>
<td>3.83</td>
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<td>3.46</td>
<td>2.78</td>
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<td>Low</td>
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<td>4.43</td>
<td>3.19</td>
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<td>Low</td>
<td>High</td>
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<td>4.61</td>
<td>3.93</td>
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<td>4.23</td>
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<td>Variable</td>
<td>Mean</td>
<td>s.d.</td>
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<td>3</td>
<td>4</td>
<td>5</td>
</tr>
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<td>--------------------------------------</td>
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<td>-----</td>
</tr>
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<td>1. Resource constraints</td>
<td>1.53</td>
<td>.50</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>2. Organizational identification</td>
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<td>.50</td>
<td>.06</td>
<td>1.0</td>
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<td></td>
<td></td>
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<td>3. Positive PsyCap group norms</td>
<td>1.53</td>
<td>.50</td>
<td>-.04</td>
<td>.01</td>
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<td>4. Psychological capital</td>
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<td>.78</td>
<td>-.05</td>
<td>.37**</td>
<td>.19*</td>
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<td>5. Challenge appraisal</td>
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<td>.96</td>
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<td>.39**</td>
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<td>.63**</td>
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<td>6. Threat appraisal</td>
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<td>.13</td>
<td>.22**</td>
<td>.10</td>
<td>.45**</td>
<td>.45**</td>
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<td>8. Continuous improvement planning</td>
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<td>.50**</td>
<td>.41**</td>
</tr>
</tbody>
</table>

*Note.* *p* < .05 , **p* < .01
FIGURES

Figure 4: Study 3 Organizational Identification by Resource Constraints Interaction on Challenge Appraisals
Figure 5: Study 3 Full Model Test in Mplus

Note: Values on paths are standardized coefficients. * $p < .05$, ** $p < .01$
Fit indices were as follows: RMSEA=.00; CFI=1.00; and SRMR=.03.
CHAPTER 5

GENERAL DISCUSSION

The goal of this research was to understand what motivates individuals to pursue continuous improvement activities despite minimal resources to support them. By moving from theory-building in a qualitative study of manufacturing employees to theory-testing, first in a field survey study of nascent entrepreneurs and then in an online experiment with working adults across industry settings, my research illustrates the important role of individuals’ challenge appraisals for their continuous improvement behaviors under resource constrained circumstances. Even though stressor and resource theories propose that a lack of resources will generate stress that leads individuals to reduce their ongoing and proactive improvement behaviors (Hobfoll, 2001; Spector & Jex, 1998), my findings indicate that resource constraints can instead promote such important continuous improvement behaviors when individuals interpret them as a challenge. As such, these findings help to elucidate Sonnentag and colleagues’ “counterintuitive” findings regarding a positive relationship between some workplace stressors and individuals’ proactive behaviors (Fay & Sonnentag, 2002; Fritz & Sonnentag, 2009; Ohly et al., 2006, Sonnentag, 2003). While these authors argue that stressors can generate proactive behaviors by signaling that something is wrong and needs to be addressed, my research suggests that this relationship will only hold when individuals interpret those stressors as something they believe they can cope with and even benefit from in terms of growth and learning. If individuals face resource constraints that they indeed recognize need to be addressed, they are nevertheless unlikely to engage in continuous improvement behaviors if they do not believe that the resources are challenges from which they can grow. This dissertation accordingly suggests that the relationship between resource constraints and continuous
improvement is not simply positive or negative, but rather it depends on the underlying cognitive mechanism through which individuals interpret and respond to those constraints.

In view of the above, this research also highlights the critical role that individuals’ psychological resources, such as their PsyCap and organizational identification, play in enabling them to interpret resource constraints in more challenging ways. The combination of results from my three studies indicate that individuals’ PsyCap and organizational identification moderate their appraisals of organizational resource deficiencies such that they make them more likely to interpret these stressors as challenging, thereby enhancing the likelihood that individuals will engage in continuous improvement. Put differently, these positive psychological resources buffer the potential negative effects of resource constraints by encouraging individuals to take a broader view that includes more options for how to constructively deal with the resource constraints.

Building on these results, and to add to the literature on PsyCap antecedents, my research also found that individuals’ learning goal orientation, positive PsyCap group norms (as a form of social support) and organizational identification all are positively associated with PsyCap, thereby helping to build this positive psychological resource.

Informed by the literature and the results from Study 1, the theoretical model in Figure 1 also proposed that resource constraints would hamper individuals’ continuous improvement behaviors if they interpreted them as a threat. However, I did not find support for this hypothesis in two separate tests across different contexts (Study 2 or 3), nor did I find an interaction effect between individuals’ psychological resources and resource constraints on their threat appraisals as expected in these studies. While the results from Study 1 illustrated that individuals’ threat and challenge appraisals were related, such that they interpreted their circumstances as either threatening or challenging, the results from Study 2 and 3 instead found that these appraisals are
two unique constructs where only challenge appraisals produced significant results. Accordingly, these results suggest that threat appraisals are less relevant in the context of continuous improvement. In line with the process of full-cycle research, I refined the theoretical model further to align with these results of my theory testing (see Figure 6). Specifically, I removed threat appraisals from the model, linking resource constraints and continuous improvement behaviors through challenge appraisals only. At the same time, threat appraisals may be associated with other variables that I did not examine in my research, including individuals’ overall wellbeing and even burnout. However, for the purposes of continuous improvement, my final, updated model depicts individuals’ challenge appraisal as the key mediator for such important improvement behaviors in the face of resource constraints. Collectively, my research offers a more positive and nuanced understanding of individuals’ cognitive and behavioral variation in response to resource constraints, including how they can remain motivated toward continuous improvement activities necessary for success.

