Integrating cognitive, motivational and emotional self-regulation in early stage entrepreneurs

VOLUME 1 OF 2

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Abstract

Integrating cognitive, motivational and emotional self-regulation in early stage entrepreneurs

Deirdre O'Shea


The model provides a more complete picture of the aspects of the self and the task that individuals regulate in achievement contexts. More specifically, the model was tested in an entrepreneurial context, typically characterised by high autonomy, and where the entrepreneur has responsibility for managing both themselves and their venture to achieve success. The choice to examine self-regulatory mechanisms in entrepreneurs was based on the idea that “people with good self-control do better than others” ( Forgas, Baumeister & Tice, 2009; p. 5). Hence, the second objective of the research was to examine the way in which early-stage entrepreneurs engage self-regulatory processes to aid success.

The study adopted a mixed-methods design, utilising an interview and questionnaire, integrated during data analysis. Seventy five entrepreneurs took part. Motivational variables included entrepreneurial orientations, personal initiative, domain specific efficacy, and work engagement. Cognitive variables included goal orientations, goal-setting, planning and taking goal-directed action. Emotional variables included emotion regulation, anticipatory emotions and coping strategies. Three measures of goal attainment were used: an objective measure, an external evaluation, and the individual’s self-perceptions of success, all assessed using multi-item scales.

The results confirmed the proximal-distal nature of the self-regulatory processes. For each path (cognitive, motivational and emotional), the results demonstrated clearly that the more distal variables predicted the more proximal variables, but cross-prediction between the paths (e.g. cognitive predicting motivational or emotional, motivational predicting cognitive or emotional etc.) were somewhat more mixed. The cognitive variables had the largest impact on entrepreneurial success, demonstrating an effect on all three success variables. The motivational and emotional variables had an impact only on self-perceptions of success.
The results provide insights into the self-regulatory mechanisms relevant for entrepreneurial success. The model provides a more complete integration of self-regulatory concepts than has been observed previously. Examining self-regulation within the entrepreneurial context allows for the disparate psychological perspectives on entrepreneurship to be discussed using a common framework (e.g. entrepreneurial personality; Rauch & Frese, 2007a,b; motivational and cognitive approaches; Locke & Baum, 2007; Busenitz & Arthurs, 2007; process perspective, Baron, 2007, 2008; competence approach, Markman, 2007). Practically, this research points to the meta-skills pertinent to entrepreneurial success that can be trained. Furthermore, future applications of such research are pertinent for employees as they operate in increasingly dynamic and autonomous working environments.
Acknowledgements

“Perfect” research is neither necessary nor possible. All one has to achieve is to do a little better than one’s predecessors...Beyond that, trying to do as much better as possible is actually the type of challenge that makes life as a researcher interesting!

Davidsson (2007; p. 318)

I learned long ago that striving for perfection in any endeavour is a fruitless and unrewarding task. Similarly, striving to be “the best” in anything is impossible- there will always be someone better. But, striving to do the best that I can do; now there is a worthy endeavour! For what constitutes one’s best? One of the most wonderful aspects of being human is that no matter how hard we try, we can always do a little better. The research contained in this thesis represents my best efforts at this point in time. I have no doubt that in the future, I will do better, but that does not diminish my satisfaction with having completed the research contained here. I take courage in Davidsson’s words that striving for better in the future will make my life as a researcher interesting, and indeed, I look forward to this challenge.

Doing one’s best is not done in isolation however, and I could not have achieved this research without the help of many throughout the course of my journey. The simple words “Thank you” cannot begin to describe my appreciation for all the help that my supervisor, Dr. Finian Buckley, has given me. I cannot say that I was an undemanding student, but he never failed to deal with whatever ‘Deirdre’s current PhD crisis’ happened to be (and there were many!). His advice as a mentor, direction as a supervisor, and supportive words when needed, were unsurpassed and is truly appreciated. Dr. Melrona Kirrane, Dr. Edel Conway and Dr. Siobhan McGovern served as internal reader, internal examiner and viva chair respectively. While I very much appreciate the time and effort that were required in these roles, I must also thank them for their words of encouragement and support, which was always ready and waiting. Thanks also to Prof. Hugo Kehr, who served as external examiner for this PhD.

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Saving the best for last, I must thank my loved ones, who through the light and dark days of this journey have always stuck with me. My parents have always, and in many ways still do, represent my rock, and more than their financial support (which was significant to say the least), their love, care and emotional support has gotten me through many educational systems and qualifications from when I was a young child. With all honesty, I can say that I would not have gotten to this point without their love and encouragement. They were the first ones to tell me to “do my best”, and in doing so, set that comparative standard that self-regulation researchers talk about. My two sisters I thank for reminding me at opportune moments that there is more to life than this PhD, and that a trip to the nail salon, or an occasional shopping spree, can do wonders for one’s perspective on the world! Finally, I would also like to thank Michael for sticking with me through this process. The fact that he has moved from the status of boyfriend to husband during the time that this research has taken is primarily testament to his love, but also to the time that this PhD has taken!
SECTION 1: INTRODUCTION AND REVIEW OF RELEVANT LITERATURE
CHAPTER 1: Overview of the study

It is not unrealistic to propose that psychology has thus far identified only two main variables that contribute to human success across almost the full range of human striving. These are intelligence and self-regulation...crucially...self-regulation does appear to be amenable to interventions to increase it...Self-regulation thus represents one of the best hopes for psychology to make a broad, positive contribution to human welfare.

(Forgas, Baumeister & Tice, 2009; p. 5-6)

1.1. Self-regulation as an emerging trend in Organisational Psychology and Management Science

Research at the level of the individual in organisation/management sciences has begun to move towards a more contextualised and nuanced examination of the person in-action. In line with this, much of the research on motivation in recent years is now advocating a dynamic process perspective regarding the ways in which individuals manage themselves, as well as their thoughts, emotions, social interactions, time and so on. Within organisations, there is an increasing trend towards the encouragement of self-directed practices by employees, with an emphasis on the organisational conditions that promote such behaviour (Lord, Diefendorff, Schmidt & Hall, 2010). In line with these trends, the present study focused on the way in which early-stage entrepreneurs engage their self-regulatory processes to aid the success of the venture. Forgas, Baumeister and Tice (2009; p. 1) recently stated that; “The ability to control and regulate our actions is perhaps the quintessential characteristic of human beings.” Self-regulation refers to the regulation of the self by the self, and requires a change to bring thinking and behaviour into accord with some consciously desired rule, norm, goal or other standard (Forgas, Baumeister & Tice, 2009). The distinct advantage of self-regulation to researchers and practitioners is that it is amenable to development, in contrast to cognitive ability which is largely regarded as stable and hence, not amenable to change.

The concept of self-regulation is a relatively recent addition to the field of psychology, receiving little attention until the last few decades (Forgas, Baumeister & Tice, 2009). The year 1990 might be marked as the point where research leaders came to agree that self-regulation was one of the vital keys to understanding the human self (Forgas, Baumeister & Tice, 2009). Self-regulatory processes have been studied across the breadth of psychological research (ibid.), and its recent introduction into the work and organisational domain has delivered significant advancements to theory and practice in work motivation. Self-regulatory processes include
acting, thinking, learning, and feeling, as well as the links between processes, and the context in which they are occurring (Vancouver, 2008).

The underlying choice to examine self-regulatory processes within a cohort of entrepreneurs lies in the well documented finding that “people with good self-control do better than others” (Forgas, Baumeister & Tice, 2009; p. 5). In line with this reasoning, the central argument of this research was that entrepreneurs with superior skill in self-regulation would do better than entrepreneurs lacking such skills, or with inferior skills in these areas. Furthermore, entrepreneurs operate in a working context that represents complete autonomy, in which the entrepreneur has responsibility for managing both themselves and their venture, in order to achieve success and sustainability. As such, the need for well developed self-regulatory skill in all domains of functioning is likely more important here than in any other context in which people work.

The stage of development of the entrepreneur represents a key temporal issue in the present research. Entrepreneurs, in the first years of setting up a venture, are operating in relatively novel environments, and as such, are less likely to be automatically or tacitly regulating their performance in these new environments. This was considered to be an important factor in the present research, as expertise has numerous implications for self-regulation. Experts can extensively rely on automatic access to structured knowledge such as scripts to generate action, in contrast to novices, for whom performance creates a greater attentional load (Kanfer & Ackerman, 1989; Lord et al., 2010). Hence, experts can devote more resources to other processes, such as more strategic, meta-cognitive considerations (Lord et al., 2010). It has been demonstrated that active monitoring of one’s performance during task engagement can impair performance by consuming attentional resources that might otherwise be devoted to the task itself, which is particularly debilitating for novices (Lord et al., 2010). Hence, the research was restricted to those in the early phases of starting a business, where it is less likely that such tasks are being regulated automatically.

1.2. Aims of the research
The central focus of this research was at the individual level of analysis, focusing on the internal or intrapsychic mechanisms which individuals use to self-regulate various aspects of the self. Theories of self-regulation to date have largely restricted themselves to one primary focus, which has resulted in an artificial separation of the inherently interwoven processes at play in managing various aspects of the self, and has also limited theories to one specific context (e.g. work, academic achievement, or health). For example, theories of self-regulation have tended to take a cognitive focus, or an emotional focus, or a motivational focus, and have not integrated these areas. This represents a significant limitation to the field of self-regulation, and ultimately confines its explanatory power. While there are some theories that consider two intrapsychic
processes (e.g. Control theory incorporates cognition and emotion; the Compensatory model of work motivation and volition considers cognition and motivation), this remains relatively rare, and no theory to date has incorporated the three intrapsychic processes of cognition, motivation and emotion in a comprehensive manner. Furthermore, the complexity of the processes pertinent to the cognitive theories of self-regulation, as well as the inherent complexities of designing research to examine such processes, has lead to a proliferation of experimental research, which artificially narrows the focus to one or perhaps two of the phases in the process.

Little previous research has considered both the distal and proximal concepts that influence one another when one manages the self. Hence, the present research significantly advances both theory and research in self-regulation, by developing and testing a model that (a) incorporated cognitive, motivational and emotional self-regulatory mechanisms, and (b) considered the distal and proximal manifestations of these three intrapsychic mechanisms. Finally, it was considered important to investigate the adaptive function that self-regulation has for the individual, and so, the impact on various aspects of entrepreneurial success was also investigated. Hence, “the proposed framework draws on many prior theories but reassembles them in a novel way” (Russell, 2003; p. 146).

Cognition, motivation and emotion are “three platonic categories” (Pekrun, 2006; p. 330) that represent psychological reality. Although they often occur together, they can also occur separately, and so should be treated separately from a conceptual viewpoint which represents a significant empirical challenge that has not sufficiently been met to date (Pekrun, 2006). Furthermore, to disentangle the constructs and analyse their interrelationships presupposes integrating research traditions from different fields that have not sufficiently been connected to date (Pekrun, 2006). The present research developed a model to meet the dual challenges of identifying the links between the three phenomena, while also disentangling their interrelationships. Pekrun (2006) argued that while psychologists of the past focused on the development of comprehensive theories, more modern research has led to a proliferation of small constructs and mini-theories in many fields of psychology, and if cumulative theoretical and empirical progress is to be made, this lack of theoretical integration has to be overcome. The present research overcomes this lack of integration of previous theories, and develops a comprehensive model that allows a deeper understanding of self-regulation. Hence, the comprehensive theory developed here has the potential to advance the field of self-regulation quite significantly.

Effective self-regulation with regard to the achievement of long-term objectives only works when people can translate their distal regulatory objectives into well-defined and specific goals that they wish to achieve (Forgas, Baumeister & Tice, 2009). Hence, the proximal-distal distinction is of central concern in research on self-regulation. More recent trends in self-
regulatory theorising have advocated a dynamic process perspective (Vancouver, 2008; Vancouver & Day, 2005; Vancouver, Weinhardt & Schmidt, 2010). However, research to test this approach has largely focused on experimental studies during the in-action phase of regulatory processing. Integrating the proximal-distal distinction allowed the present research to investigate how different self-regulatory concepts at varying levels of generality are inter-related and combine to determine performance. Furthermore, it allows for the examination of individual differences in underlying motivational states in conjunction with temporary changes in regulatory activities; an area that has received scant attention in previous literature (Forgas, Baumeister & Tice, 2009). Secondly, within the domain of conscious self-regulation, research has almost exclusively focused on cognitive aspects of self-regulatory functioning, with some minimal research considering the interaction between cognitive and emotional processes (e.g. Carver, 2001, 2006). This research provides a comprehensive model of self-regulatory processes in the domains of cognition, motivation, and emotion, and most significantly, their inter-relationships, which addresses four of the five broad categories of self-regulation (control of one’s thoughts, one’s moods, regulation of motivation and regulation of performance; Forgas, Baumeister & Tice, 2009).

Hence, the model of self-regulatory processes advocated in the present research builds on past research and theory across the spectrum of psychological research on self-regulation, but moves beyond this by integrating of cognition, motivation and emotion in this field, and by also integrating distal and proximal concepts within each of these three domains. Forgas, Baumeister and Tice (2009) argue that there is much to be gained from the integration of the cognitive, motivational and behavioural approaches to self-regulation research. Furthermore, this model is tested in a real-life setting, rather than a laboratory, which adds to the ecological validity of the study, and allows the practical significance of such processes to come to the fore.

1.3. Overview of the methodological approach

One of the central debates in self-regulation research relates to the question of whether self-regulation occurs at the conscious or unconscious level. As Forgas, Baumeister and Tice (2009; p. 7) note “there is a great deal of highly sophisticated self-regulatory activity that occurs automatically, spontaneously, and without the individual ever becoming consciously aware of the processes and strategies they perform” (e.g. Fishbach, 2009; Fitzsimons & Bargh, 2004; Fitzsimons et al., 2009; Förster & Lieberman, 2009; Sansone, 2009). However, from the perspective of organisational psychology, of much greater interest are self-regulatory processes that are conscious, and hence, amenable to manipulation. Furthermore, much of what is considered self-regulation in everyday terms involves conscious, effortful and motivated activities by individuals who seek to control and determine their cognitive, affective, motivational and behavioural outcomes (Forgas, Baumeister & Tice, 2009). Similarly, this
study was interested in those self-regulatory processes that are consciously accessible to individuals, and the chosen methodology reflected this focus, using a self-report approach to data collection.

In reality, however, many of the self-regulatory tasks that individuals engage in involve a combination of both conscious and nonconscious processes. From a methodological approach, this provides a challenge for the researcher, as directly asking an individual “how do you self-regulate” produces little other than confusion for the participant. To address this problem, a number of researchers (e.g. Berings et al., 2006; Frese et al., 2007) have developed innovative interview protocols which take a more indirect approach to questioning individuals about their self-regulatory processes in the areas of goal-development, planning and learning. In other research, such the areas of stress and coping, reliable and well-validated questionnaires are available for use (e.g. Carver, Scheier & Weintraub, 1989; Gross & John, 2003). In order to maintain an optimal level of measurement sophistication, this research firstly, adopted those methods which were available in past research and had been shown to be valid assessment tools for self-regulation in the domains of cognition, motivation and emotion. Secondly, where such methods were not available from past research, qualitative approaches were developed which took their inspiration from those in previous research.

Hence, the methodological approach adopted in the present research most closely fits within the emerging mixed-methods tradition. However, rather than the more typical use of mixed methods, where qualitative and quantitative techniques are used separately, sometimes on different participants, and/or at different points in time, to allow for triangulation, the approach adopted in the present research took an integrated approach. Data was collected at one point in time from each participant, using both qualitative (i.e. interview) and quantitative (i.e. questionnaire) data collection techniques. At the point of analysis, the qualitative data was first analysed using traditional qualitative analysis techniques, and following this, the use of a detailed coding scheme allowed for the translation of the qualitative data into a format that allowed for statistical analysis of inter-relationships between all variables.

This approach to mixed-methods is less commonly described in the literature, most likely because of the complexity involved. However, it is far from absent (e.g. Chi, 1997), and represents a strength of the study in a number of ways; firstly, each variable in the study was assessed using the most appropriate tools, and secondly, it demonstrates methodological fit (Edmondson & McManus, 2007) between the stage of development of the extant theory, and the chosen methodological tools.
1.4. Layout of the thesis

The integration of the cognitive, motivational, emotional and behavioural mechanisms at play in the act of self-regulation provides quite a complex picture of human functioning. Add to this the variety of theories emphasising different aspects of self-regulatory processes and functioning, and this provides a challenge both for the writer to explain, and the reader to comprehend. In order to facilitate some form of structure throughout this work, it has been divided into four main sections.

Section 1 (chapters 1 through 6) provides an overview of relevant theory, literature and issues in past research, and builds the model of self-regulation developed in the present research. Chapter 2 begins with an attempt to contextualise the research, and discusses the boundary conditions within which the study was conducted. It provides a brief overview of psychological research in the area of entrepreneurship, but focuses more specifically on the relatively small amount of research that has been conducted which suggests that self-regulation plays an important role for the individual entrepreneur.

Chapter 3 begins our journey through the labyrinth of self-regulation. It begins by presenting commonly accepted definitions of the concept, and focuses on the cognitive domain; that being the dominant focus of the majority of past research in the field. It presents a number of theories of self-regulation, which are largely cognitive and process-driven in their orientation, and which serve as the building blocks for the present model. Following this, a rudimentary model developed for the present research is presented, which includes only the cognitive components of the model, and then moves to outline the relevant hypotheses pertinent to these cognitive components. For ease of reference, hypotheses that are cognitive in nature will be referred to with the prefix “C” (e.g. Hypothesis C1, C2 etc.).

Chapter 4 focuses on motivation, and provides a brief overview of motivational research in the context of both work and entrepreneurship, expanding on the proximal-distal distinction which has become highly influential. It then moves to consider the role and manifestation of motivational and volitional resources throughout the self-regulatory process, moving beyond the more cognitively oriented models presented in Chapter 3, to consider models which have attempted to incorporate cognitive and motivational aspects of self-regulation. Using this, the model is built upon to include motivational and volitional components, and their inter-relationships with the cognitive components are hypothesised. Again, for ease of reference, hypotheses that include a motivational component are preceded by the prefix “M”.

Chapter 5 introduces affect and emotion, focusing initially on the importance of emotions in the context of work and entrepreneurship, before moving on to consider ways in which emotional processes can be conceptualised along a proximal-distal continuum and incorporated
into the self-regulation model. Hypotheses (preceded by the prefix “E” to indicate emotions) are posed with regard to further inter-relationships that can be investigated by adding affective components to the cognitive and motivational ones at varying processual stages, and proximity levels.

Chapter 6 summarises the developed model in its entirety, and the main research questions and hypotheses to be investigated. As such it serves an orienting function for the reader, prior to moving on to discuss the methodology and findings.

Section 2 (chapter 7) discusses the methodological and measurement issues that were necessary to consider in the design of the study. It integrates methodological context, measurement and analysis issues, as well as issues of methodological fit, in order to provide a rationale for the decisions made with regard to the design, implementation and analysis of the research. It describes the methodology, and includes information regarding the participants, the research design, how each of the variables were operationalised, the procedure and the main analytical techniques employed.

Section 3 (chapters 8 through 10) describe the main findings of the research. In order to maintain a coherent structure, the research questions and hypotheses relating to the cognitive (c), motivational (m) and emotional (e) components of the model are presented in separate chapters (8, 9, and 10 respectively), corresponding to the presentation of each of the paths in the literature review (chapters 3, 4, and 5 respectively).

Finally, section 4 (chapter 11 through 13) pertain to the discussion of the findings, and the conclusions which can be drawn from these. Chapters 11 and 12 discuss, contextualise and explain the findings, linking the results to past research, and drawing out the theoretical and practical implications that derive from both the individual findings and the overall inter-relationships. Chapter 11 focuses on the findings that relate directly to self-regulation, while chapter 12 focuses on the findings that have implications for the field of entrepreneurship. Finally, chapter 13 summarises the major conclusions for the research, and discusses the limitations of the research. Broad suggestions for future development and ways forward for the field of self-regulation and entrepreneurship are discussed as well as the potential of the model for future research, for the development of entrepreneurs, and to the broader work domain.
CHAPTER 2: The Psychology of Entrepreneurship

The most direct cause of entrepreneurship is the entrepreneur.

(Locke & Baum, 2007; p. 95)

Researchers with a psychology background can make strong and welcome contributions...to the study of entrepreneurship.

(Davidsson, 2008; p. 177)

2.1. Introduction

The purpose of this chapter is to contextualise the research, and provide an overview of the particular environmental characteristics that distinguish entrepreneurship from other business settings. Entrepreneurship is a multi-disciplinary field of research (Ireland & Webb, 2007), and it is not the purpose of this chapter to provide a comprehensive overview of research on entrepreneurship. The present research is firmly rooted in psychological perspectives to entrepreneurship, and more specifically, is interested in the ways in which self-regulation can positively impact an entrepreneur's success. Hence, following a very brief overview of entrepreneurship, this chapter will focus on the distinguishing features of a psychological approach to entrepreneurship, and on research demonstrating the potential that self-regulation to explain the role that the individual plays in the success of their venture.

2.2. What is entrepreneurship?

The importance of entrepreneurship lies in its function as an economic mechanism, leading to change and innovation, and the mitigation of inefficiencies in economies (Baum, Frese, Baron & Katz, 2007; Drucker, 1999). Entrepreneurship can pertain to almost all activities of human beings but its defining characteristic is the constant search and response to change, and the exploitation of it as an opportunity (Drucker, 1999). Baum et al. (2007; p. 6) advocate the following definition of entrepreneurship, for use in studies within the field of psychology: “Entrepreneurship is a process that involves the discovery, evaluation and exploitation of opportunities to introduce new products, services processes, ways of organising, or markets” which draws on the previous definition by Shane and Venkataraman (2000) and Venkataraman (1997). This is a generally accepted and now popular definition of entrepreneurship, as it is emphasises the role of both process and people (Baum et al., 2007). Although this definition does not require the formation of a new venture as a necessary starting point for entrepreneurship, the present research focuses on business start-ups, as these are commonly the form through which new economic activity is generated.
Shane, Locke and Collins (2003) stress that the study of the entrepreneurial process is extremely important, and is necessarily linked to the concept of entrepreneurial action. Davidsson (2007), building on Gartner’s (1990) work, regards entrepreneurship as the creation of new economic activity or sometimes, any new activity. In this view, the term entrepreneur is a theoretical abstraction that refers to one or more individuals who, in a particular case, bring about this change as an individual feat, or as a team feat, or in sequence. The focus in this perspective is on the activity or on entrepreneurship (ibid.). This view of entrepreneurship captures the reality of the situation, where entrepreneurship can be an individual act, a team effort, or that entrepreneurship is often best conceived of as a process (e.g. Baron, 2007), where different individuals may contribute in different roles over time (Davidsson, 2007). Moreover, when defined in this manner, entrepreneurship can be studied on many different levels of analysis (Davidsson, 2007; Davidson & Wiklund, 2001). In addition, we can study entrepreneurship as a process or as a policy issue, which can incorporate a number of the levels concurrently.

The focus of the present research is at the level of the individual entrepreneur or business owner. To a psychologist, an entrepreneur is typically driven by certain forces or motivators, such as the need to obtain or attain something, to experiment, or to achieve (Hisrich, 1990). The present research considers the influence that a number of psychological variables may have on both the psychological context and the context of the new enterprise or venture. The research holds event time, at the level of the new venture constant, by focusing on entrepreneurs who are in the early stage of the organisational life cycle. Although not explicitly measured in the research, there is an element of subjective temporal dimensions in the proximal-distal distinction which is demonstrated in the development of the theoretical model over the chapters to come. Essentially, this research concurs with Shane, Locke and Collins (2003) that “the entrepreneurial process occurs because people act to pursue opportunities” (p. 259). However, the decision to take action is subject to a whole host of cognitive, motivational and emotional influences and the management of these. This research proposes that these influences can be usefully explained by current theorising and research in the domain of self-regulation and volition.

2.3. Entrepreneurship as a context for psychological research

The study of entrepreneurs and entrepreneurship from a psychological perspective is an emerging theme in the literature. Baum, Frese, Baron and Katz (2007) express the belief that industrial/organisational (I/O) psychologists are prepared to make important research contributions that will create knowledge about the economically, socially, and technologically important entrepreneurship process. The entrepreneur’s situation presents psychologists with the opportunity to study human cognition and behaviour under higher uncertainty and greater
resource scarcity than typically found in established organisations (Baum et al., 2007). This research investigates entrepreneurs from such a perspective. It focuses specifically on the individual entrepreneur, but in contrast to earlier themes in the psychological study of entrepreneurs, did not focus exclusively on traits, but considered the interactional importance of process, traits, behaviour, emotions, motivation, cognition and environment.

In order to place psychological approaches within the wider field of entrepreneurial research, it is necessary to consider the characteristics of the entrepreneurial context, the level of analysis, and the stage in the entrepreneurial process. Many entrepreneurship researchers have stressed the importance of considering context in this field of research (Amit, Glosten & Muller, 1993; Bygrave, 1989; Low & MacMillan, 1988; Phan, 2004). Furthermore, Baum et al. (2007) state that situation is very important to the psychology of entrepreneurship, as entrepreneurs function at extremes of complexity, uncertainty, personal risk, urgency and resource scarcity. From a psychological perspective, new ventures represent weak situations (Markman, 2007), and in such situations individual differences are more likely to have an influence on outcomes and performance (Markman, 2007; Rauch & Frese, 2007a). The extreme levels of uncertainty, time pressure and resource shortages that are characteristic of entrepreneurial contexts (Baum et al., 2007) make it interesting as an arena of psychological investigation. Griffin, Parker and Neal (2008) suggest that in uncertain environments, inputs, processes and outputs of work systems lack predictability, and furthermore, two forms of behaviour, namely proactivity and adaptability, are particularly important in such uncertain environments. Adaptability involves responding and adjusting to changes, while proactivity involves anticipating and creating changes (Griffin, Neal & Parker, 2007). Hence, the formation and growth of a new venture represents one work context in which to study psychological concepts that may also be applied to multiple other environments or contexts, both work and non-work.

Secondly, the level of analysis is of key importance also when considering entrepreneurship from a psychological perspective. Davidsson (2007) suggests that when entrepreneurship is defined as the creation of new economic activity, it becomes clear that entrepreneurship is something that can be studied on many different levels of analysis, and the importance of considering these levels in entrepreneurship research has now been advocated and demonstrated by several authors in the field (e.g. Busenitz et al., 2003; Davidsson & Wiklund, 2001; Low & MacMillan, 1988). Davidsson (2007) further stresses that in order to qualify as entrepreneurial research, entrepreneurial activity on the chosen level of analysis must be explicitly considered. The present study is very firmly rooted in the psychology of the entrepreneur, and hence, the actions that are examined pertain to those of the early stage entrepreneur. However, it also considers venture level success, and so the stage of the venture is also considered to ensure the appropriate success indicators are assessed.
Experts in the field of entrepreneurship have increasingly stressed the processual and dynamic nature of the phenomenon, which occurs over time (Baron, 2002, 2007; Brazeal & Herbert, 1999; Bryant & Julian, 2000; Gartner, 2001; Low & MacMillan, 1988). At the outset of a new venture, it is quite usual for the individual entrepreneur to comprise the organisation. Hence, the issue of time is of particular importance when considering context and process in entrepreneurial research. The present research agrees with Bryant and Julien (2000), when they state that an individual and an organisation are not the same thing, especially when the organisation is no longer led by a single person who holds all the power. However, there are times throughout the entrepreneurial process when the individual and the organisation are more (e.g. the early phases of a new venture) or less (e.g. latter phases of a venture) synonymous.

Davidsson & Wiklund (2001) see the trend towards considering both the individual and the firm levels in conjunction with one another as a positive advancement, which may signal that individual characteristics are being systematically related to firm-level behaviour and outcomes, rather than just describing the individuals who start and run independent businesses. Davidsson (2007) critiques entrepreneurship studies which build their design on the assumption that stable or innate characteristics of the individual are the main, direct explanation for the emergence of a new firm and/or its performance. The present research does not make such a claim. Although somewhat stable dispositional characteristics are included in the model, the main claim of the present research is that the combination of self-regulatory processes, which include actions, contribute to entrepreneurial success. However, the adage to this claim is that the effect of individual processes on venture success holds for early stage ventures, where the individual entrepreneur is synonymous with the firm. This is in line with Baron’s (2007) process model of entrepreneurship, which suggests that the meaning of success changes over the course of the entrepreneurial life cycle or process. It is also in line with psychological models of entrepreneurial success (Rauch & Frese, 2000, 2007a, 2007b).

The interconnection between process and level is a further key consideration. Baum et al. (2007) note that there are interesting issues involving multiple levels of analysis and multiple stages of business in entrepreneurship:

1. At the outset of a new venture, the solitary entrepreneur has an enormous influence on the start-up firm (e.g. van Gelderen, Frese & Thurik, 2000)
2. As the venture grows, the influence shifts to the level of the entrepreneurial firm
3. Subsequently, organisational factors dominate the established firm.

The findings of Kundu and Katz (2003) go some way towards corroborating this. They found that during the early stages of firm development, the owner characteristics, not the firm characteristics play a pivotal role in performance of international SMEs. Such a perspective also incorporates time issues- as a new venture develops, the consideration of important levels
of analysis also changes. It also highlights the issue of considering both levels of analysis and contextual issues, whereby the individual entrepreneur becomes increasingly embedded in the organisational context of the venture as it grows over time. Recent research by Baum, Locke and Smith (2001) has demonstrated the advantages of considering multiple levels of analysis in understanding venture success. In their multidimensional model of venture growth, Baum, Locke and Smith (20001) included seventeen concepts from five micro/macro research domains. Empirical testing of this model demonstrated that the CEOs specific competencies and motivation, and competitive strategies were direct predictors of venture growth, while CEOs traits and general competencies, as well as the environment, had indirect effects.

The present research focused on the role of the individual entrepreneur in the early stage of a business venture. Baron, Frese and Baum (2007) state that entrepreneurs’ personal characteristics, including their preferred behaviours have the greatest impact on entrepreneurship in the early stages. In a sense, the characteristics and behaviours of the entrepreneur can be considered as a form of context, as was outlined in the work of Shapiro et al. (2007) in their discussion of polycontextually sensitive research methods. One of the categories of contextual variables to be considered in achieving polycontextuality is what they term, ‘psychological’ variables, comprising cognitive, emotional and affective contextual dimensions (Shapiro et al., 2007; p. 132). An example of such a focus within the entrepreneurship field is work by Lans et al. (2004), who define entrepreneurship as a certain mindset and process associated with individuals, who possess a set of competencies (e.g. creativity, risk-taking), showing these competencies in distinctive entrepreneurial behaviour (turning a business idea into success), alongside daily management.

Traditionally, psychology was labelled as viewing entrepreneurship from a personality concept, while economics was labelled as taking a more macro perspective (e.g. see McMullen & Shepherd, 2006). However, current conceptualisations acknowledge the complexity of the person in context, acknowledging a role for both the person and the environment. The study of entrepreneurship from a psychological perspective has been instrumental in advancing the important role that individual characteristics of the entrepreneur, such as cognition, motivation, affect and action, play in a new venture or start-up. Recent advances in the psychology of entrepreneurship have begun to focus on such variables as entrepreneurial competencies (Baum & Locke, 2004; Bird, 1995; Man, Lau & Chan, 2002; Markman, 2007), entrepreneurial motivation (Locke & Baum, 2007), entrepreneurial cognition and cognitive styles (Baron, 1998; Busenitz & Arthurs, 2007; Cools & Van Den Broeck, 2007; Corbett, 2005; Hmieleski & Corbett, 2006; Mitchell et al. 2002a, b) and entrepreneurial behaviour and action (Boyd & Vozikis, 1994; Cromie, 2000; Frese, 2007, 2009; Palich & Bagby, 1995; Utsch & Rauch, 2000). Where economic theories of the entrepreneur have focused on explaining what must occur for
the economy to function, psychological theories have tried to explain why entrepreneurs are more willing than their counterparts to bear environmental uncertainty (McMullen & Shepherd, 2006). Such approaches represent ‘psychological context’ (Shapiro *et al.*, 2007; p. 132). From the perspective of entrepreneurial action, whether an individual will engage in a particular action is a decision that depends on whether the individual is motivated enough to act, given the uncertainty he or she expects to encounter in pursuit of an opportunity (McMullen & Shepherd, 2006). Hence, action depends on psychological context, as well as environmental context.

Psychological research has also promoted the role that behaviour or action plays in the entrepreneurial context (e.g. Boyd & Vozikis, 1994; Gartner, 1988; Levesque & Minniti, 2006; Palich & Bagby, 1995; Sarasvathy, 2004). Entrepreneurial behaviour remains a crucial engine of innovation and growth for the economy and for individual companies, as by definition, it implies attention and willingness to take advantage of unexpected opportunities (Bosma & Harding, 2007). Cromie (2000) concludes that the discussion of entrepreneurship and the entrepreneur has highlighted the following behaviours characteristic of entrepreneurs. In general, entrepreneurs are likely to: (i) have a propensity to create business organisations; (ii) proactively scan business environments in search of new opportunities; (iii) seek innovative solutions to problems and opportunities; (iv) take an autonomous and strategic role in identifying, marshalling, and organising resources to convert opportunities into marketable goods or services; (v) vigorously strive to achieve profit and business growth; (vi) be willing to bear the risks associated with this behaviour.

Utsch and Rauch (2000) considered the two entrepreneurial behaviours of innovativeness and initiative as mediators between achievement orientation and venture performance. Innovativeness is a behaviour that describes more than an interest in innovation, but describes actual innovative behaviour, such as the daily effort to improve one’s work procedures (Utsch & Rauch, 2000). Personal initiative is a behaviour that includes self-starting, proactive and long-term oriented behaviour, as well as persistence towards obstacles (Utsch & Rauch, 2000). The most powerful factor in the model was innovativeness. There was a strong link from achievement orientation to innovativeness and a strong link from innovativeness to venture performance variables (profit growth and employee growth). Hence, entrepreneurial behaviour appears to be an important mediator between more distal traits and venture performance.

Davidsson (2007) suggests that psychologically trained researchers have recently shown examples of drastic improvements from the naïve designs that hope for direct effects of distal person variables as main explanations of firm performance (e.g. Utsch & Rauch, 2000), and in his opinion, this category contains studies that are among the strongest contributions of any in entrepreneurship research in the last few years. The present research attempts to add to this category of entrepreneurship research and further advance psychological research in this
domain. The present research follows the pattern for achieving this, as identified by Davidsson (2007), by selecting more actionable psychological variables for inclusion, including both proximal and distal psychological concepts and modelling the influence of the former as mediated by the latter. In this sense, the present research fits with best practice in the entrepreneurship research as well as fitting with current theories of self-regulation.

2.4. Why study self-regulation in entrepreneurs?

Baron (2002) suggests that successful entrepreneurs are more adept than less successful entrepreneurs at regulating several key cognitive processes, and furthermore, recommended that this is an area worthy of further study. The activities of entrepreneurs are of high complexity and they often have to act within unknown and unpredictable environments (Frese, 2007). Therefore, entrepreneurs will tend to need to regulate more tasks on the conscious level of regulation than other occupations (ibid.). Because new tasks appear for entrepreneurs again and again as the firm unfolds, conscious regulation of action is likely to be important for several years in contrast to most other jobs (ibid.). Furthermore, Haynie, Grégorie and Shepherd (2004) suggest that metacognition is naturally suited to studying individuals engaged in a series of entrepreneurial processes, and for examining cognitive processes across a series of entrepreneurial endeavours. In addition, they suggest that given the dynamism and uncertainty of entrepreneurial contexts, metacognition facilitates studying how entrepreneurs cognitively adapt to their evolving and unfolding contexts.

Bygrave (1993) described one characteristic of an entrepreneurial event as an event that is initiated by an act of human volition. Hence, the concept of self-regulation in the entrepreneurial context has the potential to form an integrating framework around which to merge some of the more recent psychological approaches to the study of entrepreneurship. In the area of educational psychology, research on self-regulated learning is already espousing the significant advantages of incorporating cognition, motivation, affect, behaviour and context (see Pintrich, 2004), and hence has relevance to both the motivational and cognitive approaches to entrepreneurship (e.g. see Locke & Baum, 2007; Busenitz & Arthurs, 2007), and to the development of theory in self-regulation research. Furthermore, within the domain of educational psychology, there is a ripe debate underway as to the correct level of analysis for self-regulated learning; trait, behaviour, process or some combination of these levels. Examining self-regulation within the entrepreneurial context will also allow for the disparate perspectives of the entrepreneurial personality (see Rauch & Frese, 2007a, b), the process perspective of entrepreneurship (see Baron, 2007) as well as the competence approach (see Markman, 2007) to be discussed using a common framework. Fiet (2007) has already suggested a theoretical link between self-regulation and entrepreneurial search and discovery, suggesting that individual volition plays a role in successful discovery.
In order to understand the implications of the present research in the emerging context of the psychology of entrepreneurship, it is appropriate to highlight the main contributions that this research will make in this context. In recent years, a small number of researchers have begun to recognise the important role that self-regulation may play as a psychological success factor in entrepreneurship. Most notable among these is the work of Michael Frese and colleagues. This work centres on Action Theory and its role in entrepreneurial performance. The main suggestion of this work is that entrepreneurial performance should be considered from three perspectives, namely sequence, structure and regulatory focus, with the suggestion being that this integrative framework can be used to allow a researcher to pinpoint which aspect of performance one is studying in detail (Frese, 2007). Ultimately, research in all of these areas can be brought together into a complete theory of entrepreneurial performance (ibid.).

In the last decade, psychological researchers have expanded the boundaries of entrepreneurship research, by providing a more complex modelling of the role of individuals in the entrepreneurial process. For example, Baum and Locke (2004) conducted a longitudinal study considering the relationship of entrepreneurial traits, skill and motivation to subsequent venture growth, and their findings provide a strong rationale for the integration of cognitive, motivational and emotional concepts in this context. They concluded that goals, self-efficacy and communicated vision had direct effects on venture growth, and these factors mediated the effects of passion, tenacity and new resource skill on venture growth. In addition, they also found that communicated vision and self-efficacy were related to goals, and tenacity was related to new resource skill.

Markman (2007) points out that although research on the link between cognitive ability and entrepreneurship is rare, general research on cognition and entrepreneurship is growing fast. In particular, research examining cognitive ability as a moderator between planning and business success in on the increase, and again, this is most notably seen in the work of Frese and colleagues. Kraus (Kraus, 2003; Kraus et al., 2005) has established that self-regulation or reciprocal determinism is evident in the relationship between entrepreneurial orientations (EO), strategy process characteristics and business performance, and correctly concludes that a comprehensive psychological approach to entrepreneurial performance must incorporate self-regulatory processes. Frese (2007) suggests that regulation, in the general sense, can be applied to entrepreneurship in three contexts, the task, the social and the self. The present research, with its focus on self-regulation in multiple domains of functioning, can be said to place its focus on regulation within the contexts of the self and the task. It has been suggested that high performance requires regulating oneself effectively, and according to Frese (2007) this includes, ‘self-management (including personality management), self-efficacy, and switch from self to
task” (p. 174). Incorporating the traditional cognitive approach to self-regulation, with motivational and emotional aspects will add to the knowledge base of this switch.

2.4.1. A psychological model of entrepreneurial success

At the core of studying self-regulation in entrepreneurs lies the issue of whether entrepreneurs who engage in self-regulatory strategies are more successful than those who do not, or who do so less effectively. Recent research has begun to examine the psychological components that engender success at a venture or enterprise level in the domain of entrepreneurship. The Giessen-Amsterdam Model of Entrepreneurial Success (Rauch & Frese, 2000) is an interdisciplinary model that assumes that there is no success without action, and that such actions are mainly determined by the goals and strategies of an entrepreneur. This model suggests that as all strategies and tactics are goal oriented, all entrepreneurial success has to start to look at these variables. In addition, as both goals and strategies may turn out to be wrong, inefficient or misplaced in a certain environment, prior success and failure has an effect on modifying goals and strategies (Rauch & Frese, 2000). All of the influences of personality, human capital, and environment on success have to be mediated by strategies and tactics of actions (ibid.).

A key assumption of this model is that a general trait can only predict specific behaviour through certain mediating processes. Hence, this model does not hypothesise any direct links from personality, human capital or environment to success because of the assumption that there is no success without action (Frese, 2001). According to this model, psychological strategies of actions are the bottleneck through which all of entrepreneurial success is accomplished or not accomplished (ibid.). This has much in common with distal-proximal conceptualisation of motivation (e.g. Kanfer, 1992) as will be seen in chapter 4. Each of the elements of the model will briefly outlined below.

![Figure 2.1 The Giessen-Amsterdam Model of small business owners' success (Rauch & Frese, 2000)](image_url)

**Personality.** With regard to personality, Frese (2001) suggests that traditional approaches to studying entrepreneurial personality, as well as the critiques of such approaches, have
overlooked the significant advances that have been made in personality research, primarily the issues that specific behaviours (such as starting up a business) work only through mediating processes. A second issue is that the personality variable has to be specific enough to predict specific entrepreneurial behaviour. Thirdly, there is the issue that interaction models suggest it is more appropriate to examine which personality trait helps in which environment. Finally, Frese (2001) suggests that no one personality trait will have a strong relationship with success because success is determined by many factors.

*Human Capital* theory is concerned with knowledge and experiences of small-scale business owners (Frese, 2001). In a meta-analysis, Unger (2006) found a small but significant relationship between human capital and success.

**Goals.** Frese (2001) suggests that one can distinguish between goals related to the start-up of an enterprise and goals related to the existing enterprise.

**Strategies** can be broken into three dimensions of: context, process and entrepreneurial orientations (Frese, 2001). From a psychological perspective, strategies are directly related to goal-oriented actions (ibid.). Strategic content is concerned with the type of business decisions with regard to customers, suppliers, employees, products, production factors, marketing, capital and competitors. The strategic process is concerned with formulation and implementation of strategic decisions, and incorporates Strategy Process Characteristics (or planning). Finally, orientation implies an attitude towards one’s strategy (ibid.).

Each enterprise is nested in a specific *environment*. The task environment can be divided into three bipolar dimensions: complexity, dynamism and munificence (Frese, 2001). Complexity describes the homogeneity versus heterogeneity of an environment, Dynamism, describes the variability of an environment, and Munificence falls into two subconcepts, ease of getting customers, and ease of getting capital (ibid.).

Rauch and Frese’s (2000) Model of Small Business Owners Success has clear links to Action Theory, first proposed by Frese and Zapf (1994; see also Frese, 2007). This theory is discussed in more detail in chapter 3. Rauch and Frese (2000) suggest that entrepreneurship can profit from such an interface between business and success because psychological variables are clearly and consistently linked to entrepreneurial entry and success.

Rauch and Frese (2007a) outline a variant on the Giessen-Amsterdam model (see Figure 2.2) to explicate the pathways through which individual differences affect business success. They suggest that the model is compatible with the proximal-distal distinction (Kanfer, 1992, see chapter 4) and with established entrepreneurship growth models (Baum, Locke & Smith, 2001). In this variant model, they describe how broad personality traits may affect the
dynamics of setting goals and developing strategies, which in turn, affect business creation and success. Hence, there is an assumption that broad personality traits are not directly related to business success, but rather, are related because they influence traits that are more specific/proximal to entrepreneurship. It is these more specific traits than in turn influence goals and action strategies and ultimately business success (Rauch & Frese, 2000). Rauch and Frese’s (2007b) meta-analysis demonstrated that specific traits were more strongly related to business creation and business success than global measures. These specific traits included need for achievement, risk-taking, innovativeness, autonomy, locus of control and self-efficacy (Rauch & Frese, 2007a, b). Interestingly, the first four of these specific traits have been incorporated into the concept of entrepreneurial orientations (see chapter 4).

Rauch and Frese (2007a) further suggest that if the specificity of traits and their proximity to performance are important, then even more proximal constructs, such as processes related to personality, such as cognitive or self-regulatory processes, can lead to even stronger relationships. However, a recent review by Frese (2009) suggests that it is not just the engagement of such processes and traits that are important but the activeness by which they are engaged and regulated. This approach represents a significant advancement to the two models of entrepreneurial success outlined in this section, and will be discussed below.

2.4.2. Active performance concepts and their role in entrepreneurship

Frese (2009) notes that nearly all definitions of entrepreneurship emphasise the point that entrepreneurs are active actors in the market, and hence, that an entrepreneur’s actions need to be the starting point for theorising in entrepreneurship. Rauch and Frese (2000) argue in their model outlined above that actions are necessary to start a firm and are necessary to be
successful, and other explanations of entrepreneurship cannot really explain intentional behaviour completely (Frese, 2009). Hence, Frese (2009) argues that it is logical to turn to psychology to study important categories of entrepreneurship research, such as decisive actions, perceptions and implementations of opportunities. Frese (2009) points out that decisive actions are a form of behaviour, and while the latter concepts involve perception, cognition, emotions and motivation, these are central foci in psychology.