Theoretical Implications and Future Research

My framing of continuous improvement activities as a learning oriented type of proactive, individual behavior is a novel perspective that to date has been largely overlooked. Most prior research has investigated continuous improvement as a strategy or culture (e.g., Bhuian & Baghel, 2005), which tends to ignore individual cognition and motivation as the basis for the success of such improvement activities (Kim et al., 2011). Since it has been argued that the majority of continuous improvement initiatives tend to fail due to a lack of employee engagement (Oliver, 2009), future research should be informed by this theoretical framework as
a foundation for investigating the emergent effects of individuals’ continuous improvement behaviors on organizational adaptability and effectiveness overall. That is, there is a need for more empirical evidence regarding the role of the individual versus the organizational context for the effectiveness of continuous improvement initiatives. More research is also needed to shed light on the factors that help drive these types of critical improvement behaviors over time, including individuals’ cognition, affect, and motivational preferences both alone and in the collective. For example, the impact of individuals’ achievement orientations, such as whether they are motivated by learning or performing goals, may influence their continuous improvement behaviors in ways that may be more or less beneficial for the organization overall (Chadwick & Raver, 2012). This research direction is important in light of the construct overlap with other proactive behaviors, such as voice and individual innovation, which may further explicate the unique drivers and moderators of individuals’ continuous improvement behaviors.

Since there is currently minimal theory or evidence in place that speaks to the issue of why individuals respond differently to the same stressor or what the implications of such differential appraisals for proactive behaviors are, further investigation of individuals’ interpretations of resource constraints is imperative. Rather than conceptualizing resource constraints as a challenge versus a threat or hindrance to everyone alike (e.g., LePine, Podsakoff, & LePine, 2005) or as a direct trigger for negative or positive behaviors (e.g., Fay & Sonnentag, 2002; Hobfoll, 2001), my research sheds light on how subjective individuals’ perceptions and reactions of them are as a function of their personal resources. In particular, I found that individuals’ positive psychological resources helped them become more rather than less challenge oriented in the face of resource constraints, which has positive implications for their proactive improvement behaviors. The study of cognitive processes has received little attention
regarding their role in promoting positive outcomes in the face of challenges (e.g., Anshel et al., 2001; Weick, 1995), and as such, I hope my framework can inspire future scholars to not only measure but also manipulate individuals’ sensemaking process for a richer understanding of it and the individual and contextual factors that influence it.

Since my results from Study 2 illustrate the interpretative processes through which nascent entrepreneurs respond to opportunities and challenges in their environment, my research provides support as well as additional insights for the entrepreneurial interpretation theory (Barreto, 2012). This relatively new theoretical framework proposes that entrepreneurs capitalize only on those opportunities (exogenous or endogenous shocks) that they attend to and give meaning to in line with information available and their own knowledge structures. This research demonstrates that entrepreneurs’ interpretations of resource constraints in their business context also affect how they capitalize on their business opportunities (through more or less continuous improvement activities). In addition, my framework suggests that this process is a function of not only the entrepreneurs’ available information and knowledge structures, but also their PsyCap. Entrepreneurship scholars should assess these interpretive processes further in relation to other business and performance outcomes for a deeper understanding of these micro processes.

My finding that individuals’ PsyCap and organizational identification can influence their appraisals of resource constraints in ways that help them overcome and even combat the negative effects of those constraints also offers support for Hobfoll’s resource substitution theory (Frese & Zapf, 1988; Hobfoll, 2001). More specifically, my research suggests that individuals are able to substitute for missing resources in their organizational setting with resources from their own psychological domain, thereby making them less vulnerable to their contextual constraints overall. Future research should investigate the impact of other types of resources that may serve
as a substitute in resource constrained situations. For example, in addition to encouraging individuals to more positively identify with their organization, the development of a positive group identity may be even more powerful as it speaks to the employees’ more immediate environment. Group identification may also be easier to develop as leaders are likely to have more control and influence over their group than their overall organizational setting.

Related to the point above, my conceptualization of resource constraints in this research is quite broad, such that it includes several types of constraints from different domains. While I did ensure that I only investigated the effects of resource constraints that were relevant to the particular context of interest, such as insufficient networks for entrepreneurs or outdated design software for marketing designers, these constraints were still relatively diverse and were also studied as a group. An important direction for future research would be to look at the impact of specific types of resource constraints for individuals’ appraisals and continuous improvement behaviors. For example, there may be some resource constraints that are more detrimental than others in their effect on individuals’ cognition and ensuing behaviors, and as such, the process of resource substitution may work more or less effectively for these types of constraints. These are critical new directions that can help shed light on the impact of particular contexts for proactive and beneficial organizational behaviors.