Frese (2009) summarises many years of research that he, and his associated researchers, have conducted examining the role that active performance concepts play in explaining the success of individual entrepreneurs, stemming from Action Theory or Action Regulation Theory (Frese & Sabini, 1985; Frese & Zapf, 1994; Miller et al., 1960). Frese (2009) outlines the facets of active performance as they relate to entrepreneurs (see Table 2.1), in which he distinguishes different steps in the action sequence (discussed in chapter 3) and three aspects of being active; self-starting, long-term proactivity, and persistence in the face of barriers and obstacles that need to be overcome. These three aspects of being active are drawn from the concept of personal initiative (Frese & Fay, 2001; chapter 4).

Table 2.1. Facets of active performance of entrepreneurs (Frese, 2009)

<table>
<thead>
<tr>
<th>Action Sequence</th>
<th>Self-starting</th>
<th>Proactive</th>
<th>Overcome barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal/Redefinition of tasks</td>
<td>- active goal</td>
<td>- Anticipate future opportunities and problems, and convert into goals</td>
<td>- protect goals when frustrated or taxed by difficult environment or complex goal structures</td>
</tr>
<tr>
<td></td>
<td>- not just goals that are taken over from others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- setting higher goals (growth goals)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information collection and prognosis</td>
<td>- Active search, i.e. exploration, active scanning</td>
<td>- search for potential problem areas and opportunities before they occur</td>
<td>- maintain search in spite of lack of resources, problems, complexity and negative emotions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Develop knowledge on alternative routes of action</td>
<td></td>
</tr>
<tr>
<td>Plan and execution</td>
<td>- Active plan</td>
<td>- back-up plans</td>
<td>- overcome barriers</td>
</tr>
<tr>
<td></td>
<td>- High degree of self-developing a plan</td>
<td>- have action plans for opportunities ready</td>
<td>- return to plan quickly when disrupted</td>
</tr>
<tr>
<td></td>
<td>- Don’t imitate, don’t just follow advisors</td>
<td>- proactivity of plan and detailedness</td>
<td></td>
</tr>
<tr>
<td>Monitoring and feedback</td>
<td>- self-developed feedback and active search for feedback</td>
<td>- develop pre-signals for potential problems and opportunities</td>
<td>- protect feedback search</td>
</tr>
</tbody>
</table>

Figure 2.3 outlines the characteristics of active performance and hypotheses as to how they are related to entrepreneurial success. Frese (2009) defined active performance as being self-started, proactive and persistent, implying the way in which each concept will manifest is active or motivational in nature. Many of the active performance concepts will be reviewed in extensive detail as we move through the three central chapters building the theoretical model (chapters 3, 4 and 5), and hence, they will not be explained in great detail at this point.
The value of Frese’s (2009) active approach to entrepreneurship, and Rauch and Frese’s (2000) psychological model of entrepreneurial success lies in the fact that combined, both of these models demonstrate that value of taking a psychological approach to entrepreneurship. Furthermore, they specifically demonstrate the value in using self-regulation as a framework to examine how the individual entrepreneur contributes to success in their venture.

2.5. Chapter summary

The above review of the psychological literature pertaining to entrepreneurship demonstrates that psychology can and is making a valuable contribution to the understanding of entrepreneurial phenomena. It is the contention of the present research that models of self-regulation hold particular potential for explaining in more depth and detail the role of intrapsychic processes in entrepreneurship. These cognitive, motivational and emotional mechanisms will be explained in the chapters which follow.
CHAPTER 3: Self-Regulation: Predominant theories and the proliferation of the cognitive approach

If one agrees that self-regulation and self-control can be achieved by effective goal pursuit, it is important to analyse strategies that allow people to discriminatingly set goals that are desirable and feasible, and then strive for them in an effective manner.

(Oettingen & Gollwitzer, 2009; p. 142)

3.1. Introduction

The purpose of this chapter is to provide an overview of cognitive approaches to self-regulation. The primary theories that approach self-regulation will be reviewed, which include Action Theory, and the Rubicon Model of Action Phases. These form the core building blocks of the cognitive component of the model. However, in order to consider more distal manifestations of such cognitive processes, it is necessary to consider a number of other relevant theories in the areas of goal-setting and goal orientation. Finally, these will be incorporated into a rudimentary model, depicting the relationships between the cognitive components of the model, and their associated hypotheses (preceded by the suffix “C”).

Before delving into the cognitive perspective, a general overview of self-regulation is provided, including its definition and nature, which discusses some overarching issues pertinent to cognitive, motivational and emotional aspects. The role of self-regulation in applied fields in organisational psychology and entrepreneurship is also considered.

3.2. Defining self-regulation

Kanfer (1996) notes that substantial progress in understanding self-regulatory processes has converged on a conceptualisation that emphasises goals, self-monitoring, self-evaluation, and self-reactions as the basic mechanisms by which individuals may exercise control over the direction, persistence and intensity of thinking, affect and behaviour. Self-regulation has been defined as:

A multi-component, multi-level, iterative, self-steering process that targets one’s own cognitions, affects, and actions, as well as features of the environment for modulation in the service of one’s goals. Self-regulation implies choice, consistency and continuity of movement over time; and these three C’s critically depend on having access to a well-integrated goal hierarchy. (Boekaerts, Maes & Karoly, 2005; p 150).

This definition highlights a number of important characteristics of self-regulation, most notably, that it is goal-directed, involves cognition, affect, motivation, and considers their impact on behaviour. Over the last few decades there has been a growing recognition in both psychology,
education and industry among others, that goal-directed behaviour is central to the well-being of individuals, that goal-guided self-regulation can be improved, and that the impact of factors that threaten self-regulation can be reduced (Boekaerts, Maes & Karoly, 2005). This has sprung from research showing the existence of a strong relationship between individuals’ self-regulation strategies and various indices of adaptive success (Boekaerts, Maes & Karoly, 2005).

Some researchers make a distinction between self-control and self-regulation. Self-control is the process by which individuals bring themselves into line with their goals and standards, while self-regulation describes all forms of monitored adaptation by the self, including non-conscious regulation (Baumeister & Alquist, 2009). Hence, self-control is a narrower concept, only relating to the conscious, effortful form of self-regulation (ibid.). Although the processes investigated in this research are primarily conscious, the research is not restricted to the narrower domain of self-control, and so the term self-regulation is used throughout.

One of the core building blocks of the theoretical model proposed in the present research lies in the emphasis on self-regulation as a goal oriented process. Such process perspectives have focused on the goal, planning, and implementation process. These cognitive theories of self-regulation will form the focus of this chapter, while further relevant theories will be introduced as they become relevant, in order to integrate motivational and emotional components in later chapters.

3.2.1. Self-regulation as a dynamic process and limited resource

The issue of process is central to the concept of self-regulation (Nenniger, 2005; Vancouver & Day, 2005), and so, it is important to emphasise this in defining and researching the concept. Vancouver’s (2008) dynamic process model of self-regulation suggests that the basic processes of self-regulation (acting, thinking, learning and feeling) are all highly similar in terms of their underlying architecture, and build from one another. He suggests that the complexity of self-regulation arises as the various parts are put together and repeated as necessary to represent the person-in-context. This provide initial support for the contention of the present research that there is considerable merit to the consideration of cognitive, motivational and emotional aspects of self-regulation along parallel paths that can interact with one another. That said, Vancouver’s (2008) dynamic process model is still structured around the goal system, and he suggests that the minimum requirements needed to explain a goal system are (i) a way to monitor goal status, and (ii) a way to affect goal status. The thinking component is rooted in the concept of forethought and feedforward processes, which refers to an individual’s ability to anticipate future states and change goals as a result. Learning in this process is conceptualised as the strengthening of associations between internal (cognitive) representations of stimuli and internal representations of response and consequence.
Taking a somewhat different angle, Baumeister, Heatherton and Tice (1994) attempted to explain self-regulation by mapping it onto an energy model, suggesting that it is a limited resource and hence, an individual’s ability to self-regulate was limited, which may explain self-regulatory failures (e.g. yo-yo dieting, or attempts to stop smoking). This Limited Resource Model (LRM) is by now quite well supported by research (Baumeister & Alquist, 2009; Baumeister & Exline, 1999; Baumeister, Muraven, & Tice, 2000; Muraven & Baumeister, 2000). Encouraging is the finding that like a muscle, exercising our self-regulation increases its strength and stamina, leading to improvements in individual’s ability and capacity to self-regulate (Baumeister & Alquist, 2009). The resource based view suggests that the consumption of self-regulatory resources is particularly taxing when tasks are novel (Kanfer & Ackerman, 1989), which is of particular relevance to the present research context of early stage entrepreneurs.

3.2.2. The Nature of Self-Regulation: Cognition, Emotion and Motivation

From a cognitive perspective, many researchers view self-regulation as the processes involved in attaining and maintaining goals, where goals are internally represented desired states (Vancouver & Day, 2005). However, in reality, the inter-play between cognitive, motivational and emotional processes are key to understanding self-regulation. Locke (2000) states that although cognition and motivation can be partly isolated for the purpose of specialised study, in everyday life they are never separate. Cognition answers that question ‘what is?’ while motivation answers the question ‘so what?’ (Locke, 2000; p. 411), and so both cognition and motivation operate concurrently with each other. When it comes to a choice of action, cognition has primacy over motivation, because one cannot want something without knowing that it exists and that it has certain valued attributes. Furthermore, Locke suggests that a correlate of assessing an object as significant is the arousal of action, and motives, values and goals (all part of motivation) affect action in three ways: (a) they affect what facts we choose to act on, and regulate the direction of action by focusing attention and activity on value- and goal-relevant behaviour at the expense of other non-goal relevant actions, (b) values and goals affect the intensity of the action and the emotion based on how important the value is held to be, and (c) values and goals also affect the persistence of action.

Furthermore, Austin and Vancouver (1996) also argue that goals cannot be understood when isolated from the cognitive, behavioural and affective responses organised in pursuing goals. Locke (2000) states that goal-directed actions entail both automatic and volitional elements, with emotions constituting one example of an automatised factor. The role that affect plays in self-regulation is highlighted in Carver and Scheier’s (1990, 2000a, 2009) Control Theory (Chapter 5).
The present chapter focuses on the process of self-regulation and takes primarily a cognitive view. Subsequent chapters will advance the theoretical framework by integrating motivational and emotional aspects within the self-regulatory framework. The role of cognition in organisations has been of growing interest to psychologists for over two decades now (Hodgkinson & Healey, 2007). The field of cognition in psychology deals with sense perception, conceptual identification, stored perceptual and conceptual knowledge and skill (Locke, 2000). All knowledge above the perceptual level is gained through active information processing, and feedback from action, which encompasses learning, memory, problem-solving and decision-making (Locke, 2000). In this chapter, the focus is on those cognitive processes that are most frequently associated with self-regulation, and so, the focus from a cognitive perspective lies largely on goals and the goal-setting process.

3.3. Self-regulation in applied fields: Organisational Psychology and Entrepreneurship

The search for a general understanding of self-regulation has not been coherent given the diversity in the field, and has resulted in large bodies of domain-specific knowledge about self-regulation, with each covering specific aspects using their own scientific terminology (Boekaerts, Pintrich & Zeidner, 2005). There are at least three divergent bodies of literature that describe what self-regulation is, how it develops and how it might be improved (Boekaerts, Maes & Karoly, 2005), namely educational psychology, organisational psychology and health psychology. The present research lies largely within the work and organisational psychology domain, and Wood (2005) contends that the area of self-regulation has great potential for this field.

As with all areas that study self-regulation, definition has been an issue in the domain of work and organisational psychology. The diversity of meanings and applications of self-regulation constructs within work and organisational psychology reflect differences in the meaning of self-regulation across a range of basic and applied psychology literatures (Wood, 2005). Within work and organisational psychology, bodies of literature have developed around specific behaviours, such as feedback seeking (e.g. Ashford & Tsui, 1991), and interventions, such as self-management training (Frayne & Geringer, 2000; Frayne & Latham, 1987), each using a particular conceptualisation of self-regulation (see Wood, 2005). Self-regulation has been related to job search behaviour, withdrawal decisions, re-employment success and work motivation (Vancouver & Day, 2005), skill training and job performance (Kanfer, 2005), as well as management effectiveness (Tsui & Ashford, 1994), error management (Keith & Frese, 2005) and career self-management (Raabe, Frese & Beehr, 2007). Generally, it has been suggested that in complex jobs (of which entrepreneurship can be classed), distal goals may be
less effective than effective metacognitive and self-management skills (Kanfer & Heggestad, 1997).

As organisations seek to replace bureaucracy, hierarchical structures, and authoritarian leadership styles with more autonomous work practices, initiative and entrepreneurship, self-regulation theory is a good fit with the emerging demands of modern organisations (Wood, 2005). Tsui and Ashford (1994) suggest that individual’s adaptive self-regulatory efforts should have greater payoffs in jobs defined by task interdependence, ambiguity and a scarcity of directly provided or spontaneous feedback. Entrepreneurs tend to operate in environments characterised by such ambiguity and low levels of feedback. Hence, one can postulate that self-regulation may be extremely important for entrepreneurs. However, very little research to date has explicitly mapped the self-regulatory process in entrepreneurship, although aspects of the process have been examined to a limited extent. A number of studies have examined goals in the context of entrepreneurship (e.g. Kuratko, Hornsby & Naffziger, 1997; Noel & Latham, 2006; Tracy, Locke & Renard, 1999), and in addition, the role of planning (Frese et al., 2007) and deliberate practice learning strategies (Unger et al., 2009) have been shown to be related to entrepreneurial success. Frese (2009, discussed in chapter 2) has advocated an active approach to entrepreneurship, based on Action Theory. Hence, although some strides have been made with regard to understanding the role that self-regulation plays for entrepreneurs, there is much work yet to be done in this area.

3.4. Theoretical Overview of Self-Regulation

Having provided a brief overview of definitional and conceptual approaches to self-regulation, the remainder of this chapter will focus on cognitive approaches. Research in the area of self-regulation from a cognitive perspective has tended to focus on one of a number of theories in the area, with Action Theory (Frese & Zapf, 1994; Frese, 2007), Control Theory (Carver & Scheier, 1981, 2000a), and Regulatory Focus (Brockner & Higgins, 2001; Higgins, 1996, 2002; Higgins & Silberman 1998; Shah, Higgins, & Friedman, 1998) being predominant. However, self-regulation has its origins and roots in a number of areas, drawing on motivational theories and research including social cognitive theory (Bandura, 1986, 1997; Frayne & Latham, 1987; Latham & Frayne, 1989), goal-setting theory (Locke & Latham, 1990, 2000), and volition (Corno & Kanfer, 1993; Heckhausen, 1991; Heckhausen and Kuhl, 1985; Kuhl 1984, 1985, 2000; Kuhl & Fuhrmann, 1998) in its development, and research in self-regulation is often rooted in these theoretical traditions as well.

Kanfer (1992) notes that the various conceptions of goals and self-regulation provide complementary perspectives. However, current controversies between theories tend to hinge on the operation of specific mechanisms involved in self-regulation (Kanfer, 2005). For example,
social-learning/social-cognitive theories and control theory perspectives focus on the cognitive and affective mechanisms underlying the goal-performance relationship, but are relatively silent about the influence of specific goal characteristics on performance (Kanfer, 1992). Kanfer (2005) suggests that in the domain of work and organisational psychology, the most widely accepted perspective involves an integration of the goal-setting and social-cognitive theories, in which person, social and environmental factors operate in concert to affect an individual’s goals and self-regulatory activities.

A number of researchers have called for a need to integrate theories of self-regulation, and have made strides towards accomplishing this feat. Karoly, Boekaerts and Maes (2005) suggest that the following components of self-regulation may serve as functional universals: goal-selection, goal-setting, feedback sensitivity, error monitoring, self-evaluative judgements, self-corrective instrumental action, and the emergence of self-efficacy beliefs, and can be used in all fields to pursue, in parallel, studies that attempt to examine the interactive nature of these universal component functions along with the moderating role of boundary conditions, such as schematic knowledge structures, and automaticity. Wood (2005) presents a table depicting potential categories that may be used in the development of a general framework of self-regulation research in the domain of work and organisational psychology (see Table 3.1.).

Table 3.2 provides a summary and comparison of the main theories of self-regulation, which elaborates on the distinctions between the different theories. The present research draws on Action Theory and theories of volition from the self-regulation domain in developing the initial theoretical basis for the examination of self-regulation in entrepreneurs. These theories focus on motivation in-action and lie at the proximal end of the motivation spectrum. The aims of the present research were to advance theory in self-regulation, and to investigate how early stage entrepreneurs self-regulate their cognitions, emotions, and motivation in order to achieve success in their venture. Given these aims, an actional and process approach to self-regulation is most appropriate. Hence, both Action Theory and the Rubicon Model of Action Phases will form the focus of the remainder of this section, in order to explain each theory in more depth.
Table 3.1 Potential categories and examples for a framework of self-regulation research (Wood, 2005).

<table>
<thead>
<tr>
<th>Potential Category</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Theoretical Framework</td>
<td>Social Cognitive Theory</td>
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<td></td>
<td>Control Theory</td>
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<td></td>
<td>Self-Determination Theory</td>
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<td></td>
<td>Action Theory</td>
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<td></td>
<td>Action-state Theory</td>
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<tr>
<td>Categories of key processes or subfunctions in self-regulation</td>
<td>Goal establishment, planning, striving, goal revision</td>
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<td></td>
<td>Self-observation, judgements, self-reactive influences</td>
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<td></td>
<td>Goal setting, self-monitoring, activation of standards, discrepancy detection</td>
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<td>Self-regulatory mechanisms (cognitive and affective mediators of outcomes)</td>
<td>Standards and goals</td>
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<td>Affective self-evaluations</td>
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<td>Self-efficacy</td>
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<td>Intrinsic interest</td>
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<td>Perceived instrumentality</td>
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<td>Self-regulatory skills</td>
<td>Memory</td>
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<td>Emotional discrimination, impulse control</td>
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<td>Attention capacity and control</td>
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<td>Feedback seeking</td>
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<td></td>
<td>Planning and goal-setting</td>
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<td>Personal determinants of self-regulatory processes</td>
<td>Conscientiousness</td>
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<td>Extraversion</td>
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<td></td>
<td>Neuroticism</td>
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<td></td>
<td>Self-monitoring</td>
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<td>Self-regulation interventions</td>
<td>Attention management, distraction activities</td>
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<td></td>
<td>Behavioural recording, performance monitoring</td>
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<td></td>
<td>Goal-setting, task planning, scheduling</td>
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<td>Verbal self-guidance, self-talk, thought suppression</td>
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<td></td>
<td>Stimulus control, task selection, content management</td>
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<td>Self-rewards, values clarification</td>
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<td>Organisational events that stimulate self-regulatory processes</td>
<td>Accountability (planning, budget reviews, performance appraisals etc.)</td>
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<td>Organisational change (technology change, job redesign etc.)</td>
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<td></td>
<td>Personal challenges (failures, task set backs, promotions, new jobs, etc.)</td>
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<td>Disrupting of routines (equipment failure, poor performance, criticism etc)</td>
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<td></td>
<td>Dysfunctional work cultures (anxiety, perceived inequities, threat etc.)</td>
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<tr>
<td>Organisational and work arrangements that facilitate self-regulation</td>
<td>Error tolerance</td>
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<td>Autonomy and flexibility in allocation of effort</td>
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<td>Task support</td>
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<td>Guided mastery approach to novel and challenging tasks</td>
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<td></td>
<td>Goal-setting and feedback systems</td>
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</tbody>
</table>
## Table 3.2 Comparison of main theories of self-regulation

<table>
<thead>
<tr>
<th>Theory/Main Researchers</th>
<th>Conceptual Origins</th>
<th>Emphasis on</th>
<th>Key Concepts</th>
<th>Steps in Process</th>
<th>Applications</th>
<th>Critiques</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Action Theory</strong></td>
<td>German tradition in psychological research focusing on the work action</td>
<td>a cognitive theory, tried to behaviour and to objective work environments and work outcomes</td>
<td>Cognitive regulation of action</td>
<td>- Goal</td>
<td>Error management training - Career management training - Entrepreneurship</td>
<td>1. Need to replicate the role of motivation and emotions within the theory (Frase, 2007) 2. Relationship between the self and the sequence, structure, form and context needs clarification (Frase, 2007) 3. Criticised by SDT researchers for not making differential predictions for intrinsic and extrinsic motivation (Gagne &amp; Deci, 2005)</td>
</tr>
<tr>
<td>Frase (2007, 2009); Frase &amp; Selins (1985); Frase &amp; Zapf (1984); Hackman (1958); Miller et al. (1960)</td>
<td></td>
<td></td>
<td>3. Intricacy and complexity</td>
<td>- Information integration - Planning - Execution, monitoring and feedback</td>
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<tr>
<td><strong>Compensatory Model of Work Motivation and Emotion</strong></td>
<td>A synergistic approach to work motivation. Draws on extends: expectancy-value models (Vroom, 1964), goal-setting theory (Locke &amp; Latham, 1990), self-efficacy (Bandura, 1977), self-regulation (Bandura, 1988), dual system approaches McCauld et al., (1999) intrinsic and extrinsic motivation (Deci &amp; Ryan, 2000), reward models (Lowar, 1991) and the work of Bandura and colaborators (Kauf &amp; Ackerman, 1999, Kauf &amp; Hegeman, 1987).</td>
<td>Implicit versus explicit motives, Complementary roles of volitional processes in the absence of sufficient distal motivations, Integration of motives and ability</td>
<td>Manifestation of explicit and implicit motives at proximal and distal levels, Distal: implicit motives, explicit motives, perceived abilities, Personal: problem solving, volitional regulation, Interaction of explicit motives, implicit motives and perceived abilities leads to flow experience</td>
<td>- More distal aspects have their effect through relevant proximal mechanisms - Volitional regulation required to resolve discrepancies between implicit and explicit motives - Problem-solving competes for insufficient perceived abilities</td>
<td>- Self-management training - Motivating power of visions - Motivating employees to engage in open-innovation - User integration in sustainability innovations - Unconning effect of task congruent rewards</td>
<td>Does not replicate processes although these are inherent in the model</td>
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<tr>
<td>Kehr (2004a)</td>
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<tr>
<td><strong>Control Theory</strong></td>
<td>Control theory of human functioning (Rosen, 1973), an outgrowth of the cybernetic model in engineering Cybernetic - people possess representations of standards (known as goals) for their behaviour, and these goals are part of a cognitive mechanism that is used to regulate their behaviour (Miller, Galanter &amp; Pribram, 1960)</td>
<td>Cognition, affect</td>
<td>Behaviour is goal directed and feedback controlled, Hierarchical, multi-level nature of goals, Goals underlying behaviour form a hierarchy of subgoals, Dynamics of goal revision over time, Types of feedback loops: Positive (discrepancy-reducing), and Negative (discrepancy-enlarging), The experience of affect (end of confidence versus doubt) arises from the process of feedback control</td>
<td>Two feedback loops: Behavioural self-regulation, emotional self-regulation (see chapter 4 for more detail)</td>
<td>1. Assumptions that underlie control theory are questionable. It is a machine model derived from cybernetic engineering, and is rather mechanistic. 2. The cybernetic model ignores the vast knowledge of cognitive self-regulation of human motivation. 3. It is more focused on the regulation of individual goals than control by means of feedback loops (Bandura &amp; Locke, 2003). 4. Focus on discrepancy reduction limits the analysis of motivational processes to contexts in which the individual seeks to rectify inadequate performance (Kanuka, 1982). 5. Bandura (1986) argued against this model because it does not understand increases in goal level after a prior goal has been reached (Frase, 2007).</td>
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### Chapter 3  
**Self-Regulation**

#### Fantasy Realisation Theory

- **Ostafinski (1996, 2000)**: 
  - Cattell, Pals & Schmukler (2001)

- **Goal-setting as a self-regulatory phenomenon**
  - Two forms of thinking about the future: Expectations and Free Fantasies.
  - Expectations: judgements of how likely it is that certain events or behaviours will occur in the future, based on past experience and a person's performance history.
  - Free fantasies: thoughts and images of future events or behaviours that appear in the mind, independent of the likelihood that these events or behaviours will actually occur.

- **Advantages Robinson model by detailing the self-regulatory strategies of goal-setting.**

#### Regulatory Focus

- **Higgins (1987, 2005)**
  - Pain vs. pleasure or violation (Laws, 1953) as a motivational distinction.
  - Memory (1980) - classification of two positive or pleasurable situations, vs. two negative or painful situations.

- **Regulatory dispositions/good content**
  - People differ systematically in their chronic self-regulatory focus.
  - Regulatory focus is one way in which different systems of regulating pain and pleasure can be distinguished.

- **Resource Allocation Strength Model**
  - Baumeister & Alqaier (2000);
  - Baumeister et al. (1997); Baumeister, Heatherton & Tice (1994);
  - Baumeister, Vohs & Tice (2007)

- **Physiology - patterns in model resemble what happens with physical muscles.** They grow fatigued when used, people conserve energy when fatigue begins, and they carry savannah and more efficient at tapping resources over time with continued exercise.

- **An individual's ability to self-regulate is limited.** Self-control can be mapped onto an energy model, where initial acts of self-control lead to depletions in subsequent acts of self-control, due to the depletion of some energy source.

- **Ego depletion - A first set of regulation, depleted emotion control, behavioral or thought control, leads to decreased self-regulation on a second task.**

- **Conservation Hypothesis - Individuals are reporting future demands and challenges, they should conserve their current resources for later.**

- **Self-control strength - strength is a particular type of constraint, which can be increased as a result of regular exercise.** 
  - Means, the idea of improving self-regulation by having people exercise in captivity.

- **Glucose - may play a role in an individual's ability to exercise self-control.**
  - It is linked to attention control, emotional control, criminal behavior.

- **Focus mainly on dispositional or trait level, and does not take into account person-centered issues.**

- **NA**

#### N/A

- **Risk-taking in entrepreneurship (Baron, 2004)**
  - Adaptive performance (Uziel-Gil, Hasson & Menzel, 2009)

- **NA**

#### Violence

- **Food, and alcohol - interpersonal differences.**
# Chapter 3

## Self-Regulation

<table>
<thead>
<tr>
<th>Self-regulation model for overcoming obstacles to action</th>
<th>Skinner’s explanatory principle of self-control</th>
<th>Self-regulation within a behavioural sequence</th>
<th>Self-regulating cycle that is activated whenever the smooth flow of behaviour is disrupted by an obstacle</th>
<th>5 sequential phases: 1. self-monitoring. 2. self-evaluation. 3. self-consequence</th>
<th>Clinical psychology and therapy research: seeking new approaches to removing deficits in self-control</th>
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<tr>
<td>Self-Determination</td>
<td>Individual differences in curiosity orientation (Deci &amp; Ryan, 1985)</td>
<td>SDT posulates that autonomous and controlled motivation differ in terms of their underlying regulatory processes and their accompanying experiences.</td>
<td>Behaviour can be characterized in terms of the degree to which they are autonomous versus controlled, both of which are forms of intrinsic motivation.</td>
<td>SDT motivates individuals to become autonomous through a process of internalization. This is an overarching term that refers to 3 processes: identification, integration, and integration.</td>
<td>2. Criticized by SDT researchers for using a unidirectional conception of motivation, who suggest that it is not well equipped to predict types of performance, and for not giving consideration to the affective or well-being outcomes that accompany different types of motivation and performance (Gagne &amp; Deci, 2005)</td>
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<tr>
<td>Social Cognitive Theory of Self-Regulation</td>
<td>Bandura (1969, 1990, 1991, 1997, 2001); Wood &amp; Bandura (1994); Zimmerman (1989, 1990, 1995, 2005)</td>
<td>Intrinsic and extrinsic motivation</td>
<td>Clinical-Experimental Psychology: in an agentic perspective in which people function as autonomous or controlled and self-evaluating proactive regulators of their motivation and actions (Bandura, 2001)</td>
<td>Self-efficacy (beliefs of personal efficacy or personal control)</td>
<td>1. Pay &amp; Frese (2001): Questioned relevance of self-determination theory to workplace, citing a number of problems: a. Work is assigned and so, merely 'freely done' as required in definitions of intrinsic motivation. b. Employees expect to be paid for their work - withholding a salary would result in most people performing the assigned task. SDT theory states that the more extrinsic rewards are given the less one's subsequent intrinsic motivation. c. SDT theory states that the hallmark of intrinsic motivation a engagement, enjoyment, and it is critical for self-regulating. Negative emotion often leads to self-defeating behavior - i.e. the person wants to change something for the better. d. The undermining of intrinsic motivation has been controversial from the time it first appeared in the literature (Gagne &amp; Deci, 2005). Recent theories of work motivation have not failed to accept the findings in relation to this aspect of the theory; e.g. Field (2004) suggested that rewards would not undermine intrinsic motivation if they did not decrease the intrinsic motivation.</td>
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<tr>
<td>Volition - Rubicon model of action phases</td>
<td>Guillian (1999); Heckhausen (1991)</td>
<td>German tradition in psychological research focusing on the work action</td>
<td>Motivational process in action</td>
<td>- Motivation pre-actional (Planning) - Volition pre-actional (Planning) - Volition actional (Action) - Motivation post-actional (Evaluation)</td>
<td>Coaching in the workplace (Grant, 2005)</td>
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3.4.1. Action Theory of Self-Regulation

Theories of action and action regulation have generally come out of the German tradition in psychological research, where the basic starting point is work action. Action can be defined as goal-oriented behaviour that is organised in specific ways by goals, information integration, plans and feedback, that can be regulated consciously or via routines (Achtziger & Gollwitzer, 2008; Frese, 2009; Frese & Zapf, 1994). Action theory is a cognitive theory, but these cognitions are tied to behaviour and to objective work environments, and to the objective work outcome. Hence, it is a behaviour oriented theory, which focuses on the regulatory function of cognitions (Frese & Zapf, 1994).

Action Theory has been described as a “grand theory” (Frese and Zapf, 1994; p 272), referring to the fact that it provides quite a broad approach to understanding work actions in general. Although each component is described in this review, more attention is paid to those elements that are pertinent to the building of the theoretical model. Frese (2007) states that there are three main building blocks to understanding how humans regulate their actions: sequence, structure and focus. Sequence refers to how actions unfold (Frese, 2007). First, an action proceeds from a goal to a plan, to its execution and to feedback being received; this is termed the action process. The core of action is the feedback cycle, and this implies that there is a goal, which constitutes the set point to which action outcomes are compared (Frese & Zapf, 1994).

Secondly, structure involves levels of regulation (Frese, 2007); an action is regulated by cognitions, and the regulation process can be either conscious or automatic (Frese & Zapf, 1994). Action regulation is described as hierarchically structured, with four levels of regulation: the sensorimotor level, the flexible action patterns level, the intellectual level and the heuristic level. The important distinction between these levels is between actions that are consciously regulated and those that are routinised. Long-term knowledge of these processes is stored in the operative image system (Frese & Zapf, 1994). The third building block is the focus of an action, and this can be the task, the social context in which the task is done, or the self. Each of these three building blocks are discussed in the subsections that follow.

3.4.1.1. Sequence: The Action Process

The action process consists of a number of steps: (a) the development of goals and decision between competing goals, (b) mapping of the environment or orientation, including prognosis of future events, (c) generation of plans, (d) decision to select a particular plan from available plans, (e) execution and monitoring of the plan and (f) the processing of feedback (see Figure 3.2.; Frese, 2007; Frese and Zapf, 1994). However, actions are often chaotic, and later steps in the action process may change earlier ones, so that the process is not always sequential.
Chapter 3  

Self-Regulation

(Frese & Zapf, 1994). Frese (2007) suggests that in the context of the entrepreneurial process, the action process means that once a would-be entrepreneur has the goal to found a firm, or perhaps to not work as an employee, they then map out the area in which the firm is supposed to operate, they plan how to achieve this goal, monitor the process of executing these ideas, and process feedback from potential customers, banks, venture capitalists etc.

(i) Goal Development

Frese and Zapf (1994) describe the goal as the most important concept in action theory. The concept of goal integrates motivational and cognitive concepts: the goal is the point of comparison for the action (the cognitive aspect) and the action is pulled by the goal (the motivational aspect) (ibid.).

As with the majority of self-regulation theories, Action Theory is closely interlinked with research on goals, and in particular, this theory has much overlap with the concept of goal processes and goal-setting (Austin & Vancouver, 1996; Heckhausen & Kuhl, 1985; Locke & Latham, 1990) which involve goal establishment, planning, goal striving and goal revising. Frese and Zapf (1994) outline a number of important parameters of goals: (a) goal difficulty, (b) specificity of the goal, (c) hierarchization of goals and subgoals, (d) connectedness of goals and subgoals, (e) time range (long range vs. short range), (f) valence (positive or negative value attached to a goal state), (g) process versus end-state goals (Process goals are goals directly related to an action, where the action itself may be the goal. In contrast, the production of a product is an example of an end-state goal), and (h) efficiency divergence of goals (which suggest that one should chose subgoals with the highest number of options to reach potential other goals with a high likelihood). These parameters offer means through which to differentiate the ways in which individuals form and structure their goals, and a number of these parameters have been differentially related to performance (Bluedorn & Martin, 2008; Locke & Latham, 2002).

Orienting oneself towards something novel is the lowest level of analysis of situational and object conditions. Orientation often means to attend to signals, as signals are action-relevant stimuli that are integrated into some knowledge system on the work task. Signals are related to the knowledge and the mental models that the work has about a work process (Frese & Zapf, 1994). Frese (2007) suggests that the following issues are of importance in mapping the environment: (i) the realism of the mental model, (ii) broad signal inventory, including opportunity recognition and the function of quick detection of complex signals (chunking), (iii) developing a map of the environment that has operative value, and (iv) the right level of decomposition to understand the environment.

Frese (2007) suggests that business owners have to know the environment or acquire knowledge of the environment in which they plan to operate. In dynamic systems, objects may change even without an intervention by the actors. Here prognosis of future events must be calculated (Frese & Zapf, 1994). Mapping may be the result of experimentation (an action) and the feedback the actor receives as a result of that action (Frese, 2007).

(iii) Generation of plans and (iv) Decision to select a particular plan

Planning refers to the development of specific alternative behavioural paths by which a goal can be attained, or in other words, a plan is a strategy (Austin & Vancouver, 1996). The action theory concept of plan should not be confused with everyday uses of the term. In the psychological sense, a plan means that one has some kind of order of operation for the next few seconds, minutes, months or years (Frese, 2007) and can mean everything from the first idea of how to proceed to an elaborated blueprint (Frese & Zapf, 1994). Plans of action can be routinised or automatic (System 2) or conscious and effortful (System 1) (Frese et al., 2007), and it is the latter plans that are of interest in this research. System 1 planning is a conscious and effortful process that is adaptive when one is planning for new actions in difficult environments (Frese & Zapf, 1994; Frese et al., 2007).

Frese et al. (2007) suggest that a high degree of conscious and effortful planning (System 1 planning) involves two issues, (i) the degree of detailedness of the plan, and (ii) the degree to which mental simulations are oriented to bring about long-term future states, termed the degree of proactiveness. The degree of detailedness may vary from an elaborate, detailed and specific plan to one that is very general and does not apply steps (Frese et al., 2007). One aspect of elaborate planning is to think about contingencies or to have an alternative plan (e.g. a Plan B) if the first plan does not work out. A second aspect requires the individual to have a large inventory of potential signals which tell the actor whether it is useful to implement the plan. The scope of the proactiveness dimension reaches from passive to proactive (Hacker, 1992; cited in Frese et al., 2007). A passive plan does not attempt to change the environment and
actions are primarily affected by the environment. Hence, passive plans can also be termed reactive (Frese et al., 2007). A proactive plan, in contrast, means that the individual has determined their environment to a certain extent, by anticipating future demands and opportunities and preparing for them in the present. This is achieved by acting on the environment to bring about future events (Frese et al., 2007). A proactive plan also implies that owners think about the type of feedback needed and develop indicators for this feedback, which helps them adjust their plans when necessary (Frese et al., 2007).

In the planning stage, the development of specific alternative behavioural paths by which a goal can be attained (i.e. a strategy) is engaged in. Planning serves two functions. Firstly, it provides a way of testing alternative actions without actually evoking the physical resources or other costs necessary to engage in the action. Secondly, in order to achieve many goals, it is necessary to engage in a sequence of activities before a deviation from the desired state is detected; anticipated deviations must be drawn from memory or models (Austin & Vancouver, 1996; Gollwitzer, Fujita & Oettingen, 2004).

Frese et al. (2007) demonstrate that planning is a key predictor of success in business owners. Proactive business owners are more focused on the long term and consider more potential issues and signals, and hence, they tend to develop more elaborate plans (Frese et al., 2007). Frese et al. also suggest that as opportunity detection and exploitation have become important issues in entrepreneurship research, the concepts of elaborate and proactive planning need to be developed for the study of entrepreneurship. Hence, this study focuses on both the elaborateness and the proactivity of the entrepreneurs plan within the self-regulatory process.

(v) Monitoring of Execution

Although Frese and Zapf (1994) acknowledge that it is superfluous to separate the phase of execution from the phase of planning, as planning always implies some kind of operation, they state that it is important to distinguish between the execution of a plan and the waiting period in higher-order plans. The goal striving phase of the process relates to taking of action and monitoring of the consequences of such actions (Austin & Vancouver, 1996). Frese and Zapf (1994) state that various aspects are important for plan execution: (a) flexibility, (b) speed, (c) sharing and coordination of plans, (d) overlapping plan execution (i.e. whether an individual follows one plan at a time or follow several), and (e) the feedback process.

The core of action is the feedback cycle. Feedback is information about how far one has progressed towards a goal, and is neither completely outside the person nor completely inside (Frese & Zapf, 1994), and can be explicit or implicit in the environment (Austin & Vancouver, 1996). Feedback can only be interpreted with reference to a goal, and hence feedback is a relational concept (Frese & Zapf, 1994). Frese (2007) suggests that important parameters with
regard to feedback are: process vs. outcome feedback, the degree of realism versus self-striving interpretations, feedback search rate, and how active this search for feedback is.

Feedback can also lead to redefinition. *Goal revision* is essentially goal establishment revisited (Austin & Vancouver, 1996). Redefinition is a specific feature of a psychological approach that focuses on the mental regulation of work (Hacker, 2003). It illustrates that mental regulation of activity is mediated by the object of that activity (ibid.). Redefinition comprises a prospective cognitive and emotional evaluation of the tasks, and this prospective evaluation will determine what the person will actually implement and how he or she will do so (ibid.).

### 3.4.1.2. Action Structure: The Hierarchical Cognitive Regulation of Behaviour.

The second building block is structure, and according to Action Theory, the structure of action must be organised hierarchically. Frese (2007) suggests that the hierarchical cognitive regulation of action is analogous to a “grammar” for action (p. 162), whereby it allows us to understand how well-organised behaviours that achieve higher order goals, such as launching a new product, are achieved by using lower level behaviours (e.g. uttering a sentence or typing a word). The higher levels of the hierarchy are conscious, thought oriented and general, while the lower levels consist of routines, are specific, and often involve muscle movements. However, Frese (2007) stresses that we do not always pay attention to the full hierarchy. Higher level goals, such as life goals or moral standards, are typically not in the foreground of our attention, and we can only attend to those goals that are of immediate action relevance due to limitations in working memory capacity (Frese, 2007).

Frese and Zapf (1994) conceptualise the hierarchy as going from consciousness to automaticity. Conscious strategies are necessary when a new problem is tackled or when a more routinized strategy fails to work. However, with practice in redundant environments, actions become routinized and automatic (ibid.). Automatic actions have the following characteristics: (i) they become more situationally specific, (ii) they require less effort (iii) they involve overlap between different operations, (iv) they require less feedback from the environment, (v) they require fewer decisions to be made, and (vi) movements take on a more parsimonious form (ibid.).

Frese (2007; Frese & Zapf, 1994) conceptualise a number of hierarchical levels of action regulation (see Table 3.3). These levels move from automatic movement sequences, which engage largely unconscious regulation and little effort (the sensorimotor level of regulation), to levels characteristics by schemata that require activation (the level of flexible action patterns), through to more conscious and effortful levels of regulation that engage strategies to guide goal-oriented behaviour (the intellectual level of action regulation) and onto metacognitive levels.
which refer to knowledge about how we ourselves use these strategies (the level of metacognitive heuristics).

Frese (2007) suggests that there is merit in crossing sequence and structure. The various levels of regulation crossed with sequence (or action process) are shown in Table 3.3. Such a hierarchy of action regulation mirrors similar approaches in the classification of goals (e.g. Bayer, Ferguson & Gollwitzer, 2003; DeShon & Gillespie, 2005). Frese (2007) states that intermediate goals are most often in the foreground of our attention. As this study is specifically interested in consciously set goals, the conscious and heuristic levels are more relevant. Emotions are more likely to be regulated at the lower levels of regulation, but are sometimes regulated consciously as well. This will be expanded upon in chapter 5.

Table 3.3 Levels of Regulation (Frese, 2007; Frese & Zapf, 1994)

<table>
<thead>
<tr>
<th>Structure</th>
<th>Sensorimotor/ Skill Level</th>
<th>Level of Flexible Action Patterns</th>
<th>Conscious Level</th>
<th>Heuristic Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consciously of Regulation</td>
<td>Unconscious, normally no access to consciousness</td>
<td>Access to consciousness possible, but not necessary</td>
<td>Conscious representation necessary</td>
<td>Both conscious and automatic use of heuristics</td>
</tr>
<tr>
<td>Elements of the knowledge base</td>
<td>Movement-oriented schemata, not necessarily conscious</td>
<td>Flexible action pattern</td>
<td>Complex, intellectually mediated imaging systems</td>
<td>Generalised heuristics, possibly automated</td>
</tr>
<tr>
<td>Sequence</td>
<td>No independent goals available</td>
<td>Triggered by higher level or situational cues</td>
<td>Subgoals</td>
<td>Goals</td>
</tr>
<tr>
<td>Mapping</td>
<td>Orientation reflex of environment</td>
<td>Schema</td>
<td>Conscious prognosis</td>
<td>How much knowledge necessary to feel equipped to act</td>
</tr>
<tr>
<td>Action Programs/ Plans</td>
<td>Blueprints of elementary movement patterns and cognitive routines</td>
<td>Well-known action patterns with situational specifications</td>
<td>Conscious complex plans, strategies</td>
<td>Metaplans, heuristics</td>
</tr>
<tr>
<td>Feedback/signals</td>
<td>Stereotype test programs, unconscious processing of kinaesthetic and pro-proceptive feedback signals</td>
<td>Processing of well-known signals &amp; feedback</td>
<td>Analysis and synthesis of new information</td>
<td>Abstract (non-object oriented) checks, logical inconsistencies, heuristics for feedback processing</td>
</tr>
</tbody>
</table>

Actions are regulated on a higher level when barriers, opportunities for new goals or environmental pressures appear (Frese, 2007). Given that these represent common actions and contexts experienced by entrepreneurs, one can presuppose that entrepreneurs are more likely to regulate their actions at the conscious or heuristic levels. However, Frese (2007) suggests that entrepreneurs can develop routines to search for opportunities. However, once an important new opportunity is detected action processing is more likely conscious. However, new
opportunity recognition should be easier for entrepreneurs who have been in business for some time, because they can regulate most other actions on a lower level of regulation (Frese, 2007).

An important point to note is that people may misunderstand their own action regulation. Frese (2007) suggests that entrepreneurs argue quite frequently that they decide things without much thought (i.e. intuitive decision-making), but for action theory, intuition suggests that the action is regulated on lower levels (Frese, 2007).

3.4.1.3. Focus

Focus is the third building block in Action Theory. Frese (2007) suggests that the focus of an action can be the task, the social context in which the task is done, or the self. Within a work context, an action is often conceptualised as a task. A task can be divided into internal tasks and external tasks. The external task is presented by the organisation, whereas an internal task comes from the person him/her-self. However, people develop goals both when they are creating their own tasks or when they are taking over external tasks. The result of an external task is generally anticipated as a goal (Frese & Zapf, 1994).

In addition to a task, there are two other types of regulatory foci suggested by action theory, the social and the self. Achievement in work is often based on some sort of collective activities, and performance is often based on how well the social and organisational context in which task performance takes place is regulated. In this case, the regulatory focus is the social context (Frese, 2007). Frese (2007) suggests that it is important for entrepreneurs’ success to regulate the social contexts of task performance. Social focus actions can be mapped on the same sequence of steps as tasks (as discussed above), but the main distinction is that social focus actions are primarily based on interactions. Hence, communicative actions and interactions with people are the main foci in regulating the social context.

Finally, a third focus of regulation can be the self, which has overlaps with Boekaerts (2001; Boekaerts & Niemvirta, 2005) ego-protective goals. The self focus includes aspects such as self-management, self-efficacy and the switch from self to task. Within the self-focus, this study considers motivational and emotional self-regulation. These will be explained and incorporated into the model in subsequent chapters.

The emphasis on focus within action theory has some overlaps with J. Heckhausen and Schulz (1998) discussion of primary and secondary control in their Life-Span Theory of Control. The focus of control in this theory consists of either primary or secondary control. Primary control refers to behaviours directed at the external environment, and involves attempts to change the world so that it fits the needs and desires of the individual. Secondary control, in contrast, is targeted at internal processes and serves to minimise losses and maintain and expand existing levels of primary control. Processes of primary control involve direct action on the
environment, while secondary control processes are primarily cognitive (J. Heckhausen & Schulz, 1998). Hence, the authors suggest that the defining characteristics of primary of secondary control can be conceptualised along two orthogonal attributes, each with two levels; target (external world vs. self) and process (action vs. cognition). Furthermore, J. Heckhausen and Schulz (1998) suggest that one of the main functions of secondary control is support of primary control in terms of metavolitional and metamotivational action control. The authors also demonstrate how the focus of action control can be usefully integrated into the Rubicon model of action phases (discussed below).

Frese and Zapf (1994) espouse the belief that the major advantage of action theory is not its cognitive orientation, but rather, the ease with which the theory can relate cognitive issues to applied field settings. Action theory has been shown to have a number of applications in the area of organisational psychology. The main applications which have been investigated to date include: errors and error management; the inter-relationship between work and personality; the development of competence at the workplace and training; task characteristics; work design; entrepreneurial success (Frese et al., 2007; Frese & Zapf, 1994). Frese (2009) demonstrates the relevance of taking an action approach to explaining entrepreneurship. In the first phase of starting a business, Frese (2009) suggests that most entrepreneurs have to perform many tasks for which they have no experience and little or no training, and hence, all of these tasks have to be performed on the conscious level of regulation.

3.5. Volition

Theories of volition form the second theoretical basis for the present research. Kanfer (1992) notes that the distinction between distal and proximal constructs is based on the call for differentiation of the motivational processes underlying choice and volition. Volition emphasises the importance of motivational processes that take place in the context of action (Kanfer, 1992) and as with Action Theory, it is rooted in the motivation psychology of action (Achtziger & Gollwitzer, 2008). J. Heckhausen (2007) distinguishes between issues of motivation - why we strive for certain goals- and issues of volition - how to strive for certain goals. Volitional processes are defined as those thoughts and/or behaviours that are directed towards maintaining one’s intention to attain a specific goal in the face of both internal and external distractions (Corno & Kanfer, 1993; Snow, Corno & Jackson, 1996). Binswanger (1991) describes volition as cognitive self-regulation, likening it to “focus” in the realm of optics (p. 163). He states that to raise one’s level of awareness is, in effect, to focus one’s mind, and the act of focusing one’s consciousness is volitional.

Acting “of one’s own volition” involves mobilising one’s personal resources (e.g. that aid in the allocation of time and mental effort towards tasks) and applying them when needed to direct and control efforts towards goals (Corno & Kanfer, 1993, p 303). Hence, theories of
volition have clear overlaps with Action Theory, where both take as the central concept the prediction of certain behaviours, or actions. However, where Action Theory tends to be largely cognitive in focus, volition is more motivational in focus. Kehr (2004) describes volition as an array of self-regulatory strategies to support explicit action tendencies against competing behavioural impulses. He suggests that volitional regulation is needed to support cognitive preferences insufficiently motivated by behavioural tendencies, but is not needed for cognitive preferences congruent with affective preferences.

Heckhausen (1991) describes research on motivation as being divided into two main camps; one which studies how intentions are formed, and the second which studies how intentions are implemented. Volition falls into the latter category and can be defined as the concrete implementation of actions appropriate to the attainment of a goal chosen in the motivation phase (Heckhausen, 1991). Heckhausen and Kuhl (1985) coined the term “crossing the Rubicon” to refer to the differences between motivational processes underlying the formation of intentions and those processes affecting volition. The Rubicon was chosen as a metaphor as it refers to the historical event where Caesar decided to cross the river Rubicon in northern Italy, and in doing so, violated the integrity of the Roman Empire, and instigated a civil war. Hence, the metaphor of crossing the Rubicon means to make a decision that has irrevocable consequences (J. Heckhausen, 2007).

To clarify, volition is a form of action, but is distinguished from this more general term by the fact that the intended is willed. As a result, the problems of volitional psychology have also been referred to as issues of action control (Heckhausen, 1991), clearly demonstrating the interconnectedness of volition and theories of self-regulation stemming from an action perspective.

### 3.5.1. The Rubicon Model of Action Phases (Heckhausen & Kuhl, 1985)

The second theoretical building block of the present research is the Rubicon Model of Action Phases (Gollwitzer, 1988, 1990; Heckhausen, 1991; Heckhausen & Kuhl, 1985). The Rubicon Model of Action Phases focuses on the course of action, which is considered to be a temporal, horizontal path starting with a person’s desires and ending with the evaluation of the action outcomes achieved (Achtziger & Gollwitzer, 2008). The Rubicon model defines clear boundaries between the phases of action control, and this was a significant innovation in the model’s development (Achtziger & Gollwitzer, 2008). These boundaries mark functional shifts between mindsets conducive to goal deliberation and mindsets conducive to goal achievement (Achtziger & Gollwitzer, 2008). As such, the action phases in the Rubicon model also capture (to a limited extent) some of the distal-proximal continuum suggested by Kanfer (1992), incorporating both goal-setting research with the more process oriented volitional literature.
The Rubicon model specifies a course of action involving a phase of deliberating the positive and negative potential action alternatives (predecisional phase), a phase of planning concrete strategies for achieving the goal selected at the end of the predecisional phase (preactional/postdecisional phase), a phase of enacting these strategies (actional phase), and a phase of evaluating the action outcome (postactional) (Achtziger & Gollwitzer, 2008). The first boundary occurs at the point of intention formation and separates the motivational processes of the predecisional phase from the volitional processes of the postdecisional phases. Further boundaries between phases are the initiation and conclusion of an action (Heckhausen, 1991). The Rubicon model also implies that the individual phases have their own functional characteristics, distinguishing motivational from volitional processes (ibid.). Crossing the Rubicon from motivation to volition is believed to create different work conditions and different information processing models (Corno & Kanfer, 1993; Heckhausen & Kuhl, 1985).

Figure 3.2 shows the four action phases of the Rubicon Model. The model forms a sequential structure reflecting complementary functions of the consecutive action phases (choosing, planning, acting and evaluating) (J. Heckhausen, 2007). The three breaks in the action flow are shown: the intention formation or Rubicon, action initiation, and intention deactivation (goal attainment and termination of action). While this model suggests that all actions proceed through the four phases before the next action does the same, in reality there are goal intentions which may have been formed long ago in the predecisional motivational stage that still await their implementation (Heckhausen, 1991). Hence, at any given time, there are many intentions in the preactional phase that are essentially in a waiting state until they can gain access to action (ibid.).

Intention or goal formation occurs in the first phase of pre-decisional motivation, and is characterised by deliberation, where an individual must choose between alternative goals and deliberate on the advantages and disadvantages of the goal incentives, and the expectancies of
obtaining the goal (J. Heckhausen, 2007). As deliberation in this phase is not overly long, Heckhausen (1991) postulates a metavolitional control process, which results in a tendency to wind-up deliberations and to control information processing in order to assure that implementation of the initially-planned goal intentions retain priority. Metavolitions ensure that the flow of information is processed in a manner favouring the implementation of the adopted goal intention (Heckhausen, 1991). The result of this deliberation phase culminates in commitment to a specific goal, and crossing the Rubicon from wishes to goals (Achtziger & Gollwitzer, 2008).

When the decision about a goal intention has been made, the decisional Rubicon is crossed, and one enters the next phase which is post-decisional but pre-actional (J. Heckhausen, 2007). Action initiation occurs in the pre-actional volitional phase. The term volition indicates that the motivational deliberation of potential action goals has been terminated and the individual is now committed to achieving a specific goal (Achtziger & Gollwitzer, 2008). The task of this phase is to determine how best to achieve a specific goal state (Achtziger & Gollwitzer, 2008) and is functionally dedicated to planning (J. Heckhausen, 2007). Hence, in this stage, behavioural intentions are formed. Behavioural intentions are only formed for goal intentions whose initiation and execution are difficult and, are also conceptualised as metavolitions (Heckhausen, 1991).

As soon as action is initiated, we move into the actional volition phase, where the initiated action is guided by the mental representation of the relevant goal intention. In this stage, the focus is on pursuing goal-directed actions and bringing them to successful conclusion (Achtziger & Gollwitzer, 2008). The processes that keep an action on course, and protect it from competing intentions are controlled. Intensity and perseverance of action is determined by the volitional strength of the goal intention (Heckhausen, 1991), and this strength acts as a kind of threshold value for effort exertion (Achtziger & Gollwitzer, 2008).

The conclusion of an action directed towards implementing a goal intention signals the onset of the post-actional motivation phase. The task to be addressed in this stage is a motivational one (Achtziger & Gollwitzer, 2008). This phase entails evaluating the attained action outcome and contemplating possible inferences to be drawn for future actions. If the individual is satisfied with the outcome, the goal intention is deactivated, while if the goal has not been reached, one must examine why this happened in order to decide whether to continue to pursue the goal intention, to modify it, or to abandon it (Heckhausen, 1991).

In addition to the phases within the Rubicon model, each phase is associated with a different “mind-set”, which relates to the thought contents and the selection and processing of information within each phase (Gollwitzer, 1990; Heckhausen, 1991). These mindsets prepare a person to act and appropriately tune information processing to facilitate the operations required
in each phase. More specifically, Heckhausen (1991) distinguishes between the motivational mind-set and volitional mind-set. The motivational mind-set is concerned with whether the receiving and processing of information meets the task demands, and hence, is reality-oriented. In contrast, the volitional mind-set is implementation oriented. Plans of action and behavioural intentions that focus attention characterise the volitional mind-set (Heckhausen, 1991). These two mind-sets are similar to what Gollwitzer and Bayer (1999) term deliberative and implemental mindsets. Both mindsets are considered functional to effective goal pursuit, as they provide the cognitive orientations most useful to solving the tasks of choosing between potential goals and implementing chosen goals (Gollwitzer & Bayer, 1999). These two mind-sets also have overlaps with the motivational and volitional resources that will be discussed in chapter 4.

3.6. Goals, Goal-Setting and Self-Regulation

Action Theory and the Rubicon Model of action phases suggest that the pre-decisional phases or goal-setting phases of action are required before goals can be implemented and action taken (e.g. Kanfer, 1992; Latham & Locke, 1991). Hence, more distal goal concepts are likely to have an impact on action through more proximal processes. Hence, in the sections which follow, more distal goal processes such as goal-orientations, and goal-setting are discussed, and their potential for integration with action theories are outlined. From a cognitive perspective, the present research takes the goal as its starting point, and hence, it is prudent to examine the nature of goals and goal-setting in addition to theories of self-regulation.

By far the largest empirical literature on mechanisms of self-regulation concerns various aspects of the goal execution sequence (i.e. maintenance, change, and/or termination of action) (Karoly, 1993). However, Elliot and Fryer (2008) note with surprise how little the precise nature of the term goal has been explicitly discussed in the literature, with researchers and theorists commonly neglecting to offer a definition of “goal” (p. 235). Furthermore, they point out that researchers and theorists not only exhibit disagreement in their technical definitions of goal, but they also conceptualise goals in many different ways. Austin and Vancouver (1996) offer a definition of goals as internal representations of desired states. Elliot and Fryer (2008) further this definition, defining a goal as “a cognitive representation of a future object that the organism is committed to approach or avoid” (p. 244). Furthermore, goals are focused on the future, meaning that goal-directed behaviour is proactive, not reactive. Implicit in this conceptualisation is that the mental image of the future possibility has a causal influence on present behaviour (Elliot & Fryer, 2008).
3.6.1. The nature of the goal: Goal structure

Goals serve as concrete points of reference for directing our actions in fulfilment of our needs (Shah & Kruglanski, 2005), and as such play a central role in theories of self-regulation. Goal content theories focus on the thematic and structural properties of set goals and attempt to explain differences in goal-directed behaviour in terms of what an individual specifies as the goal (Gollwitzer & Bayer, 1999). Generally, such theories have been considered to be conceptually distinct from theories of self-regulation, which focus on the question of how people overcome certain implementational problems (Gollwitzer & Bayer, 1999). However, as will be shown towards the end of this chapter, it is argued here that there are distinct advantages to incorporating both approaches in order to develop a more complete picture of the role that goals play in the self-regulation process and in achieving success.

Goal structure refers to the hierarchical organisation of goals and the properties of goals and dimensions on which goals vary (Austin & Vancouver, 1996). In addition, the structure of goals is conceived in terms of their inter-relationships (Austin & Vancouver, 1996). Lower level goals can be conceptualised as the means by which higher-level goals are attained (Lord & Levy, 1994; Lord et al., 2010). Two conceptualizations of structure will be examined: goal orientations, and goal hierarchies.

3.6.1.1. Goal Orientation

Goal orientation represents one manifestation of the nature of goals. DeShon and Gillespie (2005) suggest that goal orientation is a promising motivational construct that may explain why some individuals adapt to change better, and so may be important in the context of entrepreneurship, where change is a feature of the environment. Goal orientation represents choice behaviour in achievement situations, influencing the decision between many possible courses of action that individuals may choose to take in a particular context (DeShon & Gillespie, 2005; Schmidt, Dolis & Tolli, 2009). In the organisational psychology literature goal orientations have been found to predict job performance above and beyond cognitive ability and personality (Payne, Youngcourt & Beaubien, 2007) and at multiple levels of analysis (Yeo, Loft, Xiao & Kiewitz, 2009). In the context of entrepreneurship, it has been suggested that anxious owners may take more risks, while promotion-focused owners, who are more strongly oriented towards achieving positive goals, are less anxious, and take less risks (Baron, 2004; Frese, 2007).

One of the major issues to date in advancing research in the area of goal orientation has been definitional and measurement inconsistencies. DeShon and Gillespie (2005) demonstrated that there are five categories of definitions: goals, traits, quasi-traits, mental frameworks and beliefs. The most common definitional approach to goal orientation views it as the adoption and
pursuit of specific goals in achievement contexts (DeShon & Gillespie, 2005). A two-by-two matrix has been proposed to conceptualise the two types of goal orientations- mastery and performance goals- with two different valences- approach or avoidance (Baranik, Barron & Finney, 2007; Elliot & McGregor, 2001; Pintrich, 2005; see Table 3.4.). Goal orientation has overlaps with theories of regulatory focus (e.g. Brockner & Higgins, 2001; Higgins, 1996, 2002; Higgins & Silberman, 1998; Shah, Higgins & Friedman, 1998) where the approach/avoidance distinction is also evident. The mastery avoid orientation represents a development from previous research where three orientations were specified (mastery; performance approach and performance avoid), although up to six orientations have been investigated in past research (DeShon & Gillespie, 2005). Elliot (1999) suggested that the typical mastery goal orientation is an approach goal, but Elliot and McGregor (2001) argue that, although less common, a mastery-avoid goal is possible, giving the example of an expert who desires to avoid losing skill.

Van Yperen (2006) investigated this 2x2 framework, by comparing individuals according to their dominant achievement goals. He found that mastery approach goals were associated with need for achievement, general self-efficacy, positive affectivity, perfectionistic striving and intrinsic motivation. Performance-avoid goals were associated with negative affectivity, socially prescribed perfectionism, extrinsic motivation, and amotivation. Dominant performance approach goals were associated with high scores on both positively and negatively valenced variables, and dominant mastery-avoidance goals were associated with low scores on both types of variables (Van Yperen, 2006).

Kaplan and Maehr (2007) note that individuals may adopt several different goal orientations depending upon certain contextual conditions. The suggestion here is that individuals perceive cues in the environment that highlight the salience of one goal orientation or another, which in turn, guides thoughts, feelings and behaviour in accord with this orientation. Hence, the concept of goal-orientation has overlaps with Bandura’s (1991) social cognitive theory of self-regulation. Adopting a performance-approach goal along with a mastery-approach goal has been posited as promoting optimal motivation, as these goals are associated with high performance levels and high interest (Harackiewicz, Barron, Pintrich, Elliot & Thrash, 2002).
Table 3.4 Two goal orientations and their approach and avoidance forms (Pintrich, 2005; p. 477).

<table>
<thead>
<tr>
<th></th>
<th>Approach Focus</th>
<th>Avoidance Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mastery orientation</td>
<td>Focus on mastering task, learning understanding</td>
<td>Focus on avoiding misunderstanding, avoiding not learning, or not mastering task</td>
</tr>
<tr>
<td></td>
<td>Use of standards of self-improvement, progress, deep understanding of task</td>
<td>Use of standards of not being wrong, not doing it incorrectly relative to task</td>
</tr>
<tr>
<td></td>
<td>(Learning goal, task goal, task-involved goal)</td>
<td></td>
</tr>
<tr>
<td>Performance orientation</td>
<td>Focus on being superior, besting others, being the smartest, best at task in comparison to others</td>
<td>Focus on avoiding inferiority, not looking stupid in comparison to others</td>
</tr>
<tr>
<td></td>
<td>Use of normative standards, such as getting best or highest grades, being top or best performer</td>
<td>Use of normative standards of not getting the worst grades, being lower performer in class</td>
</tr>
<tr>
<td></td>
<td>(performance goal, ego-involved goal, self-enhancing ego orientation, relative ability ego)</td>
<td>(performance goal, ego-involved goal, self-defeating ego orientation)</td>
</tr>
</tbody>
</table>

There is a reasonable amount of literature examining the relationship of mastery goals to motivational beliefs such as efficacy, value, interest, attributions and affect (motivational self-regulation), which indicate that adopting a mastery goal has positive implications for these variables (see Pintrich, 2005 for a review). VandeWalle et al. (1999) found that a learning goal orientation had a positive relationship with sales performance, but was fully mediated by three self-regulatory strategies: goal setting, effort and planning. In contrast, a performance goal orientation was unrelated to sales performance. Hence, the goal orientation concept appears relevant to consider in the context of self-regulation. Button et al. (1996) highlighted that a performance orientation is typically necessary in an organisational context, where employees must meet performance standards for the organisation in order to be successful. Hence, they suggested that a balance of both orientations (mastery and performance) is adaptive in most work settings, and this style can only be elucidated if a two dimensional goal orientation approach is adopted. The suggestion that individuals can be simultaneously high or low on the dimensions of goal orientation (DeShon & Gillespie, 2005) is only compatible with a proximally oriented approach to motivation and goals, and a state approach to goal orientation (Dragoni, 2005), rather than trait approaches (e.g. Fisher & Ford, 1998; VandeWalle & Cummings, 1997). State goal orientation is characterised by its dynamic nature and responsiveness to situational influences (Dragoni, 2005; Dweck & Leggett, 1988). Dragoni (2005) proposed that leadership and climate perceptions influence the state goal orientations that will be adopted by employees. Entrepreneurs operate in a weak situation, where there are not strong indicators as to what the appropriate goal orientation might be for the context. Hence, being able to adopt an appropriate state goal orientation in this context is an example of an adaptive self-regulatory strategy.

De Shon and Gillespie (2005) also highlight that a number of researchers conceptualise goal orientations as being domain-specific, rather than relatively stable individual difference
variables. This suggestion is particularly relevant to early stage entrepreneurs, who typically attempt to balance the high level of knowledge acquisition needed to start a new company, as well the more performance oriented tasks required to keep the nascent organisation afloat in the first few years of start-up. Hence, entrepreneurs may take a mastery or performance approach to the business overall, but across situations, domains, and time, there may be some fluidity in the choice of orientation towards goals. This suggests that success may lie in taking an adaptive approach where such early stage entrepreneurs alternate between mastery goals in terms of advancing their skill as an entrepreneur, and performance goals relating to making a success of the business.

3.6.1.2. Goal Hierarchies: Motivated Action Theory

DeShon and Gillespie (2005) forward the Motivated Action Theory (MAT) to integrate goal orientation with self-regulation and goal-oriented action models (e.g. Carver & Scheier, 1998; Frese & Zapf, 1994). The assumptions on which this theory rests are: (a) action is directed towards the attainment of goals, (b) goals are hierarchically structured within the individual, such that high-level goals are distal desired states and lower level goals are means to obtain the higher level goals, (c) a single goal controls action at any given point in time, (d) activation levels determine which goal guides behaviour at a given point in time, and (e) situational features interact dynamically with activated goals to affect choice and behaviour. This last point is of particular relevance to entrepreneurs. Environmental volatility is a typical characteristic of entrepreneurs’ environments, and such ambiguous and unpredictable contexts create a relatively weak situation (Schmidt et al., 2009). The effects of goal orientation appear to be strongest under such conditions (Schmidt et al., 2009).

DeShon and Gillespie (2005) suggest that goals are hierarchical structures (see Figure 3.3), which can be likened to the hierarchical levels in Frese and Zapf’s (1994) action theory. At the top of the hierarchy are self-goals, which refer to the fundamental outcomes that all individuals must achieve, for example, to lead normal, healthy, fulfilling lives. Principle goals are general heuristics or behavioural principles that serve as guides for clusters of behaviour (DeShon & Gillespie, 2005). In entrepreneurial terms, such goals often relate to growth of the business, to adding or creating value in some form. The achievement goals in the model are most closely associated with goal orientations. They are intermediate goals and reflect the general action patterns that individual’s use in achievement situations to pursue principle goals (DeShon & Gillespie, 2005). Hence, an individual will adopt an achievement goal that suits the profile of the principle goal being pursued (ibid.). Finally, the action plan goals specify a mechanism for achieving the goal, and tend to be highly flexible strategies, pathways or trajectories for achieving desired goals (ibid.).
The first three steps in Frese’s (2007; Frese & Zapf, 1994) action process are largely analogous to the goal hierarchy in DeShon and Gillespie’s (2005) Motivated Action Theory. The goal to found a firm (approach) or not to work as an employee (avoidance) can be considered principle goals. These then get translated into achievement goals, which are necessarily related to the area in which the goal will operate. Finally, planning how to achieve this goal is equivalent to action plan goals in MAT terminology or to subgoals as Frese refers to them elsewhere (see Kraus et al., 2005).

There are also synergies to be found between MAT and the aspect of structure in Action Theory. Frese (2007) suggests that higher level goals, such as life goals or moral standards (self goals in MAT terminology), are typically not in the foreground of our attention, and we can only attend to those goals that are of immediate action relevance due to limitations in working memory capacity. Hence, intermediate goals are most often in the foreground of our attention (Frese, 2007). This suggests that achievement goals (and to some extent principle goals in DeShon & Gillespie’s goal hierarchy) are more often the focus of an individual’s attention. It is possible to map MAT’s goal hierarchy onto the sequence hierarchy of Action Theory. Self-goals and principle goals can be considered meta-goals, and reside under the Heuristic level of regulation. Achievement goals also lie under the Heuristic level, but are considered goals. Finally, Action Plan goals can be considered subgoals, and reside at the conscious level of regulation.

This hierarchy of goals has several implications with regard to issues in thinking about behaviour. The hierarchy suggests that goals at any level can be achieved by a variety of means at lower levels. This explains the fact that people can sometimes radically shift the manner in
which they try to reach a goal when the goal itself has not changed (Carver & Scheier, 2000a). In a similar vein, a particular act can be performed in the service of diverse goals. Hence, Carver and Scheier suggest that behaviour can only be understood by identifying the goals to which behaviour is addressed. Furthermore, Cron et al. (2005) found that each dimension of goal orientation may play different roles as goal-setting and performance events unfold.

In the domain of entrepreneurship, Kuratko, Hornsby and Naffziger (1997) report on a study examining an owner’s goals in relation to sustaining entrepreneurship, which in retrospect can be fitted to Motivated Action Theory. Results indicated that owner’s goals can be divided into four main factors; extrinsic rewards (e.g. increasing income or wealth), independence/autonomy, intrinsic rewards (e.g. challenge, excitement, personal growth) and family security. As such, these goals can be classed as principle goals. However, little research in the domain of entrepreneurship has investigated how such macro-levels goals get translated into more proximal goals, such as achievement goals and plans. Noel and Latham (2006) report on an experimental study investigating learning and outcome goals in entrepreneurship. Results indicated that participants who used a learning goal were able to keep their simulated firms running longer than those using a performance goal. However, this has not been investigated in the field with individuals currently engaged in entrepreneurship, although Sarasvathy’s (2008) consideration of entrepreneurial expertise, with the distinction between means drives versus goal driven action would seem to have overlaps with goal orientations.

3.6.2. The nature of the goal: Goal dimensionality

*Goal dimensions* are constructs on which goals vary, and both the content of goals and the values of goal dimensions can change (Austin & Vancouver, 1996), and represent a second way of conceptualising the nature of goals. Goal dimensionality is a key consideration when examining the roles that goals play within a self-regulatory framework. Austin and Vancouver (1996) identified six common factors of goal dimensionality across empirical and theoretical approaches: (a) importance-commitment, (b) difficulty-level, (c) specificity-representation, (d) temporal range, (e) level of consciousness and (f) connectedness-complexity, which vary in one of three contexts: person, time, and goals. The first context, between persons, refers to the differences in the level of a dimension for the same goal or goal set across individuals. For the contexts of time and goals, the level of analysis is usually within the individual. Time focuses on how a goal or goals may change over time, while the goal context focuses on how goals interact with each other within a person. Hence, the goal context focuses on what goal dimensions determine which goals receive what resources (Austin and Vancouver, 1996).

Goal dimensionality has influenced Action Theory (Frese & Zapf, 1994) as well as other cognitive theories of self-regulation many of which include the Test-Operate-Test-Exit (TOTE) cycle (Austin & Vancouver, 1996). In this cycle, stimulus input is evaluated through a
comparison with a standard (a goal), operated on to bring the input in line with the standard and tested again for a match. Once a match is achieved, the loop is exited (Austin & Vancouver, 1996). This process describes a discrete cybernetic model (ibid.). The present research focuses on two specific goal dimensions which have been found to be important in goal setting: goal difficulty and goal specificity.

3.6.2.1. Goal-setting

Goal processes are the behaviours and cognitions related to striving towards multiple goals (Vancouver & Day, 2005). Goal setting can be likened to goal establishment which is the first stage of any goal process. The goal-setting model concentrates almost exclusively on the influence of goal content attributes on performance, whereas goal-orientation approaches focus on the influence of goal type on patterns of self-regulation (Kanfer, 1992). Goal-setting theory suggests that the simplest and most direct motivational explanation for why some people perform better than others (when ability and knowledge are held constant) is because they have different performance goals (Latham & Locke, 1991). The theory is based on the premise that conscious goals affect action, in the sense that a goal is seen as the object or aim of an action (Locke & Latham, 2002). One of the greatest contributions that goal-setting theory can make to theorising and research on self-regulation is to provide it with a framework for integrating cognitive, motivational, behavioural and environmental aspects of self-regulation. This is a contribution which has, to date, not been fully exploited.

Locke & Latham’s (1990) theory of goal setting focuses on the relationship between conscious performance goals and level of task performance rather than on discrete intentions to take specific actions (Locke & Latham, 2002). Goals have been found to regulate performance through four mechanisms: (a) goals serve a directive function in directing attention and effort toward goal-relevant activities, an effect which occurs both cognitively and behaviourally (b) goals have an energising function, whereby high goals lead to greater effort than low goals, (c) goals affect persistence, whereby difficult goals may prolong effort, and finally (d) goals affect action indirectly by leading to the arousal, discovery and/or use of task-relevant knowledge and strategies (Latham & Locke, 1991; Locke & Latham, 2002). There are times when the first three mechanisms are insufficient to attain a goal, and in such circumstances the individual must develop or discover new strategies if the goal is to be achieved (Latham & Locke, 1991). It is in this scenario that final mechanism in (d) above become relevant.

Integrating the research on the various aspects of goals and goal-setting with the research on self-regulation has been considered by a number of researchers. Locke and Latham (2002) state that goal setting is a key variable in self-regulation and is applicable to any self-regulated activity. Latham and Locke (1991) suggest that the setting of goals, and their translation into action is a volitional process. Furthermore, from a self-regulatory perspective, a specific
difficult goal clarifies for a person what constitutes effective performance (ibid.). Gollwitzer, Fujita and Oettingen (2004) discuss the distinction between goal intentions and implementation intentions (i.e. if-then plans), suggesting that both are set in an act of willing: the goal intention specifies the intention to meet a goal or standard, and the implementation intention refers to the intention to perform a plan. As such, both goal intentions and implementation intentions can be seen as two stages in the process of self-regulation, more often referred to as planning in this literature (e.g. Action Theory). Gollwitzer, Fujita and Oettingen (2004) suggest that making if-then plans (forming implementation intentions) that specify an anticipated critical situation and link it to an instrumental, goal directed response is an effective self-regulatory strategy.

In addition to goal difficulty and specificity, intensity has also been found to be a factor relating to the setting of goals for performance (Latham & Locke, 1990). Gollwitzer, Heckhausen and Ratajczak (1990) found that individuals who thought more intensely and comprehensively about how to solve a problem were more likely to become committed to solving it, and were more likely to take action to solve it. This finding has close links to Kehr’s (2004a) compensatory model of work motivation and volition (discussed in chapter 4) which includes a problem-solving aspect. The findings of this study also corroborate research on planning in the self-regulatory process, which suggests that the elaborateness of a plan is linked to success (Frese et al., 2007). Further evidence of interactions between goal-setting and self-regulation come from research conducted by Frayne and Geringer (1990), which suggested that a leader’s skill in self-management, and more specifically, in goal-setting, self-monitoring and self-assessment, was correlated significantly with the performance of the international joint venture. Similarly, in the entrepreneurship domain, two studies by Locke and colleagues (Baum, Locke & Smith, 2001; Tracy, Locke & Renard, 1999) found quantitative measures of goal difficulty to be related to performance. Hence, self-regulatory processes and goal-setting at the level of the individual appear to be important for success at the organisational level. This finding may have particular relevance to early stage entrepreneurs, where the individual and the organisational level of analysis are typically difficult to separate.

Echoing the goal hierarchy in DeShon and Gillespie’s (2005) model, research in the goal-setting/self-regulation literature suggests that both distal and proximal goals may be important. Frayne and Geringer (1990) found that in self-management training, the setting of both proximal and distal goals was identified as an effective behaviour pattern of people who lead successful joint ventures. Seijts et al. (2004) investigated goal-setting and goal regulation together in a complex business simulation. Their findings suggested that a specific learning goal led to higher performance than did either a specific performance goal or a vague goal. Furthermore, self-efficacy mediated the effect of a learning goal on performance.
3.7. The Present Model of Action Steps within the Rubicon Model of Work Volition

Research has been somewhat illusive in developing an overarching theory which describes how all the various aspects of goals (e.g. structure, content, orientation, goal setting) fit with research on self-regulation. However, Vancouver and Day (2005) identified a number of common constructs identified in the literature as being part of self-regulation. These include self-efficacy, goals, feedback, goal orientation, discrepancy and goal commitment. Wood (2005) expresses concerns that this definition does not create a broad enough frame for self-regulation research, and as a start, it could be broadened to include both internal and external processes included in the purposeful pursuit of goals. Furthermore, he recommends that the consideration of transactional processes can also provide boundary conditions for the engagement of self-regulatory processes. Transactional processes are those that link the internal self-regulatory processes to the context of human action can provide boundary conditions for the engagement of self-regulatory processes, which are activated by certain events, such as when people confront task challenges or novel situations, when routine behaviour is disrupted, when people receive feedback on their progress, when significant external incentives are at stake, or when social cues draw attention to the self (Karoly, 1993; Wood, 2005).

Most research on self-regulation in work settings focuses on regulation at an intermediate level around task or action goals (Lord et al., 2010). This is the starting point of the present research also, which uses Frese’s (2007, Frese & Zapf, 1994) action theory of self-regulation and the Rubicon model as the basic templates for the cognitive model of self-regulatory mechanisms in entrepreneurs. It also draws on a whole host of other self-regulation theories, in addition to theorising about goal orientation and goal-setting to develop the complete model of cognitive, motivational, affective and behavioural aspects of self-regulation in entrepreneurs. These additional self-regulation theories and their relevance will be discussed over the following two chapters. However, the basic model (see Figure 3.4) presented in this chapter represents the incorporation of Frese’s action stages with the Rubicon phases, and so represents the cognitive nature of the process. The motivational and affective components will be incorporated in subsequent chapters.

Action theory is one of the few theories of self-regulation which has been explicitly used in researching entrepreneurs (Frese, 2007), and so serves as a strong starting point for building the present model of self-regulation in entrepreneurs. Although action theory is a meta-theory, it can provide an integrative function to explain entrepreneurial phenomena, such as psychological action strategies or failures and errors by entrepreneurs (Frese, 2007), and has recently been used as the foundations of an active approach to entrepreneurial performance (Frese, 2009). A further advantage of using action theory in the entrepreneurial context is its
individualistic nature, which makes it particularly relevant to the first stages of development of a firm, during which time individual entrepreneurs have a huge influence on what is happening in their firms (Frese, 2007). Hence, for the present study which examines self-regulatory strategies in early stage entrepreneurs and new business owners, action theory represents a self-regulation theory which has previously addressed the entrepreneurial context, and which is also relevant to the contextual and temporal dimensions of the research.

However, Action Theory is largely a cognitive theory, and does not incorporate motivational and emotional aspects to any great degree. The Rubicon model is volitional, and hence, motivational in its focus. Bringing these theories together allows for a more comprehensive approach to the study of self-regulation. There are clear synergies between Frese’s (Frese, 2007; Frese & Zapf, 1994) theory of action regulation and the Rubicon model of action phases (Heckhausen, 1991). Frese (2007) suggests that in order to consider the interplay of the steps in the action sequence one must look to the Rubicon model. He suggests that planning is what makes people cross the Rubicon. Once people plan, an intention is transformed into an implementation intention, and the Rubicon is traversed. Frese (2007) suggests that planning is more important in entrepreneurship, because there is no-one else who structures the goals and the ways of achieving those goals for the individual entrepreneur.

Similarly, there are overlaps between Action Theory, theories of goal-setting and Motivated Action Theory (MAT). DeShon and Gillespie (2005) even acknowledge the influence of Action Theory in their development of MAT, and Latham and Locke (2001) discuss the self-regulatory function served by goal-setting. Hence, goal orientations and goal-setting also fit quite neatly into the emerging model.

Figure 3.4 presents the basic theoretical model of self-regulatory processes in entrepreneurs that was investigated in the present research. Presented below are the more specific empirical models to be tested and their associated hypotheses. As this basic model only deals with the cognitive components of the self-regulation, these hypotheses specify the expected relationships between achievement goals, goal setting, planning and success. The hypotheses are drawn from the proceeding discussion relating to the components of Action Theory, the Rubicon Model, MAT, and Goal-Setting Theory.
Figure 3.4 The cognitive model of self-regulatory processes in early stage entrepreneurs.
Chapter 3  

Given the way in which goal-setting and planning were assessed (which is discussed in more detail in Chapter 8), the hypotheses will test the effects of goal-setting and planning in separate analyses, to avoid issues of multicollinearity.

**Hypothesis C1**: Mastery approach goals and performance-approach goals will have a direct positive effect on (a) objective success, (b) subjective perceptions of success and (c) external evaluations of success, while performance-avoid goals will have a direct negative effect.

Hypotheses C2, C3, and C4 specify the expected relationships between planning, goal orientation and success.

**Hypothesis C2**: Entrepreneurs who engage in more elaborate and proactive planning will show higher levels of (a) objective success, (b) external evaluations of success, and (c) subjective success.

**Hypothesis C3**: Mastery approach and performance-approach goals will be positively predict planning, while performance-avoid goals will negatively predict it.

**Hypothesis C4**: Mastery-approach goals and performance-approach goals will have an indirect effect on (a) objective success, (b) self-perceptions of success and (c) external success through planning.

Hypotheses C5, C6 and C7 specify the expected relationships between goal-setting, actions towards one’s goals, goal orientation and success.

**Hypothesis C5**: Entrepreneurs who engage in goal setting (setting specific difficult goals) will show higher levels of (a) objective success (b) external evaluations of success, and (c) self-perceptions of success.

**Hypothesis C6**: Entrepreneurs who have taken more actions towards achieving their goals will show higher levels of (a) objective success (b) external evaluations of success, and (c) self-perceptions of success.

**Hypothesis C7**: Mastery approach and performance-approach goals will be positively predict goal-setting, while performance-avoid goals will be negatively predict it.

**Hypothesis C8**: The effect of mastery-approach goals and performance-approach goals on (a) objective success, (b) self-perceptions of success and (c) external success will be mediated by (i) goal-setting and (ii) actions towards goals.

**Hypothesis C9**: Goal-setting will have an indirect effect on (a) objective success and (b) subjective perceptions of success and (c) external success through the actions one has taken to achieve their goals.
Figure 3.5 outlines the empirical model (as opposed to the theoretical model) for the cognitive components. Note that for clarity, only the direct paths between each sequential phase are included, but all direct and indirect effects are specified in the hypotheses.

Figure 3.5.a Hypothesised direct relationships between goal orientation and success

Figure 3.5.b Hypothesised relationships between goal orientation, planning and success.

Figure 3.5.c Hypothesised relationships between goal orientation, goal-setting, actions and success.
CHAPTER 4: Motivation and the Self-Regulation Process

Being able to control our own motivation is an important self-regulatory problem...Successful self-regulation involves the regulation of both goals-defined and experience-defined motivation.
(Sansone, 2009; p. 47)

4.1. Introduction

The purpose of this chapter is to introduce the motivational path of the proposed model. In order to do so, theories of self-regulation that (a) are motivational in nature, and (b) integrate motivational and cognitive concepts are reviewed and discussed. Following this, the model is built upon and the motivational path is presented in conjunction with the cognitive path. Each of the individual motivational and volitional components are then discussed, before the empirical models with their associated hypotheses are presented. These empirical models pertain to the relationships between the motivational paths and success, and to the integration of the motivational and cognitive components. To facilitate ease of reference, hypotheses pertinent to this chapter are preceded by the suffix “M”.

4.2. Self-regulation as proximal motivation.

Kanfer (1992) suggested that self-regulation is located at the proximal end of the continuum of motivation theories (see Figure 4.1), focusing on motivational constructs at the level of purposive action. Such constructs tend to start with an individual’s goals rather than with the factors that have shaped the individual’s objectives. Kanfer (1992) suggests that self-regulation and volitional activities pertain to the system through which persons translate goals into action, and the reason they are termed proximal is because the product of these processes typically exerts a direct influence on behaviour. The proximal-distal distinction is also evident in Kanfer’s (1996; Kanfer & Ackerman, 1989) integrated resource allocation model, which will be discussed in more detail below.

This proximal-distal distinction forms one of the core building blocks of the conceptual framework being developed in the present research. Although self-regulation is primarily considered a proximal phenomenon, there are many distal influences which can have their effect through self-regulatory processes. The terms proximal and distal refer to the continuum of generality along which all person concepts can be differentiated (Frese & Fay, 2001). Personality, along with knowledge, skills and abilities are distal causes of behaviour, while orientations are of medium specificity, in the sense that they are more specific and more action-oriented, and closer to behaviour than the distal causes (Frese & Fay, 2001). As such, the
proximal-distal distinction is suggestive of a process approach, although it includes distal, stable variables that are not subject to action processes, but may exert an influence on such processes.

![Figure 4.1 Kanfer's (1992) Heuristic framework of motivation constructs and exemplar motivation theories.](image)

There are clear overlaps between Kanfer’s proximal-distal continuum and the phases of the Rubicon model. Kanfer and Ackerman (1989) suggest that distal motivational processes are initially antecedent to task engagement (action initiation or phase 3 in the Rubicon model) and that distal decisions set the stage for resource availability during task engagement. They give the example of an individual who is faced with learning a new skill to demonstrate how distal motivational processes operate:

“The individual judges the utility of performing this new skill through a perceived performance-utility function. [Phase 1] If the utility function is positive, a decision to engage in the task must also be predicated on a judgement of the relation between the individual’s effort and performance (i.e. the perceived performance-resource function). [Phase 2 - Crossing the Rubicon] The perceived performance-resource function provides a mapping between effort and expected performance that allows an evaluation of the benefits of particular levels of performance relative to anticipated costs of expending effort. Optimisation of effort-utility and performance-utility yields an intended level of effort to be devoted to the task [Phase 3]” (Kanfer & Ackerman, 1989; p. 661; comments in brackets were added).

Hence, there is a clear justification and utility in adding the proximal-distal conceptualisation to the Action Theory/Rubicon model integration.
4.3. Entrepreneurs and Motivation

Heckhausen’s (1991) model of volition and Frese’s (2007; Frese & Zapf, 1994) Action Theory of self-regulation fit quite well with a recent review of entrepreneurial motivation, which Locke & Baum (2007, p. 93), defined as “motivation that is directed toward entrepreneurial goals (i.e. goals that involve the recognition and exploitation of business opportunities).” Overall, however, motivation has received relatively little attention in the entrepreneurship domain. Yet, Shane Locke and Collins (2003) consider motivation an integral component of the decisions that entrepreneurs make, and argue that the variance across people in terms of their motivations will influence who pursues entrepreneurial opportunities, who assembles resources, and how people undertake the entrepreneurial process.

The majority of quantitative research examining entrepreneurial motivation in the past has focused on trait, or reasonably stable, dispositional manifestations of motivation, for example, need for achievement, risking-taking propensity, tolerance for ambiguity, locus of control and general self-efficacy (Shane, Locke & Collins, 2003). The need to move beyond the limited array of motivational constructs that have been studied to date in entrepreneurs is recognized (e.g. Shane, Locke & Collins, 2003). Goal-setting is one exception to the more typical trait approach to entrepreneurial motivation in past research (e.g. Naffziger, Hornby & Kuratko, 1994), although self-efficacy has also been examined at the task-specific level in a limited number of cases (e.g. Baum, 1994). The present research moves beyond the majority of previous studies of motivation in the entrepreneurship domain, which have largely focused on the concept of need for achievement (nAch) (Collins, Hanges & Locke, 2004; Johnson, 1990; McClelland 1955, 1961, 1962; Stewart & Roth, 2007).

Locke and Baum (2007) provide some direction with regard to advancing research on entrepreneurial motivation, recommending that future studies incorporate trait measures, as well as general, and situationally specific variables. They identified a number of distinct motivational factors within the entrepreneurship domain; namely situational factors, motivational traits, values and motives (independence, general self-confidence, achievement motivation, and drive which comprises proactivity, ambition and energy), and situationally specific motivators (self-efficacy, goals and vision). Their model (see Figure 4.2), which was supported in their empirical research, suggests that general traits have their influence on performance through situationally specific motivators. This approach supports the distal-proximal work of Kanfer (1992) and also provides general support for the model being developed in the present research (see Figure 4.5). Motivational traits, values and motives tend to be represented in the motivational pre-decisional phase of Heckhausen’s models, and in the present research, are labelled motivational resources. Situationally-specific motivation tends to
be relevant in the volitional phases of Heckhausen’s model. In the present research, motivation will be assessed in the volitional stage in the form of volitional resources.

![Figure 4.2 Summary of motivational traits and situationally specific motivations determining entrepreneurial performance (Locke & Baum, 2007).]

The present research also addresses a number of problems with previous research in the area of entrepreneurial motivation (as outlined by Shane, Locke & Collins, 2003). Firstly, human motivations can influence the tendency of people to engage in entrepreneurial activities only if those activities are possible. By examining motivation as it manifests in the phases of action regulation outlined in the Rubicon model, the present research addresses this shortcoming. Secondly, the processual nature of entrepreneurship means that entrepreneurship is episodic, entrepreneurial action is not long lasting, and this means that it is unrealistic to assume that motivation will remain stable across each of the steps in the entrepreneurial process. The present research attempts to address this by considering entrepreneurs in the early stages of business formation only. Thirdly, Shane, Locke & Collins (2003) recommend that researchers need to go back to the psychological literature on motivation in order to better define and measure the important motives for entrepreneurs. Finally, they also note the importance of considering the indirect effects of motivational traits. The present research examines both direct and indirect effects of motivational and volitional resources on volitional cognition and success, hence, addressing this issue.