In the three studies of this dissertation, I was able to test whether the theoretical model held across different research settings, including a manufacturing context, a small business environment, and an online experiment about a hypothetical marketing design scenario. Considering the importance of continuous improvement behaviors in resource constrained organizations, it would be both interesting and important to further test and add to my hypothesized relationships in other settings. For example, it seems plausible that the theorized
relationships would be relevant in health care organizations in which caregivers and medical professionals are expected to deliver high quality care with increasingly limited resources such as staffing, financing, and even time. It would also be interesting to see whether my model holds in organizations with fewer resource constraints, such as those less affected by economic downturns, especially because proactive improvement behaviors are still beneficial for the organizations’ overall functioning. Having said that, it is also important to point out that there may be contexts in which continuous improvement may generate less beneficial effects when individuals are facing resource constraints. For example, manufacturers in industries with mature products, little competition, and little room for additional growth may see fewer benefits of continuous improvement. Future research should investigate scenarios in which engaging in continuous improvement may therefore exacerbate resource constraints; these are important moderators to take into consideration.

This research on how individuals can adapt and improve in the face of resource constraints adds another perspective to the ongoing debate regarding the role of organizational slack for organizational performance (Tan & Peng, 2003). Organizational slack can be thought of as the opposite of resource constraints in that it is defined as a “cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment” (Bourgeois, 1981, adapted from March). In line with this definition, organizational theorists (e.g., Pfeffer & Salancik, 1978) tend to argue that organizational slack is positive for organizational performance as it acts as a buffer that allows organizations to better cope during difficult times (despite its associated costs). In contrast, agency theorists (e.g., Fama, 1980) argue that organizational slack can create inefficiencies as
employees rely on it rather than try to find new ways around their challenges. Building on these views, my dissertation research suggests that both these theories may apply under different circumstances. That is, my findings indicate that a lack of organizational slack (i.e., resource constraints) may deter organizational performance unless employees interpret the constraints as challenging that in turn leads them to engage in more rather than fewer proactive improvement behaviors. Having said that, it is also important to note that Tan and Peng (2003) have argued for a contingency perspective such that only a moderate amount of constraints/slack will positively influence performance; having too many resources can hamper employees’ proactivity as such behaviors are simply not deemed necessary, while severe resource constraints may generate physical and cognitive overload that leave employees unable to engage in continuous improvement. This is an interesting perspective to explore further in relation to the results of my research. Specifically, research could investigate what is a “moderate” amount of resources and how individuals’ appraisals vary as a function of incremental changes in levels of constraints.

Rather than demonstrating how to promote critical improvement and growth activities under ideal circumstances (i.e., with sufficient and supportive resources in place), my theoretical framework offers a novel and more realistic perspective from which to build knowledge in that organizations rarely have all the resources and support needed. Considering that it is under these types of resource constrained circumstances that individuals’ continuous improvement behaviors become especially advantageous, this framework is both hopeful and provocative. On the one hand, it suggests that organizations can encourage their employees to continuously improve in more cost-effective ways than initially predicted by previous research and theory. That is, helping individuals develop and maintain PsyCap and/or a strong and positive organizational identification is more economically realistic than trying to ensure that sufficient organizational
resources are in place at all times. However, this requires that organizations have excellent leaders and practices in place to foster these positive psychological resources. Future research should accordingly investigate the specific ways in which these types of positive psychological resources can be enhanced in individuals -- other than through formal interventions as described in the literature (e.g., Dutton et al., 2001; Luthans & Youssef, 2004) or through the development of learning orientations, organizational identification, and positive group norms as per my research findings here. For example, the use of internal mentorship programs that partner junior employees with more senior employees who can support and guide them in their career may enhance their levels of PsyCap. In addition, the use of ongoing communication and recognition of employees who help make the organization a better place may enhance employees’ organizational identification as may company supported initiatives that allow employees to bring in their family for “show-and-tell”.

On the other hand, my framework suggests that there are “no excuses” for individuals to avoid continuously growing and improving in the face of resource constraints, which may not necessarily be true or even appropriate at all times. Through future research, therefore, it will be important to assess whether individuals’ continuous improvement can be sustained at high levels over time in the face of resource constraints or whether this is a temporary phenomenon. Put differently, we need to better understand whether the benefits of PsyCap and challenge appraisals on continuous improvement are able to be sustained over time if the resource constraints persist. Several informants in my Study 1 suggested that their pursuit of continuous improvement behaviors despite minimal resource support was a time-sensitive issue; eventually they would need more organizational support before their own resources suffered in the process of trying to “do more with less.” In follow-up discussions with employees of this organization approximately
two years later (for a different research project), it appeared that a reduction in individuals’ PsyCap and their accompanying motivation for continuous improvement had indeed become the new reality. While the organization had been able to build on the momentum of the employees’ relatively high levels of PsyCap and motivation for continuous improvement despite the resource constraints for about one year, no additional resources or support had been offered; in fact, employees perceived that leadership support had diminished. Many employees accordingly indicated that they had begun to feel less hopeful and able to help the organization improve, and several even expressed that they had given up on the organization and its continuous improvement initiative as a whole. This speaks to the importance of investigating whether these positive psychological resources have benefits over longer periods of time or if there are other important factors that are needed for the sustained success of individuals’ continuous improvement.