In order to address the shortcomings of previous research investigating motivation in entrepreneurs, it is first necessary to consider some of the recent theories of work motivation, and how they are interlinked with self-regulation. Mitchell (1982) defined motivation as those psychological processes that cause the arousal, direction, and persistence of voluntary actions that are goal directed. As such, motivation represents any force that energizes and directs people to perform their jobs. The present research is primarily concerned with self-regulatory processes which fall at the proximal end of the motivation continuum as outlined by Kanfer (1992). Kanfer and Ackerman (1989, p. 661) term “the choice to engage any, some, or all of one’s resources for attainment of a goal” as distal motivational processes. Distal motivational
processes are initially antecedent to task engagement, and distal decisions set the stage for resource availability during task engagement (ibid.). Proximal motivational processes determine the distribution of effort across on-task and off-task activities during task engagement, which include self-regulatory activities such as self-monitoring, self-evaluation and self-reactions. The engagement of proximal motivational processes requires attentional effort (Kanfer & Ackerman, 1989). In the sections which follow, three theories of motivation are presented and reviewed which are key to the incorporation of the motivational and cognitive elements of the self-regulation process in the present research.

There has been little focused attention on volitional concepts in the context of work, and even less in the more specific context of entrepreneurship. Furthermore, much of the research supporting the Rubicon model has been experimental in nature (see Achtziger & Gollwitzer, 2008 for a comprehensive review). Early research considering non-cognitive mechanisms of self-regulation were proposed by Kanfer and Ackerman (1989) in the context of skill acquisition, which was recently updated and elaborated upon in relation to proactive motivation by Parker, Bindl and Strauss (2010). Kehr (2004a) suggested a compensatory model of work motivation and volition also has relevance for the integration of motivational and cognitive concepts at different phases of the Rubicon model. These models will be discussed in order to consider in more depth the relationship between cognitive and motivational processes at play in self-regulation.

4.4.1. Resource Allocation Model

Kanfer and Ackerman (1989) proposed a dynamic resource allocation model of performance which permitted the assessment of motivational processes in the context of skill training (see Figure 4.3). The model uses the construct of attentional resources as the common theoretical linkage among individual differences in ability, motivation and task demands. It posits that individuals have a pool of attentional capacity from which attentional resources are allocated to various activities at two different points. The first point is distally, and the second is proximally, in terms of the proportion of total resources allocated (Kanfer, 1996b). The model measures the differences in general cognitive ability to establish the upper limit on the availability of attentional resources for task performance. In comparison, the motivational processes are the mechanisms by which attentional resources are allocated to tasks.
The distinction between distal and proximal motivational concepts is based on theories of motivation that distinguish between determinants of choice and determinants of action (Kanfer, 1992), and between choice motivation and control motivation (Kuhl, 1984). Kanfer (1992; Kanfer & Ackerman, 1989) describes distal motivational processes as the choice to engage any, some, or all of one’s resources for attainment of a goal. Furthermore, distal motivational processes are initially antecedent to task engagement, and distal decisions determine the resource availability during task engagement (Kanfer & Ackerman, 1989). In contrast, proximal motivational processes determine the distribution of effort across on-task and off-task activities during task engagement, and comprise self-regulatory activities such as self-monitoring, self-evaluation and self-reactions (Kanfer & Ackerman, 1989). Such proximal motivational processes are required when goals involve the acquisition of complex or novel skills, or goal attainment requires sustained attentional effort in the face of difficulties, and hence, they require attentional effort that may compete with on-task and off-task demands (Kanfer & Ackerman, 1989). Research based on this model has demonstrated that self-regulatory activities affect on-task use of attentional resources, and that such activities may help or hinder skill learning, depending on the demands of the task and on individual differences in general cognitive ability.

Kanfer (1996b) suggested that there are a number of contextual characteristics of skill acquisition that resulted in self-regulatory activities being of particular importance. Firstly, goal accomplishment tends to proceed slowly, often involving frustrations and failures, particularly during the early stages of learning. Secondly, for practice to have a positive effect on performance, additional motivational mechanisms are required to sustain attention and effort.

Figure 4.3 Kanfer & Ackerman’s (1989; p. 665) Resource allocation model, depicting ability-motivation interactions for attentional effort.
over time and in the face of such difficulties and failures. Hence, Kanfer (1996b) suggests that self-regulatory processes are key motivational determinants of learning and performance in such contexts.

The characteristics of this context have quite a few elements in common with the context of early stage entrepreneurs. They too have much to learn and have substantial demands placed on them. In line with the rationale for focusing on early stage entrepreneurs, Kanfer (1996b) states that dynamic changes in task demands occur when people are learning difficult tasks, such that during the early phases of skill training, a task demands substantial cognitive resources and attentional effort. Task demands on attentional effort decline with practice, and fewer resources are then required for sustaining performance at the current level, at which point performance is generally faster and less error-prone (Kanfer, 1996b). For this reason, two different types of motivational skills are required as the skill acquisition process progresses. The first, emotion control skills are more important early in training, when task demands on attention are highest. These skills help to keep off-task concerns and negative emotions from diverting attention from the task. Late in training, the second type of motivational skill becomes more important, motivational control. As performance improves with practice and over time, people can perform the task at their current performance level with less effort, and this can be detrimental to motivation. Hence, skills in motivation control enables individuals to sustain on-task attention and effort (Kanfer, 1996b).

4.4.2. The Compensatory Model of Work Motivation and Volition

Kehr’s (2004a) compensatory model of work motivation and volition incorporates structural components (implicit motives, explicit motives, and perceived abilities) and functional processes (volitional regulation and problem solving) (see Figure 4.4). Kehr criticises current conceptualisations of self-regulation as being too loosely defined, and sees the interplay between implicit and explicit motives as being a key concern. He defines implicit motives as associative networks connecting situational cues with basic affective reactions and implicit behavioural tendencies, which are not consciously accessible, and uses McClelland’s (1995) three motives of power, achievement and affiliation as examples. Explicit motives are defined as the reasons people self-attribute for their actions, are consciously accessible and are closely related to the development of goals, intentions and self-concepts (Kehr, 2004a). Based on these definitions, it is clear the majority of self-regulation and goal theories focus predominantly on explicit motives. However, there are some overlaps between Kehr’s (2004a) conceptualisation of implicit and explicit motives and Boekaerts (1992, 1995, 1996, 2001) distinction between learning goals and ego-protective goals in her model of self-regulated learning. Kehr’s (2004a) inclusion of perceived ability as a structural component of the
compensatory model, also has clear overlaps with research on self-efficacy in the motivation literature.

Kehr (2004a) makes the point that the activation of implicit and explicit motives is largely independent; affective experiences being associated with activation of implicit motives, while explicit motives influence cognitive choice and goal-setting. Of note is the fact that Kehr (2004a) uses Kanfer (1992) to distinguish between the manifestation of implicit and explicit motives at proximal and distal levels. He further uses this continuum to show the relationship between perceived abilities and problem-solving: perceived abilities are perceived at a distal level, as they help to determine the allocation of attention, while problem solving happens at a proximal level because it requires reallocation of attention. Such a proposition draws on Kanfer and Ackerman’s (1989) resource allocation model, and also fits quite well with Action Theory. For example, Frese et al. (2007) suggest that proactive and elaborate planning enhance problem-solving because it is based on a better knowledge of the situation.

Kehr (2004a) argues that volitional regulation is needed to support cognitive preferences that are insufficiently motivated or that are discrepant from actual implicit behavioural tendencies. Discrepancies between implicit and explicit motives at a distal level may instigate cognitive preferences at a proximal level, and cause intrapersonal conflict. Volition compensates for insufficient motivational support and resolves intrapersonal conflicts from competing behavioural impulses that have originated in discrepancies in implicit and explicit motives (Kehr, 2004a). Problem solving, on the other hand, compensates for insufficient abilities and overcomes environmental difficulties (Kehr, 2004a).

From the perspective of the present research, the most important aspect of Kehr’s (2004a) compensatory model is the way in which both implicit and explicit motives, as well as the more cognitive aspects of perceived abilities and problem solving can be meaningfully integrated along Kanfer’s proximal-distal continuum. Secondly, the distinction between structural
components and functional processes is of note, and reflects the distinction in theories of motivation between entities (e.g. traits, needs, motives) and processes. Finally, the integration of motivational research with more traditional concepts from cognitive psychology (such as problem-solving) is also of note. However, although process is an integral part of the model, Kehr does not explicate this process, as is done in Action Theory or the Rubicon model. Integrating each of these approaches allows for significant advancement of thinking in the areas of motivation, volition and self-regulation.

To date, Kehr’s model has been applied in organisations through the development of an intervention programme to enhance self-management through training. The Self-Management Training designed using this framework incorporated six training modules: (a) goal setting and reducing goal conflicts, (b) increasing awareness of implicit motives, (c) enhancing volition, (d) reducing overcontrol, (e) enhancing organismic congruence and intrinsic motivation, and (f) identifying and overcoming barriers to action (Kehr, Bles & Von Rosenstiel, 1999; Kehr & Von Rosenstiell, 2004).

4.4.3. The Model of Proactive Motivation

Much of the self-regulation literature describes the process as active or proactive in nature (e.g. Frese, 2007; Frese & Zapf, 1994) and Frese (2009) demonstrated how active performance concepts can explain entrepreneurial success. Parker, Bindl and Strauss (2010) presented a model of proactive motivation which has quite a lot in common with Frese’s (2009) active performance concepts (see chapter 2), and speaks to the action theories of self-regulation (Frese & Zapf, 1994; Heckhausen & Kuhl, 1985).

Proactivity has three key attributes; it is self-starting, change oriented, and future focused (Parker, Bindl & Strauss, 2010). As such, it is essentially another name for the concept of personal initiative (Fay & Frese, 2001; Frese, Kring, Soose & Zempel, 1996). Early research attempted to define and classify proactiveness as a personality construct (Bateman & Crant, 1993; Crant, 2000), which assumed that proactive individuals are proactive across many different domains (Parker et al., 2010). Behavioural forms of proactive behaviour include: organisational citizenship, job crafting, organisational socialization and career development (see Parker et al., 2010 for a review). Research on personal initiative (discussed in more detail later in this chapter) recognised that it was a motivational construct, and as such there are likely common motivational processes underlying the different types of proactive behaviour, beyond proactive personality (Parker et al., 2010). Furthermore, Fay and Frese (2001) suggested that as self-regulation guides goal-directed activities in spite of challenges and failures, personal initiative cannot exist without self-regulation.
Parker, Bindl and Strauss (2010) consider proactivity to be a goal-driven process involving both the setting of a proactive goal, and striving to achieve that proactive goal. The model they present (see Figure 4.5) identifies a range of proactive goals that individuals can pursue in organisations, which vary along two dimensions; the future they aim to bring about, and whether the self or the situation is being changed. Parker et al. (2010) suggest that there are three higher order categories of individual-level proactive behaviour at work. Proactive person-environment fit behaviour encompasses proactive goals to achieve a better fit between one’s attributes and those of the internal work environment (e.g. achieving demand-abilities fit, supplies-values fit). The second category consists of proactive work behaviour, which involves goals to improve the internal organisational environment, such as taking charge to improve work methods, proactive problem solving, or improving one’s tasks at the individual, team or organisational level. The final category is proactive strategic behaviour, which involves taking control and bringing about change to improve the organisation’s strategy and its fit with the external environment (e.g. issue selling, strategic scanning) (Parker et al., 2010). These higher order categories were confirmed in research conducted by Parker and Collins (2010), which also demonstrated that there are similarities and differences in the antecedents of these behaviours. It is likely that such higher order categories will manifest somewhat differently in the entrepreneurial context, although there are overlaps. For example, strategic scanning of the environment is an important behaviour for entrepreneurs to engage in when seeking opportunities.

Parker et al. (2010) believe that as proactive action is motivated and conscious, both theories of motivation and theories of self-regulation can be used to explain it. However, beyond this, the present research argues that proactiveness is an inherent quality of any self-regulatory process, and it is the level of activity or proactivity that determines the success of engaging in self-regulatory processes.

Parker et al.’s (2010) model also draws on Kanfer and Ackerman’s (1989) conceptualisation of goal generation and goal striving. Goal generation occurs prior to task engagement (in a similar fashion as hypothesised by the Rubicon model). Proactive goal generation involves at least two processes: envisioning refers to the process of perceiving a current or future problem or opportunity and imagining a different future that can be achieved by actively addressing this problem or opportunity. Planning involves the individual deciding on which actions to take to achieve this future (Bindl & Parker, 2009; Parker, Bindl & Strauss, 2010).
In the model, goal-striving refers to the behavioural and psychological mechanisms by which individuals purposively seek to accomplish proactive goals, also in line with Kanfer and Ackerman (1989), and is comprised of two key elements. Enacting refers to the overt action individuals engage in to achieve their proactive goal, while reflecting consists of an individual’s efforts to understand the success, failure or consequences of his or her proactive behaviour (Bindl & Parker, 2009; Parker, Bindl & Strauss, 2010). This model also draws on goal-setting theory (Locke & Latham, 1990), suggesting that proactive goals will be more likely to result in effective striving, and ultimate achievement of the goal, if they are specific and challenging. Furthermore, they suggest that proactive goals will be more effective if they are learning focused rather than solely performance focused, and if they include subgoals and planning.

Up to this point, the model is a re-phrasing of the cognitive models of self-regulation and goals that were reviewed in chapter 3. However, the model goes on to integrate much of Kanfer and Ackerman’s (1989) theory, describing three motivational states as can do motivation, reason to motivation, and energised to motivation. Can-do motivational states include self-efficacy perceptions, control appraisals and attributions, and perceptions of the costs of an action. Reason-to motivation refer to why individuals select or persist with particular proactive goals. Parker et al. (2010) suggests that this is of particular importance for self-initiated goals that have not been imposed or prescribed by some external regulation, and in weak situations in which individuals have high levels of discretion, goals are not tightly specified, the means for achieving them are uncertain, and attainment is not clearly linked to rewards (Griffin et al., 2007; Parker et al., 2010). In such conditions, Parker et al. (2010) suggests that there needs to
be a strong driving force to engage in proactive behaviour. They also suggest that reason to motivation may be more important than can do states in proactive processes, particularly for long-term oriented proactive goals, as they tend to be more abstract and high level (Parker et al., 2010) and hence more distal. Parker et al. use the concepts of intrinsic motivation and autonomous external motivation from Self-Determination Theory to explain different types of reason to motivation.

These motivational states and their distal correlates provide a strong rationale for the motivational path of self-regulatory processes in the present research (presented in Figure 4.6 below). The present research firstly suggests that self-regulatory motivational processes can be mapped along a proximal-distal continuum, as suggested by Kanfer, and also can be mapped onto a similar set of action phases as more cognitive variables have been. The model of proactive motivation provides support for the contention that both cognition and motivation have distal and proximal manifestations, and that these influence each other.

The final motivational state, energised to motivation provides a rationale for including emotional variables in the present model (to be described in chapter 5). The suggestion is that more positive affect should enhance the likelihood that individuals set proactive goals, and also potentially promotes more effective proactive goal striving. The model of proactive motivation also suggests that more distal positive affect can influence proactivity indirectly via can do and reason to states. A similar rationale is applied in the present research where more distal cognitive, motivational and emotional paths are posited to have the potential to affect more proximal variables from any of the three paths.

The model of proactive motivation also suggests that proactive motivation states are more proximal to goals and action, and it is these states that drive goal generation and striving. Furthermore, the model suggests that it is largely through these states that more distal variables such as personality and other individual differences, as well as the work context (and the interaction between these), have their influences (Parker et al., 2010). As such, this model provides a strong rationale for the integration of motivation and cognition in the investigation of self-regulatory processes in the present research. Key to the model are the links made between the motivational states and their influence on goal setting. Parker et al. (2010) suggest that can do, reason to, and energised to states motivate the setting of goals and the striving to achieve these goals. The present research posits a similar relationship between motivational states and cognitive processes of goal setting and goal striving. However, the present research goes further by suggesting the motivation can be extrapolated to all phases of action, and do not just have their influence through goals. A further important point raised by Parker et al. (2010) is that both can do and reason to states must align with the particular target, giving the example that different forms of self-efficacy are required for the different forms of proactive behaviour.
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Parker et al. (2010) further argue that affect influences can do and reason to states, and boosts proactivity through these pathways. Again, the present research takes a similar approach, but goes further by suggesting that emotions and emotion regulation can also be extrapolated to all phases of the action process.

The model they present also identifies the distal antecedents that predict proactive behaviour via the motivational states. These include individuals’ personality, values, knowledge, skill and abilities, and also considers contextual antecedents such as job design, leadership and social processes. As the present research focuses on the entrepreneurial context, it does not consider the contextual influences, as they either do not apply in this context (e.g. entrepreneurs are the leaders of their venture), or the entrepreneur has so much autonomy to influence the context that the contextual influence would not be expected to have any influence (e.g. job design). The individual differences included in Parker et al.’s (2010) model include: proactive personality, desire for control, openness to change life values, goal orientations, future oriented thinking, core beliefs about the self and emotion regulation. The present research draws on a somewhat different but overlapping set of individual differences that are pertinent to the entrepreneurial context. As will be seen below, personal initiative is included as a dispositional variable, while entrepreneurial orientations capture many of the distal dispositions that are similar to the list above, but more contextually relevant. Emotion regulation at the dispositional level is included in chapter 5.

Hence, Kanfer and Ackerman’s (1989) work, and its more modern equivalent, the model of proactive motivation, in conjunction with Kehr’s (2004a) model of work motivation and volition provide strong support for the distal and proximal conceptualisation of work motivation that will be incorporated into the cognitive action process described in chapter 3.

4.5. Building proximal and distal motivation into the action phases and goal processes of self-regulation.

Although self-regulation has been classed as a proximal motivational construct, self-regulation has maintained a largely cognitive focus in terms of how the process is operationalised. Little research has investigated the interplay of proximal and distal motivators and their influence on the cognitive processes of self-regulation, although some exceptions to this are evident (e.g. Boekaerts 1995, 1996, 2001; Borkowski, Chan, & Muthukrishna, 2000; Järvelä & Volet, 2004; Keith & Frese, 2005; Van Gelderen, Jansen & Jonges, 2003). It is clear from the review above that more distal concepts and processes may have an effect upon proximal processes such as goal-setting and self-regulation.

The present research examined some of the pertinent distal motivations that may impact an entrepreneur’s self-regulatory processes. These are referred to as motivational resources (in
line with the terminology of Frese et al., 2007), and are divided into two types. Distal motivational resources do not necessarily fall within the traditional remit of traits, although could be considered dispositions, while proximal motivational resources are somewhat more situational. In addition, the research includes volitional resources, which fall at the more proximal end of the motivation continuum, and may lie in the pre-actional or actional volitional phase of the Rubicon model. The distal motivational resources investigated in relation to entrepreneurs include entrepreneurial orientations and personal initiative. More proximal motivational resources investigated include entrepreneurial self-efficacy and creative self-efficacy (domain specific concepts). Volitional resources are investigated in form of work engagement. A number of other volitional concepts are omitted from the model, as they are not focused on in the present research. These include in-action volitional concepts, such as flow, task interest, task-specific self-efficacy and motivation regulation strategies. Figure 4.6 provides a visual representation of where these motivational and volitional resources are located within the Rubicon/Action theory model outlined in the previous chapter, and also introduces the distal-proximal conceptualisation of cognition and motivation.

The approach adopted in the present research, considering both motivational and volitional resources, has echoes of Kanfer and Heggestad (1997; p. 2) distinction between what people “possess” (i.e. motivational traits) and what people “experience” at a more situational level (e.g. skills such as motivation control and emotion control), as well as the influence of motivational traits and motivational skills. Such a proposition fits well with the phases of the Rubicon Model, where motivational resources can be placed in the pre-decisional phase, whereas volitional resources can be placed within the pre-actional and actional phases on the model.
Figure 4.6 Theoretical integration of the motivational and cognitive components of the self-regulatory process.
4.6. Motivation and volition in the self-regulation process

One of the strengths of the present model is its integration of motivational resources (located at a more distal level on Kanfer’s continuum) and volitional resources (at the proximal level). One of the key limitations of previous work on self-regulation is the lack of consideration given to contextual issues that determine when motivational and volitional regulation are necessary, and when more distal motivational concepts are the key to driving one’s performance (e.g. Dewitte & Lens, 1999). The present research model incorporates both distal and proximal components of motivation and emotions (discussed in the next chapter) in the self-regulatory framework, and as such, allows for the simultaneous examination of the impact that motivational resources and regulatory strategies may have on the achievement of goals. In the following sections, the specific motivational and volitional resources that were included in the present research are discussed.

4.6.1. Distal Motivational Resources

In her seminal paper, Kanfer (1992) describes how dispositional sources of motivation can influence the self-regulatory processes, what is termed the influence of non-cognitive individual differences on self-regulation. This is later mirrored in the research by Frese et al. (2007) in their investigation of cognitive and motivational resources that influence planning and success in entrepreneurs, and is also seen in Parker, Bindl and Strauss’ (2010) model of proactive motivation. The present research attempts to incorporate both motivational resources and volitional resources into the Rubicon model of Action Phases, by examining the influence of such non-cognitive individual differences on self-regulation. Specifically, the distal motivational resources investigated are: entrepreneurial orientations and personal initiative, which are examined below.

4.6.1.1. Entrepreneurial orientations (EO)

Frese and Fay (2001) describe an orientation as being a concept that is of medium specificity. It is neither a highly specific attitude nor a general personality trait (Frese & Fay, 2001). Entrepreneurial Orientations (EO) have predominantly been used to refer to a firm’s strategic orientations, capturing specific entrepreneurial aspects of decision making styles, methods and practices (e.g. Lumpkin & Dess, 1996). This currently prevalent conceptualization of EO as a firm-level construct was originally developed with the psychological claim to distinguish between managers and business owners (Kraus, Frese, Friedrich & Unger, 2005). Davidsson (2007) states that this is an example of a level mix-up, and more recent research has examined EO as a psychological construct (Kraus et al., 2005), representing a shift in attention to the level of the individual entrepreneur. Frese (2009) advocates the use of entrepreneurial orientations at this level. This conceptualisation of EO entails psychological orientations of the
owner that relate to the owner’s daily tasks and fit with the environmental requirements (Kraus et al., 2005). Orientations are culturally conditioned and influenced by the environment, and include affective, cognitive, and behavioural components (Kraus et al., 2005). Hence, Kraus (2003) suggests that entrepreneurial orientations are more proximal to the entrepreneurial tasks than traits and dispositions, and classified them as being of medium specificity and medium proximity to behaviour. Hence, they can be seen as more stable than states, but open to change over longer periods of time.

Frese and Fay (2001) suggest that orientations hold a motivational component because they make the person believe that the behaviour is possible and that the individual can deal with potential negative consequences. The psychological conceptualisation of EO comprises autonomy orientation, competitive aggressiveness, innovative orientation, risk-taking orientation (drawn from Lumpkin and Dess’ (1996) original conceptualisation), as well the components of learning and achievement orientations (Kraus et al., 2005). Research indicated that a high learning orientation, achievement orientation and personal initiative were related to entrepreneurial performance measures and success (Kraus et al., 2005). However, Kraus et al. (2005) did demonstrate that the EO construct can be used as a global construct as well as comprised of each of the components separately.

The number of dimensions of EO have varied in past research, with three dimensions identified and used consistently in the literature, comprising, innovativeness, risk taking and proactiveness. However, further dimensions added include competitive aggressiveness and autonomy (see Rauch et al., 2009 for a review). However, Kraus et al. (2005) also added learning orientation and achievement orientation when developing a psychological level entrepreneurial orientation construct. In the present research, entrepreneurial orientations was used as a unidimensional construct, which is in line with past research at the individual (Kraus et al., 2005) and original firm level (Covin & Slevin, 1989; Rauch et al., 2009).

Frese (2009) suggests that entrepreneurial orientations represent a form of action orientation and is related to the concept of active performance in entrepreneurship. He also makes the point that the concept of proactiveness was conceptualised as part of the concept of entrepreneurial orientations by earlier developers of the firm level concept (e.g. Lumpkin & Dess, 1996). He suggests that being self-starting (a characteristic of active performance) is related to being innovative, which is one orientation included under the umbrella of entrepreneurial orientations. Furthermore, autonomy implies being self-directed when pursuing opportunities. Entrepreneurial orientations have been demonstrated to be consistently related to success in the recent meta-analysis by Rauch et al. (2009).

In the research by Kraus et al. (2005), personal initiative was subsumed into the EO concept, and investigated as one component of the broader orientation. However, research into
personal initiative is a distinct stream of research in its own right, and has been gaining momentum in recent years (e.g. Frese, Garst & Fay, 2007; Rank, Pace & Frese, 2004), especially with the advancement of similar concepts such as proactivity (Fritz & Sonnentag, 2009; Parker, Bindl & Strauss, 2010; Parker & Collins, 2010; Parker, Griffin & Neal, 2007). Hence, in the present research, personal initiative was examined as a distinct distal motivational resource.

4.6.1.2. Personal Initiative

Personal initiative can be defined as self-starting, proactive and persistent behaviour (Frese, Kring, Soose & Zempel, 1996). In essence, it is a behaviour syndrome relating to an individual taking an active and self-striving approach to work and going beyond what is required in a given job (Frese et al., 1996, 1997, Fay & Frese, 2001). Frese et al. (1997) define a syndrome as a set of co-occurring behaviours that together signify initiative. An active entrepreneur is actively searching for opportunities (Baron, 2004), but this may be systematic or unsystematic (Frese, 2007). Frese (2007) suggests that entrepreneurs are typically more active than the general population, and introduced the term personal initiative to describe this active orientation (Fay & Frese, 2001). This concept has much overlap with proactivity as outlined in the model of proactive motivation above.

Kanfer and Heggestad (1997) describe personal initiative as a person characteristic that is associated with motivational patterns. It is characterised by the following aspects (Frese et al., 1996): (i) it is consistent with the organisation’s mission; (ii) it has a long-term focus; (iii) it is goal-directed and action-oriented; (iv) it is persistent in the face of barriers and setbacks, and (v) it is self-starting and proactive. Results of the study by Frese et al. (1997) found that those who intended to become self-employed and those who actually were small-scale entrepreneurs displayed a higher degree of initiative. Fay and Frese (2001) report that the degree of small-firm owner’s personal initiative was found to be correlated with firms’ success and entrepreneurial success in samples from different economic environments, namely, East Germany, Uganda and Zimbabwe.

Parker (2000) clearly places personal initiative in the motivation literature in her distinction between passive and proactive motivation, and more recently in her model of proactive motivation (Parker, Bindl & Strauss, 2010). Personal initiative is an active approach (Frese, 2007, 2009), which increases opportunities to learn, to control the environment, to reach one’s goals, and to reach positive consequences, and hence, it is a powerful approach because it can influence events before they appear (Frese, 2007). Furthermore, active approaches make it possible to adjust the task to one’s knowledge, skills and aptitudes, and the environment is made to fit the person better (Frese, 2007). One of the consequences of taking an active approach to work goals and tasks it that the environment is changed by the individual, even if ever so
slightly (Fay & Frese, 2001). Personal initiative is based on developing a fuller set of goals that goes beyond what is formally required in a job by being pro-active (Frese et al., 1997).

The reference to self-starting in the definition of personal initiative implies that the goals are not given or assigned by someone else, but that the person him- or herself develops these goals (Frese et al., 1996). This definition places personal initiative in a position to be linked to the goal-setting aspect of self-regulation. Clear overlaps can be seen between personal initiative if we consider the definition of self-regulation as a “self-steering process that targets one’s own cognitions, affects, and actions, as well as features of the environment for modulation in the service of one’s goals” (Boekaerts, Maes & Karoly, 2005; p 150), and as a process that enables an “individual to guide his/her goal-directed activities over time and across changing circumstances (contexts)” (Karoly, 1993, p 25). In addition, some research has been devoted to the issue of the level of analysis at which personal initiative and proactivity can be assessed. Clearly, proactive behaviour and personal initiative can be assessed as a behaviour, and accumulating evidence suggests that multiple behaviours, goal processes and self-regulatory efforts can be considered along a continuum from passive to proactive (Frese, 2009; Parker 2000). In line with this reasoning, personal initiative can be divided into phases of the action sequence (Frese & Zapf, 1994).

The conceptualization, and indeed, the definition of proactivity has become a topic of interest with the proliferation of research on the topic. Parker and Collins (2010) attempted to integrate multiple proactive concepts at the behavioural level. They note that three elements are present in most definitions of proactive behaviour. These are acting in anticipation, taking control and self-initiation. Parker and Collins (2010) hypothesise, and find support for, three higher order categories of proactive behaviour; namely proactive work behaviour (consisting of taking charge, voice, individual innovation, problem prevention), proactive strategic behaviour (strategic scanning, issue selling credibility, issue selling willingness) and proactive person-environment fit (feedback inquiry, feedback monitoring, job change negotiations, career initiative). However, proactive behaviours are not always positive, and a number of researchers have suggested that counterproductive work behaviours may also be a form of active behaviour (Semmer et al., 2010; Spector & Fox, 2010).

However, a number of researchers have also considered personal initiative as a dispositional level variable, for example, Kraus et al. (2005) considered it as a component of entrepreneurial orientations, which as discussed above as somewhat more stable than states or behaviour. Similarly, Crant (Bateman & Crant, 1993; Crant, 2000) introduced the concept of the proactive personality, which is a stable trait influencing the extent to which individuals will engage in proactive behaviours across multiple contexts. Hence, in Kanfer’s (1992) conceptualisation, personal initiative can also be seen to be a distal motivator that has an
influence on the more proximal volitional process influencing the action sequence of behaviour. Previous research has demonstrated that personal initiative, when assessed via self-report questionnaire, is highly correlated with proactive personality (Fay & Frese, 2001; Frese et al., 1997; Parker & Collins, 2010). Personal initiative has also been posited to be positively related to the concept of self-efficacy, because a person needs to believe in his or her ability to do things competently to show initiative (Fay & Frese, 2001). This suggests that more distal motivational processes have an impact on some of the hypothesised volitional resources.

4.6.2. Proximal Motivational Resources

The premise of the theoretical model developed in the present research is that motivation (as well as cognition and emotion) manifests itself in different forms throughout the action process, and this has been shown to fit quite neatly with the proximal-distal distinction. However, the action process specifies one pre-decisional phase that is motivational in nature, while the present research distinguishes two, allowing for a more fine-grained distinction of proximity. Hence, while entrepreneurial orientations and personal initiative have been shown to be somewhat dispositional in nature, concepts such as self-efficacy when assessed at the domain level are more proximal in nature. However, it is acknowledged that general self-efficacy would be distal in nature. The present research focused on the domain specific concepts of entrepreneurial self-efficacy and creative self-efficacy, and as such, it was deemed appropriate to place these in a more proximal action phase. However, they are still at the domain specific level, and so it is questionable as to whether they are truly volitional in nature. Hence, it was deemed necessary to place them in a new actional phase, labelled “Proximal Motivation pre-decisional.”

4.6.2.1. Domain Specific Self-Efficacy

Perceived self-efficacy concerns people’s beliefs in their capabilities to mobilise the motivation, cognitive resources and courses of action needed to exercise control over events in their lives (Wood & Bandura, 1989). An efficacy expectation is defined as the conviction that one can successfully execute the behaviour required to produce a desired outcome (Bandura, 1977). Given appropriate skills and adequate incentives efficacy expectations are a major determinant of people’s choice of activity, how much effort they will expend and how long they will sustain effort in dealing with stressful situations (ibid.).

Self-efficacy was originally developed by Bandura as a task- or situation-specific concept. As such, Bandura saw specific domains of self-efficacy as unrelated to each other, and measured them by identifying self-percepts attached solely to the specific area of psychological functioning being explored (Shelton, 1990). However, it is now generally believed that efficacy exists at three levels, a task-specific level, a domain level, and a general level (Woodruff &
The present research is interested in two domain-specific self-efficacy perceptions: entrepreneurial self-efficacy and creative self-efficacy. Kanfer and Ackerman (1989) classify self-efficacy as a type of self-reaction. This self-reaction in turn is a self-regulatory activity that falls into the category of a proximal motivational process when assessed at the domain level.

Recently, there has been a debate as to the role that self-efficacy plays in motivational self-regulation, and some have suggested that self-efficacy may have different impacts at different levels of analysis (see Seo & Ilies, 2009 for a review). The debate has largely been dominated by control theorists (e.g. Vancouver, 2008) and social cognitive theorists (e.g. Bandura & Locke, 2003), and has centred on the relationship between self-efficacy and performance at the within-person level of analysis (Seo & Ilies, 2009). In brief, Sociocognitive theorists suggest that self-efficacy beliefs operate in conjunction with goal systems to enhance motivation and performance by increasing effort or persistence (e.g. Bandura 1997, 2001; Locke & Latham, 1990), while control theorists (e.g. Vancouver, 2005; Vancouver & Kendall, 2006) suggest that in addition to the above explanation, when goal level is held constant, high self-efficacy may create optimism or over-confidence with regard to the discrepancies between current and desired states, which leads to lowering the levels of resources allocated to a task, and ultimately, lowers performance (see Seo & Ilies, 2009). They suggested that in highly dynamic task environments, where both tasks and their performance fluctuations reflect continuous processes in response towards ultimate performance, each task carries different implications of prior performance. Given the positive relationship between self-efficacy and goals, self-efficacy should positively predict performance in individuals in a dynamic task environment (Seo & Ilies, 2009). In such situations, higher self-efficacy may encourage individuals to continually set and reset higher levels of meaningful goals without developing overconfidence and/or lowering motivational resources (Seo & Ilies, 2009). Seo and Ilies (2009) further suggest that such discrepant findings may be resolved with the incorporation of affect into the model (discussed in Chapter 5).

The self-efficacy concept is highly appropriate for the study of entrepreneurship because it can be viewed as either a task or domain specific construct (Chen et al., 1998; Drnovsek & Glas, 2002), and also because it incorporates internal (personality) and external (environmental) factors, but is close to action and action intentionality (Bird, 1988; Boyd & Vozikis, 1994; Drnovsik & Glas, 2002). In their study of the factors influencing venture growth, Baum, Locke and Smith (2001) included self-efficacy as a form of situationally specific motivation along with growth goals and vision.

Self-efficacy is posited to play a key role in determining the initiation, direction and maintenance of goal/self-regulation processes (Kanfer, 2005). As such, its influence tends to be
initially seen in the goals an individual chooses to set and to act upon. Frese (2007) suggested that self-efficacy should have an impact on all of the steps of the sequence in action theory (goals, plan, feedback processing etc.). However, self-efficacy should have a higher influence on consciously regulated task performance than on routinized activities, and so, self-efficacy should be more highly related to performance in novel situations (ibid). The present study examines the impact of both entrepreneurial and creative self-efficacy on the sequential steps in the action process.

4.6.2.2. Entrepreneurial self-efficacy

Entrepreneurial self-efficacy (ESE) is a construct that measures a person’s beliefs in their own ability to perform on the various skill requirements necessary to pursue a new venture opportunity (DeNoble et al., 1999). It can be described as the strength of a person’s belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship (Chen, Greene & Crick, 1998). As a belief in one’s vocational capabilities, entrepreneurial self-efficacy is relatively more general than task self-efficacy (Chen, Greene & Crick, 1998) and can be classed as a domain specific concept.

Self-efficacy has a number of practical and theoretical implications for entrepreneurial success because initiating new ventures requires unique skills and mind sets, which may be distinct from those required for managers in a fully fledged established organisation (Chen et al., 1998; deNoble et al., 1999). One of the strongest barriers that an entrepreneur may have to overcome is anxiety about his or her success throughout the initial start-up process (DeNoble et al., 1999). An entrepreneur with a high level of self-efficacy (i.e. who believes in his or her capability to execute all of the requirements to perform a task successfully) is more likely to see the positive potential outcomes that might accrue from a new venture (ibid.). Previous research has demonstrated that self-efficacy has a positive impact on various aspects of entrepreneurship (e.g. Chen, Greene & Crick, 1998; DeNoble et al., 1999), but much of this used entrepreneurial students as their sample. Although, more recent research has suggested that self-efficacy holds positive benefits for entrepreneurs (Baum & Locke, 2004; Frese et al., 2007; Markman, Balkin & Baron, 2002), there is a need to further examine the role that entrepreneurial self-efficacy plays in the success of actual entrepreneurs (Zhao, Seibert & Hills, 2005). The present research moves towards addressing this gap by examining entrepreneurial self-efficacy in early stage business owners, rather than in a student population.

4.6.2.3. Creative self-efficacy

Creative self-efficacy (CSE) is said to tap individual’s beliefs that they can be creative in their work roles (Tierney & Farmer, 2002), and is the second domain-specific form of self-efficacy examined as a proximal motivational resource in the present research. Previous
research suggest that job tenure, job self-efficacy, supervisor behaviour, and job complexity contributed to creative efficacy beliefs (Tierney & Farmer, 2002). This concept has links to Ford’s (1996) theory of creativity, where he placed self-efficacy beliefs as a key motivational component in his model of individual creative action (Tierney & Farmer, 2002). Gong, Huang and Farh (2009) demonstrated that employee learning orientation and transformational leadership were positive antecedents of employee creative self-efficacy, and that this in turn had an impact on creative performance. Furthermore, Mathisen and Bronnick (2009) demonstrated that training could enhance creative self-efficacy. Little research has specifically focused on the entrepreneur when considering the impact of creative self-efficacy. A notable exception is the work of Baron and Markman (2004), who found that during the middle stages of the entrepreneurial process, creative self-efficacy was positively related to efforts by entrepreneurs to obtain intellectual property protection for their inventions. Furthermore, strengthening students’ confidence to become an entrepreneur through the mechanisms known to affect self-efficacy beliefs (mastery experiences, role modelling, social persuasion and physiological states) appears to have an important impact at the early, pre-launch stage of an entrepreneurial venture (Zhao, Seibert & Hills, 2005).

4.6.3. Volitional resources

Kanfer and Heggestad (1997) define motivational skills as individual differences in specific self-regulatory patterns of activity, and see them as domain-specific and malleable in adulthood. Furthermore, they can be seen as contextually situated patterns of self-regulatory activity that involve cognition, affect, and behaviour (ibid.). These motivational skills are similar in breadth to the proximal motivational resources and the volitional resources in the present research. The present research examines work engagement as a type of volitional resource engaged in the pre-actional stage. It does not focus on in-action volitional resources, but examples of these include flow, task specific self-efficacy, task interest and motivation regulation strategies.

4.6.3.1. Work Engagement

The present research posits work engagement as a volitional resource engaged in the pre-actional phase of the Rubicon model. Engagement in the work sphere is defined as a positive, fulfilling work-related state of mind that is characterised by vigor, dedication and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Vigor is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one’s work and persistence even in the face of difficulties. Dedication is characterised by a sense of significance, enthusiasm, inspiration, pride and challenge. Dedication is closely related to involvement, but has a wider scope by not only referring to a particular cognitive or belief state but including the affective dimension as well (Schaufeli et al., 2002). Finally, absorption is
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characterised by being fully concentrated and deeply engrossed in one’s work, whereby time
passes quickly and one has difficulties in detaching oneself from work. Engaged employees
have a sense of energetic and effective connection with their work activities, and they see
themselves as able to deal well with the demands of their jobs (Schaufeli, Bakker & Salanova,
2006).

The classification of work engagement into one of the action phases poses quite a
challenge. Past research has noted the ambiguity in the classification of work engagement as a
concept, with Macey and Schneider (2008) distinguishing between psychological state
engagement, behavioural engagement, and trait engagement. Engagement has been likened to
Csikzentmihalyi’s concept of flow (see Hallberg & Schaufeli, 2006), which would place it
within the realm of a volitional in-action state that is relevant once a person is engaged in a task.
However, Schaufeli, Bakker and Salanova (2006) suggest that engagement refers to a more
persistent and pervasive affective-cognitive state that is not focused on any particular object,
event, individual, or behaviour, rather than a momentary and specific state. Hallberg and
Schaufeli (2006) suggest that work engagement is more stable and longer lasting than flow. As
such, using this definition, engagement appears to represent a domain-specific state, that is
somewhat broader (or more distal) than the concept of flow, but which is still a state, rather than
a trait. This classification is corroborated by Macey and Schneider (2008), who classify the
Schaufeli and Bakker (2003) measure of engagement (used in the present research) as a form of
state engagement, suggesting that it has overlaps with the concept of job involvement. Flow, on
the other hand, may be envisaged as a form of behavioural engagement (Macey & Schneider,
2008). As such, in terms of classification along a proximal-distal continuum, engagement in the
present research appears to lie within the state area and appears to be volitional in nature,
although more distal that in-action volition which is more usually associated with the state of
flow. Hence, the present research classes work engagement as a volitional resource falling into
the volitional pre-actional phase of the Rubicon model.

Griffin, Parker and Neal (2008) distinguish work engagement as a form of psychological
engagement which is distinct from behavioural engagement. Importantly, they note that
psychological engagement is an energetic state that has substantial variability over the course of
a day, week, or month, and as such, it is necessary to address two heretofore unanswered
questions with regard to psychological engagement: firstly, how does psychological engagement
motivate individuals to exert higher effort across the broad domain of work behaviour, and
secondly, how does engagement motivate the allocation of effort to different forms of
behaviour? Some research has been conducted to examine these questions. For example,
Llorens, Schaufeli, Bakker and Salanova (2007) found support for the presence of a positive
gain spiral, whereby task resources predicted future engagement, and engagement predicted
(through efficacy beliefs) future task resources (ibid.). By incorporating work engagement into the broader self-regulatory process, the present research aimed to further investigate such issues.

Little research to date has examined engagement in the context of entrepreneurship, although it appears to be a natural progression in light of previous research indicating that entrepreneurs are individuals highly engaged in their work (e.g. Cromie, 2000). Furthermore, Sonnentag (2003) found a relationship between work engagement and proactive behaviour in the context of recovery from work during leisure time. As was seen in the section on motivational resources, personal initiative has strong links to entrepreneurship. More recent research by Gorgievski, Bakker and Schaufeli (2010) demonstrated that work engagement was related to task performance and innovativeness in entrepreneurs. However, emerging research is suggesting that there may be cultural differences in the role that work engagement plays in entrepreneurship. Gorgievski, Dej and Stephen (2011) found that entrepreneurs who possess more job resources (skill discretion, decision making latitude, feedback from the job) and personal resources (self-efficacy and personal initiative) experience more work engagement and subjective success. However, for German and Dutch entrepreneurs, planning strategies did not predict engagement or subjective success. On the other hand, for Polish entrepreneurs, both full and critical point planning related to higher work engagement, and full planning predicted an increase in turnover. These findings suggest that motivational and cognitive elements of self-regulation may have different effects in different contexts.

4.7. Testing the expanded self-regulation model incorporating cognitive and motivational paths.

This section outlines the specific empirical models devised to test the theoretical integration of the cognitive and motivational components of the self-regulation process. Initially, the relationships between the motivational and volitional components of the model were investigated, as well as their relationship to success. The motivational variables were expected to be primarily related to self-perceptions of success, given that this is a form of outcome self-efficacy. However, there is quite strong evidence from past research, including meta-analyses that firm-level entrepreneurial orientations are linked with firm performance (Rauch et al., 2009), and given the exploratory nature of this aspect of the research, relationships with all three indicators of success were examined. Secondly, the relationship between the motivational and cognitive components were investigated.

In a similar vein to the research by Kanfer and Heggestad (1997), this research suggested that individual differences in motivational resources influence individual differences in volitional resources. Hallberg and Schaufeli (2006) found that work engagement was positively related to job autonomy, providing some support for the suggestion that entrepreneurial orientations (which includes autonomy orientations) will be related to work engagement.
Furthermore, Sonnentag (2003) found various relationships between trait and day-level measures of personal initiative and engagement, providing further support for the investigation of the hypotheses below, and summarised in Figure 4.7. Note that only the direct relationships between each sequential phase are included in each figure, for clarity. In reality, however, all direct and indirect paths were investigated for each model.

**Hypothesis M1**: Entrepreneurial orientations and personal initiative will positively predict (a) domain self-efficacy (entrepreneurial and creative) and (b) work engagement.

**Hypothesis M2**: Domain self-efficacy (entrepreneurial and creative) will positively predict work engagement.

**Hypothesis M3**: Entrepreneurial orientations and personal initiative will have an indirect effect on work engagement via (a) entrepreneurial self-efficacy and (b) creative self-efficacy.

**Hypothesis M4**: Work engagement will positively predict (a) self-perceptions of success, (b) objective success and (c) external success.

**Hypothesis M5**: Domain self-efficacy (entrepreneurial and creative) will have (a) a direct effect on success, and (b) an indirect effect on success via work engagement.

**Hypothesis M6**: Entrepreneurial orientations and personal initiative will have (a) a direct effect and (b) an indirect effect via domain self-efficacy and work engagement, on success.

![Figure 4.7 Hypothesised relationships between motivational and volitional resources and success.](image)

This research sought to move beyond a purely cognitive or motivational approach and to consider the co-influences of both cognitive and motivational aspects of self-regulation. Hence, it was hypothesised that both motivational and volitional resources will have an effect of volitional cognition (planning and goal-setting). Kraus (2003) conceptualised entrepreneurial orientations as a more distal concept than strategy process characteristics, or planning. Frese et al. (2007) demonstrated that the motivational resources of personal initiative, general self-efficacy and need for achievement had an impact on planning. Furthermore, Baum, Locke and Smith (2001) found that situationally specific self-efficacy predicted venture growth, and in other research was linked to planning (see Baum, Locke and Smith, 2001). In addition to the
hypotheses above, which considered only the motivational components, the following hypotheses were added (summarised in Figure 4.8):

**Hypothesis M7**: Entrepreneurial orientations and personal initiative will positively predict (a) mastery approach goal orientations and (b) performance approach goal orientations.

**Hypothesis M8**: Entrepreneurial orientations and personal initiative will have a direct and an indirect effect on planning via (a) mastery approach and (b) performance approach goal orientations.

**Hypothesis M9**: Entrepreneurial orientations and personal initiative will have an indirect effect on success via (a) mastery approach, (b) performance approach goal orientations, and (c) planning.

**Hypothesis M10**: Domain specific self-efficacy (entrepreneurial and creative) will have a direct effect on planning.

**Hypothesis M11**: Mastery and performance approach goal orientations will have a direct effect on work engagement.

![Figure 4.8 Hypothesised relationships between motivational and volitional resources, goal orientations, planning and success.](image)

Finally, the combined cognitive and motivational model was also investigated with goal-setting and actions included instead of planning (see Figure 4.9).

**Hypothesis M12**: Entrepreneurial orientations and personal initiative will have a direct and an indirect effect on goal-setting (goal difficulty and goal specificity) via (a) mastery approach and (b) performance approach goal orientations.

**Hypothesis M13**: Entrepreneurial orientations and personal initiative will have a direct and an indirect effect on actions via (a) goal orientations and (b) goal-setting (goal difficulty and goal specificity).
Hypothesis M14: Entrepreneurial orientations and personal initiative will have an indirect effect on success via (a) mastery approach, (b) performance approach goal orientations, and (c) goal-setting, and (d) actions.

Hypothesis M15: Domain specific self-efficacy (entrepreneurial and creative) will have a direct effect on goal-setting (goal-difficulty and goal specificity).

Figure 4.9 Hypothesised relationships between motivational and volitional resources, goal orientations, goal-setting, actions and success.
CHAPTER 5: Emotions and the self-regulation process

Emotion regulation emerges as one of the most far-reaching and influential processes at the interface of cognition and emotion.

(Koole, 2009a; p. 4)

5.1. Introduction

The regulation of emotions is an important topic in the self-regulation literature, and represents the third intrapsychic process (in addition to cognition and motivation) that is the focus in the present research. However, it is important to make a distinction between the experience of emotions and the regulation of emotion. The literature on affective experience is broad and deep, and this chapter provides a very brief overview of this at the outset, before moving on to discuss the self-regulation of emotions. The main context for the research is that of entrepreneurship, which is a specific type of work context, and so, the manifestation of emotions and emotion regulation is discussed in these contexts also. Finally, the full model is presented with an explanation of (a) the relationships between emotions, emotion regulation and entrepreneurial success, (b) the relationship between the emotional components and action, (c) the relationships between the emotional and cognitive components of the model and (d) the relationships between the emotional and motivational components.

5.2. Emotions: form, structure and function

The focus of the present research lies in the roles that (a) anticipatory or goal-directed emotions, and (b) the regulation of emotion, play in the self-regulatory process. As such, the scope of the present research in terms of its interest in emotions is much narrower in focus than that which is studied by emotion researchers. However, a brief overview of the ways in which emotions are defined and conceptualised is outlined in this section.

Affect is inherent to the human experience and hence, to any situation in which humans interact with their environment, including the work context (Barsade & Gibson, 2007). It is also an essential and often adaptive component of social behaviour (Forgas & George, 2001). To date, the study of emotions has been hampered by the lack of a consistent set of distinguishing terms with consistent definitions (Niedenthal, Krauth-Gruber & Ric, 2006). Three main distinctions can be made between emotions, affect and mood, and the present research only focuses on emotions. Affect refers to the automatic, mainly non-conscious responses to stimuli (Baumeister, DeWall & Zhang, 2007), while mood refers to a long term response (i.e. a response that lasts more than several minutes and possibly hours or days) (Tice, 2009), that is relatively objectless, in the sense that they do not have a clear event or object that elicited
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(Niedenthal, Krauth-Gruber & Ric, 2006). The term *emotion* refers to a conscious, emotional state accompanied by bodily arousal (Tice, 2009), and is more limited in scope than affect or mood (Baumeister, Vohs, DeWall & Zhang, 2007). Experts agree that emotions motivate cognition and action, and recruit response systems (Izard, 2009). There is also growing consensus with regard to different forms of emotions, for example, basic emotions rooted and defined in evolution and biology, and secondly, emotion schemas that include cognitive components which differ across individuals and cultures (Izard, 2009).

Dual process theories of emotions distinguish between automatic affective reactions, and complex, conscious emotional reactions (Baumeister, Vohs, DeWall & Zhang, 2007). Using self-reports of emotion (as are used in the present research) assumes that emotions are at least partly conscious and that individuals can reflect on these conscious states and quantify them (Niedenthal, Krauth-Gruber & Ric, 2006). Furthermore, given that self-regulation is generally considered to be a conscious phenomenon, certainly at higher levels, this research does not focus on automatic or unconscious emotions. Conscious emotions frequently involve a strong subjective feeling in addition to some physical response such as arousal (Baumeister, *et al.*, 2007).

In addition to the debate on the form of emotion (i.e. affect, mood or emotion), there has been a long-standing debate between two differing conceptions of the structure of emotions, one based on discrete categories (e.g. anger, anxiety, guilt, happiness, pride) and the other based on dimensions (Lazarus, 1991). The approach of discrete category researchers has been to first analyse the categories, and only then to consider each as varying along a dimension of intensity. In the dimensional approach, the categorical variations are reduced by combining them on the basis of shared and divergent properties, usually by factor analysis, and portraying the resulting factor structure in dimensional space (Lazarus, 1991; Watson & Tellegen, 1985).

Dimensional accounts of the structure of emotions have tended to focus on the concept of *core affect*, which refers to momentary, elementary feelings of pleasure or displeasure and of activation or deactivation (Baumeister *et al.*, 2007; Russell & Barrett, 1999; see Figure 5.1). Russell (2003) suggests that core affect are states experienced as feeling good or bad, energised or enervated, and these states influence reflexes, cognition, and behaviour. Core affect is linked with the conscious experience of emotion, and when a change in core affect is linked to its perceived cause, it becomes attributed affect, which functions to guide attention and behaviour directed at an object (Russell, 2003).
Russell (2003) suggests that there is a need to integrate the dimensional perspective (e.g. core affect) with the categorical perspective, which focuses more on specific emotions. He suggests that in order to do this we need to consider an emotional episode, which he defines as an event that counts as a member of an emotion category (e.g. fear, anger). Although Russell postulates the existence of a prototypical emotion episode, which is an event that counts as an excellent member, he is quick to point out that the sequence of events that make up an actual emotion episode is not fixed, but is constructed anew each time to fit its specific circumstances.
Any emotion episode is made up of a number of components (see Table 5.1), which may influence one another, but they are not ordered in an invariant sequence, as they are ongoing and may temporally overlap (Russell, 2003). Russell’s (2003) conceptualisation of the emotion episode provides a clear integration between emotional experience and the more cognitive action processes of goal-setting, planning, and taking action. There is also research linking Russell’s conceptualisation of core affect to motivational processes (e.g. Seo, Barrett & Bartenuk, 2004).

Gross and Thompson (2007) describe contemporary functionalist perspectives of emotion as emphasising the important roles that emotions play as they ready necessary behavioural responses, tune decision making, enhance memory for important events, and facilitate interpersonal interactions. Carver (2001) argues that it is not sufficient to only discuss the dimensional structure of affect without considering its functional implications, and outlines a functional analysis in which approach and incentive-based affects are managed by one self-regulatory system, while avoidance and threat-related affects are managed by another self-regulatory system. In both cases, positive and negative emotions can be regulated and convey information about whether the behaviour being engaged in is going well or poorly (Carver, 2001). This functional basis of behaviour is covered in more detail in the discussion of Control Theory later in the chapter.

5.3. The role of emotions in the work context

The role of emotions in the workplace is becoming an increasing focus for both researchers and practitioners (Brief & Weiss, 2002; Fisher & Ashkanasy, 2000), with specific theories, such as Affective Events Theory being developed to understand their role in organisations (Fisher & Ashkanasy, 2000; Weiss & Cropanzano, 1996). Emotions have been shown to play a role in performance, decision-making, creativity, creative problem-solving, group dynamics and individual behaviours such as turnover, helping behaviour, negotiation and leadership, as well as leading to more positive supervisory emotions, higher income, enhanced negotiating ability, and performing discretionary acts for the benefit of the organisation (Amabile, Barsade, Mueller & Staw, 2005; Barsade & Gibson, 2007; Forgas & George, 2001; George & Zhou, 2001; Isen et al., 1987; Lyubomirsky, King & Diener, 2005; Seo & Barrett, 2007). Recent research has focused on the production of moods and emotions at work, emphasising stressful events, leaders, work groups, physical settings and rewards/punishments (Brief & Weiss, 2002). Furthermore, there is some research that points to a link between positive emotions and engaging in proactive or discretionary employee behaviour (George & Brief, 1992; VanDyne, Cummings & MacLean Parks, 1995).
Two of the more popular topics that have been examined within the work context are that of emotion work and emotional labour, stemming from the work of Hochschild (1983). Recent research has made a link between deep and surface acting and emotion regulation (Beal, Trougakos, Weiss & Green, 2006), and has linked such processes to more cognitive models of self-regulation (Zapf, 2002). Zapf (2002) uses action theory to organise the various aspects of emotion work, and using this, explains that the psychological focus is on the regulation of emotions according to a goal given by the organisation. Using action theory in this manner provides strong support for the present research which attempts to integrate such emotional components with the more cognitive ones addressed in action theory.

Keith and Frese (2005, 2008) report on the use of error management training programmes in organisations, arguing that such training stimulates self-regulation of emotions, in the form of self-control as well as self-regulation of cognitions, in the form of metacognition during skill acquisition. Emotion control refers to a skill that involves the use of self-regulatory processes to keep performance anxiety and other negative emotional reactions at bay during task engagement (Kanfer, Ackerman & Heggestad, 1996). Keith and Frese (2005) found that both emotion control and metacognitive activity mediated the effects of the training on adaptive transfer. This provides further support for the importance of both cognitive and emotional self-regulation in the workplace.

Further theoretical advances have been made in the work domain, which attempt to link context and cognition in explaining unpleasant affect. Daniels, Harris and Briner (2004) proposed a cognitive account to explain the mental processes by which work events cause unpleasant affect (see Figure 5.2). The relevance of this model to the present research lies in the way in which the authors integrate components of several previous theories in its development, which include aspects of appraisal theory (Lazarus, 1999), affective events theory (Weiss & Cropanzano, 1996), approaches based on cognitive information processing (Power & Dagleish, 1997), action-control theory (Frese & Zapf, 1994) and the job-demands-control-support model (Karasek & Theorell, 1990). Although the purpose of this model is to explain the cause of unpleasant affect, while the model in the present research is interested in affect and coping to the extent that it relates to the processes of self-regulation, the model demonstrates that in order to develop theory that incorporates emotions, it is necessary to consider a multitude of previous theories and the ways in which they overlap.
Brief and Weiss (2002) suggested that a more useful approach to the traditional focus on particular performance dimensions may lie in a greater focus on broader affective processes, such as emotion regulation. The present research focuses on goal-directed emotions, and more specifically, on an entrepreneur’s positive and negative affectivity in anticipation of success or failure in achieving a goal. Furthermore, Brief and Weiss (2002) suggest that taking a process orientation requires a better grasp of the state-trait distinction; something which is addressed in the present research through its emphasis on the core building blocks; the proximal-distal distinction, and the action process.

5.4. Entrepreneurs and emotion

Baron (2008) suggests that there are two main reasons why affect is a relevant topic to study in the entrepreneurial context. Firstly, affect is most likely to exert an influence in contexts which are unpredictable and filled with change, which is typical of the environments in which entrepreneurs operate. Secondly, the specific tasks that entrepreneurs perform are very varied in nature and change as the process unfolds, and again affect has been shown to be an important influence in such tasks (see Baron, 2008 for a review). However, the ways in which emotions affect entrepreneurs has received scant attention, although pockets of research which examine emotion nuanced topics are evident from a select number of researchers. The main focus of these pockets have been on (a) entrepreneurial passion (Baum & Locke, 2004; Baum, Locke & Smith, 2001; Cardon et al., 2009), (b) emotional intelligence (Cross & Travaglione, 2003; Rhee & White, 2007; Zampetakis et al., 2009), (c) the emotions associated with business failure (Shepherd, Wiklund & Haynie, 2009), and (d) the interplay of emotions and cognition and/or effort (Baron, 2008).
Cardon et al. (2009) recently proposed a model of entrepreneurial passion which can aid in the integration of emotions into the theoretical model of self-regulation advanced in the present research. The depth of theoretical integration of cognitive, motivational and emotional processes provides many points of comparison with the present model, and the authors use self-regulation as an overarching theoretical framework to develop their model of entrepreneurial passion. Firstly, Cardon et al. (2009) suggest that passion may be considered as an emotional resource for coping with entrepreneurial challenges, which overlaps with the motivational and volitional resources in the self-regulatory process, but suggests that there may be merit in considering resources of an emotional nature also. Chen, Yao and Kotha (2009) suggest that passion is a domain-specific motivational construct, but it appears more likely that passion is an emotional resource that can enhance motivational constructs rather than a motivational resource in its own right. Secondly, Cardon et al.’s (2009) model emphasises the role that passion can play in the motivation of entrepreneurs, and this provides support for the interaction of emotional and motivational concepts in the self-regulatory process. Thirdly, they suggest that passion is activated by emotionally important goals, and can influence the goal-related cognitions. Taken together, this suggests that the present model has merit in considering the impact that goal-directed emotions have on the self-regulatory process.

It has also been suggested that passion may be a motivator of action (Cardon et al., 2005), and is linked to motivational constructs such as perceived meaningfulness of work, identity, need for achievement and work engagement (Bierly, Kessler & Christensen, 2000; Cardon et al., 2009; Gorgievski, Bakker & Schaufeli, 2010; Rauch & Frese, 2000). Baum and Locke (2004) demonstrate that passion can be seen as a distal construct, influencing more proximal cognitive and motivational constructs. Past research has found that its influence on venture growth is mediated by more proximal cognitive and motivational variables (Baum & Locke, 2004; Baum, Locke & Smith, 2001). Research has demonstrated that perceptions of entrepreneurial passion by venture capitalists and angel investors influence their investment decisions (Cardon, Sudek & Mitteness, 2009; Chen, Yao & Kotha, 2009). This suggests that there may be some relevance in considering the role that entrepreneurs’ emotions have on venture success.

Baron (2008) presents a seminal paper developing a theoretical framework addressing the role that affect plays in the entrepreneurial process, specifically addressing the influence of affect on cognition (see Figure 5.3). In particular, Baron suggests that affect can have influences on key aspects of the entrepreneurial process that have a demonstrated link to success, including opportunity recognition, the acquisition of essential resources and the capacity to respond quickly and effectively to rapid change in highly dynamic environments. Baron’s (2008) model provides a strong rationale for the theoretical integration of cognition and
affect in the process of self-regulation in entrepreneurs, and suggests that affect is an important variable to consider to fully explain the role of cognition in entrepreneurial success (e.g. Foo, Uy & Baron, 2009; Grant & Ashford, 2008). Baron’s (2008) model also provides support for the separation of emotions and emotion regulation, suggesting the one can in fact, influence the other. Little research has examined the role of emotion regulation or coping in the context of entrepreneurship (with the exception of Cross & Travaglione, 2003; Huy & Zott, 2007; Radley, 2008).

![Figure 5.3 Baron’s (2008; p. 335) Theoretical model of the role of affect in entrepreneurship.](image)

5.5. Emotions in the self-regulatory system

Until the early 1980s, there was relatively little research by organisational psychologists on the relations among affect, cognition and behaviour (Forgas, 2002). Loewenstein, Vohs and Baumeister (2007) suggest that we need answers to the When question, by which they mean when do emotions or cognitions predominate, and/or when are emotions harmful or helpful to cognition? The present research argues that unlocking the interactions between cognition and emotion is essential to fully understand self-regulatory processes. It further argues that in addition to integrating cognition and emotion, we need to integrate both with motivation as well.

5.5.1. Cognitive theories of emotion

Although not theories of self-regulation per se, cognitive theories of emotion provide key principles that can aid our understanding of the role of emotions in self-regulation. Contemporary theories in this area have tended to emphasise cognitive, information-processing mechanisms that link feelings and thinking, with recent social cognitive theories focusing on the information-processing mechanisms responsible for mediating affective influences on thinking and acting (Forgas, 2002). Pekrun (2006) suggests that cognitive emotion theories like the control value theory imply that emotions are closely and reciprocally linked to their cognitive and motivational antecedents and effects.
Appraisal theories of emotion link emotions to more immediate cognitive processes of evaluating the meaning, causal attribution and assessment of coping capabilities (Clore & Ortony, 2000; Niedenthal, Krauth-Gruber & Ric, 2006). The main contribution of cognitive appraisal theories of emotion is the understanding that emotions are elicited and differentiated by evaluations (appraisals) of the environment with respect to the current goals and interests of the individual experiencing the emotion (Niedenthal, Krauth-Gruber & Ric, 2006). As such, cognitive appraisal theories of emotions provide an initial explanation for where emotions fit into the self-regulatory process.

Oatley and Johnson-Laird’s (1987) cognitive theory of emotion posits that emotions are adaptations to environmental challenges and opportunities posed repeatedly over the course of evolution, and that emotions serve the primary function of coordinating a modular mental architecture (Niedenthal, Krauth-Gruber & Ric, 2006). Emotions come about when individuals judge consciously or unconsciously that progress on their current goals is threatened or requires adjustment (Niedenthal, Krauth-Gruber & Ric, 2006). The emotion then reorganises and redirects the individual’s activity in the service of a new goal or at least in such a way as to deal with what has just occurred (Oatley & Johnson-Laird, 1987).

Oum and Lieberman (2007) suggest that a more comprehensive conception of emotions needs to incorporate an information processing model of the mind. From this perspective, emotions can be viewed as a subset of cognition, rather than a separate domain from cognition, which aids in guiding decision making and behaviour that would have led to an increase in survival and reproduction in ancestral environments (Oum & Lieberman, 2007). From this perspective, emotion programmes are cognitive programmes that activate a suite of psychological and physiological programmes in response to a recurring situation which impacted survival and reproduction in ancestral environments. Similarly, Forgas’ (Forgas, 1995, 2002; Forgas & George, 2001) Affect Infusion Model suggests that affective influences on social cognition and behaviour are largely dependent on the kind of information-processing strategies people employ to deal with a particular task.

The affect-as-information model (Swarz & Clore, 1988) suggests that people may directly use their affect as information when inferring a response to social situations. The alternative affect priming theory predicts that affect influences social thinking and behaviour through selectively priming affect-related constructs, facilitating their use when planning and executing social behaviour (Bower, 1981; Bower & Forgas, 2001; Forgas, 2002). Similarly, a number of researchers have suggested that individuals differ in their affective information processing (see Seo & Barrett, 2007). This view suggests that individuals can experience intense feelings during decision making, and also can simultaneously regulate the possible bias-inducing effects of those feelings on their decisions (Seo & Barrett, 2007).
Cognitive theories of emotion provide a springboard from which to further investigate in more depth the interplay of emotion and cognition within the self-regulatory process. Although not theories of self-regulation per se, overtones of such cognitive theories are evident in the small number of theories of self-regulation that do incorporate affect, particularly Control Theory, which will be discussed in later in the chapter.

5.5.2. Emotions, cognition and the regulation of behaviour

Tice (2009) suggests that emotions may sometimes alter behaviour directly, although at most, broad tendencies towards approach and avoidance will likely be associated with emotions. More likely is that emotions serve as a source of feedback about behaviour, rather than for direct control of behaviour (Baumeister, Vohs, DeWall & Zhang, 2007; Tice, 2009). By providing feedback, emotions may stimulate retrospective appraisal of actions, and in this way, conscious emotional states can promote learning and alter guidelines for future behaviour (Baumeister, Vohs, DeWall & Zhang, 2007). Hence, emotion regulation may be a fundamental guiding principle behind some behaviour.

The role of affect in goal system functioning is substantiated by multiple lines of conceptualisation and research (Austin & Vancouver, 1996). It has been suggested that goal striving and goal attainment might be processed with different implications for affective responding, whereby progressing towards a goal might be associated with a unique type of affect, which is not related to outcome valence, but to the process of goal striving and similar to Csiksentmihalyi’s (1990) concept of flow (Austin & Vancouver, 1996). Specific emotional experiences associated with goal attainment or attainment failure may be transferred to the means that serve these goals (Shah & Kruglanski, 2005). This line of reasoning is further corroborated by Payne et al. (2007) who found a relationship between goal orientation and anxiety. It seems clear that there is a link between emotions and the goal system.

Seo and Ilies (2009) conducted a study which advanced our understanding of the role that emotions play in the processes and consequences of motivational self-regulation, specifically investigating motivational self-regulation that is driven by self-efficacy and goals. These authors suggest firstly, that past performance influences self-efficacy, which in turn influences effort (mediated also by goal level), and that effort then influences performance. Secondly, they expand this model to identify three affective mechanisms through which motivation and performance is self-regulated within individuals over time. They predicted that positive and negative affect triggered by past performance would influence motivation and performance either directly or indirectly via affecting goal level and/or self-efficacy. Their findings (see Figure 5.4) indicated that when individuals experienced more positive affect, they tended to spend more time on a given task and achieve a higher level of performance, whereas
experiencing more negative affect led to achieving lower levels of performance. These effects occurred both directly, and indirectly via self-efficacy: experiencing more positive affect led to higher levels of self-efficacy, but experiencing negative affect lowered self-efficacy (Seo & Ilies, 2009). In a similar vein, Tsai, Chen and Liu (2007) conducted a longitudinal study which demonstrated that positive moods predicts task performance indirectly through the motivational processes of self-efficacy and task persistence.

![Figure 5.4 Findings of Seo & Ilies (2009)](image)

5.5.3. Theories of self-regulation incorporating affect: Control Theory

Control Theory is one of the few theories of self-regulation that explicitly incorporates both cognitive and affective aspects. Control theory grew out of research suggesting that there are two distinct types of action tendencies; approach and avoidance (or withdrawal), and that these approach or avoidance behaviours are managed by two partially distinct self-regulatory systems (Carver, 2001; 2006). Control Theory posits that human behaviour is fundamentally goal oriented, but such goals can be dynamic in the sense that they are paths to be negotiated rather than points to be attained (Carver, Lawrence & Scheier, 1996). Carver and Scheier (2000) see the concepts of behaviours, goals, and the process of feedback control as being closely linked, with goals serving as reference values for feedback loops. A feedback loop is the unit of cybernetic control, and has been defined as a system of four elements in a particular organisation: an input system, a reference value, a comparator, and an output function (ibid.) (see Fig. 5.5). Movement towards a goal reflects the functioning of a feedback loop, in which one’s perception of present conditions are compared to a desired or intended condition, and discrepancies are countered by subsequent action. Discrepancy reducing feedback processes or loops are essentially approach processes, and discrepancy enlarging loops, sometimes thought of as anti-goals, try to increase the discrepancy between the present conditions and the anti-goal, and these processes create avoidance or withdrawal (Carver, 2006; Carver & Scheier, 2009). These two layers of feedback processes manage two different aspects of behaviour, and operate
together to allow people to juggle multiple tasks and conserve resources (Carver & Scheier, 2009).

One of the strengths of control theory is that it incorporates the role that affect plays in a self-regulatory system, which is structured under the fundamental organising principle of feedback control, the control in this case being over emotions. Carver and Scheier (1990) have suggested that feelings arise as a consequence of a feedback process, which operates simultaneously with the behaviour-guiding function and in parallel to it. The general sense is that a second layer of negative feedback systems monitors and manages how well people are moving toward desired goals and away from anti-goals (Carver, 2006). The sensed rate of progress of the first system is compared to a criterion, and the result is experienced as affect (Carver, 2006). The function of this second feedback process is to check how well the behaviour loop is doing at reducing its discrepancies, or in other words, its function is monitoring progress. Hence, the input for this second loop is a representation of the rate of discrepancy reduction in the action system over time. The reference value in the affect loop is an acceptable or desired rate of behavioural discrepancy reduction (Carver & Scheier, 1990). The result of the comparison process can manifest itself in two ways: the first is a sense of expectancy, otherwise known as confidence and doubt, and the second is a sense of positiveness or negativeness, otherwise known as affect or feeling (Carver & Scheier, 2000a).

Hence, Carver and Scheier (1990, 1998) suggest that affect comes to exist through certain feedback systems that monitor and regulate the effectiveness with which people move toward incentives and move away from threats. These feedback systems are assumed to compare a signal corresponding to rate of process against a reference rate (Carver, 2001). The “error signal” of these loops manifest itself as the experience of affect. If the rate of movement is too
low, then negative affect arises, and conversely, if the rate of movement is high enough, positive affect arises (Carver, 2001).

Finally, moving on to the output in the affect loop, Carver and Scheier (2000a, b) suggest that this is an adjustment in the rate of progress. This then, is where the affect loop and the action loop merge. Negative feelings imply that a rate is too low, and the first response is usually to try harder (Carver, 2006). However, as positive feelings arise when things are going better than they need to, people who exceed the criterion rate of progress (and have positive feelings as a result), may reduce subsequent effort in this domain, and are likely to “coast” (Carver, 2006; p. 106). Carver and Scheier (2000) suggest that these two processes are roughly equivalent to two functions which are typically ascribed to motivation. The action loop handles most of the directional function of motivation, and the affect loop handles the intensity function of motivation (e.g. vigor, enthusiasm, effort, concentration).

Carver and Scheier (2000) suggest that this model of affect regulation applies to both discrepancy enlarging loops as well as discrepancy reducing loops. Secondly, it is suggested that affect relating to both approach and avoidance has the potential to be either positive or negative (Carver & Scheier, 2009). However, there is a difference in the affect associated with doing well or poorly with regard to the two loops. Doing well at moving toward an incentive is not the same experience as doing well at moving away from a threat. Both have the potential to induce either positive or negative affect, but the two positives and the two negatives may not be the same as each other (Carver, 2001) (see Figure 5.6.). Approach involves positive affect such as elation, eagerness, and excitement, and negative affect such as frustration, anger and sadness. In contrast, avoidance involves positive affect such as relief and contentment, and negative affect such as fear, guilt and anxiety (Carver & Scheier, 2009).

<table>
<thead>
<tr>
<th>Approach process</th>
<th>Avoidance process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doing well 🕍</td>
<td>Reliebf, calmness</td>
</tr>
<tr>
<td>Elation, eagerness</td>
<td>Doing poorly 🕍</td>
</tr>
<tr>
<td>(neutral)</td>
<td>Sadness, depression</td>
</tr>
<tr>
<td>Doing poorly 🕍</td>
<td>Fear, anxiety</td>
</tr>
</tbody>
</table>

*Figure 5.6 Two sets of behavioural systems and poles of the affective dimensions for each system (Carver, 2001; p. 347)*

The two layered viewpoint of control implies that there is a natural connection between affect and action, and suggests that the affect loop has a direct influence on the action loop.
(Carver, 2006). In terms of the present research, Control theory informs the theoretical model by suggesting cognitive and action can be influenced by emotion, and that the regulation of both cognition and emotion may be intertwined in the decision to persist or give up on a course of action.

5.5.4. Theories of self-regulation incorporating affect: Personality Systems Interaction Theory

A second theory of self-regulation which considers affect is the Personality Systems Interaction Theory (PSI). Kuhl argues that a personality framework, such as PSI theory, is suitable for the study of volition (Kuhl, 2000; Kuhl & Fuhrmann, 1998). As noted in Chapter 3, Kuhl (1984, 1985, 2000) was the first theorist to make a definitive distinction between motivation and volitional issues. Instead of focusing on cognitive content, such as beliefs, expectations or causal attributions, Kuhl’s theory focuses on the basic properties of the functional architecture underlying motivation and self-regulation (Kuhl, 2000).

PSI theory is a theoretical approach that integrates insights from cognitive science, motivation science, personality psychology, and neurobiology into a single coherent framework (Kuhl, Kazén & Koole, 2006). This theory assumes that human motivation and personality are mediated by a hierarchy of seven regulatory systems, which can be subsumed into three broad levels (Kuhl, Kazén & Koole, 2006; see Table 5.2.). Behaviour is guided by elementary sensations and intuitive behaviour programmes at the lowest level, which tends to result in rigid and inflexible behaviour control. At the mid-level, behaviour is seen as being guided by emotion and coping systems, and distinguishes between positive and negative affect systems, which regulate approach and avoidance behaviour. This level is also responsible for coping and integrating discrepant information into a high-level system through activation of the hippocampus. At the highest level, behaviour is regulated by complex cognitive systems, of which two are distinguished; one which specialises in sequential analytical processing and self-control, and a second, which specialises in parallel holistic processing and self-regulation (Kuhl, Kazén & Koole, 2006). Greater flexibility can be achieved by using the higher-level systems to regulate behaviour (ibid.).

Kuhl (2000) suggests that four modes of volition can be distinguished, of which self-control and self-regulation are two. These can be described as the facilitating modes. The other two modes, volitional inhibition and inhibition of self-access are described as inhibitory modes. Positive affect facilitates self-regulation and reduces volitional inhibition, whereas negative affect increases inhibition of self-access and facilitates the self-control mode (Kuhl, 2000). Focusing on the two facilitating modes of volition, the theory distinguishes between self-control and self-regulation (Kuhl, 2000; Kuhl & Fuhrmann, 1998), although the term self-regulation is used somewhat differently in this theory than in its more common conceptualisation. The
conscious form of action control (self-control) is based on the suppression of non-intended processing, while the second, self-regulation is described in terms of largely implicit processes that integrate as many subsystems and processes as possible for the support of a chosen action. Self-regulation is the mode which supports the task of maintaining one’s actions in line with one’s integrated self (Kuhl & Fuhrmann, 1998). In contrast, self-control is based on suppression of many subsystems and processes to reduce the risk that any competing action tendency takes over and jeopardizes the enactment of a difficult intention (Kuhl, 2000). Kuhl (2000) suggests that self-control should be facilitated by negative affect, whereas positive affect should facilitate self-regulation or the implicit, self-driven type of action control.

Table 5.2 Levels and systems of PSI Theory (Kuhl, Kazén & Koole, 2006; p. 410)

<table>
<thead>
<tr>
<th>Broad category</th>
<th>Level</th>
<th>Main systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex cognition</td>
<td>(7) self-government</td>
<td>Self-regulation (EM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-control (IM)</td>
</tr>
<tr>
<td>(6) high level cognition</td>
<td></td>
<td>Parallel holistic processing (EM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sequential analytic processing (IM)</td>
</tr>
<tr>
<td>Emotions and coping</td>
<td>(5) Motives</td>
<td>Power (EM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Achievement (IM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Affiliation (IBC)</td>
</tr>
<tr>
<td>(4) Emotional coping</td>
<td></td>
<td>OR → Hippocampus → EM</td>
</tr>
<tr>
<td>(3) affect</td>
<td></td>
<td>Positive (IBC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhibition Positive (IM)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative (OR) Inhibition Negative (EM)</td>
</tr>
<tr>
<td>Elementary sensation and behaviour</td>
<td>(2) Temperament</td>
<td>Motor activation (IBC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensory arousal (OR)</td>
</tr>
<tr>
<td>(1) simple cognitive operations</td>
<td></td>
<td>Motor programs (IBC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensory categorisation (OR)</td>
</tr>
</tbody>
</table>

Notes: EM = Extention memory; IM = Intention memory; OR = object recognition; IBC = Intuitive behavioural control; → = interaction between two systems, PSI theory assumes interactions among all systems, especially at higher levels. Only the main systems involved at each level are identified in the table.

This theory also posits that the term volition describes a central coordination of cognitive, motivational, emotional and temperamental processes represented by six macrosystems comprised of: i. analytical, thinking, ii. holistic processing of information, feeling, iii. elementary, sensation, iv. intuitive acting, v. positive emotionality, and vi. negative emotionality (Kuhl, 2000; Kuhl & Fuhrmann, 1998). Bagozzi (1992) suggests that Kuhl’s idea of action control captures part of the emotive aspects of the implementation processes. To achieve goal enactment and self-development, the different systems need to be coordinated. PSI theory suggests this coordination process depends on affect. Positive affect coordinates the interplay of intention memory and intuitive behaviour control, such that when positive affect is low (e.g. due to heavy demands, frustration or discouragement), intention memory becomes activated and intuitive behaviour control is inhibited. When positive affect is high (e.g. due to achieving a success), intention memory is inhibited and intuitive behaviour control is activated (Kuhl, Kazén & Koole, 2006). Negative affect is responsible for coordinating the interplay of object recognition and extension memory, such that when negative affect is high, object recognition
becomes activated and extension memory becomes inhibited, whereas when negative affect is low, object recognition becomes inhibited and extension memory becomes activated (Kuhl, Kazén & Koole, 2006). Hence, Kuhl, Kazén and Koole (2006) conclude that efficient affect regulation skills will greatly facilitate self-regulation in general.

Those with high self-regulatory capacity are termed action-oriented, and tend to act automatically or with little deliberation to enact plans (Bagozzi, 1992). Action control refers to the tendency to approach or avoid decisions or goal-directed behaviours in either static (passive) or dynamic (active ways) (Bagozzi, 1992) and is defined as a metastatic mode of control, in which the enactment of change-oriented intentions is facilitated (Koole & Jostman, 2004; Kuhl, 1984). Kuhl (1985) suggests that action control is a self-regulatory mechanism that helps overcome difficulties inherent in the enactment of mental structures. People with low self-regulatory capacity are termed state-oriented, and tend to engage in extensive planning and deliberation before acting state orientation is defined as a catastatic mode of control, which preserves the status quo by inhibiting the enactment of change-oriented intentions (Koole & Jostman, 2004; Kuhl, 1984). Koole and Jostman (2004) demonstrated that under stressful conditions, action-oriented individuals mobilize central executive systems, such as extension memory and engage in implicit down-regulation of negative affect (ibid.). The authors conclude that intuitive affect regulation is a highly adaptive volitional tool. This research has interesting implications for studying self-regulation. It unequivocally demonstrates a link between self-regulation, volition and affect. Koole and Jostman’s (2004) study suggests that individuals may have general tendencies towards styles of self-regulation (i.e. action oriented or state oriented), which can be linked to volition.

Kuhl’s action theory provides a framework around which to examine the role of motivation and affect in the self-regulatory process. Theories of self-regulation have tended to focus almost exclusively on cognition and tend to provide cognitive models of self-regulatory functions. Even when motivation and affect are discussed in these theories, they tend to have cognitive explanations. Kuhl (2000) makes the point that affective reactions to a situation cannot be fully explained on the basis of what a person thinks or believes (cognition), and argues that many aspects of motivation and affect are “subcognitive” (p 116), by which he means that a component of affect/motivation is not mediated by higher-order cognitive processing. Hence, the processes underlying affect generation suggest that there is more to motivation and affect than cognitive contents such as goals, expectations and other beliefs (Kuhl, 2000). Furthermore, Ryan (1998) commends Kuhl on highlighting the fact that not all intentional acts are necessarily autonomous, something that is largely ignored in contemporary studies of goals-directed action.
PSI theory suggests that emotional changes, rather than emotional states underlie successful self-regulation (Koole, 2009b). These emotional changes may be induced from the outside, such as through supportive social relationships, or by the person themselves. In this latter case, emotion regulation is aimed at coordinating between the person’s emotional state and the regulatory demands of the situation (Koole, 2009b). Koole (2009b) labels this systemic emotion regulation, and PSI theory assumes that this form of emotional regulation is aimed at maintaining a global balance between the person’s motivational, emotional and cognitive functions, which helps to preserve the integrity of the person’s entire psychological system.

It has been suggested that theories of personality architecture, such as PSI, may provide the integrative theoretical framework that is needed for self-regulation research (Kuhl, Kazén & Koole, 2006). PSI theory suggests that the ability to self-regulate negative affect is described by the personality disposition of action versus state orientation after failure (disengagement versus preoccupation) (Baumann & Kuhl, 2002). The construct reflects the ability to make timely decisions, commit to a course of action, initiate action, avoid procrastination, handle multiple competing demands, maintain challenging goals and persist despite failure or setbacks (Kuhl & Beckmann, 1994). Action oriented individuals respond to aversive experiences with a focus on options for action that support coping, while state-oriented individuals tend to respond with ruminations about past, present or future (Baumann & Kuhl, 2002; Kuhl, 1994). The conceptualisation of state orientation suggests that such individuals have a low ability to volitionally control negative affect and intrusive thoughts (Baumann & Kuhl, 2002). This conceptualisation has a number of overlaps with the problem focused and emotion focused coping strategies suggested by Carver, Scheier and Weintraub (1989) (discussed below), albeit at a more distal level of analysis. Diefendorff et al. (2000) suggest that in the context of a broader model of self-regulation, action-state orientation is concerned with characteristic differences in the enactment and maintenance of goals and the ability to protect activated goals from competing action tendencies through information-processing mechanisms.

5.5.5. Goal-directed emotions

Effective self-regulation must allow both for focused attention on current goal-related activities and for rapid reorientation toward new and important information, and the affective system plays a role in achieving this balance (Lord et al., 2010). A basic distinction can be made between currently felt emotion, and future, possible, or anticipated emotion (Loewenstein, Vohs & Baumeister, 2007), which is further supported by the research of Andrade and Cohen (2007) and Pekrun (2006). The focus of the present study is on anticipated emotions in the context of goal achievement or failure to achieve a goal. Anticipation of emotional outcomes is an important aspect of feedback theory (Baumeister, Vohs, DeWall & Zhang, 2007).
Furthermore, as people learn to anticipate feedback, they may alter their behaviour constructively to pursue the feedback that they like (ibid).

Bagozzi, Dholakia and Basuroy (2003) note that emotions have two functions in goal-directed behaviour; the first to provide feedback about the extent of goal achievement (informational function), and the second, is to direct and energise goal-directed behaviour following choice (motivational function). Anticipated emotions engender volitional processes that are concerned with the formation of goal intentions, planning and monitoring, and as such represent the motivational function of emotions (Bagozzi, Dholakia & Basuroy, 2003), which may explain why anticipated emotions have been said to be more important in guiding behaviour than actual, felt emotion (Baumeister et al., 2007). If we consider the role of emotions in decision-making, it has been suggested that anticipated emotions generally benefit the decision process, while current emotions often impair it (Baumeister et al., 2007). Anticipated emotions occur when an individual imagines experiencing certain emotions in the future once certain desirable or undesirable future events have occurred (Baumgartner, Pieters & Bagozzi, 2008). The central role of anticipated emotions lies in motivating goal-directed behaviour (Baumgartner, Pieters & Bagozzi, 2008). This has clear links with feedback system theory (Baumeister et al., 2007) which suggests that anticipated emotions may play a prominent and beneficial role in human decision making processes. From this perspective, it is not what a person is feeling right now, but what they anticipate feeling as a result of a particular behaviour (such as attaining a valued goal) that can be a powerful and effective guide to choosing well (Baumeister et al., 2007). Anticipated emotion is directly linked to conscious emotions, in the sense that people anticipate whether and to what degree a decision will produce a positive or negative subjective emotional experience (Baumeister et al., 2007).

Anticipated emotions can include any discrete emotion that may be experienced in response to the assumed occurrence of a desired or undesired future event (Baumgartner, Pieters & Bagozzi, 2008). Anticipated emotions may represent an adaptive subcategory of influential conscious experiences, and as such are expected to have a beneficial effect in areas such as the decision making process (Baumeister et al., 2007). Anticipated emotional outcomes can facilitate optimal decision making. Emotions calculate outcomes; and as such, positive emotions represent positive outcomes and negative emotions signify negative outcomes (Baumeister et al., 2007). Hence, choices that are made with the intention of maximising positive future emotions and minimising negative future emotions should result in good outcomes (Baumeister et al., 2007).

Bagozzi, Baumgartner and Pieters (1998) suggested a model of goal-directed emotions, building on the idea of anticipated emotions, and also considering outcome emotions. Their emotional goal system model suggests that appraisals of the consequences of achieving or not
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Emotions

achieving a goal elicits anticipatory emotions, which in turn, contribute to volitions (intentions, plans, and the decision to expend energy) in the service of goal pursuit; goal directed behaviours next arise in response to volitions and lead to goal attainment, and the latter then functions as the basis for a new set of appraisals and accompanying goal-outcome emotions. The main tenet of this model is that emotions function to produce action in a way that promotes the achievement of goals. However, this relationship is neither automatic nor direct, and emotions function in complex ways to motivate, direct and regulate actions in the service of goal pursuit (Bagozzi, Baumgartner, & Pieters, 1998). According to this model, it is the intensity of anticipatory emotions that is the crucial aspect that gives them their motivational potential (Bagozzi, Baumgartner, & Pieters, 1998).

Similar lines of reasoning are emerging in the domain of educational psychology. Pekrun’s (2006) control-value theory of achievement emotions attempts to explain the antecedents and effects of emotions experienced in achievement and academic settings. Achievement emotions are defined as emotions which are tied directly to achievement activities or achievement outcomes (Pekrun, 2006). The cognitive components of the present research centres around the goal-setting and goal achievement process. As such, achievement related or goal directed emotions would appear to be most pertinent to this cognitive self-regulatory process. Pekrun’s theory is based on the premise that appraisals of control and values are central to the arousal of achievement emotions. The present research focuses on the impact or outcomes of anticipatory goal-directed emotions. While these are evident in Pekrun’s theory, they are included as a type of activity-related emotions, the other type being retrospective emotions. Finally, the theory also includes outcome emotions, such as joy, hope, pride, anxiety, hopelessness, shame and anger relating to success or failure. Pekrun (2006) suggests that achievement emotions affect the cognitive, motivational and regulatory processes mediating learning and achievement.

5.6. Emotion regulation

Up to this point, the focus of this chapter has been on the ways in which emotions, and particularly anticipated emotions, can be incorporated into self-regulation with cognition and motivation. The second area of interest to the present research is the area of emotion regulation. Koole (2009b) noted that the interface between self-regulation and emotion regulation has received little attention, and the present research attempts to address this gap, both theoretically and empirically. Emotion regulation refers to the set of processes whereby people manage their emotional states, including specific emotions such as anger or sadness, global moods such as depression and euphoria, general stress responses and rapid affective reactions that may or may not be consciously experienced (Koole, 2009b). As such, emotion regulation processes are used to influence the emotions individuals’ experience and how and whether they eventually express
these emotions (Gross, 1999), and may increase, maintain or decrease positive and negative emotions (Koole, 2009a). In essence, emotion regulation can be used to improve the role that one’s emotions are playing (Pekrun, 2006).

Tice (2009) suggests that emotion is relatively immune to direct self-regulation, and that in general, people cannot control their emotions as easily or directly as they can control their behaviours or cognition (Tice, 2009), and so, tend to resort to various indirect strategies to change emotions (Baumeister et al., 2007). One reason that Tice (2009) forwards to explain this is that an ability to choose and change one’s emotional state at will would undermine the adaptive function of emotion. In contrast, Koole (2009a) argues that people are much more flexible in dealing with their emotions, and can control virtually every aspect of emotional processing, including how emotions direct attention. Hence, emotions can be managed and are generally regulated through the use of various emotion regulation strategies, which may influence or change different components of the emotion process, including cognitive, physiological, behavioural, expressive, and experiential aspects (Koole, 2009a; Niedenthal, Krauth-Gruber & Ric, 2006). The present study focuses on emotion regulation strategies that influence the cognitive and experiential components.