Since my dissertation research was inspired by full-cycle research, I engaged in an iterative research process that began with theory building through qualitative inquiry, followed by theory testing with different quantitative methods in two unique contexts upon which I modified my model further. This process helps to enhance both internal and external validity of the findings (Singleton & Straits, 1999), providing strong support for my research model. In particular, my phenomenological interview study was based on rich descriptions by individuals to whom continuous improvement in the face of resource constraints is critical, and as such, it helped me develop theory of a highly relevant phenomenon in today’s organizations. My second study allowed me to test my theory over time in a naturalistic setting through the use of multiple surveys, therefore providing support for several of my hypotheses. Building on this, my third study allowed me to exert more control and to enhance the generalizability of the results through
an online experiment for a randomized sample of individuals for which I manipulated the variables of interest. A randomized experimental design offers more control over the manipulations and thus more confidence that emerging differences across the experimental groups are due to the manipulation effects (Shadish et al., 2002; albeit stronger control and manipulations could be produced through an in-person experiment rather than a scenario study). Collectively, therefore, my dissertation research provides important support for my theoretical model with the use of diverse and complementary research studies.

**Practical Implications and Conclusions**

From a practical perspective, this research highlights the importance of recognizing how subjective resource constraints can be and how important individuals’ psychological resources are for how they interpret such constraints as more or less of a challenge from which they can grow. Since PsyCap and organizational identification have shown to be developable (e.g., Dutton et al., 2011; Luthans & Youssef, 2004), this research also suggests that there are critical opportunities for organizations to ensure their employees are in the best position to interpret and react to stressors in ways that allow them to continuously improve in the face of adversity. For example, leaders should focus on how to reinforce PsyCap in their employees to help them react in more positive and resilient ways to challenges, such as by encouraging the development of learning goal orientations. Learning orientations can be developed by promoting and rewarding innovation, risk taking, and learning from mistakes in a non-judgmental manner (e.g., Edmondson, 2002). Alternatively, organizations could help foster positive organizational identification with their employees by institutionalizing practices that encourage participation in prosocial behaviors such as offering half Fridays off for those interested in volunteering with charities of their choice (Dutton et al., 2011). Having said that, it is imperative to highlight that
this research offers recommendations for how organizations can overcome resource constraints with the development of their employees’ psychological resources in the short-term and not necessarily the long-term. That is, if no real attempts are made to improve on resource constrained organizational situations over time, or if leaders do not at least explain why constraints are not possible to address in the short-term, the development of employees’ psychological resources may stop to produce beneficial effects.

In conclusion, my research provides important answers to the timely and relevant dilemma of how to motivate individuals to pursue proactive continuous improvement behaviors while facing resource constraints. My results generate a more positive and nuanced understanding regarding the importance of individuals’ positive psychological resource for how they can remain resilient and dynamic in the face of adversity, which have far reaching implications for individual and organizational success across contexts in today’s global and highly competitive economy.
FIGURES

Figure 6: Final Theoretical Model for Continuous Improvement in the Face of Resource Constraints
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25: 293–315.


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perceived social support. *Journal of Personality Assessment*, 52: 30-41.
APPENDIX A: STUDY 1 INTERVIEW PROTOCOL

Study One Interview Protocol

Letter of Information provided and any pre-interview questions answered.

I’d like to first get a bit of background information regarding the context where you work.

1. Can you please tell me a little about your job (or role) and your current work group?

I’d now like to get to the core questions about continuous improvement initiatives.

2. Within the job and work group that you just described, what does continuous improvement mean to you?

3. To what extent do the members of your work group participate in continuous improvement activities?

4. In your work group and this organization, what are some of the things that encourage high levels of involvement in continuous improvement activities?

5. In your work group and this organization, what are some of the things that discourage high levels of involvement in continuous improvement activities?

6. What recommendations do you have (if any) for enhancing the continuous improvement efforts in your work group and/or organization?

Thank you very much for answering my questions. Is there anything else that you would like to add?

Thanks again for your help with this research!
APPENDIX B: STUDY 2 MEASURES

Time 1 Scales:

Learning Goal Orientation Scale (VandeWalle, 2001)

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Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988)

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Survey Key:
Significant other: 1, 2, 5, 10
Family: 3, 4, 8, 11
Friends: 6, 7, 9, 12
Demographic Information Questionnaire

INSTRUCTIONS: Please answer the following questions about yourself and your new business. The researchers will only use this information for their research questions and to summarize across all respondents in a way that protects your identity.