Basic components of emotion regulation include recognition and understanding of one’s own emotions, managing these emotions by inducing, modulating or preventing them, and using emotions for action and goal attainment (Pekrun, 2006). Before an individual can regulate their emotions, they must be aware of their current emotional state and the possible consequences the emotion has both for themselves and for others (Niedenthal, Krauth-Gruber & Ric, 2006). Emotion knowledge includes knowledge about the causes of emotions, their bodily sensations and expressive behaviour, and about possible means of modifying them. Such knowledge facilitates emotion regulation because it provides information about the appropriateness of the emotional experience, and about the possible actions that can be taken to deal with discrepant emotions (Niedenthal, Krauth-Gruber & Ric, 2006).

Emotion regulation has links to the concept of emotional intelligence. Barsade and Gibson (2007) describe emotional intelligence as a meta-emotional ability, which has been found to positively influence performance on problem solving, problem analysis and decision making. Emotional intelligence can be described as one’s ability to monitor one’s own and others feelings and emotions, and to use this information to guide one’s thinking and actions (Salovey & Meyer, 1990). In a similar vein, emotion regulation refers to one’s attempts to influence which emotions one has, when one has them, and how these emotions are experienced and expressed (Gross, 1998). In this sense, although emotion regulation is restricted to intra-individual processes (rather than inter-individual, where the attempt is to influence another individual’s emotions), the ability to change one’s own emotions means that we must first be
able to identify and monitor the emotional experience. Hence, emotion regulation can also be seen as a meta-emotional capability. Emotion regulation is inherently a component of emotional intelligence, although it is referred to as managing emotions in this theory (Salovey & Grewal, 2005). Of note is that Rhee and White (2007) found emotional self-control to be one of the lowest competencies demonstrated when investigating emotional intelligence in entrepreneurs.


Gross (1999) uses the term emotion regulation to describe the heterogeneous set of processes by which emotions are themselves regulated. Within this, he further distinguishes between the use of emotion regulation to refer both to how individuals influence their own emotions and how they influence others’ emotions. Gross (1999) suggests that this dual usage is less than beneficial, as it mixes two different sets of emotions, goals and strategies. In line with Gross (1999), the present research focuses on emotion regulation as an intra-individual process, i.e. on the ways in which individuals influence their own emotions, when they have them, and how they experience and express these emotions.

Similar to debates in the self-regulation literature more generally, there has been an ongoing debate among emotion regulation researchers as to whether emotion regulation is conscious, nonconscious or some combination of both. Although acknowledging that previous discussions have favoured a categorical distinction between conscious and unconscious processes, Gross (1999) suggested that it may be more useful to consider a continuum of processes that vary in the degree to which they are controlled, effortful, and conscious versus automatic, effortless and unconscious. Gross and Thompson (2007) developed the modal model of emotion, whereby a person-situation transaction occurs that compels attention, has particular meaning for the individual, and gives rise to a coordinated yet flexible multisystem response to the ongoing person-situation transaction (see Figure 5.7). The sequence of the modal model of emotion begins with a psychologically relevant situation, which is often external, but may sometimes be internal (e.g. based on mental representations). This situation is attended to in various ways, giving rise to appraisals that constitute the individuals assessment of the situation’s familiarity, valence and value relevance, and gives rise to an emotional response. The emotions have a recursive aspect, in the sense that they can lead to changes to the environment, which can have the effect of altering the probability of subsequent instances of that and other emotions (Gross & Thompson, 2007).
Gross (1999) stresses the importance of distinguishing what individuals want to achieve by influencing their emotions (their emotion regulation goals) from the processes which they invoke to achieve these goals. Core features of emotion regulation from this perspective are (i) the possibility that people may regulate either negative or positive emotions either by decreasing them or increasing them, (ii) emotion regulation may be conceptualised along a continuum from conscious, effortful and controlled regulation, to unconscious, effortless and automatic regulation, and (iii) no a priori assumptions are made as to whether any particular form of emotion regulation is necessarily good or bad; emotion regulation processes may be used to make things better or worse depending on the context (Gross & Thompson, 2007).

Gross (1999) suggests that one way to organise the processes or strategies of emotion regulation is by using a consensual process model of emotion generation, such as the modal model outlined above. Gross uses emotion process models emphasising biological bases of emotion, in which emotion begins with an evaluation of external or internal emotion cues. These evaluations trigger a co-ordinated set of behavioural, experiential, and physiological emotion response tendencies, which may be modulated, and it is this modulation that gives shape to the manifest emotional responses (Gross, 1999). Hence, emotion regulation strategies can be distinguished in terms of when they have their primary impact on the emotion-generative process (Gross & John, 2003). Gross (1999) uses this scheme to describe the five points in the emotion-generative process that emotion regulatory processes may target (see Figure 5.5.). These five points represent five families of emotion regulation processes: situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Gross & Thompson, 2007; see Table 5.3.). These strategies may involve changing the environment or situation, changing cognitive processes, and change emotional responses once a situation has occurred (Gross, 1999).
Table 5.3 Emotion regulation processes that may be employed throughout the emotion generation process (Gross, 1999)

<table>
<thead>
<tr>
<th>Emotion regulation strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situation Selection</td>
<td>A forward looking approach that refers to approaching or avoiding certain people or situations on the basis of their likely emotional impact. Alternatively referred to as niche picking.</td>
</tr>
<tr>
<td>Situation modification</td>
<td>An approach possible once one is in an emotion-elicitng situation, which refers to modifying the local environment so as to alter its emotional impact.</td>
</tr>
<tr>
<td>Attention deployment</td>
<td>Refers to how individuals direct their attention within a given situation in order to influence their emotions. This approach may include strategies from distraction, which focuses on non-emotion-relevant aspects of the situation, or shifts attention away from the immediate situation, to rumination, which focuses attention on the situation and its emotional implications.</td>
</tr>
<tr>
<td>Cognitive change</td>
<td>Refers to evaluating the situation one is in so as to alter its emotional significance, either by changing how one thinks about the situation or about one’s capacity to manage the demands it poses.</td>
</tr>
<tr>
<td>Response modulation</td>
<td>Refers to influencing emotion response tendencies once they arise.</td>
</tr>
</tbody>
</table>

At the broadest level, Gross and John (2003) distinguish between antecedent-focused and response-focused emotion regulation strategies, which reflect higher order commonalities between the individual families of strategies (Gross & Thompson, 2007). Antecedent focused strategies refer to actions we take before the emotion response tendencies have become fully activated and have resulted in changed behaviour, and the first four categories of strategies may be subsumed under this heading (Gross & Thompson, 2007). Response-focused strategies refer to actions undertaken once an emotion is already underway, after the emotion response tendencies have already been generated (Gross & John, 2003). Although Gross (1998, 1999) identifies five families of strategies that individuals may use to regulate their emotions, in subsequent research, he has tended to focus on the two basic processes of emotion regulation, namely reappraisal and suppression (e.g. see the measure developed by Gross & John, 2007). In line with this, these two emotion regulation strategies are the ones which are focused on in the present research.

Reappraisal is a form of cognitive change, and begins with the idea that no situation in and of itself generates an emotion. It is the individuals’ appraisal of the situation that generates emotions. Hence, this type of cognitive change involves changing a situations meaning in a way that alters its emotional impact (Gross & Thompson, 2007). Gross (1999) suggests that one very powerful way of regulating emotion is to modify the way in which a situation is appraised. Such reappraisals may decrease or increase emotional responding, depending on the particular circumstances. Reappraisal is an antecedent-focused strategy, because it intervenes before the emotion tendencies have been fully generated, and hence, can efficiently alter the entire subsequent emotion trajectory (Gross & John, 2003). When used to down regulate negative emotion, Gross and John (2003) suggest that it should successfully reduce the experiential and behavioural components of negative emotion.
Suppression, in contrast refers to the inhibiting of emotion-expressive behaviour (Gross, 1999). Suppression is a response-focused strategy, that comes relatively late in the emotion-generative process, and modifies behavioural aspect of the emotion response tendencies (Gross & John, 2003). Butler and Gross (2009) found that suppression leads to increases in physiological responding and decreases in cognitive functioning. Suppression requires individuals to effortfully manage emotion response tendencies as they continually arise, and these efforts may consume cognitive resources that could otherwise be used for optimal performance (Gross & John, 2003). Comparing the effectiveness of these two strategies, Gross (1998) found that re-appraisal or anticipatory coping is more effective than suppression.

Although reappraisal and suppression are two emotion regulation strategies, and the word strategy implies an action that is undertaken, Gross and John (2003) focus on individual differences in the use of reappraisal and suppression. Hence, they do not assess these strategies during the actional phase, but at the more distal level of individual differences. However, they conceptualise these individual differences in emotion regulation not as fixed or immutable traits, but as socially acquired strategies that are sensitive to individual development (John & Gross, 2007). In their findings, Gross and John (2003) found that reappraisers cope with stress by using reinterpretation, have a well-developed capacity for negative mood repair, and show a sense of their capacity for capacity for negative mood regulation. In contrast, suppressors cope with adversity by “battening the hatches” (p. 355) and hence, feel inauthentic, and do not vent their true feelings. They tend to evaluate their emotions in negative terms, and the lack of clarity they experience around their emotions is associated with a lower ability to repair their mood, lower estimates of their own ability to regulate negative mood, and increased rumination (Gross & John, 2003). On the other hand, reappraisers tend to experience and express greater positive emotion (Gross, & John, 2003).

Diefendorff, Richard and Yang (2008) make a comparison between Gross’ process-oriented model of emotion regulation and the strategies of deep and surface acting that have been described in the literature on emotional labour (e.g. Hochschild, 1983). The most obvious difference they identify is that Gross (1998) argued for four distinct antecedent focused emotion regulation strategies, while deep acting is characterised as a general strategy in which one effortfully tries to change one’s emotions, suggesting that the antecedent focused strategies are functionally equivalent. The second difference they note is that the definitions of deep and surface acting suggest that they are motive driven, whereas the emotion regulation strategies identified by Gross are not.

The conceptualisation of the emotion regulation strategies of reappraisal and suppression as individual difference variables highlights some methodological differences between emotion regulation and coping, as they have traditionally been researched. John and Gross (2007)
indicate that much coping research has examined individual differences within the context of a specific stressful encounter and has focused on the individual’s behavioural and cognitive responses to the stressor.

5.6.2. Emotion regulation versus coping

Koole (2009a) describes coping as a topic that is closely related to self-regulation. Indeed, if one looks at the strategies that individuals use to regulate their emotions, there is much overlap between what are referred to as coping strategies, and what are referred to as emotion regulation strategies. However, one of the key differences between coping and emotion regulation is that the coping literature only deals with the regulation of negative emotions, while the emotion regulation literature acknowledges that both positive and negative emotions may in fact, be regulated. The range of potential coping strategies available to individuals is also broader than those pertaining only to the regulation of emotion. Gross (1999) examined the historical antecedents of emotion regulation research, with its origins in the psychoanalytic, stress and coping traditions. However, he noted that an increased interest in emotion regulation had lead to boundary ambiguities that needed clarification in order to progress the field. Research stemming from the psychoanalytic tradition tended to focus on anxiety regulation, while research stemming from the stress and coping traditions began to emphasise the cognitive processes required to transform an external event into something with adaptive significance for the individual (Gross, 1999).

Gross and Thompson (2007) classify both emotion regulation and coping as subordinates of the broader construct of affect regulation. They consider affect regulation to include the four overlapping constructs of (i) coping, (ii) emotion regulation, (iii) mood regulation and (iv) psychological defences. As mentioned above, coping is distinguished from emotion regulation by its predominant focus on decreasing negative affect, by its emphasis on adaptive responding, and by its emphasis on much larger periods of time. Mood comparison and mood repair are more concerned with altering emotion experience than emotional behaviour, and psychological defences typically have as their focus the regulation of aggressive or sexual impulses and their associated negative emotion experience (Gross & Thompson, 2007).

Lazarus (1991) describes coping as the psychological analogue to action tendencies, and as a complex, deliberate and planful process. In a similar approach to that of Koole (2009a), Daniels, Harris and Briner (2004) make the distinction between coping function and coping behaviour. They suggest that coping function is the goal of coping, or represents what the individual is trying to achieve through coping. In contrast, they describe coping behaviour as attempts to adapt to or otherwise regulate the affective impact of an event, in line with Lazarus’ (1999) definition. Coping function may activate subordinate plans, with attendant actions, and
lead to the enactment of coping behaviour, but importantly, coping function will not always lead to coping behaviour (Daniels, Harris & Briner, 2004). In a similar vein, Gross (1999) suggests that although there is relatively little known about individuals’ emotion regulation goals, there is increasing recognition that emotion regulation involves both decreasing and increasing positive and negative emotions.

Lazarus (1991) hypothesised that coping may shape emotions in one of two ways. Problem-focused coping relates to efforts to overcome or reduce the effect of an undesirable situation, and often involves planful actions to change the person-environment relationship by directly acting on the environment or on oneself. Emotion-focused coping refers to cognitive strategies to master, reduce or tolerate an undesirable situation. It alters only what is in the mind, either by attention deployment (essentially, avoidance) or by changing the meaning of the relationship (e.g. denial or distancing) (Lazarus, 1991). The fundamental mechanism by which problem-focused and emotion focused coping have their effect is appraisal. Lazarus (1991) proposed that appraisal processes of internal and situational conditions lead to emotional responses, and that these, in turn, induce coping activities. Two types of appraisal processes that occur in coping: primary appraisal assesses (i) the motivational relevance of the conditions leading to the appraisal (their importance in relation to one’s goals), (ii) the motivational congruence, or the extent to which the conditions thwart or facilitate achievement of one’s goals, and (iii) one’s ego involvement. A secondary appraisal, in contrast, considers the resources or options for coping with internal or situational conditions, such as (i) attribution to oneself or to another of credit or blame for harm or benefit, (ii) self-efficacy with regard to acting on the situational conditions, (iii) self-efficacy with regard to regulating one’s own internal states, and (iv) expectations of forces operating beyond one’s control (Bagozzi, 1992; Folkman & Lazarus, 1985; Gross, 1999).

In comparison to stress and coping researchers, those studying emotion regulation have sought finer-grained distinctions among environment-individual interactions using either dimensional or discrete approaches (Gross, 1999). Of the two terms, Gross (1999) suggests that coping is the broader term as it encompasses non-emotional actions. Coping also differs from emotion regulation in that it is usually studied over prolonged periods of time (Gross, 1999). However, emotion regulation includes processes that are not considered in the coping literature, such as the influence of positive emotions (Gross, 1999).

5.6.3. Problem-Focused Coping

The second type of regulation strategies investigated in the present research relates to problem focused coping. Lazarus (1991) suggests that one way of conceptualising the action process is as a set of lower order goals or intentions that serve as methods of achieving higher
order goals, and whether one uses the terms, coping, means to ends, goals, or intentions depends
not so much on the difference in the kind of behaviour involved but on their place in the goal
hierarchy, their scope and/or their level of abstraction. Hence, Lazarus (1991) concludes that
the topic of coping is part of motivational psychology as well as decision/appraisal processes
and strategies of attainment. The self-regulation process allows for a conceptual integration of
these areas.

Beal, Trougakis, Weiss and Green (2006) suggest that a key ingredient of successful
emotion regulation is the particular strategy used. Problem focused coping is directed at the
stress itself, by taking steps to remove or to evade it, or to diminish its impact if it cannot be
evaded. Emotion-focused coping, on the other hand, is aimed at minimising distress triggered
by stressors (Carver & Connor-Smith, 2010). Both types of strategies have distinct proximal
goals, which determines the response’s category assignment. For example, seeking support is
emotion focused if the goal is to obtain emotional support or reassurance, but is problem-
focused if the goal is to obtain advice or instrumental help (Carver & Connor-Smith, 2010).

Based on Lazarus and Folkman (1984), and Carver and Scheier (1981), Carver, Scheier
and Weintraub (1989) identified five strategies of problem-focused coping (active coping,
planning, suppression of competing activities, restraint coping, seeking of instrumental social
support) and five strategies of emotion-focused coping (seeking of emotional social support,
positive reinterpretation, acceptance, denial and turning to religion), as well we three coping
responses that were deemed to be less useful (focus on and venting of emotion, behavioural
disengagement, mental disengagement) (see Table 5.4). The present research focused only on
the problem-focused strategies, as these are not referred to in Gross and John’s emotion
regulation strategies, and it was deemed appropriate to include additional strategies for dealing
with emotional or stressful events.

From a theoretical perspective, Carver, Scheier and Weintraub (1989) suggest that
problem-focused coping strategies are adaptive strategies, and hence, may be more effective in
terms of leading to goal attainment. However, although emotion-focused coping has generally
been found to be less adaptive than problem-focused coping, Baker and Berenbaum (2007)
suggest that these results need to be qualified by considering the type of goal and the type of
demotion-focused strategy. These authors focus on a subset of emotion-focused strategies, which
they collectively call emotion-approach coping. Such strategies focus on actively identifying,
processing and expressing one’s emotions, which in turn can provide information about one’s
goal status (Baker & Berenbaum, 2007). Secondly, they suggested and found that different
approaches to coping (problem-focused versus emotion-approach) were differentially effective
depending on whether the situation was an achievement context or an interpersonal one. The
achievement context is relevant to the present research and their findings demonstrated that
individuals who experience achievement stressors had higher levels of positive affect if they engaged in more rather than less emotional expression and emotional-support coping. Furthermore, they found that problem-focused coping resulted in lower levels of positive affect if individuals were not clear about their emotions, and suggested that problem-focused coping can be counter-productive if one hastily decides on a particular strategy without using one’s emotions as a guide to help solve the problem (Baker & Berenbaum., 2007).

Table 5.4 Coping strategies identified by Carver, Scheier & Weintraub (1989).

<table>
<thead>
<tr>
<th>Coping Strategy</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Active Coping</td>
<td>Taking active steps to try to remove or circumvent the stressor or to ameliorate its effect. Active coping includes initiating direct action, increasing one’s efforts, and trying to execute a coping attempt in a stepwise fashion.</td>
</tr>
<tr>
<td>2. Planning</td>
<td>Thinking about how to cope with a stressor. Planning involves coming up with action strategies, thinking about what steps to take and how best to handle the problem. This strategy differs conceptually from a problem-focused action, and occurs during secondary appraisal.</td>
</tr>
<tr>
<td>3. Suppression of competing activities</td>
<td>Means putting other projects aside, trying to avoid becoming distracted by other events, and letting other things slide if necessary in order to deal with the stressor.</td>
</tr>
<tr>
<td>4. Restraint coping</td>
<td>Refers to waiting until an appropriate opportunity to act presents itself, holding oneself back, and not acting prematurely. This is an active strategy in the sense that the focus of behavior is on dealing effectively with the stressor, but it is also a passive strategy in the sense that using restraint means not acting.</td>
</tr>
<tr>
<td>5. Seeking instrumental social support</td>
<td>Seeking advice, assistance or information.</td>
</tr>
<tr>
<td>Emotion-Focused Coping</td>
<td>Getting moral support, sympathy, or understanding.</td>
</tr>
<tr>
<td>6. Seeking emotional social support</td>
<td>Coping aimed at managing distressing emotions rather than at dealing with the stressor. Construing a stressful situation in positive terms should intrinsically lead the person to continue or to resume active, problem-focused coping actions. Also termed positive reappraisal.</td>
</tr>
<tr>
<td>7. Positive reinterpretation</td>
<td>It is argued this is a functional coping response, in that a person who accepts the reality of a stressful situation would seem to be engaged in an attempt to deal with the situation. Acceptance of a stressor as real occurs in primary appraisal, but acceptance of a current absence of active coping strategies related to secondary appraisal. The opposite of denial.</td>
</tr>
<tr>
<td>8. Acceptance</td>
<td>Reports of refusal to believe that the stressor exists or of trying to repress it as though the stressor is not real. A response that sometimes emerges in primary appraisal. It has been suggested that denial can be useful in that it minimizes distress and therefore facilitates coping. On the other hand, denying the reality of an event, allows the event to become more serious and makes it more difficult for coping to occur.</td>
</tr>
<tr>
<td>Denial</td>
<td>The tendency to focus on whatever distress or upset one is experiencing and to vent these feelings. Such a response may sometimes be functional, but focusing on these emotions, particularly for long periods, can impede adjustment.</td>
</tr>
<tr>
<td>10. Focus on and venting of emotions</td>
<td>Reducing one’s efforts to deal with the stressor, perhaps giving up the attempt to attain goals with which the stressor is interfering. Behavioural disengagement is also reflected in phenomena such as helplessness.</td>
</tr>
<tr>
<td>11. Behavioural disengagement</td>
<td>A variation on behavioural disengagement, hypothesised to occur when conditions prevent behavioural disengagement. Behavioural disengagement occurs via a wide variety of activities that serve to distract the person from thinking about the behavioural dimension or goal with which the stressor is interfering. Tactically, this strategy includes using alternative activities to take one’s mind off a problem, daydreaming, escaping through sleep or escape by immersion in TV.</td>
</tr>
<tr>
<td>12. Mental disengagement</td>
<td>The tendency to turn to religion in time of stress.</td>
</tr>
</tbody>
</table>

Comparing Gross’ strategies to those of Carver, Scheier and Weintraub (1989), John and Gross (2007) suggest that coping strategies may be broader in scope than emotion regulation strategies, but make specific comparisons between the COPE strategies and the five families for emotion regulation strategies identified in their research (see also Gross & John,
They suggest that both the *Active Coping* and *Planning* scales measure anticipatory active coping efforts, and should therefore relate to situation selection and situation modification. Furthermore, they suggest that *Seeking Instrumental Social Support* should relate to less use of both distraction or focusing away from one’s emotions, and emotional suppression. Gross and John (2003) state that the two coping styles most related to reappraisal and suppression are reinterpretation and venting. Reinterpretation involves looking for the silver lining in stressful events and trying to learn from difficult experiences, while venting involves being aware of one’s upset or distress and expressing it (Gross & John, 2003). The coping styles are defined more narrowly than the emotion regulation strategies, as they focus only on stressful situations and experiences. However, they tap a broader set of underlying processes; for example, reinterpretation assesses optimism as well as learning from experiences, while venting assesses both experience and expression of negative emotion (Gross & John, 2003).

### 5.6.4. Classifying emotion regulation strategies

Koole (2009a) provides one of the first comprehensive attempts to classify emotion-regulation strategies, which aids in the integration of this area with research on emotions more generally, and with the broader field of self-regulation. Koole (2009a) uses two higher order categories as the basis of his taxonomy; the emotion-generating system that is targeted, and the psychological functions that are served by emotion regulation. Koole’s proposed taxonomy is outlined in Table 5.5. From this table, it is clear that the focus of the present research is largely that of goal-oriented emotion regulation, which Koole (2009a) suggests is directed by a single verbally reportable goal, norm or task, which may operate in one of two ways: (i) it may be driven by a person’s beliefs about the utility of particular emotional states, or (ii) an ongoing goal, task or norm may change the relevance of emotionally charged information.

The two individual differences in emotion regulation included in the present research (emotion reappraisal and suppression) are both included as goal-oriented emotion regulation strategies in Koole’s (2009a) taxonomy, but target different emotion generation systems. Thought suppression targets the attentional system, and a critical factor in such goal-oriented regulation of attention appears to be the availability of distracting stimuli. In contrast, emotion reappraisal targets the knowledge system, whereby the emotional impact of an event is changed by changing one’s subjective evaluation of an event. Cognitive reappraisal inhibits activation of emotional regions in the brain and increases activation of regions that support working memory (Koole, 2009a), which may explain why it does not impair other self-regulatory efforts.

Koole’s (2009a) taxonomy of emotion regulation strategies does not explicitly include any of the problem-focused coping strategies (active coping, planning, suppression of...
competing activities, restraint coping, seeking instrumental social support). However, if one applies a similar taxonomy to these strategies it is clear that they also fall under the remit of having a goal-oriented function, which target either attentional or knowledge systems.

### Table 5.5 Koole’s (2009a) proposed taxonomy of emotion regulation strategies.

<table>
<thead>
<tr>
<th>Emotion Generation system</th>
<th>Psychological Function Goal-oriented</th>
<th>Person-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>Effortful distraction</td>
<td>Attentional counter-regulation</td>
</tr>
<tr>
<td></td>
<td>Thought suppression</td>
<td>Meditation</td>
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<tr>
<td></td>
<td></td>
<td>Mindfulness training</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Cognitive reappraisal</td>
<td>Expressive writing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specification of emotional experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activating stored networks of emotion knowledge</td>
</tr>
<tr>
<td>Body</td>
<td>Expressive suppression</td>
<td>Controlled breathing</td>
</tr>
<tr>
<td></td>
<td>Response suppression</td>
<td>Progressive muscle relaxation</td>
</tr>
<tr>
<td></td>
<td>Ventiing</td>
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</tbody>
</table>

5.6.5. Emotion regulation and the broader self-regulatory process

Gross (1999) suggests that it is reasonable to maintain distinctions between processes that regulate emotions and those that regulate thoughts, but one pressing question for future research is to examine how emotion regulation relates to other forms of regulation. One of the key commonalities across all areas of self-regulation are the concepts of proactiveness and adaptiveness, and the area of emotion regulation is no different. This is clearly reflected in Aspinwall and Taylor’s (1997) concept of proactive coping. Proactive coping occurs proactively before the occurrence of any stressor, and is intended to prevent threatening or harmful situations from arising (Carver & Connor-Smith, 2007). Furthermore, the framework developed by Aspinwall and Taylor (1997) emphasises the individual differences and resources that may promote effective proactive coping. In this sense, it has some overlaps with Kanfer and Heggestad’s (1997) work considering motivational traits and skills. Aspinwall and Taylor (1997) make quite a similar argument to the present research, suggesting that an understanding of self-regulatory skill, the functions of personal and social resources, and proclivities to use certain kinds of coping strategies will provide insights into how people gain a competitive edge in many situations.

Proactive coping may be distinguished from coping in three main ways. Firstly, it is temporally prior to coping or anticipatory coping, involving the accumulation of resources and the acquisition of skills that are not designed to address any particular stressor but to prepare for any potential stressor that might occur in the future. Secondly, proactive coping requires different skills than does coping with extant stressors, and thirdly, different skills and activities are likely to be successful for proactive coping (Aspinwall & Taylor, 1997). In short, proactive coping is more future-oriented, and is about goal management, whereas the traditional
conceptualisation of coping is more reactive, and is about risk management (Greenglass & Fiskenbaum, 2009).

Both problem-focused coping and reappraisal are closely linked to the conceptualisation of proactive coping. In the fourth stage of Aspinwall and Taylor’s (1997) framework (preliminary coping efforts), successful coping is active rather than avoidant, and involves cognitive activities such as planning, or behavioural activities such as seeking information from others and taking preliminary action. Greenglass (2002) reports on findings comparing the COPE measure (Carver, Scheier & Weintraub, 1989) of emotion and problem-focused coping strategies (which were used in the present research) with the Proactive Coping Inventory (Greenglass et al., 1999). The findings indicated that the support seeking scale correlated between .50 and .65 with the seeking instrumental and social support subscales of the COPE. The proactive coping scale was correlated between .50 and .52 with the Active coping scale of the COPE. Hence, it would appear that there is quite a bit of overlap between these subscales of the two measures, and one can conclude that, at the very least, the problem focused strategies of active coping and seeking instrumental social support are proactive in nature.

5.7. Incorporating affect into the present model: The expanded model

From the above review, it is clear that affect plays a significant role, along with cognition and motivation, in the process of regulating the self. The exact impact that emotions will have in this process, depends on a number of factors, including the positive or negative nature of the emotion, whether the emotion is experienced or anticipated, and linked to this, the phase in the action process in which the affective experience occurs. In addition, the regulation strategy needs to be considered.

Figure 5.8 outlines the theoretical integration of cognitive, motivational and emotional processes which are at play at different distal and proximal levels. The detail of the relationships between each component will be discussed in more detail in the sections that follow. Emotions and the regulation of emotions can manifest throughout each phase of the model in different ways, and it is beyond the scope of this research to incorporate every manifestation of emotion and emotion regulation in every phase of the model. This research focuses on emotion regulation in the motivational pre-decisional phase, anticipated goal-directed emotions in the volitional pre-actional phase, and coping strategies a meta-emotional process) in the volitional actional phase. As an illustration of the other emotional concepts that would be relevant consider the following: in the distal pre-decisional phase, outcome emotions from a previous experience may also influence choice of goals. Activity related emotions would also be pertinent during the actional phase, and outcome emotions, following achievement or non-achievement of the goal would come about in the post-actional phase. However, these are not the focus of the present study.
Figure 5.8 Theoretical integration of the emotional motivation and cognitive components of the self-regulatory process.
The basic premise underlying the theoretical frameworks of the present research is the action process (see chapter 3) and the proximal-distal distinction (see chapter 4), and there has been some movement in the literature towards the incorporation of affect into such episodic or processual frameworks. The model presented by Beal, Weiss, Barros and MacDiarmid (2005) is one example. They present an episodic process model considering how affect influences within-person performance. This model focuses on a more micro-level conceptualisation of an action process, or performance episode, but there are a number of overlaps with the present research in terms of rationale. However, the present model is more focused on integrating the proximal and distal components that come into play are varying stages throughout the action process.

The subsections which follow will provide more detail on the emotional phenomena focused on in the present research, and their expected relationships with the cognitive and motivational phenomena outlined in previous chapters. For ease of reference, all hypotheses will be preceded by the letter “E” (referring to a hypothesis incorporating an emotional component).

5.7.1. Emotional components of the model and their relationships

Prior to integrating the emotional aspects of the model with the cognitive and motivational components, it is necessary to examine the relationships that exist between goal-directed emotions and emotion regulation. Figure 5.9 outlines the hypothesised relationships between individual differences in emotion regulation, anticipated goal-directed emotions, coping strategies and entrepreneurial success. For ease of interpretation, in each of the figures depicting the empirical models, only the direct effects between each sequential phase of the model have been included. However, in the analysis, the direct and indirect effects between variables in all phases of the model were investigated.

Figure 5.9 Hypothesized relationships between the emotional components of the model and entrepreneurial success.

Baker and Berenbaum (2007) found that for individuals who were not clear or attentive about their emotions, problem-focused coping could be counter-productive, particularly if it
leads to hastily deciding on a particular strategy without using one’s emotions to help solve the problem. This suggests that individual differences in emotion regulation, anticipatory emotions and coping strategies may have an impact on outcomes variables such as success and self-perceptions of success. This line of reasoning is also corroborated by Aspinwall and Taylor’s (1997) framework of proactive coping, which highlights the importance of the temporal pattern of initial coping efforts, and the fact that little is known about which strategies were tried first and what information was gained from these attempts. Hence the following hypothesis is proposed:

**Hypothesis E1:** Problem-focused coping will have a positive effect on (a) self-perceptions of success, (b) objective success and (c) external success.

Research based on Control Theory has found that positive affect and optimism influences one’s preference for effective coping strategies (i.e. problem-focused coping), whereas negative affect and pessimism enhances preferences for less effective strategies (Carver & Scheier, 2001; Scheier & Carver, 1992). Research on proactive coping has also found that positive mood is associated with more effective coping (Aspinwall & Taylor, 1992; Diamond & Aspinwall, 2003). These past findings suggest that individuals who are higher in positive affectivity should engage in problem-focused coping strategies. On the other hand, Baumgartner, Pieters and Bagozzi (2008) suggest that anticipated negative emotions associated with imagining a failure to achieve a goal may stimulate coping behaviours to prevent this letdown. Interestingly, Aspinwall and Taylor (1992) found that negative mood was a strong predictor of avoidant coping, but also predicted greater active coping and greater seeking of social support. They explain these findings by suggesting that negative mood may act as a general distress state, which leads individuals to attempt to use a variety of coping strategies. Extrapolating these findings to the case of anticipatory negative emotions would suggest that the anticipation of negative emotions if one fails to achieve one’s goals may lead an individual to engage in problem-focused coping to try to circumvent such a failure.

**Hypothesis E2:** The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on problem focused coping.

Bagozzi, Baumgartner, & Pieters (1998) suggest that people who value a goal less should feel less intense positive emotions towards success, and less intense negative emotions towards failure than those who value a goal more. Pekrun (2006) explains this by suggesting that the intensity of anticipatory emotions are a positive curvilinear, or negative function of outcome expectancies, and a positive function of outcome value. In other words, emotional intensity will be higher when success or failure is subjectively more important (Pekrun, 2006). The present research suggests that the anticipation of positive emotions if one succeeds in a goal, and the anticipation of negative emotions if one fails to achieve the same goal, will both be important in distinguishing varying levels of goal importance for the individual which will be differentially
related to success. For example, if an individual anticipates strong positive emotions on succeeding to achieve a goal, and strong negative emotions on failing to achieve the goal, this is indicative of a goal where achievement is an absolute imperative for the individual. However, in a case where anticipated positive emotions for succeeding are strong, but the corresponding negative emotions associated with anticipated failure are much weaker, this type of goal can be seen as a “nice to have”, and hence, there may be less pressure felt by the individual to pursue it relentlessly. Finally, if both types of anticipated emotions are weak, then this is suggestive of a low priority goal for the individual. Thus, this research suggests that the intensity of both positive and negative goal-directed emotions will be associated with success.

*Hypothesis E3: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive direct effect on (a) self-perceptions of success, (b) objective success and (c) external success, and an indirect effect via problem-focused coping.*

Research based on the Personality Systems Interaction Theory (PSI; Kuhl, 2000) provides support for a relationship between affectivity and affect regulation, which has relevance for the examination of emotions and emotion regulation. Baumann, Kaschel and Kuhl (2007) tested the interactions between two types of affect sensitivity and two types of affect regulation. Findings of the research indicated that low sensitivity to positive affect was associated with reduced emotional well-being when self-motivation was low. High sensitivity to negative affect was associated with psychosomatic symptoms when self-relaxation was low. However, such findings may depend on what strategy is employed to regulate emotions. Considering Gross’s process oriented model of emotions, we would expect that antecedent focused strategies, which occur prior to the elicitation of a full blown emotion experience will impact the emotion itself, whereas response focused are less likely to have such an impact. John and Gross (2007) report on findings which demonstrated that reappraisal, which occurs early in the emotion-generative process before emotion-response tendencies have been fully generated, permits the modification of the entire emotional sequence, including the experience of more positive or negative emotion. In contrast, they found that suppression, which occurs relatively late in the emotion-generative process, primarily modifies the behavioural aspect of emotion-response tendencies, without reducing the experience of negative emotion. As mentioned above, re-appraisal and suppression have been measured as individual differences, and as such, chronic use of reappraisal has been shown to be positively associated with positive emotion, and negatively associated with negative emotion, while the opposite has been shown to be the case for suppression.

*Hypothesis E4a: The chronic use of re-appraisal will result in higher levels of anticipated positive emotions and lower levels of anticipated negative emotions.*
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Hypothesis E4b: The chronic use of suppression will result in lower levels of anticipated positive emotions and higher levels of anticipated negative emotions.

Baker and Berenbaum (2007) found in their research that participants who were clear and attentive about expressing their emotions had higher levels of positive affect if they engaged in problem-focused coping. Individuals who typically engage in emotion reappraisal are likely to have a clearer understanding of their emotions than those that typically engage in suppression, and hence, it is plausible to suggest that these individuals will engage in more problem-focused coping. Baker and Berenbaum (2007) suggest that those individuals who are clear in their emotions have little to gain by engaging in emotion-approach coping, and have the requisite information to effectively solve their problems and to be insightful regarding their problem. Furthermore, suppression has been found to have a negative relationship with cognition (memory), and social support, while reappraisal was not found to be significantly related to these variables (John & Gross, 2007), which is in line with the suggestion that suppression consumes cognitive resources. This research suggests that there may be a link between emotions and coping strategies. Given that this relationship has not been investigated in relation to entrepreneurs, we specify hypotheses in relation to both reappraisal and suppression and their impact on coping strategy.

Hypothesis E5a: The chronic use of reappraisal will result in an increase tendency to engage in problem-focused coping.

Hypothesis E5b: The chronic use of suppression will result in a reduced tendency to engage in problem focused coping.

Little research has explicitly investigated whether there is a relationship between emotion regulation and performance in a work context, or success at the level of a new venture. Some research in the area of emotional labour however suggests that such a relationship may exist. Goldberg and Grandey (2007) found that individuals who had to follow emotional display rules, rather than having autonomy in which emotions to display, led to higher levels of energy depletion for those using surface acting (of which suppression is one mechanism) rather than deep acting (of which emotion reappraisal is an example). Totterdell and Holman (2003) found that deep acting was associated with quality of performance and displayed enthusiasm, but surface acting was not. Furthermore, Keith and Frese (2005) demonstrated that emotion control and metacognition mediated the effects of error management training on performance. Hence, it appears that there is merit in investigating the relationships between emotion regulation strategies and success.

Hypothesis E6a: Emotion reappraisal will have a positive direct effect on (i) self-perceptions of success, (ii) objective success and (iii) external success, and an indirect effect via anticipated emotions and problem-focused coping.
Hypothesis E6b: Suppression will have a negative direct effect on (i) self-perceptions of success, (ii) objective success and (iii) external success, and an indirect effect via anticipated emotions and problem-focused coping.

5.7.2. Relationships between the emotional and cognitive components of the model.

Figures 5.10 and 5.11 outline the empirical models examining the emotional and cognitive components of the model. As with the models in previous chapters, Figure 5.10 tests the cognitive components with planning included as the form of volitional cognition, while in Figure 5.11, this variable is replaced with goal-setting and actions taken towards a goal. The hypotheses pertaining to Figure 5.10 will be discussed first, before moving on to discuss the hypotheses pertaining to Figure 5.11.

![Hypothesized relationships between the emotional and cognitive components of the model (planning).](image)

Butler and Gross (2009) suggest that both emotions and emotion regulation are tightly linked to goal achievement. Previous research has suggested that anticipatory emotions can be seen as prefactual appraisals, whereby a decision maker imagines the affective consequence of goal attainment and goal failure before deciding to perform instrumental acts (Perugini & Bagozzi, 2001). As such, the processes behind the functioning of anticipatory emotions are dynamic and entail self-regulation in response to feedback (Perugini & Bagozzi, 2001), in a similar manner postulated by control theory (Carver & Scheier, 1990). Hence, it seems plausible that anticipatory emotions have an influence on planning and goal-setting. Furthermore, Bandura (1989) suggested that individuals will set loftier goals when they expect positive outcomes and when they persist at reaching their goals in the face of setbacks. Gervey et al. (2005) found that positive mood increases individuals’ ability to detect the utility of particular means to achieve a goal, thus promoting actions in line with their primary goal. This suggests that link between positively felt emotions and planning. In their model, Bagozzi, Baumgartner, & Pieters (1998) suggest that anticipatory emotions of sufficient intensity
motivate volitional processes. Their results found that the stronger a person’s positive or negative emotional response to goal success or failure respectively, the more they will engage in volitional process such as developing implementation intentions, planning, and being willing to expend effort to achieve the goal. In line with these findings, the present research suggests that anticipatory emotions will be associated with volitional processes such as goal-setting and planning. Further evidence corroborating the motivational influence of emotions was found by Brown, Cron and Slocum (1997), who demonstrated that positive anticipatory emotions were positively related to volitions and also mediated the relationship between personal stakes (the extent to which aspects of an individual’s well-being is riding on a situation’s outcomes) and volitions.

Hypothesis E7: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on planning.

In section 5.7.1, it was suggested that the strength of anticipated emotions experienced could be associated with the value of a goal for an individual, with stronger anticipated emotions being associated with goals that were more important to an individual (see Bagozzi, Baumgartner & Pieters, 1998; Pekrun, 2006), and should result in higher levels of success. However, it is possible that this relationship is mediated by cognitive variables. For example, the more important a goal is to an individual should result in them working harder to achieve the goal, and engaging in more planning and goal-setting to try to ensure success.

Hypothesis E8: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have an indirect effect on success, via planning.

One of the reasons for regulating one’s emotions is to facilitate the experience and expression of emotions that one believes will facilitate performance in a particular situation (Niedenthal, Krauth-Gruber & Ric, 2006). Brown, Westbrook and Challagalla (2005) discuss adaptive and maladaptive forms of coping. Effective coping enables individuals to resolve problems, relieve emotional distress and stay on track to achieve their goals (Brown et al., 2005). Galliot and Tice (2007) make the point that efforts to change one’s mood may influence decision making and behaviour, and as such, emotion regulation, rather than emotions per se, may affect decisions. Furthermore, people sometimes make decisions which influence their long-term goals in an effort to make themselves feel better in the short term (Galliot & Tice, 2007). This ability to control one’s impulses and delay gratification in the pursuit of long term goals is a vital capacity in order to succeed, and is highly adaptive (Galliot & Tice, 2007). Hence, the effect of emotion regulation on performance is likely to depend on the type of strategy employed. For individuals who choose strategies that facilitate remaining on-task, such as reappraisal of emotions or problem-focused coping strategies, this is likely to lead to higher levels of performance or success on the task. Little research has directly investigated the role the emotion regulation plays in work performance, with one exception to this being the work by

Gross and John (2003) found that individuals who habitually use reappraisal had higher levels of environmental mastery, personal growth and a clearer purpose in life. Suppression, which comes relatively late in the emotion-generative process, primarily modifies the behavioural aspect of the emotion-response tendency, without reducing the experience of negative emotion (John & Gross, 2007). Suppression requires the individual to effortfully manage response tendencies as they arise continually, and consumes cognitive resources that could otherwise be used for optimal performance in the social contexts in which they emotions arise (John & Gross, 2007). For individuals who choose strategies, such as suppression, that decrease the attentional resources available for on-task behaviour due to a re-focusing of attention on dealing with an emotion, this is likely to decrease an individual’s goal-related performance and decrease success attained. This is in line with a resource allocation view of self-regulation (e.g. Baumeister & Alquist, 2009). Furthermore, Baumeister, Vohs, DeWall and Zhang (2007) suggest that because the effects of emotion on cognitive processes may emphasise thought processes that are designed to help the person learn lessons from recent experiences, when emotion is blocked (e.g. through suppression), people are more likely prone to repeat their mistakes.

_Hypothesis E9a:_ Reappraisal will be positively related to planning.

_Hypothesis E9b:_ Suppression will be negatively related to planning.

_Hypothesis E10a:_ Reappraisal will have an indirect effect on planning via anticipated positive emotions

_Hypothesis E10b:_ Suppression will have an indirect effect on planning via anticipated negative emotions.

Control Theory clearly emphasises the role of emotion in the motive models of approach and avoidance (e.g. Carver, 2001). The approach system manages incentive motivation and has been called the behavioural activation system, while the other system manages aversive motivation and withdrawal or avoidance behaviour, and is generally referred to as the behavioural inhibition system (Carver, 2001). Furthermore, Zelenski (2008) also suggests that emotions play a role in approach and avoidance motivation from the perspective of research looking at the behavioural activation system (BAS; Gray, 1981, 1994; Pickering, Corr & Gray, 1999). This approach posits that individual differences emerge from two independent motivational systems; the BAS responds to conditioned cues of reward in the environment and creates approach motivation, while the behavioural inhibition system (BIS) monitors the environment for punishment cues and upon detection, inhibits ongoing behaviour and creates
avoidance motivation (Zelenski, 2008). In addition, the two systems are generally believed to have different neural substrates and to exert distinct influences on action. The two motive systems are also believed to be the sources of the affective qualities that are relevant to approach behaviour and avoidance or withdrawal behaviour respectively (Carver, 2001). Given this reasoning, it is clear that we can expect a relationship between one’s goal orientations and one’s affect or emotions.

Achievement goals have been described as exerting a broad influence on individual’s cognition and affect (Elliot, 1999; Pekrun, 2006). In terms of emotions, an approach orientation should facilitate a more positive emotional experience, and an avoidance orientation should facilitate a more negative emotional experience (Pekrun, 2006; Zelenski, 2008). Furthermore, Bagozzi, Dholakia and Basuroy (2003) propose that anticipated emotions are similar to the notions of hope of success and fear of failure as antecedents of approach and avoidance behaviour in achievement contexts. They note that the mechanism by which anticipated emotions arise is still unclear, but one possibility is that such emotions arise in response to a decision process whereby an individual compares the prospect of decision enactment and the possibility of failing to do so with his or her personal standards or reference values (Bagozzi et al., 2003). Such comparisons have been termed outcome-desire pursuits and outcome desire-avoidance (Bagozzi, 1992; Bagozzi et al., 2003), and as such this has overlaps with approach and avoidance orientations in achievement goals. Van Yperen (2006) found that, among other things, a mastery approach orientation was associated with positive affectivity, while a performance avoid orientation was associated with negative affectivity. Pekrun (2006) suggested that performance approach goals will facilitate positive outcome emotions, and performance avoid goals will foster negative outcome emotions. In contrast however, Parker, Collins and Grant (2008) found that high levels of performance orientation appeared to overwhelm any value of activated positive affect for promoting proactivity. Similarly, Payne et al. (2007) found that individuals with high levels of performance avoid and prove performance goal orientations were likely to have high level of state anxiety, while those with high levels of learning goal orientation were more likely to experience lower levels of state anxiety.