1. What is your gender? _____ Female _____ Male (please select one)

2. What is your age? _____ (please write in)

3. Which of the following best describes your racial/ethnic background? (please select one)
   _____ Aboriginal / Native American
   _____ Asian
   _____ Black (African or Caribbean)
   _____ Caucasian / White
   _____ Hispanic / Latino / Latina
   _____ Other (please specify) ________________________________

4. What is the highest level of education that you have completed? (please select one)
   _____ Have not completed high school
   _____ High school diploma or equivalent
   _____ Some college or university, but no degree
   _____ Two-year college degree or equivalent
   _____ Bachelor’s degree or equivalent
   _____ Master’s degree or equivalent
   _____ Doctoral degree or equivalent

5. How many years of work experience do you have? (please select one)
   _____ Less than 1 year
   _____ 1-5 years
   _____ 5-10 years
   _____ 10-15 years
   _____ 15-20 years
   _____ 20+ years
**Time 2 Scales:**

**Psychological Capital**

**Hope (Snyder et al., 1996)**

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<td>1.</td>
<td>If I should find myself in a jam at work, I could think of many ways to get out of it. a</td>
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<td>2.</td>
<td>At the present time, I am energetically pursuing my work goals. a</td>
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<td>3.</td>
<td>There are lots of ways around any problem. a</td>
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<td>4.</td>
<td>Right now I see myself as being pretty successful at work.</td>
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<td>5.</td>
<td>I can think of many ways to reach my current work goals.</td>
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<td>6.</td>
<td>At this time, I am meeting the work goals that I have set for myself.</td>
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**Optimism (Scheier & Carver, 1985)**

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<td>1.</td>
<td>When things are uncertain for me at work, I usually expect the best.</td>
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<td>2.</td>
<td>If something can go wrong for me work-wise, it will. a</td>
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<td>3.</td>
<td>I always look on the bright side of things regarding my job.</td>
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<td>4.</td>
<td>I’m optimistic about what will happen to me in the future as it pertains to work.</td>
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<td>5.</td>
<td>In this job, things never work out the way I want them to. a</td>
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<td>6.</td>
<td>I approach this job as if “every cloud has a silver lining”.</td>
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a items were not included in final analysis
Resilience (Wagnhild & Young, 1993)

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<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>When I have a setback at work, I have trouble recovering from it, moving on. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2.</td>
<td>I usually manage difficulties one way or another at work. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3.</td>
<td>I can be “on my own,” so to speak, at work if I have to. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4.</td>
<td>I usually take stressful things at work in stride.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>I can get through difficult times at work because I’ve experienced difficulty before.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>I feel I can handle many things at a time at this job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Self-efficacy (Parker, 1998)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel confident analyzing a long-term problem to find a solution. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2.</td>
<td>I feel confident in representing my work area in meetings with management. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3.</td>
<td>I feel confident contributing to discussions about the organization’s strategy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4.</td>
<td>I feel confident helping to set targets/goals in my work area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>I feel confident contacting people outside the organization (e.g., suppliers, customers) to discuss problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>I feel confident presenting information to a group of colleagues.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

a items were not included in final analysis
Organizational Constraints Scale (Spector & Jex, 1998)

<table>
<thead>
<tr>
<th>How often do you find it difficult or impossible to do your job because of...?</th>
<th>Never</th>
<th>Once or twice per month</th>
<th>Once or twice per week</th>
<th>Once or twice per day</th>
<th>Several times per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor equipment or supplies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Organizational rules and procedures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Other employees.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Your supervisor.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Lack of equipment or supplies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Inadequate training.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Interruptions by other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Lack of necessary information about what to do or how to do it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Conflicting job demands.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Inadequate help from others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Incorrect instructions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Lack of funding/capital.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Insufficient networks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Time for family.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Economic conditions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Lack of social structure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. Discrimination.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Government regulations.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. Lack of mentorship.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. Lack of work experience.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. Not enough time available.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. Insufficient management experience.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. Lack of sales skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. Lack of financial/accounting knowledge.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Survey Key:
Organizational constraints: 1-11; and
Entrepreneurial constraints: 12-24.
**Time 3 Scales:**

**Stress Appraisal Measure (SAM, Peacock & Wong, 1990)**

Consider the challenges you are facing as part of starting up your own business (your “current business situation”). Please rate your perceptions of these challenges below.

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Considerably</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is this going to have a positive impact on me?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. How eager am I to tackle this problem?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. To what extent can I become a stronger person because of this problem?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. To what extent am I excited thinking about the outcome of this situation?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Does this situation make me feel anxious?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Will the outcome of this situation be negative?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. How threatening is this situation?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Is this going to have a negative impact on me?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Survey Key:*
- Challenge: 1-4
- Threat: 5-8

**Continuous Improvement Scale (Lee, 2004; Zhou & George, 2001)**

With regard to your time as an entrepreneur/self-employed in the past three months, to what extent are the following statements true:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I voluntarily search for any work-related new information and knowledge which may help improve the quality of work I do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I make it routine to make suggestions about how to improve the work procedure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I am always monitoring if there is any room for improvement in the work I do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I am always working to continuously improve the quality of product and work process.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I often have new and innovative ideas</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I develop adequate plans for the implementation of new ideas</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I suggest new ways to achieve goals or objectives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I come up with creative solutions to problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Survey Key:*
- Exploitative continuous improvement behaviors: 1-4
- Explorative continuous improvement behaviors: 5-8
- Item was not included in final analysis
Continuous Improvement Planning Scale (Brown et al., 1997)

<table>
<thead>
<tr>
<th>In the past three months:</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have spent a good deal of time thinking about my strategy for my business.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I have developed a plan for how much time to spend on my business. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I have listed the steps necessary for reaching my goal. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I have thought about strategies I can fall back on if problems arise during my business development. a</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Each week I have made a plan for what I need to accomplish regarding my business.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I have made continuous improvements to my business.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I have sought out new and innovative ideas to help my business succeed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I have made proactive changes that have improved the quality of my business.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

a items were not included in final analysis
APPENDIX C: STUDY 3 VIGNETTES AND MEASURES

Study 3 Vignettes

Step 1: Participants read business scenario:

Please imagine yourself in the following scenario and be prepared to answer questions about your thoughts and feelings about it:

YOUR COMPANY:
You work for a multinational beverage company, ThirstyNoMore, which produces a broad spectrum of beverages including soft drinks, water, juices, and sports drinks. While ThirstyNoMore has a long history of successfully competing with the market leaders in the field, the current economic times have severely hampered the company’s ability to maintain sales growth relative to its competitors. As a result, ThirstyNoMore is currently facing some challenges that its employees need to overcome to remain competitive.