In line with this, Cron et al. (2005) found that a performance avoid orientation was related to the intensity of negative emotional reactions, while mastery and performance-approach orientations were not. Furthermore, these authors found that negative emotional reactions mediated the relationship between avoid goal orientation and goal setting. In contrast, a mastery goal orientation moderated the relationship between negative emotional reactions and goal setting. Hence, a mastery orientation may play an important role in the self-regulation of emotions. Mastery orientations promote an adaptive response pattern to adverse events (Cron et al., 2005). For a challenging task, when attentional resources are allocated to off-task activities
(in line with Kanfer and Ackerman’s (1989) resource allocation model), such as being preoccupied with negative emotions, fewer resources remain available for on-task and self-regulation activities (Cron et al., 2005). A learning goal orientation is beneficial to the mood-esteem repair process, and so, fewer resources are likely to be siphoned away by emotional distress, and will thus be available for self-regulation activities such as goal-setting (Cron et al., 2005).

Although the research conducted by Cron et al. (2005) focused on emotional reactions, there is little corresponding research on the relationship between goal orientations and anticipatory emotions. The present model provides a neat framework in which to investigate such relationships, suggesting that goal orientations first become active in the proximal pre-decisional phase, while anticipatory emotions are more proximal again, being pertinent to the volitional pre-actional phase. Hence, although the present research focuses on the anticipation of future emotions, it is hypothesised that a similar relationship between goal orientations, valence of emotion, and goal-setting will be evidenced, as was found in the research by Cron et al. (2005). However, one would not expect a mastery orientation to have a similar moderating effect on anticipated emotions as it did on affective reactions. Anticipated or goal directed emotions can be seen as emotional appraisals of the importance of the goal, and as such should prompt an individual to engage in strategies to attempt to achieve success in the goal. It is further suggested that a similar pattern of relationships to that for goal-setting will be found in predicting planning also.

**Hypothesis E11a**: Approach goal orientations (both mastery and performance) will be positively related to positive affectivity and negatively related to negative affectivity.

**Hypothesis E11b**: An avoid goal orientation will be positively related to negative affectivity and negatively related to positive affectivity.

**Hypothesis E12a**: The impact of approach goal orientations (both mastery and performance) on planning will be mediated by anticipated positive emotions.

**Hypothesis E12b**: The impact of performance avoid goal orientations on planning will be mediated by anticipated negative emotions.

Previous literature has suggested that a mastery orientation may play an important role in the self-regulation of emotions. Mastery orientations promote an adaptive response pattern to adverse events (Cron et al., 2005). Findings reported by Dykman (1998) suggested that a learning goal orientation may provide benefits in terms of allocating attentional resources to productive self-regulation activities. Furthermore, given that performance approach goals are also focusing an individual on ways to succeed at a task, it is likely that these will also be associated with engaging in adaptive forms of coping, such as problem-focused coping. Given
that the focus of performance avoid goals is on avoidance and withdrawal, this is not likely to have a positive relationship with problem-focused coping, and more likely to have either a negative relationship or no relationship.

**Hypothesis E13a:** Mastery approach and performance approach orientations will positively predict engaging in problem-focused coping strategies.

**Hypothesis E13b:** A performance avoid orientation will negatively predict engaging in problem-focused coping.

Many of the hypotheses pertaining to Figure 5.11 are similar to those outlined in relation to Figure 5.10. Hence, only those hypotheses pertaining to the addition of goal-setting and actions will be addressed below.

Previous research discussed above (see Bagozzi, Baumgartner & Pieters, 1998; Brown, Cron & Slocum, 2007; Perugini & Bagozzi, 2001) provided support for the hypothesis that anticipated emotions have an influence on goal-setting and planning. There is also evidence to suggest that emotions have an influence on action. Russell’s (2003) emotional episode includes a component of instrumental action following the attribution and appraisal of core affect. Anticipated emotions offer a basis for comparing various options that in cognitive or informational terms have little in common (Baumeister et al., 2007). Anticipated emotions guide behaviour, perhaps by exaggerating how strong the emotional outcome will be, in order to engage or sway the decision-making system (ibid.). In general, the stronger the anticipated emotion (either positive or negative), the harder an individual will work towards achieving success. In contrast to this however, Anderson (2003) suggests that a great deal of inaction stems from anticipated or feared emotional outcomes. Hence, people may delay decisions, favour the status quo over possible alternatives, and bypass risky opportunities because they are deterred from action by the anticipation that they might feel bad if they acted differently. As a result, anticipated negative emotion, even as a possibility, prompts people to stick with the relatively safe and known consequences of the current status quo.
Figure 5.11 Hypothesized relationships between the emotional and cognitive components of the model (goal-setting and actions).
There is further evidence to suggest that affect and emotions will influence the level of effort that an individual will engage in. Fredrickson (1998) hypothesised that positive feelings broaden one’s thought-action repertoires by activating and broadening the scope of cognitions, which in turn, guides one’s behavioural response towards effective goal pursuit. Using an experience sampling methodology and drawing on the affect-as-information model (Schwarz & Clore, 1988), Foo, Uy and Baron (2009) demonstrated that entrepreneurs negative affect increases their effort towards tasks that are required immediately, and positive affect predicts venture effort beyond what is immediately required. This latter relationship was mediated by future temporal focus. Adapting this research to the current case, where the focus is on anticipated emotions, the affect-as-information model would suggest that the stronger the positive and negative anticipated emotions in the event of goal achievement or goal failure will signal that this is a goal which must be achieved, and will result in greater effort towards achieving a goal on the part of the entrepreneur.

**Hypothesis E14:** The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on (a) goal-setting and (b) actions.

Similar to the argument presented above for planning, we can also suggest that the influence of anticipated emotions on success may be indirect, whereby the strength of anticipated emotions may lead an entrepreneur to engage in more goal-setting and effort in relation to a goal, and this in turn, may be what leads to higher levels of success.

**Hypothesis E15:** The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have an indirect effect on success, via goal-setting and actions.

The previous research outlined above by Baumeister et al. (2007), Gross and John (2003) and John and Gross (2007) provide support for the development of hypotheses in relation to emotion regulation, anticipated emotions and goal-setting, in line with similar hypotheses made in relation to planning.

**Hypothesis E16a:** Reappraisal will be positively related to goal-setting.

**Hypothesis E16b:** Suppression will be negatively related to goal-setting.

**Hypothesis E17a:** Reappraisal will have an indirect effect on goal-setting via anticipated positive emotions

**Hypothesis E17b:** Suppression will have an indirect effect on goal-setting via anticipated negative emotions.

The research by Cron et al. (2005) also supports the following hypotheses:
Hypothesis E18a: The impact of approach goal orientations (both mastery and performance) on goal-setting will be mediated by anticipated positive emotions.

Hypothesis E18b: The impact of performance avoid goal orientations on goal-setting will be mediated by anticipated negative emotions.

5.7.3. Relationships between the emotional and motivational components of the model.

Figure 5.12 outlines the hypothesised relationships between the emotional and motivational components of the model. Baron (2008) suggests that there may be merit in investigating affect as a potential mediator between the distal micro-level characteristics, skills, motives and abilities of the individual entrepreneur and macro-level outcomes such as entrepreneurial performance. He suggests that future research that can confirm such relationships would make a useful contribution to the field of entrepreneurship. The present research model provides a framework for such an investigation.

Bakker (2010) suggests that engagement resides in the activated positive quadrant of the emotion circumplex. A theoretical paper by Bindl and Parker (2010) suggests that there may be an emotional component to the experience of psychological engagement, which is linked with positive behaviours at work. These authors suggest that psychological engagement is best represented by the activated pleasure quadrant of affect, which includes feelings like enthusiasm (see Russell, 2003). They also suggest that because positive affect leads people to focus on positive outcomes, this enhances their judgement that they will be able to perform the corresponding task, and thereby promotes greater effort towards achieving the task. This research suggests that being engaged by one’s work may motivate individuals to engage in more problem-focused coping. It may also suggest that the more important an individual’s goals are to them (i.e. the stronger their anticipated emotions towards their goals), the more engaged they will feel in their work.

Hypothesis E19: Work engagement will positively predict engaging in problem-focused coping strategies.

Hypothesis E20: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on work engagement.

Drawing on cognitive adaptation theory (Taylor, 1989; Taylor & Brown, 1988), Aspinwall and Taylor (1992) demonstrated that optimism, psychological control and self-esteem predicted adjustment to college. Importantly however, most of these effects were mediated by coping methods, such as the non-use of avoidance coping, greater use of active coping, and greater seeking of social support. This research demonstrates a clear link between distal motivational resources and coping responses, which together can result in adaptive behaviour on the part of individuals.
Figure 5.12 Hypothesized relationships between the motivational and emotional components of the model.
Greenglass and Fiskenbaum (2009) report an association between proactive coping and self-efficacy and vigor. This may suggest that individuals who more effectively regulate their emotions and stress may be more engaged in their work and have higher self-efficacy with regard to their work. This may suggest a link between emotion regulation strategies, entrepreneurial self-efficacy and work engagement. Indeed, general self-efficacy has been identified as a coping resource whereby a sense of psychological control (i.e. self-efficacy) may lead an individual to adopt effective coping strategies (see Aspinwall & Taylor, 1992). As such, one would expect self-efficacy to lead to higher levels of problem-focused coping.

Hypothesis E21: Domain self-efficacy (entrepreneurial and creative) will be positively associated with engaging in problem-focused coping strategies.

Pekrun (2006) described self-efficacy expectancies as a type of action-control expectancy, or in other words, an expectation that an action can be initiated and performed. At a physiological level, dopamine levels are high when task success is anticipated, and hence positive affect is experienced (Lord et al., 2010). Hence, it seems plausible that higher levels of self-efficacy, which relate to higher beliefs in success should be associated with higher levels of anticipated positive emotions and lower levels of anticipated negative emotions (as goal failure may appear to be less likely).

Hypothesis E22: Domain specific self-efficacy (entrepreneurial and creative) will have a positive effect on anticipated positive emotions and a negative effect on anticipated negative emotions.

Hypothesis E23: Domain specific self-efficacy (entrepreneurial and creative) will have an indirect effect on problem-focused coping via (i) anticipated emotions and (ii) work engagement.

Professional self-efficacy should also increase with greater proactive coping since individuals who believe in their ability to deal effectively with challenges would also have expectations of continued effectiveness in their job (Greenglass, 2002). Hence, engaging in cognitive reappraisal of emotions may be associated with higher self-efficacy.

Hypothesis E24a: Emotion reappraisal will positively predict domain specific self-efficacy (entrepreneurial and creative).

Hypothesis E24b: Suppression will negatively predict domain specific self-efficacy (entrepreneurial and creative).

In addition, research has shown that proactive coping may also reduce negative outcomes such as burnout (Greenglass, 2002), which suggests that emotion reappraisal as an antecedent focused strategy should positively predict work engagement.

Hypothesis E25a: Emotion reappraisal will positively predict work engagement.

Hypothesis E25b: Suppression will negatively predict work engagement.
In their work on entrepreneurial passion, Cardon et al. (2005) argue that the notion of entrepreneurial passion is grounded in affective states recognised as emotional meta-experiences associated with high intensity. In discussing the role that passion, as an emotional meta-experience plays in entrepreneurial effectiveness, these authors argue that emotional regulation plays an essential role in converting strong affective experiences into drivers of entrepreneurial effectiveness, such as persistence, problem-solving and absorption. In the present research, this suggests that there is merit in exploring potential indirect effects via anticipatory emotions that individual differences in emotional regulation may have on work engagement, goal-setting, planning and taking actions towards one’s goals.

**Hypothesis E26a:** Reappraisal will have an indirect effect on work engagement via anticipated positive emotions

**Hypothesis E26b:** Suppression will have an indirect effect on work engagement via anticipated negative emotions.

Research on proactive coping (Aspinwall, 2005; Greenglass, 2002) would also suggest that individuals who are higher in personal initiative would be more likely to engage in active and adaptive emotion regulation and coping strategies. Furthermore, some of the problem-focused coping strategies are defined by the proactive approach. For example, active coping refers to initiating direct action and increasing effort to ameliorate a stressor (Carver, Scheier, & Weintraub, 1989), which would appear to be a form of proactive behaviour. Furthermore, Frese and Fay (2001) suggested that a feature of someone low in personal initiative relates to managing one’s emotions rather changing the situation. Hence, it is likely that personal initiative will be associated with higher use of emotion reappraisal and problem-focused coping strategies. Rank and Frese (2008) suggest that problem-focused coping may be seen as an act of personal initiative or innovative behaviour in response to perceived stress. Incorporating this reasoning into the model, also leads to the conclusion that the more distal concept of personal initiative should correlate with both individual differences in emotional reappraisal and problem-focused coping strategies (which are more proximal). Such a finding would add to the validity of the model. Additionally, Langston (1994) suggested that there are similar processes underlying coping with negative events and the processes of taking advantage of or capitalising on positive events. This idea of capitalising on positive events is quite close to the process of opportunity recognition in entrepreneurship, and hence, it is also worth investigating whether entrepreneurial orientations are related to adaptive coping also.

**Hypothesis E27:** Personal initiative will be positively associated with engaging in emotion reappraisal, and negatively associated with engaging in suppression.
Hypothesis E28: Personal initiative will be positively associated with engaging in problem-focused coping strategies.

Hypothesis E29: Entrepreneurial orientations will be positively associated with engaging in emotion reappraisal and negatively associated with engaging in suppression.

Hypothesis E30: Entrepreneurial orientations will be positively associated with engaging in problem-focused coping strategies.

Den Hartog and Belshak (2007) demonstrated that personal initiative at work was associated with affect and affective commitment. Their study demonstrated that trait affect was a predictor of taking initiative at work. However, in the present study, the affective component represents goal-directed emotions that are anticipatory in nature, while personal initiative is a more stable dispositional variable. The question here then is whether personal initiative at this level will have an impact on anticipated emotions in the event of success or failure to achieve a goal. Little in the literature has investigated whether this may be the case, although Crant (2000) defined proactiveness as being action-oriented and goal-directed, so there may be reason to assume the personal initiative may be associated with goal-directed emotions. Hence, the following hypotheses are put forward, although they are more exploratory in nature:

Hypothesis E31: Personal initiative will have a direct effect on anticipated emotions and an indirect effect via emotion regulation.

Hypothesis E32: Entrepreneurial orientations will have a direct effect on anticipated emotions and an indirect effect via emotion regulation.
CHAPTER 6: Summary of the Theoretical and Empirical models integrating Cognition, Motivation and Emotion in Self-Regulation

Self regulation is an immensely adaptive capacity.
(Kuhl, Kazén & Koole, 2006; p. 408)

6.1. Introduction

The aim of the present chapter is to summarize the models to be tested in this research. The previous three chapters outlined a complex set of models and hypotheses. Hence, this chapter will present again the final theoretical model, and the empirical models with their hypotheses to be tested. The chapter will not present any new information, but will summarize the main research questions and models to be tested in relation to the cognitive, motivational and emotional aspects of the self-regulatory process in entrepreneurs.

6.2. Summary of the complete theoretical model depicting the cognitive, motivational and emotional paths in the self-regulatory action process

The model outlined in Figure 6.1 demonstrates the manifestation of cognitive, motivational and emotional processes in the different phases of the action process. The model demonstrates that each of the three paths (cognitive, motivational and emotional) can be modelled using a distal-proximal process and that each can be mapped onto the phases of the action process.
Figure 6.1 Theoretical integration of the emotional, motivational and cognitive components of the self-regulatory process.
6.3. Summary of the empirical models to be tested and their associated hypotheses

Each of the empirical models and associated hypotheses derived from the theoretical model are outlined in the subsections below.

6.3.1. Testing the cognitive paths.

Figures 6.2 through 6.4 outline the research models for the cognitive components.

**Figure 6.2 Hypothesized direct relationships between goal orientation and success**

*Hypothesis C1: Mastery approach goals and performance-approach goals will have a direct positive effect on (a) objective success, (b) subjective perceptions of success and (c) external evaluations of success, while performance-avoid goals will have a direct negative effect.*

Given the way in which goal-setting and planning were assessed (which is discussed in more detail in Chapter 7), the hypotheses will test the effects of goal-setting and planning in separate analyses, to avoid issues of multicollinearity. Figure 6.3 and hypotheses C2-C4 specify the expected relationships between planning, goal orientation and success.

**Figure 6.3 Hypothesized relationships between goal orientation, planning and success.**
Chapter 6

Hypothesis C2: Entrepreneurs who engage in more elaborate and proactive planning will show higher levels of (a) objective success, (b) external evaluations of success, and (c) subjective success.

Hypothesis C3: Mastery approach and performance-approach goals will be positively predict planning, while performance-avoid goals will negatively predict it.

Hypothesis C4: Mastery-approach goals and performance-approach goals will have an indirect effect on (a) objective success, (b) self-perceptions of success and (c) external success through planning.

Figure 6.4 and hypotheses C5 through C9 specify the expected relationships between goal-setting, actions towards one’s goals, goal orientations and success.

Figure 6.4 Hypothesized relationships between goal orientation, goal-setting, actions and success.

Hypothesis C5: Entrepreneurs who engage in goal setting (setting specific difficult goals) will show higher levels of (a) objective success (b) external evaluations of success, and (c) self-perceptions of success.

Hypothesis C6: Entrepreneurs who have taken more actions towards achieving their goals will show higher levels of (a) objective success (b) external evaluations of success, and (c) self-perceptions of success.

Hypothesis C7: Mastery approach and performance-approach goals will be positively predict goal-setting, while performance-avoid goals will be negatively predict it.

Hypothesis C8: The effect of mastery-approach goals and performance-approach goals on (a) objective success, (b) self-perceptions of success and (c) external success will be mediated by (i) goal-setting and (ii) actions towards goals.

Hypothesis C9: Goal-setting will have an indirect effect on (a) objective success and (b) subjective perceptions of success and (c) external success through the actions one has taken to achieve their goals.
6.3.2. Testing the motivational paths.

The empirical model testing the motivational paths is outlined in Figure 6.5, and its associated hypotheses are hypotheses M1 through M6.

![Figure 6.5 Hypothesized relationships between motivational and volitional resources and success.](image)

**Hypothesis M1:** Entrepreneurial orientations and personal initiative will positively predict (a) domain self-efficacy (entrepreneurial and creative) and (b) work engagement.

**Hypothesis M2:** Domain self-efficacy (entrepreneurial and creative) will positively predict work engagement.

**Hypothesis M3:** Entrepreneurial orientations and personal initiative will have an indirect effect on work engagement via (a) entrepreneurial self-efficacy and (b) creative self-efficacy.

**Hypothesis M4:** Work engagement will positively predict (a) self-perceptions of success, (b) objective success and (c) external success.

**Hypothesis M5:** Domain self-efficacy (entrepreneurial and creative) will have (a) a direct effect on success, and (b) an indirect effect on success via work engagement.

**Hypothesis M6:** Entrepreneurial orientations and personal initiative will have (a) a direct effect and (b) an indirect effect via domain self-efficacy and work engagement, on success.

6.3.3. Testing the combination of the cognitive and motivational paths.

The empirical model testing the relationships between the cognitive and motivational paths is outlined in two separate formats, the first including planning and the second including goal-setting and actions. Figure 6.6, and its associated hypotheses (hypotheses M7 through M11) outline the model with planning, while Figure 6.7 and hypotheses M12 through M15 outline with model with goal-setting and actions.
Hypothesis M7: Entrepreneurial orientations and personal initiative will positively predict (a) mastery approach goal orientations and (b) performance approach goal orientations.

Hypothesis M8: Entrepreneurial orientations and personal initiative will have a direct and an indirect effect on planning via (a) mastery approach and (b) performance approach goal orientations.

Hypothesis M9: Entrepreneurial orientations and personal initiative will have an indirect effect on success via (a) mastery approach, (b) performance approach goal orientations, and (c) planning.

Hypothesis M10: Domain specific self-efficacy (entrepreneurial and creative) will have a direct effect on planning.

Hypothesis M11: Mastery and performance approach goal orientations will have a direct effect on work engagement.

Figure 6.6 Hypothesized relationships between motivational and volitional resources, goal orientations, planning and success.

Figure 6.7 Hypothesized relationships between motivational and volitional resources, goal orientations, goal-setting, actions and success.
Hypothesis M12: Entrepreneurial orientations and personal initiative will have a direct and an indirect effect on goal-setting (goal difficulty and goal specificity) via (a) mastery approach and (b) performance approach goal orientations.

Hypothesis M13: Entrepreneurial orientations and personal initiative will have a direct and an indirect effect on actions via (a) goal orientations and (b) goal-setting (goal difficulty and goal specificity).

Hypothesis M14: Entrepreneurial orientations and personal initiative will have an indirect effect on success via (a) mastery approach, (b) performance approach goal orientations, and (c) goal-setting, and (d) actions.

Hypothesis M15: Domain specific self-efficacy (entrepreneurial and creative) will have a direct effect on goal-setting (goal difficulty and goal specificity).

6.3.4. Testing the emotional path.

Figure 6.8 and hypotheses E1 through E6 outline the models to be tested in relation to the emotional path.

Hypothesis E1: Problem-focused coping will have a positive effect on (a) self-perceptions of success, (b) objective success and (c) external success.

Hypothesis E2: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on problem-focused coping.

Hypothesis E3: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive direct effect on (a) self-perceptions of success, (b) objective success and (c) external success, and an indirect effect via problem-focused coping.

Hypothesis E4a: The chronic use of reappraisal will result in higher levels of anticipated positive emotions and lower levels of anticipated negative emotions.

Hypothesis E4b: The chronic use of suppression will result in lower levels of anticipated positive emotions and higher levels of anticipated negative emotions.

Hypothesis E5a: The chronic use of reappraisal will result in an increase tendency to engage in problem-focused coping.

Hypothesis E5b: The chronic use of suppression will result in a reduced tendency to engage in problem-focused coping.

Hypothesis E6a: Emotion reappraisal will have a positive direct effect on (i) self-perceptions of success, (ii) objective success and (iii) external success, and an indirect effect via anticipated emotions and problem-focused coping.
Hypothesis E6b: Suppression will have a negative direct effect on (i) self-perceptions of success, (ii) objective success and (iii) external success, and an indirect effect via anticipated emotions and problem-focused coping.

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**Figure 6.8** Hypothesized relationships between the emotional components of the model and entrepreneurial success.

6.3.5. Testing the combination of the cognitive and emotional paths.

Figure 6.9 and hypotheses E7 through E13 outline the empirical model for the emotional path and the cognitive path that included planning. Figure 6.10 and hypotheses E14 through E18 test a similar model, but replace planning with goal-setting and taking action.

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**Figure 6.9** Hypothesized relationships between the emotional and cognitive components of the model (planning).

Hypothesis E7: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on planning.

Hypothesis E8: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have an indirect effect on success, via planning.

Hypothesis E9a: Reappraisal will be positively related to planning.

Hypothesis E9b: Suppression will be negatively related to planning.
Hypothesis E10a: Reappraisal will have an indirect effect on planning via anticipated positive emotions.

Hypothesis E10b: Suppression will have an indirect effect on planning via anticipated negative emotions.

Hypothesis E11a: Approach goal orientations (both mastery and performance) will be positively related to positive affectivity and negatively related to negative affectivity.

Hypothesis E11b: An avoid goal orientation will be positively related to negative affectivity and negatively related to positive affectivity.

Hypothesis E12a: The impact of approach goal orientations (both mastery and performance) on planning will be mediated by anticipated positive emotions.

Hypothesis E12b: The impact of performance avoid goal orientations on planning will be mediated by anticipated negative emotions.

Hypothesis E13a: Mastery approach and performance approach orientations will positively predict engaging in problem-focused coping strategies.

Hypothesis E13b: A performance avoid orientation will negatively predict engaging in problem-focused coping.
Figure 6.10 Hypothesized relationships between the emotional and cognitive components of the model (goal-setting and actions).
Hypothesis E14: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on (a) goal-setting and (b) actions.

Hypothesis E15: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have an indirect effect on success, via goal-setting and actions.

Hypothesis E16a: Reappraisal will be positively related to goal-setting.

Hypothesis E16b: Suppression will be negatively related to goal-setting.

Hypothesis E17a: Reappraisal will have an indirect effect on goal-setting via anticipated positive emotions.

Hypothesis E17b: Suppression will have an indirect effect on goal-setting via anticipated negative emotions.

Hypothesis E18a: The impact of approach goal orientations (both mastery and performance) on goal-setting will be mediated by anticipated positive emotions.

Hypothesis E18b: The impact of performance avoid goal orientations on goal-setting will be mediated by anticipated negative emotions.

6.3.6. Testing the combination of the motivational and emotional paths.

Figure 6.11 and hypotheses E19 through E32 outline the empirical model tested in relation to the combination of the motivational and emotional paths.

Hypothesis E19: Work engagement will positively predict engaging in problem-focused coping strategies.

Hypothesis E20: The anticipation of positive emotions in the event of goal success and negative emotions in the event of goal failure will have a positive effect on work engagement.

Hypothesis E21: Domain self-efficacy (entrepreneurial and creative) will be positively associated with engaging in problem-focused coping strategies.

Hypothesis E22: Domain specific self-efficacy (entrepreneurial and creative) will have a positive effect on anticipated positive emotions and a negative effect on anticipated negative emotions.

Hypothesis E23: Domain specific self-efficacy (entrepreneurial and creative) will have an indirect effect on problem-focused coping via (i) anticipated emotions and (ii) work engagement.

Hypothesis E24a: Emotion reappraisal will positively predict domain specific self-efficacy (entrepreneurial and creative).

Hypothesis E24b: Suppression will negatively predict domain specific self-efficacy (entrepreneurial and creative).
Hypothesis E25a: Emotion reappraisal will positively predict work engagement.

Hypothesis E25b: Suppression will negatively predict work engagement.

Hypothesis E26a: Reappraisal will have an indirect effect on work engagement via anticipated positive emotions.

Hypothesis E26b: Suppression will have an indirect effect on work engagement via anticipated negative emotions.

Hypothesis E27: Personal initiative will be positively associated with engaging in emotion reappraisal, and negatively associated with engaging in suppression.

Hypothesis E28: Personal initiative will be positively associated with engaging in problem-focused coping strategies.

Hypothesis E29: Entrepreneurial orientations will be positively associated with engaging in emotion reappraisal and negatively associated with engaging in suppression.

Hypothesis E30: Entrepreneurial orientations will be positively associated with engaging in problem-focused coping strategies.

Hypothesis E31: Personal initiative will have a direct effect on anticipated emotions and an indirect effect via emotion regulation.

Hypothesis E32: Entrepreneurial orientations will have a direct effect on anticipated emotions and an indirect effect via emotion regulation.
Figure 6.11 Hypothesized relationships between the motivational and emotional components of the model.
SECTION 2: METHODOLOGY AND METHODOLOGICAL CONSIDERATIONS
CHAPTER 7: Methodology

Systematic, thoughtful, and carefully conducted research is the key means to three ends of critical importance: (1) the identification of new knowledge; (2) the effective integration of knowledge; and (3) the meaningful application of knowledge.

(Rogelburg, 2004; Preface)

7.1. Introduction

This chapter outlines how the research was designed and conducted. It discusses issues of methodological context and methodological fit, and details the sample characteristics, the way in which the variables were assessed and measured, and provides details on the nature of the analysis, including both the qualitative, quantitative and mixed-methods components.

7.2. Issues of methodological context: The fitting process.

Buchanan and Bryman (2007) argue that method is an integral component of a wider, iterative, coherent research system, influencing the social possibilities of data collection, as well as the substantive nature of data collected and the nature and direction of theory development. Furthermore, Johns (2001) states that it is useful to consider methodological context in addition to more general contextual issues. Methodological context includes information about how research access was achieved, why certain research decisions were made, and the practical costs and benefits of any intervention (Johns, 2001). These are pertinent issues to research in entrepreneurship, which has tended to suffer from methodological flaws in the past. Buchanan and Bryman (2007) argue that choice of method is shaped not only by research aims, norms of practice, and epistemological concerns, but also by a combination of organisational, historical, political, ethical, evidential and personally significant characteristics of the field of research. Rather than classifying them as difficulties facing a researcher, Buchanan and Bryman (2007) argue that such influences are naturally occurring and unavoidable, and must be accommodated in decisions concerning choice of method, as they cannot be overcome through diligent planning. It is the aim of this section to make explicit the influences and decisions that had an impact on the design and implementation of the present research.

Providing information relevant to the theoretical approach being used or the intersection between the theory and the chosen method represents examples of methodological context (Johns, 2001), which is quite closely aligned with considerations of methodological fit (Edmondson & McManus, 2007). Fit refers to the internal consistency among elements of a research project, including the research question, prior work, research design, and theoretical contribution (Edmondson & McManus, 2007). The fitting process is one in which it is
necessary to iterate between inductive theory development, and deductive theory testing, which ultimately will advance our understanding of organisational phenomena (ibid.). Edmondson and McManus (2007) conceptualise the process of field research as a journey that may involve almost as many steps backward as forward, and further argue that methodological fit is achieved through a learning process (see Figure 7.1).

At a macro level, the present research was designed with consideration to the importance of establishing methodological fit across the study as a whole. Based on Edmondson and McManus’ (2007) description of the state of prior theory and research, it was established that the current research operates in a field which is at an intermediate stage of development. The psychology of entrepreneurship is a relatively new field of inquiry, or at least a relatively new context for psychological inquiry. However, there are quite well developed theories of self-regulation, although the testing of these theories often relies on experimental rather than field studies. Intermediate theory research draws from prior work, often using separate bodies of literature, to propose new constructs and/or provisional theoretical relationships (Edmondson & McManus, 2007). Recommendations for research designs in this context suggest that mixed-methods are most appropriate and offer the strongest insights into the research question. More specific considerations within each stage of the design and analysis with regard to methodological fit are outlined in the sections which follow.

7.3. The Mixed Methods Research Design

This research adopted a mixed-method research design, using a combination of structured interview and survey. Although mixed methods have previously been used to study learning in entrepreneurs (e.g. Morrison & Bergin-Seers, 2001) and to study motivational and
cognitive resources and planning in entrepreneurs (Frese et al., 2007), there have been general calls for more multi-method approaches to psychological research, with an increasing number of scholars in the social sciences advocating the systematic combination of qualitative and quantitative methods (see Srnka & Koeszegi, 2007 for a review). Turner and Meyer (2000) suggest that perhaps the best approach to the dilemma of whether to use mixed methods is to define the research question and then decide how to measure it. In addition, they believe that it is important to connect research questions to theory, and sometimes multiple theories, to choose a suitable method. This is the approach which has been followed in the present study. Mixed method research employs data collection in both a qualitative and a quantitative fashion, and such procedures were developed in response to a need to clarify the intent of mixing qualitative and quantitative data in a single study (Creswell, 2003). Johns (2006) criticises the dichotomy which has developed in organisational behaviour research, in which “qualitative researchers immerse themselves in context and quantitative researchers purportedly study generic phenomena and constructs” (p. 404), and this also fits with the recommendations by Edmondson and MacManus (2007).

The present research adopted a type of design referred to as an integrated mixed methods design, where qualitative material is collected and transformed into categorical data for further quantitative analysis, with the aim of deriving both theory and generalizable results (Srnka & Koeszegi, 2007). Research that follows this model starts from open-format data, and applies a systematic qualitative procedure to convert it into data that can be used for further quantitative analyses (Srnka & Koeszegi, 2007). The research design chosen in the present study reflects the specific theoretical perspective chosen, and has integrated previous research in the areas of entrepreneurship and self-regulation research. The decision to use either qualitative or quantitative data in any particular section of the research was determined by the appropriateness of each method to the variables being studied, the overall aims of the research, and the availability of valid and reliable methods in past research.

Furthermore, the choice of method was based on the recommendations of a number of researchers, who have espoused the importance of collecting multiple measures within the study of self-regulation (e.g. Hadwin et al., 2004; Järvelä & Salovaara, 2004; Salovaara; 2005; Winne & Perry, 2005). Wood (2005) recommended that W/O psychology researchers need to identify a small set of cognitive and affective constructs that act as proximal determinants of self-regulation processes. The present research draws on multiple theories and research on self-regulation, extending both theory and measurement of these processes and their proximal and distal determinants through the use of the mixed-method design.

The main strength of this approach for the present research lies in the fact that many of the variables of interest are difficult to measure using traditional Likert-scaled questionnaire
measures. Using a structured interviewing method in relation to the variables of this nature allowed for more accurate assessment. Subsequent coding of these variables allowed for their investigation with those variables that have well established quantitative measures using appropriate statistical analysis. This is a form of mixed-method design which does not fall neatly into the established typologies for mixed-method research. However, research of this nature has clear strengths, and previous research that has used such an approach has been published in leading journals (see Frese et al., 2007).

### 7.4. Sample

This research investigated entrepreneurs in the early stages of new venture development. New ventures have been defined as firms that are less than 6 years old, during which time entrepreneurial firms are in a critical developmental stage (Brush, 1995; Hmieleski & Baron, 2009; Ireland & Webb, 2007; Shrader, Oviatt & McDougall, 2000; Zahra, Ireland & Hitt, 2000). As this research focused on early stage entrepreneurs, only firms which were in existence for six years or less were considered.

A number of other definitions were considered, but frequently, such definitions do not distinguish between the venture and the entrepreneur. For example, in the Global Entrepreneurship Monitor (GEM), Bosma and Harding (2007) define new business owners as individuals who are active as owner managers of a new business that has paid wages or salaries for more than three months, but less than 42 months. This definition was not used; as firstly, it does not distinguish between first time founders (e.g. novice founders) and serial or portfolio founders (who have started multiple ventures). Secondly, the length of time between official start-up and when wages and salaries start to be paid tends to be confounded with the sector of the industry. For example, ventures in the retail or services sectors tend to start paying wages and salaries immediately (e.g. a restaurant owner must employ serving staff from the outset), whereas in the engineering sector there tends to be a long lead-time where products or services are being developed, and this is typically characterised as not paying wages or salaries. Such a venture could be in operation for two or three years before wages and salaries begin to be paid. A further complication with such a definition is that some ventures may pay wages and salaries intermittently in the early stages, and hence, it is difficult to define for how many months it has been doing so.

In total, 84 entrepreneurs were interviewed. However, three individuals were excluded from the analysis, as it was discovered during the interview that their enterprises had been in operation for more than six years. A further participant was excluded from the analysis on the grounds of insufficient information, as they had to leave mid-way through the interview, and also did not return the questionnaire. Five other participants were excluded as they did not
return the questionnaire. Hence, the final sample consisted of 75 entrepreneurs in the early stages of new venture creation. However, for the models testing the emotional components, the sample size was reduced by eleven individuals to 64. In line with the iterative and emerging nature of mixed-methods research, emotion regulation very quickly appeared as an important self-regulatory component following the initial interviews, and so were added. Srnka and Koeszegi (2007) suggest that the optimal sample size for mixed design studies is somewhere in between the traditional small number for qualitative research and the large samples typical for quantitative investigations, and use their own research consisting of eighty participants as reflecting a medium-sized sample.

Entrepreneurs ranged in age from 22 years to 57 years, with an average age of 36.75 years. 58.7% (44) of the sample were male, while 41.3% (31) were female. Of these 75 entrepreneurs, 65.3% (49) were novice founders (people who had never established a business before; Alsos & Kolvereid, 1998; Ucbasaran et al., 2008), and 34.7% (26) had attempted to start a business previously. Of the sample, 52.0% (39) were the sole owners of the venture, 32.0% (24) had started the venture with one other partner, and the remaining 16.0% (12) had started the venture with three or more partners (i.e. the venture was started by a team).

The participants were sourced throughout Ireland (see Table 7.1), and through a variety of sources, such as Enterprise Platform Programmes (which are year-long courses run in conjunction with incubator services, offered by a number of Institutes of Technology), a Masters in International Entrepreneurship at the University of Limerick, a leadership training programme offered to women who start enterprises, while others were personal contacts known to academic staff in a number of third level institutes. A number of participants were also featured in the Irish Entrepreneur, an online periodical for entrepreneurs, which profiles early stage ventures in each issue. Finally, a number of participants were social entrepreneurs, who were sourced through Social Entrepreneurs Ireland. Table 7.2 gives a breakdown of the participants from the various sources.

In terms of the stage of the venture itself, three of the participants were in the nascent stage of the venture (i.e. the business had not yet officially become operational, or was in the development stage) while the other 72 ventures were in the early stage of venture development (less than 6 years old). Ventures fell into a wide variety of sectors, which are outlined in Table 7.3.
Table 7.1 Geographical breakdown of the sample.

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<th>Number of Participants</th>
<th>Percentage</th>
</tr>
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<tr>
<td>Dublin city</td>
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<tr>
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<td>4.00</td>
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<tr>
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<td>Co. Monaghan</td>
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<td>1.30</td>
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<tr>
<td>Co. Offaly</td>
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</tr>
<tr>
<td>Co. Tipperary</td>
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</tr>
<tr>
<td>Waterford city</td>
<td>6</td>
<td>8.00</td>
</tr>
<tr>
<td>Co. Wexford</td>
<td>1</td>
<td>1.30</td>
</tr>
<tr>
<td>Co. Wicklow</td>
<td>3</td>
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</tr>
<tr>
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<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 7.2 Sources of participants.

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<th>Source</th>
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<th>Percentage</th>
</tr>
</thead>
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<td>Enterprise Platform Programs</td>
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</tr>
<tr>
<td>Leadership program for women in business</td>
<td>15</td>
<td>20.00</td>
</tr>
<tr>
<td>Personal contacts of faculty members</td>
<td>15</td>
<td>20.00</td>
</tr>
<tr>
<td>Social Entrepreneurs Ireland</td>
<td>7</td>
<td>9.30</td>
</tr>
<tr>
<td>Irish Entrepreneur (periodical)</td>
<td>7</td>
<td>9.30</td>
</tr>
<tr>
<td>Masters in International Entrepreneurship</td>
<td>5</td>
<td>6.70</td>
</tr>
<tr>
<td>Irish Times supplement</td>
<td>2</td>
<td>2.70</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>75</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

7.5. Operationalisation of the variables

Table 7.4 presents information on each of the variables included in the study, including the number of items, the number of valid participants (as a consequence of missing data), Cronbach’s alpha of the scales, inter-rater reliabilities, range, mean and standard deviation. Where interview data were used, the inter-rater reliability estimate is provided (see section 7.6.4 for more detail on this).

Cronbach alpha reliability estimates are also provided, but it should be noted that PLS SEM recommends the use of composite reliability estimates, which are included in each of the relevant appendices pertaining to the three analysis chapters (8 through 10 respectively). The appropriate cut-off point for what is an adequate level of alpha has been subject to much debate. Although, the consensus of 0.7 as an adequate level is widely accepted, this blanket criteria has been criticised. As an indicator of scale reliability, Cortina (1993) notes that Cronbach’s alpha is very much a function of (a) the number of items in the scale, (b) the inter-item correlation, and (c) the dimensionality. Cortina (1993) demonstrates that alpha can be high in spite of low average item inter-correlation or multidimensionality, provided there is a sufficient number of items. However, in the present case, where the number of items is quite small (e.g. two or three
items), Cronbach’s alpha may be artificially low. For two-item scales, Kraus et al. (2005) subjected the items to correlational analysis, stating that there should be statistically significant correlations between the two items. Hence, these are reported where appropriate also. The reliability of two of the goal orientations were still somewhat problematic, although there was substantial inter-rater reliability for the categorisation of these variables (using the criteria of Sim & Wright, 2005). However, given that these were assessed at the goal level, rather than the trait level, there is reason to believe that they could differ at this level. Finally, the sample size in the present research is also of concern in the determination of alpha levels (e.g. see Bonett, 2002). In addition to reliability analysis, confirmatory factor analyses are reported in the results chapters where appropriate. The assessment of each of the variables in the study is described below. Further information can be obtained in Appendices 7.1 through 7.6.

**Table 7.3 Breakdown of the sample by sector**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of Participants</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science &amp; Technology</td>
<td>15</td>
<td>20.0</td>
</tr>
<tr>
<td>IT/ICT</td>
<td>8</td>
<td>10.7</td>
</tr>
<tr>
<td>Engineering research</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Medical technology research and development</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Biomedical nanotechnology</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Chemical industry</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Architectural engineering</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Web-based</td>
<td>16</td>
<td>21.3</td>
</tr>
<tr>
<td>Media production</td>
<td>7</td>
<td>9.3</td>
</tr>
<tr>
<td>Online retail</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Online advertising services</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Product development</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Online platform</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Retail</td>
<td>8</td>
<td>10.6</td>
</tr>
<tr>
<td>Service retail</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Retail general</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Distribution/wholesale</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Betting industry</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Services</td>
<td>15</td>
<td>20.0</td>
</tr>
<tr>
<td>Business services</td>
<td>13</td>
<td>17.3</td>
</tr>
<tr>
<td>Media/development services</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>21</td>
<td>28.0</td>
</tr>
<tr>
<td>Social enterprise</td>
<td>8</td>
<td>10.7</td>
</tr>
<tr>
<td>Food industry</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Maintenance</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Sports industry</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Transport</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Restaurant/Hotel industry</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Aviation industry</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Farming/Veterinary industry</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>75</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Table 7.4 Characteristics of the main scales, indexes and variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>k items</th>
<th>N</th>
<th>α</th>
<th>Inter-rater reliability (Koo)</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal Difficulty</td>
<td>4</td>
<td>78</td>
<td>.783</td>
<td>.888</td>
<td>14</td>
<td>13.87</td>
<td>3.00</td>
</tr>
<tr>
<td>Goal Specificity</td>
<td>2</td>
<td>79</td>
<td>.588 (r = .407**)</td>
<td>1.00</td>
<td>8</td>
<td>6.56</td>
<td>2.05</td>
</tr>
<tr>
<td>Goal-oriented behaviour</td>
<td>2</td>
<td>79</td>
<td>.533 (r = .329**)</td>
<td>1.00</td>
<td>8</td>
<td>7.46</td>
<td>1.95</td>
</tr>
<tr>
<td>Achievement Goal Orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. Mastery Approach Goal Orientation</td>
<td>2</td>
<td>79</td>
<td>.520 (r = .180*)</td>
<td>-</td>
<td>9</td>
<td>2.00</td>
<td>1.98</td>
</tr>
<tr>
<td>v. Performance Approach Goal Orientation</td>
<td>2</td>
<td>79</td>
<td>.193 (r = .032 n.s.)</td>
<td>-</td>
<td>7</td>
<td>3.11</td>
<td>1.66</td>
</tr>
<tr>
<td>vi. Performance Avoid Goal Orientation</td>
<td>2</td>
<td>79</td>
<td>-.170 (r = -.150 n.s.)</td>
<td>-</td>
<td>8</td>
<td>1.01</td>
<td>1.26</td>
</tr>
<tr>
<td>Elaborate and proactive planning</td>
<td>4</td>
<td>79</td>
<td>.857</td>
<td>1.00</td>
<td>16</td>
<td>13.65</td>
<td>4.26</td>
</tr>
<tr>
<td>Entrepreneurial-Orientations</td>
<td>16</td>
<td>67</td>
<td>.760</td>
<td>LO = .937</td>
<td>33</td>
<td>58.33</td>
<td>7.95</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IO = 8.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AmO = .778</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Initiative</td>
<td>7</td>
<td>75</td>
<td>.800</td>
<td>N/A</td>
<td>14</td>
<td>29.59</td>
<td>3.23</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Entrepreneurial</td>
<td>23</td>
<td>74</td>
<td>.898</td>
<td>N/A</td>
<td>41</td>
<td>91.71</td>
<td>9.46</td>
</tr>
<tr>
<td>Creative</td>
<td>3</td>
<td>75</td>
<td>.653</td>
<td>N/A</td>
<td>6</td>
<td>12.77</td>
<td>1.57</td>
</tr>
<tr>
<td>Work Engagement</td>
<td>17</td>
<td>72</td>
<td>.913</td>
<td>N/A</td>
<td>46</td>
<td>84.42</td>
<td>10.78</td>
</tr>
<tr>
<td>Anticipated Emotions</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Positive (G1 + G2)</td>
<td>7</td>
<td>64</td>
<td>.851</td>
<td>N/A</td>
<td>14</td>
<td>30.22</td>
<td>4.03</td>
</tr>
<tr>
<td>Negative (G1 + G2)</td>
<td>10</td>
<td>64</td>
<td>.907</td>
<td>N/A</td>
<td>37</td>
<td>26.70</td>
<td>8.18</td>
</tr>
<tr>
<td>Emotion-Regulation</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>iii. Re-appraisal</td>
<td>6</td>
<td>62</td>
<td>.722</td>
<td>N/A</td>
<td>14</td>
<td>22.39</td>
<td>3.18</td>
</tr>
<tr>
<td>iv. Suppression</td>
<td>4</td>
<td>64</td>
<td>.697</td>
<td>N/A</td>
<td>15</td>
<td>10.31</td>
<td>3.07</td>
</tr>
<tr>
<td>Problem-Focused Coping</td>
<td>20</td>
<td>64</td>
<td>.880</td>
<td>N/A</td>
<td>35</td>
<td>61.07</td>
<td>7.75</td>
</tr>
<tr>
<td>Success</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Self-perceptions</td>
<td>3</td>
<td>74</td>
<td>.646</td>
<td>N/A</td>
<td>12</td>
<td>7.09</td>
<td>2.70</td>
</tr>
<tr>
<td>Objective</td>
<td>7</td>
<td>74</td>
<td>N/A</td>
<td></td>
<td>5</td>
<td>11.00</td>
<td>1.30</td>
</tr>
<tr>
<td>External</td>
<td>2</td>
<td>49</td>
<td>.760 (r = .619**)</td>
<td>N/A</td>
<td>7</td>
<td>7.06</td>
<td>1.62</td>
</tr>
</tbody>
</table>

**p < .01; *p < .05; †p < .10
7.5.1. Description of the variables

Goals. Assessment of goal metrics was based on the *behavioural event interview procedure* to analyse action strategies used by Frese *et al.* (2000) and developed from Spencer and Spencer (1993). This procedure asks interviewees about past events (Van Gelderen *et al.*, 2000). In line with the variation of this approach utilised by Kraus (2003), this section of the interview first asked participants to rank common business goal areas (e.g. new marketing strategy, expanding, making more profit). Participants were then asked to describe the two most important goal areas in detail and to exactly describe to the interviewer what their objectives in these areas were, which leads to a description of operational subgoals. Following this, participants were asked how they wanted to go about achieving each of the subgoals and what they had already accomplished. Both specific and general prompts were widely used (e.g. What do you mean by…? Can you give me an example for…?). An example of a general prompt was to repeat what the participant had said. In line with the procedure followed by Kraus (2003), leading words such as ‘plan’ or ‘active’ were avoided.