YOUR ROLE AND YOUR TEAM:
You have worked for ThirstyNoMore for 5 years as part of a design team that is responsible for the company’s bottle designs and print ad campaigns. You were initially hired as an Assistant Graphic Designer, but you have since been progressively promoted to your current position as a Senior Graphic Designer.

In addition to your role, your design team consists of 2 other Graphic Designers, 2 Design Engineers, 1 Market Researcher, and 2 Marketing Consultants. These team members have a diverse range of work experiences, educational backgrounds, and skill-sets related to design and marketing.

Step 2: Participants read group norms manipulation:

High PsyCap group norms condition:
- Your team members are very positive and expect the best from every situation. They talk about the importance of your team’s abilities for the company’s growth and success. Your team members strongly believe that your team has what it takes to succeed at any task. While they are aware of the company’s current challenges, they are convinced that your team is able to overcome them.

Low PsyCap group norms condition:
- Your team members can be pessimistic about the situations they face. They recognize the relevance of your team’s abilities for the company’s growth and success, but are not confident that they have what it takes to succeed. They are concerned about the challenges the company is currently facing and have doubts about whether your team will be able to overcome them.
**Step 3:** Participants read organizational identification manipulation:

**YOUR RELATIONSHIP TO THE COMPANY:**

**High organizational identification condition:**
- You feel a strong sense of belonging to ThirstyNoMore. You take it personally if anyone ever criticizes the company in front of you. You intend to stay with the company as long as you can.

**Low organizational identification condition:**
- You do not feel a strong sense of belonging to ThirstyNoMore. If anyone criticizes the company in front of you, it does not bother you. You would not mind if a better job opportunity came up somewhere else.

**Step 4:** Participants read task description:

**YOUR CURRENT TASK:**
Your marketing and sales directors have called your team into an urgent meeting. During this meeting, the directors provide your team with the task of redesigning the bottle and launching a new ad campaign for a sports drink, Grr2020, which is currently losing market share. They explain how the company’s market research suggests that the drink needs to appeal to a younger target market while being more consistent with your other drinks’ branding. They emphasize the importance of this task for the company’s sales, and they urge your team to make it happen.

As you walk out of this meeting to get back to your office, you and your team members start to discuss what strategy will work the best for this task under your current work conditions. These conditions are as follows:

**Step 5:** Participants read resource constraints manipulation:

**High resource constraints condition:**
- Personnel: Your team is not fully staffed as your lead designer has recently left the company. This will create a lot of extra pressure on everyone to be able to complete the current task successfully without jeopardizing the quality of your many other projects.
- Timeline: Your team faces severe time pressure as the standard timeline for this task has been cut in half to try to improve the current sales figures as quickly as possible.
- Software support: Your team’s current design software is outdated and does not offer the same features and support as the software many of your competitors are using.

**Low resource constraints condition:**
- Personnel: Your team is currently fully staffed, but there will be no new hires added to your team. You need to complete this new project without jeopardizing the quality of your many other projects.
- Timeline: Your team faces the company’s standard timeline for this type of redesign task, which is aimed at improving the current sales figures.
- Software support: Your team’s current design software is up to date and is comparable to the software that many of your competitors are using for these types of design tasks.
**Step 6:** Participants respond to survey items as indicated below

**Study 3 Measures**

**Manipulation Checks**

INSTRUCTIONS: The questions below ask about your understanding of the scenario and the described design task. Please answer the following questions as the person described in this scenario (i.e., as the Senior Graphic Designer at ThirstyNoMore).

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neither nor Disagree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>1. You have worked for ThirstyNoMore for 10 years.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Your task is to redesign the bottle and to launch a new ad campaign for the sports drink, Grr2020.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Your team members make you feel positive about being able to take on this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Your team members express hope about the types of tasks you take on.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Your team members are optimistic about being able to succeed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Your team members believe in your team’s ability to handle this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Your team members encourage you to persist with tasks despite any challenges you face.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. You are part of a design team that is responsible for the company’s bottle designs and print ad campaigns.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Your company has been positively affected by the current economic times.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I feel a strong sense of belonging to ThirstyNoMore.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I view ThirstyNoMore’s successes as my own successes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Being a member of ThirstyNoMore is important to my identity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I care about what happens to ThirstyNoMore.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. It upsets me when others criticize ThirstyNoMore.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. You are currently working as a Senior Graphic Designer.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Your company’s name is ThirstyAgain.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I feel constrained by the conditions my team is facing for this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. My team has very limited resources to accomplish this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. My team has enough expertise to complete this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. My team has enough personnel to handle this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. My team has enough time to complete this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. My team has enough software support to handle this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

_Survey Key:_
Distraction items: 1, 2, 8, 9, 15, 16;
Positive PsyCap group norms: 3-7;
Organizational identification: 10-14; and
**Psychological Capital**

**INSTRUCTIONS:** Please answer the following questions as the person described in this scenario (i.e., as the Senior Graphic Designer at ThirstyNoMore).

**Hope (Snyder et al., 1996)**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>If I should find myself in a jam at work, I could think of many ways to get out of it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>At the present time, I am energetically pursuing my work goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>There are lots of ways around any problem.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>Right now I see myself as being pretty successful at work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>I can think of many ways to reach my current work goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>At this time, I am meeting the work goals that I have set for myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Optimism (Scheier & Carver, 1985)**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>When things are uncertain for me at work, I usually expect the best.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>If something can go wrong for me work-wise, it will.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>I always look on the bright side of things regarding my job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>I’m optimistic about what will happen to me in the future as it pertains to work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>In this job, things never work out the way I want them to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>I approach this job as if “every cloud has a silver lining”.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Items were not included in final analysis*
Resilience (Wagnhild & Young, 1993)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>When I have a setback at work, I have trouble recovering from it, moving on.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8.</td>
<td>I usually manage difficulties one way or another at work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9.</td>
<td>I can be “on my own,” so to speak, at work if I have to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10.</td>
<td>I usually take stressful things at work in stride.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11.</td>
<td>I can get through difficult times at work because I’ve experienced difficulty before.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12.</td>
<td>I feel I can handle many things at a time at this job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Self-efficacy (Parker, 1998)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>I feel confident analyzing a long-term problem to find a solution.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8.</td>
<td>I feel confident in representing my work area in meetings with management.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9.</td>
<td>I feel confident contributing to discussions about the organization’s strategy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10.</td>
<td>I feel confident helping to set targets/goals in my work area.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11.</td>
<td>I feel confident contacting people outside the organization (e.g., suppliers, customers) to discuss problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12.</td>
<td>I feel confident presenting information to a group of colleagues.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

a items were not included in final analysis
Stress Appraisal Measure (SAM, Peacock & Wong, 1990)

INSTRUCTIONS: The questions in this section refer to the ways in which you will work in response to this situation as the person described in this scenario (i.e., as the Senior Graphic Designer at ThirstyNoMore).

<table>
<thead>
<tr>
<th>Consider the challenges you are facing as part of this design task. Please rate your perceptions of these challenges below.</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Considerably</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is this going to have a positive impact on me?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. How eager am I to tackle this problem?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. To what extent can I become a stronger person because of this problem?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. To what extent am I excited thinking about the outcome of this situation?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Does this situation make me feel anxious?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Will the outcome of this situation be negative?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. How threatening is this situation?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Is this going to have a negative impact on me?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Survey Key:
Challenge: 1-4
Threat: 5-8

Intended Effort Scale (Vandewalle, Brown, Cron, & Slocum, 1999)

INSTRUCTIONS: The questions in this section refer to the ways in which you will work in response to this situation as the person described in this scenario (i.e., as the Senior Graphic Designer at ThirstyNoMore).

<table>
<thead>
<tr>
<th>Intended Effort Scale (Vandewalle, Brown, Cron, &amp; Slocum, 1999)</th>
<th>Much less than average</th>
<th>Average</th>
<th>Much more than average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much time do you plan to spend on improving the current task?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. How much work intensity will you exert in order to help improve your team’s current task?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. How much effort do you intend to put into this task?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
**Intended Planning Scale (Brown et al., 1997)**

**INSTRUCTIONS:** The questions in this section refer to the ways in which you will work in response to this situation as the person described in this scenario (i.e., as the Senior Graphic Designer at ThirstyNoMore).

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I will spend a good deal of time thinking about my strategy for this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>I will develop a plan for how much time to spend on this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>I will list the steps necessary for reaching my goal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>I will think about strategies I can fall back on if problems arise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>Each week I will make a plan for what I need to accomplish regarding this task.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Demographic questions:

INSTRUCTIONS: Please answer the following questions about YOU (as yourself).

1. What is your gender? _____ Female _____ Male (please select one)

2. What is your age? _____ (please write in)

3. Which of the following best describes your racial/ethnic background? (please select one)
   _____ Aboriginal / Native American   _____ Caucasian / White
   _____ Asian                        _____ Hispanic / Latino / Latina
   _____ Black (African or Caribbean) _____ Other (please specify) _____________________

4. What is the highest level of education that you have completed? (please select one)
   _____ Have not completed high school
   _____ High school diploma or equivalent
   _____ Some college or university, but no degree
   _____ Two-year college degree or equivalent
   _____ Bachelor’s degree or equivalent
   _____ Master’s degree or equivalent
   _____ Doctoral degree or equivalent

5. How many years of work experience do you have? _____ (please write in)

6. In what occupations/job roles have you gained this work experience? __________________________
   (please write in)

7. I am currently: (please select one):
   _____ working full-time (35+ hours)
   _____ working part-time
   _____ unemployed
   _____ a homemaker/stay-at-home parent
   _____ retired

8. How often have you worked as part of a team in an employment setting? (please select one)
   _____ Never
   _____ About once a year
   _____ Two or three times a year
   _____ Several times a year
   _____ Monthly
   _____ Weekly
   _____ Daily
APPENDIX D

Ethics Approval for Study 1

October 19, 2011

Ms. Ingrid Chadwick
Ph.D. Candidate
Queen’s School of Business
Queen’s University
Kingston, ON K7L 3N6

GREB Romeo #: 6005551
Title: "GBUS-287-10 Continuous Improvement in Teams"

Dear Mrs. Chadwick:

The General Research Ethics Board (GREB) has reviewed and approved your request for renewal of ethics clearance for the above-named study. This renewal is valid for one year from November 19, 2011. Prior to the next renewal date you will be sent a reminder memo and the link to ROMEO to renew for another year.

You are reminded of your obligation to advise the GREB of any adverse event(s) that occur during this one year period. An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours. Report to GREB through either ROMEO Event Report or Adverse Event Report Form at http://www.queensu.ca/ors/researchethics/GeneralREB/forms.html

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example you must report changes in study procedures or implementation of new aspects into the study procedures. Your request for protocol changes will be forwarded to the appropriate GREB reviewers and/or the GREB Chair. Please report changes to GREB through either ROMEO Event Reports or the Ethics Change Form at http://www.queensu.ca/ors/researchethics/GeneralREB/forms.html

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Yours sincerely,

Joan Stevenson, Ph.D.
Professor and Chair
General Research Ethics Board

c.c.: Dr. Jana Raver, Faculty Supervisor and Co-applicant
       Dr. Jane Webster, Chair, Unit REB
       Amy Marshall, c/o Research Office
March 06, 2012

Miss Ingrid Chadwick  
Ph.D. Candidate  
Queen’s School of Business  
Queen’s University  
Kingston, ON K7L 3N6

GREB Ref #: GBUS-338-12; Romeo # 8008566  
Title: "GBUS-338-12 Entrepreneurs’ Motivation when Starting a Business"

Dear Miss Chadwick:

The General Research Ethics Board (GREB), by means of a delegated board review, has cleared your proposal entitled "GBUS-338-12 Entrepreneurs’ Motivation when Starting a Business" for ethical compliance with the Tri-Council Guidelines (TCPS) and Queen’s ethics policies. In accordance with the Tri-Council Guidelines (article D 1 6) and Senate Terms of Reference (article G), your project has been cleared for one year. At the end of each year, the GREB will ask if your project has been completed and if not, what changes have occurred or will occur in the next year.

You are reminded of your obligation to advise the GREB, with a copy to your unit REB, of any adverse event(s) that occur during this one year period (access this form at https://eservices.queensu.ca/romeo_researcher/ and click Events - GREB Adverse Event Report). An adverse event includes, but is not limited to, a complaint, a change or an unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example you must report changes to the level of risk, applicant characteristics, and implementation of new procedures. To make an amendment, access the application at https://eservices.queensu.ca/romeo_researcher/ and click Events - GREB Amendment to Approved Study Form. These changes will automatically be sent to the Ethics Coordinator, Gail Irving, at the Office of Research Services or irvingg@queensu.ca for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board. I wish you continued success in your research.

Yours sincerely,

[Signature]

Joan Stevenson, Ph.D.  
Professor and Chair  
General Research Ethics Board

cc:  
Dr. Jana Raver, Faculty Supervisor  
Dr. Jane Webster, Chair, Unit REB  
Amy Marshall, c/o Research Office
Ethics Approval for Study 3

June 19, 2012

Mrs. Ingrid Chadwick
Ph.D. Candidate
Queen’s School of Business
Queen’s University
Kingston, ON K7L 3N6

GREB Ref#: GBUS-352-12; Romeo # 6007070
Title: "GBUS-352-12 Planning for a Design Task"

Dear Mrs. Chadwick:

The General Research Ethics Board (GREB), by means of a delegated board review, has cleared your proposal entitled “GBUS-352-12 Planning for a Design Task” for ethical compliance with the Tri-Council Guidelines (TCPS) and Queen’s ethics policies. In accordance with the Tri-Council Guidelines (article D.1.6) and Senate Terms of Reference (article G), your project has been cleared for one year. At the end of each year, the GREB will ask if your project has been completed and if not, what changes have occurred or will occur in the next year.

You are reminded of your obligation to advise the GREB, with a copy to your unit REB, of any adverse event(s) that occur during this one year period (access this form at https://eservices.queensu.ca/romeo_researcher/ and click Events - GREB Adverse Event Report). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example, you must report changes to the level of risk, applicant characteristics, and implementation of new procedures. To make an amendment, access the application at https://eservices.queensu.ca/romeo_researcher/ and click Events - GREB Amendment to Approved Study Form. These changes will automatically be sent to the Ethics Coordinator, Gail Irving, at the Office of Research Services or irvinga@queensu.ca for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Yours sincerely,

Joan Stevenson, Ph.D.
Professor and Chair
General Research Ethics Board

cc: Dr. Jana Raver, Faculty Supervisor
Dr. Jane Webster, Chair, Unit REB
Amy Marshall, c/o Research Office