*Achievement Goals* were defined as intermediate goals that reflect the general action patterns that individuals use in achievement contexts to pursue principle goals (DeShon & Gillespie, 2005), and are closely associated with Elliot’s (Elliot & Church, 1997; Elliot & McGregor, 1999) model of goal orientation. Goal orientation represents a gestalt of one’s personal goals (Cron *et al.*, 2005), and DeShon and Gillespie (2005) suggest that an individual will adopt an achievement goal that suits the profile of the principle goal being pursued. For example, if an individual perceives that the potential for growth in a situation is outweighed by the threat to standing on one or more of the principle goals, then the individual will pursue an achievement goal that reduces the likelihood of the potential threatening outcome (DeShon & Gillespie, 2005). Cron *et al.* (2005) demonstrate in their research that mastery and performance orientations are not mirror image constructs and recommend the assessment of both orientations.

Three types of achievement goals were coded from the interview data: *mastery-approach, performance-approach, and performance-avoid*. From the perspective of Motivated Action Theory (MAT; DeShon & Gillespie, 2005), goal orientation is “a label used to describe the pattern of cognition and action that results from pursuing a mastery-approach, performance-approach, or performance-avoid goal at a particular point in time in a specific achievement situation (DeShon & Gillespie, 2005; p. 1114). Goal orientation was assessed by coding the subgoals identified by the participants for each of their two most important principle goals. *Performance approach* was indicated by statements of subgoals that emphasised desires to perform better than competitors, develop a product that was better than anything currently on the market, or similar. *Mastery approach* goals were indicated by statements of subgoals that
emphasised the desire to learn from the experience of setting up the venture, a desire to master what was necessary in order to make the venture a success, or similar. Finally, the *performance avoid* goal was indicated by statements of subgoals that emphasised avoiding failure, or not wishing to do poorly in relation to the principle goal. These operational definitions drew on the work of Elliot and McGregor (2001) and DeShon and Gillespie (2005). Each subgoal was coded according to one of the three categories. The extent to which each achievement goal was evident for the principle goal was then coded using a 5-point likert scale. Operationalising achievement goals in this manner is justified using DeShon and Gillespie’s (2005) MAT model. They suggest that over a period of time, a person may switch between the various achievement goals, and the appropriate portrayal of a person’s goal pursuits must reflect the time spent pursuing the different achievement goals. Hence, the present research suggests that a single principle goal may be associated with multiple types of achievement goals, which in turn is related to the subgoal being pursued. Harackiewicz *et al.* (2002) provide support for this, in which many of their respondents reported more than one type of goal in writing about their personal goals. Kaplan and Maehr (2007) provide an overview of studies in the educational arena which have used various forms of semi-structured and structured interviews for the elicitation of goal orientations. Given that goal orientations are seen as goal-specific (closer to a state than a trait), it would be inappropriate to use questionnaire based measures that tend to assess goal orientations as individual differences.

*Goal difficulty.* Following the specification of the subgoals for each of the two most important goals, participants were asked whether they considered the stated goal to be easy or difficult to achieve. If participants had difficulty in answering this question, a prompt was used (Do you think that your competitors have easier or more difficult goals?). The participants estimation of the level of difficulty of the goal as well as the interviewer’s estimate were coded using a 5-point likert scale (1 = very easy to 5 = very difficult). Hence, goal difficulty for each of the two goals was a two-item measure (participant plus interviewer rating), which was also combined into a total measure of goal difficulty across the two most important goals.

*Goal Specificity.* Two questions were asked to elicit the subgoals and their specificity during the interview. For each of their two main goals, the participants were asked to expand on their subgoals in relation to each of these main goals. Secondly, they were asked to describe how they go about achieving these goals. In the content analysis, the level of specificity was rated using a 5-point Likert scale. Goal specificity was rated for both of the two most important goals, which were combined into a two-item total scale score.

Similar to the approach taken by Baum and Locke (2004), it was assumed that entrepreneurs would be committed to their goals, as they choose their own, and because they
own their businesses, it was assumed that they receive regular feedback about progress. Hence, these two goal mediators were not measured.

Planning was assessed using an approach previously developed and validated by Frese and colleagues (Frese et al., 2007; Frese, Van Gelderen & Ombach, 2000; Van Gelderen, Frese & Thurik, 2000). The assessment of planning followed from the identification of the two most important goals for each participant and the relevant subgoals for each of the principle goals. To assess planning, the participants were asked how they intended to achieve their goals. Care was taken to avoid words such as “plan” and “active” to not bias the participants’ responses. The two aspects of planning, elaborateness and proactiveness were rated and coded in line with the procedure used by Frese et al. (2007). The elaborateness of the plan was indicated by a number of components: the detail of the plan, the number of substeps identified, taking steps towards implementing certain substeps, and past actions in similar areas. Components indicating proactiveness included: produces changes, is not a copy of others in the relevant environment, includes unusual ideas or buying supplies, production or marketing, contains thoughts about future problems and opportunities, prepares for these problems and opportunities now and thus is not waiting to see what happens (Frese et al., 2007). Both elaborateness and proactiveness were coded using a 5-point Likert scale for each of the two most important goals. Hence, the final scale of Elaborate Planning and Proactive Planning consisted of four items.

Goal oriented behaviour was assessed by asking the participants to describe any actions that they had already taken to achieve their stated goal. The actions taken were rated using a six-point likert scale (0 = no actions taken to 5 = high activity). The ratings from both goals were combined to give an overall measure of the level of goal-oriented behaviour.

Entrepreneurial Orientations (EO) were measured using a method adapted from Kraus (2003; Kraus et al., 2005), where each component was assessed with different methods, representing multiple operationalisation of the components. Learning, innovative and autonomy orientation were measured in the interview and with an interviewer evaluation. The interview measure of Learning Orientation was the question: ‘If you could start your business again, what would you do differently?’ and the answers were subsequently rated. Kraus (2003) notes that a rating is only possible if a participant wants to do something differently, and hence, the sample size was reduced by four participants for this variable.

Autonomy orientation was assessed through the question: ‘What would happen if somebody would pay you good money to take over your firm and make you the manager of the firm. You would have the same income as you do now. Would you accept it? Why?’ The interview questions for Innovative Orientation were ratings of how innovative the owners’ business ideas were. In line with previous research, all interview ratings used 5-point Likert scales (Kraus, 2003; Kraus et al., 2005).
Achievement and risk-taking orientation and competitive aggressiveness were measured using questionnaires. The achievement orientation questionnaire was a growth goal orientation measure, again developed by Kraus (2003). Risk-taking was measured using a questionnaire developed by Gomez-Mejia and Balkin (1989) and adapted by Norton and Moore (1998) to the entrepreneurial context. This was in line with the measure employed by Kraus et al. (2005), and consisted of a four-item measure, with low scores indicating less risk averse and higher scores indicating more risk averse, which were subsequently reverse scored. The competitive aggressiveness measure was a three-item questionnaire by Covin & Covin (1990); which again was in line with that employed by Kraus et al. (2005). These items relate to an enterprise’s propensity to initiate competitive interaction for the purpose of gaining competitive advantage (Covin & Covin, 1990).

Although Personal Initiative was conceived as a component of EO in Kraus et al. (2005), it was originally developed independently of the EO construct. Hence, it was treated as a separate construct in the present study. It was measured using a seven-item questionnaire measured on a 5 point Likert scale, developed by Frese et al. (1997). Frese and Fay (2001) describe the questionnaire measure of personal initiative as tapping into a construct similar to that of the proactive personality construct (Crant, 1995). In the original development of this instrument, it was designed to be conducted alongside the more detailed interview-based scale, which measured each of the personal initiative factors (general initiative at work, overcoming barriers, active approach, education initiative; Frese et al. 1997; Fay & Frese, 2001). However, this situational judgement interview assessment of personal initiative measures the construct at the behavioural level (Frese & Fay, 2001), and in the present research, we wanted to assess personal initiative at a more distal level, similar to the level at which entrepreneurial orientations were assessed. In previous research, the questionnaire-based measure was found to correlate significantly with the interview-based scales, and showed high reliability in the original study (α = 0.84, Frese et al., 1997). Hence, the questionnaire based measure was deemed suitable for the present purposes.

Entrepreneurial Self-Efficacy (deNoble et al., 1999). This study employed a measure of entrepreneurial self-efficacy (ESE) developed by DeNoble et al. (1999). This is a 23-item scale comprising 6 factors. The items are rated on a five-point scale ranging from Strongly Disagree (1) to Strongly Agree (5) based on a question ‘How capable do you believe you are in performing each of the following tasks?’ (DeNoble et al., 1999). De Noble et al. (1999) developed the ESE construct to incorporate a comprehensive set of demands placed on the start-up entrepreneur; developing new product or market opportunities, building an innovative environment, initiating investor relationships, defining core purposes and developing critical human resources to successfully distinguish between entrepreneurs and managers (Drnovsek & Glas, 2002). Hence, the measure comprises six factors. Subsequent research utilising this scale
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has found it to be reliable at both the composite level (Hmieleski & Corbett, 2008) and the factor level (Kickul & Kreuger, 2004). In the present research, it was used as a latent variable at the composite level, with the factors as indicators.

Creative Self-efficacy (Tierney & Farmer, 2002). Creative self-efficacy is said to tap employee’s beliefs that they can be creative in their work roles (Tierney & Farmer, 2002). This is a three-item questionnaire, measured on a 5-point Likert scale. Results from previous research provide support for the discriminant validity of the construct (Tierney & Farmer, 2002).

Engagement was measured using the Utrecht Work Engagement Scale (UWES-17; Schaufeli et al., 2003). This is a 17-item scale, measured on a seven point Likert scale (0 = never to 6 = always). These items reflect 3 underlying dimensions; Vigor (6 items), Dedication (5 items) and Absorption (6 items). Vigor is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one's work and persistence even in the face of difficulties. Dedication is characterised by a sense of significance, enthusiasm, inspiration, pride and challenge. Dedication is closely related to involvement, but has a wider scope by not only referring to a particular cognitive or belief state but including the affective dimension as well (Schaufeli et al., 2003). Finally, absorption is characterised by being fully concentrated and deeply engrossed in one’s work, whereby time passes quickly and one has difficulties in detaching oneself from work.

Positive and negative anticipated emotions were assessed using Barsade and Gibson’s (2007) measure of anticipatory emotions. Participants were asked to rate the extent to which they anticipated feeling each emotion if they succeeded in achieving their goals (positive emotions) and if they failed in achieving their goals (negative emotions). Seventeen emotions (seven positive and ten negative) were assessed on a five-point scale (1 = not at all to 5 = very much).

Emotion regulation strategies were assessed using Gross and John’s (2003) Emotion Regulation Questionnaire (ERQ). This assesses the strategies of emotion re-appraisal and emotion suppression. The questionnaire consists of six items pertaining to re-appraisal, and four items pertaining to suppression (with no reverse codes) which were assessed along a 5-point Likert scale (1 = strongly disagree to 5 = strong agree). The ERQ was designed to measure individual differences in these two emotion regulation strategies across individuals, rather than temporally bound actional use of the strategies.

Problem-focused coping strategies were assessed using the COPE questionnaire (Carver, Scheier & Weintraub, 1989) were also included. These refer to the strategies of active coping, planning, suppression of competing activities, restraint coping and seeking instrumental
social support. Each strategy was assessed with four items using a 4-point Likert scale ranging from 1 = “I haven’t done this at all”, to 4 = “I have done this a lot”. The COPE questionnaire was designed in such a way that it could assess dispositional coping styles, or more situational coping responses. The present research focused on the assessment of situational coping by restricting the individuals to think about dealing with stressful events that have occurred in relation to their venture.

Success. It has been suggested that entrepreneurial performance may have subjective dimensions that are not captured in financial and economic measures due to personal expectations, aspirations, skills, and decisions of the entrepreneur (Ucbasaran, Westhead & Wright, 2001). This is of particular relevance in the present research, with its focus on the level of the individual and the early stage of the entrepreneurial life cycle. Hence, three measures of success were employed, two of which were self-reported and a third consisted of an external evaluation. The self-reported measures of success were assessed via a questionnaire. The first measure asked three questions relating to self-perceptions of success (How successful are you as an entrepreneur compared to your competitors?; How satisfied are you with your work as an entrepreneur?; How satisfied are you with your current income?), which were adapted from Kraus (2003). The second self-report measure of success related to objective success variables comprising 7 items consisting of:

i. Has the company been officially incorporated?
ii. Have you developed a business plan in relation to your venture?
iii. Has your venture been successful in acquiring follow-up financing?
iv. Has your company made its first sale?
v. Has your company reached break-even point?
vi. At this point in time, please indicate the number of patents and trademarks that your business holds (if any)
vii. If applicable, please indicate the number of employees currently working in your business?

These items were based on Baron (2007) and Van der Steen, Ortt, and Tolsma (2008). The items were subsequently coded (0 = No; 1 = Yes) and totalled to give an objective indicator of success. This reflects a similar approach taken by Van der Steen, Ortt, and Tolsma (2008) and Van der Steen and Ortt (2009).

Finally, an outsider to the enterprise, but who was very familiar with the entrepreneur and his/her business, was asked to complete as external evaluation of success. This was a four-item questionnaire adapted from Kraus (2003). The first two questions pertained to success ratings, and the latter two pertained to the evaluators’ relationship to the entrepreneur.
Demographic Information. A number of demographic questions were asked to provide background details about the entrepreneur. These demographic questions were based on previous research with entrepreneurs (Drnovsek & Glas, 2001; Honig, 2001; Katz, Brockhaus & Hills, 1993), and were included in the questionnaire. These included questions pertaining to age, gender, education and training, previous work experience and whether the individual had any friends or relatives who were entrepreneurs.

7.6. Procedure

In the section which follows, the steps involved in developing, conducting and analysing the research will be described. As the questionnaire measures were described above, this section will focus initially on the development and conduct of the interview and the procedure in terms of data analysis will be described in a later section. It should be noted that prior to the commencement of data collection, ethical permission was sought and granted from the university’s ethics committee.

7.6.1. The Interview design and development

Interviews are one-to-one sessions between an interviewer and an interviewee for the purpose of answering specific research questions, and can provide rich sources of qualitative information when development or testing of new theories is needed, or when in-depth discussion can provide clarity on an issue (Bachiochi & Weiner, 2004). Creswell (2003) suggests that the advantages of interviews are that they are useful when participants cannot be observed directly (as in the present case), and they also allow the researcher to have control over the line of questioning. Limitations of the interview technique are that it provides indirect information filtered through the views of the interviewees, and it provides information in a designated place, rather than in natural field setting (Creswell, 2003). A further limitation that needs to be considered is that the researchers’ presence may bias responses (Creswell, 2003).

The interviews utilised in the present research took the format of a standardised open-ended interview, consisting of a set of questions carefully worded and arranged with the intention of taking each respondent through the same sequence and asking each respondent the same questions, with essentially the same words (Patton, 1990). This format is utilised when it is important to minimise variation in the questions posed to interviewees, which in turn, reduces the possibility of bias that comes from having different interviews for different people, and also addresses the problem of obtaining more comprehensive data from certain persons while getting less systematic information from others (ibid.). However, in order to allow scope for the interviewer to probe more flexibly, elements of the interview guide approach was incorporated into the standardised open-ended approach. This also allowed the interviewer more decision-making flexibility in determining when it is appropriate to explore certain subjects in greater
depth (Patton, 1990). The design of the individual questions comprising the interview were driven by theory and past research using a similar methodology, with the aimed of tapping various elements of the self-regulatory process.

Initial development of the interview protocol was guided by recommendations by experts in this area (e.g. Bachochi & Weiner, 2004; Creswell, 2003; Patton, 1990). Previous research which had adopted similar interview approaches in the past was also consulted. For example, pertinent areas to the present study were the psychology of entrepreneurship (Frese et al., 2007; Kraus, 2003, Kraus et al., 2005; Unger, 2006), work-based learning (Doornbos, Bolhuis & Simons, 2004), self-regulated learning (Järvelä & Salovaara, 2004; Salovaara, 2005; Zimmerman & Martinez-Pons, 1986, 1989), and critical incident techniques (Chell & Pittaway, 1998; Cope & Watts, 2000; Deakins & Freel, 1998; Flanagan, 1954; Kaulio, 2003). The initial interview protocol developed was trialled prior to the commencement of data collection, and changes were made. Following the completion of eleven interviews further changes were made to more closely link the entrepreneurs emotions with their goals. The final interview schedule can be found in Appendix 7.3.

7.6.2. The interview procedure and data collection

The developed interview protocol was used to guide the researcher in conducting the interviews. This served as the script for conducting the interview, and began with introductory statements (the purpose of the research and how the results would be used), directions for participants and informed consent, and a general section relating to motivations for becoming an entrepreneur. Participants were reminded that their participation was voluntary and that they could withdraw at any time. Before beginning the interview proper, they were asked for permission to record the interview. It was explained that the purpose of the recording was to have an accurate record of the interview, which would aid in the analysis of the research, and that the recordings would not be used for any other purpose.

The interview was divided into three main sections. Firstly, participants were asked some brief questions in relation to their venture, and their motivation for starting the venture. The main body of the interview related to the establishment of the entrepreneurs two most important goals, the extent to which the made plans in relation to these goals, and the assessment of the entrepreneurs motivation and affect with regard to the goals. To establish this, the participants were given a set of six entrepreneurial goals on separate cards, and were asked to rate the goals in terms of their importance to the entrepreneur at the present time. This mirrors the process used by Kraus (2003). For each of the two most important goals, the participants were probed with regard to their subgoals, plans, and activity towards the goal. In the final section, participants were asked questions pertaining to their learning, autonomy and innovative orientations. Finally, they were asked to complete the questionnaire, before being
thanked for their time. Before ending the interview, participants were given the opportunity to ask any questions they had in relation to their participation and the research being conducted. The majority of questions were open-ended, and probes were used where necessary to ensure the session stayed focused. The interviews were transcribed, but the interviewer also took notes where appropriate throughout the interview to allow further probing into participants’ answers as necessary.

7.7. Assessing validity and reliability in mixed-methods designs

The concept of validity has been addressed sparingly in the mixed methods literature, with early treatments of validity for mixed methods studies tended to assess the quantitative and qualitative parts of studies separately (Dellinger & Leach, 2007). Recent advances have been made through the development of a validity framework (see Figure 7.2) by Dellinger and Leach (2007), who attempted to present a useful and unified method to frame the idea of validity in mixed method research, to provide a guide for organising the necessary evidence needed to support data meaning. These researchers suggest that flexibility is important in mixed methods research, as it may become necessary for the researcher to adjust the type of validity evidence or combine types of evidence in novel, organic ways. It may also be necessary to blur the dichotomy of quantitative and qualitative validity criteria when assessing design- and measurement-related validity in mixed methods research (Dellinger & Leach, 2007). For example, in the case of the present research design, where qualitative data were collected and analysed and the results were then quantified for use in a quantitative analysis, the inferences and meanings based on these data are dependent on the quality and characteristics of the measurement and analytical processes. Hence, any meaning must be justified by the researcher with construct validation evidence that best demonstrates both the trustworthiness of the qualitative data and analytical results, as well as the credibility of the quantifying process (Dellinger & Leach, 2007).

7.8. Qualitative analysis and the development of the coding scheme

The present research used a theory-driven approach to analysing the interview data (in contrast to other qualitative analysis approaches which are data-driven). Theory driven approaches are guided by specific ideas or hypotheses which the research wants to assess (Namey et al., 2007). They tend to be more structured, and hence may be consider more reliable, as the same results are likely, regardless of the coder (Namey et al., 2007). Best practice guidelines for data analysis of qualitative research suggest that it is important to apply rigorous, systematic approaches (Bachiochi & Weiner, 2004). The process of data analysis involves making sense out of text and image data (Creswell, 2003). Namey et al. (2007) distinguish between content analysis, where the researcher evaluates the frequency and saliency
of particular words or phrases in a body of original text data in order to identify keywords or repeated ideas, and thematic analysis, which focuses on identifying and describing both implicit and explicit ideas. However, other researchers incorporate both these types of analysis under the content analysis heading. The present research initially relied upon thematic analysis, which is useful for any research approach that yields textual data (transcripts, field notes etc.) (Bachiochi & Weiner, 2004). A rating scheme was developed and applied to allow for the translation of the coded qualitative data into numerical representations, allowing for comparison with the quantitative data also collected.

Figure 7.2 Dellinger & Lee's (2007) validation framework in mixed-methods research.

Data analysis for qualitative research should apply rigorous, systematic approaches (Bachiochi & Weiner, 2004). The process of data analysis involves making sense out of text
and image data (Creswell, 2003). It involves preparing the data for analysis, conducting different analyses, moving deeper into understanding the data, representing the data, and making an interpretation of the larger meaning of the data (Creswell, 2003). Data analysis in the present research took a primarily deductive approach, but allowed for the emergence of non-hypothesised or non-theorised elements to come to the fore in an inductive manner. Deductive analysis consists of assigning participant statements into predetermined categories and dimensions based on theoretical or conceptual grounds (Patton, 1990).

Content analysis consists of a division of the text into units of analysis and a quantification of these units according to certain rules (Lindkvist, 1981), and is useful for any research approach that yields textual data (transcripts, field notes etc.) (Bachiochi & Weiner, 2004). The present research is most closely aligned with what has been termed with quantifying content analyses which integrates a theory-oriented category formation and evaluation into their conception (see Bos & Tarni, 1999). More specifically, the verbal analysis method developed by Chi (1997) was adopted, but with elements of template analysis also (King, 1998). Content analysis was aided through the use of the software package NVivo8.

Chi (1997) provided a seminal article providing practical guidelines for analysing qualitative data in an objective and quantifiable manner, a method she calls Verbal Analysis. Verbal analysis is a methodology for quantifying the subjectiveness of qualitative coding of the contents of verbal utterances (Chi, 1997). There are four main methods which have been used in past research to integrate qualitative and quantitative data, and verbal analysis is the most integrated form (Chi, 1997). In this method, the researcher relies on the qualitative data, but quantifies the analysis; the qualitative data is examined for impressions and trends, methods of coding are developed to capture those impressions, and the coding can then be analysed quantitatively (Chi, 1997). Chi (1997) outlines 8 main steps in verbal analysis, which guided the present research:

1. Reducing or sampling the protocols
   All protocols in the present research were used in the analysis, except for those participants who were excluded as described earlier.

2. Segmenting the reduced or sampled protocols (sometimes optional)
   Initially, the interview transcripts were segmented using autocoding, which divided the interviews into the main sections covering the main topics of interest to the researcher. Subsequent cross-coding ensured the no information was lost.

3. Developing or choosing a coding scheme for formalism
   The coding scheme was developed based on the researcher’s theoretical orientation and the hypotheses and questions being asked. In line with verbal analysis (Chi, 1997), the choice of formalism (coding scheme) was first developed in a top-down manner, on the
basis of the research questions, and this was fine-tuned on the basis of the verbal data (bottom-up).

4. Operationalising evidence in the coded protocols that constitutes a mapping to some chosen formalism

In this stage, it was determined what constituted a unit of analysis. In this case each of the autocoded segments formed the initial unit of analysis, which was subjected to finer grained analysis.

5. Depicting the mapped formalism (optional)

Summaries of the mapped formalism were represented in tabular format.

6. Seeking patterns in the mapped formalism

Following content analysis, all data was in a quantitative format, and relationships were examined using statistical techniques.

7. Interpreting the patterns

As all data at this point was quantitative, the patterns were interpreted based on statistical significance and effect size estimations.

8. Repeating the whole process, perhaps coding at a different grain size (optional).

The analysis of the qualitative data proceeded through a number of phases which are described in more detail below.

7.8.1. Organising the data for analysis and Framing the analysis

In this stage, the interviews were first transcribed and then entered into NVivo8. All data was read and listened to a number of times in order to familiarise the researcher with the content, and to obtain a general sense of the information and reflect on its general meaning (in line with recommendations by Creswell, 2003).

Namey et al. (2007) give guidelines with respect to analyses with multiple research questions and reasonably large data sets. The first step is to delineate the boundaries of a given analysis with a comprehensive analysis plan. Data reduction is important in this stage, and involves eliminating data not relevant to the analysis at hand, or extracting the data that are relevant. In the present research the boundaries of the analysis were the cognitive, motivational and emotional components of the interview questionnaire, which was replicated for both goals in many cases. Hence, the transcripts were first auto-coded by interview section (see Appendix 7.8), and following this were cross-coded to ensure that any information that participants may have discussed was linked to the relevant section (although it may have originated in an alternative section). This was accomplished by listening to all the taped interviews, while simultaneously reading the transcripts on-screen, and re-coding any information that related to a different section to the one assigned through the auto-coding. This first step in coding represented structural coding, where question-based, rather than theme based codes were
applied (Namey et al., 2007). Structural codes act as a labelling and indexing device, which allow the researcher to quickly access data relevant to a particular analysis from a larger data set (Namey et al., 2007).

7.8.2. Coding the interview data

Coding is the process of organising the material into ‘chunks’ before bringing meaning to those chunks (Creswell, 2003). This stage of data analysis involved the dual processes of developing a coding instrument and preliminary coding of the interviews. The theory driven coding instrument was based on previous research, outlined in more detail below. The analysis followed the principles of qualitative content analysis (Chi, 1997).

Namey et al. (2007) note that a theory-driven analysis does not preclude the analyst from uncovering emergent, data-driven themes, which may then be added to the analysis. In the present research, both an inductive and deductive approach to coding the data was adopted. Where previous guidelines for the coding of the constructs were available for use, these were adopted. Hence, goal difficulty and proactive and elaborate planning were coded drawing on the rating scheme outlined by Frese et al. (2007). Learning, autonomy and innovative orientations were coded using the guidelines outlined by Kraus (2003). The coding scheme can be found in Appendix 7.7.

7.8.3. Validity and reliability in content analysis

Dellinger & Leech (2007) suggest that qualitative researchers who work from a positivist perspective interpret validity using the same criteria as are used in quantitative research, e.g. internal validity and external validity. Tindall (2006) suggests that validity in qualitative research has to do with the adequacy of the researcher to understand and represent the people’s meanings. The establishment of validity in content analysis is a two-step process. The first step is to develop a coding scheme that guides coders in the analysis of content, and if this scheme is faithful to the theory with regard to orienting coders to the focal concepts, it is considered a valid coding scheme (Potter & Levine-Donnerstein, 1999). The second step involves assessing the decisions made by coders against some standard. With pattern content, experts must set the standard, as they are best able to understand the correct application of the coding rules, having created them. The rules are designed in such a way as to narrow the degree of interpretation down so that it converges on a correct code for each content situation (Potter & Levine-Donnerstein, 1999).

To establish face validity, the coding scheme must be logically consistent and the categories clearly defined, and linked to the theory that forms the basis for the scheme. The present research used formal theory deductively to guide the development of the coding scheme and analysis. However, the coding was left open for any previously unidentified concepts, which were coded inductively. Potter and Levine-Donnerstein (1999) suggest that the use of
such a theory-based coding scheme forms the basis for an argument for face validity. For predictive validity, a theory is needed to establish which concepts are related, from which an empirical test can be designed and conducted to establish whether the values found on one standard (one concept) are related to the values on another concept. To establish construct validity, convergent and discriminant tests are run to determine whether the standard is related to (convergent) and distinct from (discriminant) other concepts (Potter & Levine-Donnerstein, 1999). For pattern content, it is sufficient to establish face and construct validity (Potter & Levine-Donnerstein, 1999).

In order to establish reliability in the qualitative elements of the design, reproducibility was key—i.e. if coders produced the same coding patterns, then the data was regarded as reliable (Potter & Levine-Donnerstein, 1999). Tindall (2006) referred to this as investigator triangulation. With regard to the task for coders, Potter and Levine-Donnerstein (1999) state the belief that it is not realistic to expect coders to be objective when coding latent content. This does not render the analysis invalid or unreliable, but increases the importance of making the case that the judgements of coders are intersubjective, or shared across coders. Such convergence provides convincing evidence of coder consistency (Potter & Levine-Donnerstein, 1999). In the present research, there was one primary researcher who coded all the content. However, in order to establish the accuracy of the primary researchers coding, a second rater, expert in the field of study, rated a representative percentage of the data, and inter-rater reliability estimates were calculated. This is in line with Tindall’s (2006) recommendations for the role that investigator triangulation plays when working alone. Bachiochi and Weiner (2006) suggest that reliability can be assessed by judging the accuracy or the reproducibility of inferences from the data. This can be achieved by conducting inter-coder reliability analysis and calculating statistical methods for determining reliability in content analysis. These were established and calculated in the present research.

### 7.8.4. Inter-rater reliability analysis

A representative sample of each qualitative variable (approx. 10%) was coded by a second researcher to establish inter-rater reliability. These researchers were drawn from faculty and postgraduate students in the fields of psychology and organisational behaviour. Each coder rated no more than two variables, in order to avoid fatigue. A common procedure for computing reliability co-efficients is to find the percentage of agreement among coders, and then to correct for chance agreement by employing a specific method, the three most popular being: Scott’s pi, Cohen’s kappa, and Krippendorff’s alpha (Potter & Levine-Donnerstein, 1999). Scott’s pi is considered a very conservative test as it over-corrects for chance agreement (ibid.). The Kappa formula is a very sophisticated one, which allows for multiple simultaneous coders, multiple values on a variable and any level of data (nominal, ordinal, interval or ratio).
In the present research, Krippendorff’s alpha was used as the indicator of inter-rater reliability. Krippendorff’s (1980) alpha can be used in more situations than the other indicators of inter-rater agreement/reliability, but is difficult to calculate and use (Bachiochi & Weiner, 2004). However, more recently Hayes and Krippendorff (2007) developed a macro (KALPHA) for SPSS, which was used in the present research. Krippendorff’s alpha generalises across scales of measurement, can be used with any number of observers with or without missing data, and satisfies all the criteria for a good measure of reliability (Hayes & Krippendorff, 2007). These criteria include:

- It should assess the agreement between two or more observers who describe each of the units of analysis separately from each other.
- It should be grounded in the distribution of the categories or scale points actually used by the observers. The index should not be confounded by the number of categories or scale points made available for coding.
- It should constitute a numerical scale between at least two points with sensible reliability interpretations (e.g. 1 indicating perfect agreement).
- It should be appropriate to the level of measurement of the data.
- Its sampling behaviour should be known or at least computable.

(Hayes & Krippendorff, 2007).

Cut-off criteria for inter-rater reliability estimates are quite ambiguous. Cohen’s kappa values above .80 are generally considered a very good result (Brett et al., 1998). However, as Cohen’s kappa is quite a conservative estimate, these values do not translate to other measures. Sim and Wright (2005) suggest that the following criteria can be used as strengths of agreement for the kappa coefficient: ≤ 0 = poor; .01-.20 = slight; .21-.40 = fair; .41-.60 = moderate; .61-.80 = substantial and .81-1.00 = almost perfect. Le Breton and Senter (2008) note that values of .70 have been used as the traditional cut point for denoting high versus low agreement, but note that his dichotomisation is not always a useful heuristic. In the present research, kappa estimates ranged from .676 to 1.00 (see Table 7.4), with an average agreement across all variables and coders of .887. All the estimates were in the categories of substantial to almost perfect agreement (Sim & Wright, 2005), and were above .70 (with one exception which is approaching .70) using the LeBreton and Senfor (2007) cut point. Where some disagreement was evident, this was discussed among the raters and minor adjustments were made to the coding scheme where needed. Hence, the primary coders’ record was used for all subsequent analyses.

7.9. Statistical Analysis

Following the qualitative analysis of the interview data, a rating scheme was applied to the participants answers using a detailed coding scheme (see Appendix 7.7). This allowed for the quantification of the qualitative data, which was subsequently entered into a statistical
package. The quantified data was then analyzed using partial least squares structural equation modelling. Engaging in quantitative analysis of both the quantitative, questionnaire based measures, as well as the qualitative interview data allowed for a more complete analysis of the self-regulatory processes.

**7.9.1. Missing Data Analysis**

Considerable variation exists in the literature with regard to the most appropriate technique to deal with missing data; some authors recommend deletion of incomplete cases, while others suggest that up to 20% of a data set may be dealt with using missing data techniques (see Graham, 2009; Roth, 1994 for reviews). However, researchers do agree that at least two factors need to be taken into account, (i) the amount of missing data, and (ii) the pattern of missing data (Newman, 2009; Roth, 1994; Tabachnick & Fidell, 2007). Missing data scattered randomly through a data matrix pose less serious problems than non-randomly missing values (Tabachnick & Fidell, 2007). Three types of missing data can be characterised: (i) MCAR (missing completely at random), (ii) MAR (missing at random, called ignorable nonresponse) and (iii) MNAR (missing not at random or nonignorable). In this latter case, the missing data is related to the dependent variable and therefore, cannot be ignored (Graham, 2009; Tabachnick & Fidell, 2007).

There are a number of ways to treat missing data, but both Graham (2009) and Newman (2009) put forward a strong argument for using maximum likelihood (ML) and/or multiple imputation (MI) techniques over and above the use of listwise or pairwise deletion. Listwise and pairwise deletion are only unbiased when the data are MCAR, whereas ML and MI techniques are unbiased under both MCAR and MAR conditions. Scale-level non-response can be treated through maximum likelihood or multiple imputation techniques in which the researcher estimates the parameters of interest (e.g. correlations, regression weights) using a likelihood function based on observed data from all of the measured variables (Newman, 2009). Hence, if a respondent omits an entire scale, then using ML or MI techniques to recover the parameter estimates will typically produce less bias than using pairwise or listwise deletion (Newman, 2009). For item-level non-response, Newman (2009) suggests the use of mean_{item} imputation, where the researcher can average across the subset of scale items with available responses to calculate a scale score. This is the technique adopted by Frese et al. (2007) who estimated missing data from the overall scale mean for up to a third of the missing data for scales with more than two items.

In order to estimate the impact that any missing values were having on the data, a Missing Values Analysis (MVA) was conducted in SPSS (see Table A7.9.i and A7.9.iii in Appendix 7.9). Only variables that had some missing data were included in the tables. To deal with missing data in the present sample, a combination of methods were used. In the case of 5
participants, although they participated in the interview, they failed to return the questionnaire, and so there was no data available for them on those items assessed through the questionnaire. These participants were removed from the dataset, which had the effect of reducing the overall sample size to 75. Although listwise deletion has been criticised for decreasing the power of the analyses (Newman, 2009; Roth, 1994), it was deemed appropriate to adopt this conservative approach given the extent of missing data in these 5 cases. Graham (2009) suggests that if the loss of cases due to missing data is less than 5% of the total cases then biases and loss of power are both likely to be inconsequential. Furthermore, Newman (2009) suggests the mean\textsubscript{item} imputation is suitable when the level of the missing data is at the item level (rather than the survey level). Furthermore, Frese et al. (2007) favoured the use of listwise deletion of missing data because pairwise deletion can seriously distort parameter estimates in structural equation modelling.

In the remaining dataset, there was a small amount of MAR and MCAR data (tested using Little’s chi-square test), which was addressed using the mean\textsubscript{item} imputation. Changes in the item standard deviation were calculated in order to assess the magnitude of the change by imputing the mean for missing responses. All changes were extremely small (see Table A7.9.ii and A7.9.iv in Appendix 7.9). Both the listwise deletion approach for cases with significant amounts of missing data and the mean\textsubscript{item} imputation for the small remaining amount of missing data follow the approach adopted by Frese et al. (2007).

Two of the objective success indicators demonstrated between 14.7% and 16.0% of the responses missing. The indicator that asked whether the participant had been successful in gaining follow-up financing had appeared as problematic during data collection, as a number of the participants indicated that they did not need follow-up financing, and hence, the question was not relevant to them. Given that, at the very least, this indicator demonstrated potential problems in indicating success, it was deemed appropriate to reduce the objective measure of success from 7 items to 5. Newman (2009) suggests that dropping an entire scale from analysis simply because some of its items were omitted will typically produce worse biases, compared to assuming that the few completed items appropriately reflect the scale score. However, the objective success measure was comprised of a number of separate and distinct indicators of success at the early stage of venture start-up. Given that the nonresponse was explainable in at least one of the indicator items, suggesting that it may be a less than optimal indicator of success, it was deemed appropriate in the present case to use the remaining five indicators, and omit the two with quite high levels of missing data.

The emotional variables in the research, consisting of anticipatory emotions, emotion regulation strategies and coping strategies, were added after the data collection had begun, and as it emerged from the first few interviews that emotions were an important issue to consider in
conjunction with cognition and motivation. Hence, the participants for which emotion data was available for consisted of sixty four individuals, as the first eleven participants were not asked about their emotions. There was a very small proportion of missing data for two items in the coping strategies and one item in the emotion regulation strategy of re-appraisal (see Table A7.9.iii in Appendix 7.9). There were dealt with by mean item imputation as outlined above, and the difference in the standard deviations were extremely small (see Table A7.9.iv in Appendix 7.9).

The anticipatory emotions were assessed using a quantitative scale during the interview, and hence, participants were asked about their anticipated positive and negative emotions in relation to both scales. However, due to the time constraints on the part of a number of participants, twelve individuals were only asked about their anticipatory emotions in relation to the first goal, and not in relation to the second goal. To establish whether participants answered differently with regard to their goal 1 and goal 2 emotions, a series of paired samples t-tests were carried out. No significant differences were found for each emotion between goal 1 and goal 2, except for guilt. In addition, all correlations between paired emotions were significant except for pride. Hence, it was concluded that participants were not distinguishing significantly between emotions at the goal level, but rather were thinking about how success and failure in each of their two most important goals would impact their venture. Hence, to calculate anticipatory emotions, where data was available for both goals, the scores were combined for each emotion and the average of the two goal scores was calculated. Where data was available for only one goal, this was taken to be representative of the anticipatory emotions for that participant. On computation of each emotion scale (G1 + G2 for each emotion) there were still two emotions that had no data for either goal. These two data points were inputted using mean item replacement (see Table A 8.9.iv in Appendix 8.9).

7.9.2. Statistical Treatment

Once the qualitative analysis was completed, a number of statistical comparisons were made to establish relations between the cognitive, motivational and emotional components of the self-regulatory process. The majority of hypotheses specified relations between variables, and hence structural equation modelling approaches were applied. Given the relatively small sample in the present research, traditional co-variance based approaches to data analysis would have been problematic. Hence, an alternative modelling approach based on partial least squares, which is more robust to small sample sizes was used. Given that this is a less well-known technique, it is explained in more detail in the section that follows.
7.9.3. Modelling using Partial Least Squares

Partial least squares (PLS) is an alternative and less widespread technique which is available for researchers who wish to do SEM-based analysis (Chin, 1998). PLS has the advantages of making minimal demands on measures scales, sample size and residual distributions (Wold, 1985), and avoids two serious problems relating to inadmissible solutions and factor indeterminacy (Fornell & Bookstein, 1992; Chin, 1998).

Typical co-variance-based approaches to SEM adopt a maximum likelihood function which attempts to minimise that difference between the sample covariances and those predicted by the theoretical model (Chin, 1998). Typically such approaches necessitate the need for quite large sample sizes, which in the present mixed-method research study presented a problem. PLS does not place the same demands on sample size, which is one reason why it is desirable and suitable in the present analysis. Furthermore, the PLS approach is distribution free, and in contrast with ML approaches, PLS is often more general as it works with a smaller number of zero intercorrelation assumptions between residuals and variables. As a result, it makes for models that give a closer fit to the given observations (Wold, 1973; Chin, 1998). Distribution of the variables is often an issue in smaller samples, and this is a further indication of the suitability of PLS in the present circumstances.

Chin and Newsted (1999) suggest that when the theory is still relatively tentative or the measures of each latent variable are new, greater emphasis may need to be placed on the data relative to the theory. PLS adopts such an approach. In the present research, each of the individual components of the model have been quite well established in their own right. However, the idea of mapping motivational and emotional constructs at different action phases, for example, although supported by Kanfer’s (1992) proximal-distal model, has rarely been examined empirically. Previous research (Frese et al., 2007) demonstrated that motivational resources predicted planning, but these relationships have never been investigated in the context of the Rubicon model of action phases. Hence, the present research pushes new boundaries with regard to the integration of previous theories. As such, the model does have an exploratory or prediction oriented nature to it, and is not explicitly confirmatory as is necessary for SEM. This is a further reason why PLS is a more suitable approach in the present study.

PLS modelling also has advantages over standard multiple regression. Firstly, it includes a measurement model, where multiple regression deals with means. Secondly, it allows one to analyse models with latent variables that represent hypothetical constructs, and allows for the consideration of second order, as well as first order representations of constructs. Chin (1999) states that some researchers have described it as an example of second generation multivariate analysis.
7.9.3.1. Formal Specification of the PLS model

All latent variable path models in PLS consist of three sets of relations (Chin, 1998):

a. The inner model, which specifies the relationships between the latent variables
b. The outer model, which specifies the relationships between latent variables and their associated manifest or observed variables
c. The weight relations upon which the case values for the latent variables can be estimated.

In contrast to covariance-based SEM, in PLS both the theoretical and measurement portions of the model contribute to the estimation process. This can be contrasted with the two-step approach in covariance-based SEM where the measurement model is derived first, before it is used at the structural level (Chin & Newsted, 1999).

Predictor specification forms the basis of PLS modelling. PLS uses very soft, general distributional assumptions. Identical distributions are not assumed, nor is independence of cases required because no specification is made regarding the correlation between two different cases. Predictor specification adopts the statistical assumptions for a linear conditional relationship between dependent and independent variables. Predictor specification can be viewed as a least squares counterpart to the distributional assumptions of ML modelling. But it avoids the assumptions that observations follow a specific distributional pattern and that they are independently distributed. Hence, no restrictions are made on the structure of the residual covariances and under least squares modelling the residual variance terms are minimised.

7.9.3.2. Model evaluation

PLS path modelling does not provide any global goodness-of-fit criterion, but Henseler, Ringle and Sinkovics (2009) suggest the use of a catalogue of criteria to assess partial model structures. Chin (1998) suggests that because PLS makes no distributional assumption other than predictor specification in its procedure for estimating parameters, traditional parameter-based techniques for significance testing and evaluation are not appropriate. Hence, evaluation of PLS models should apply prediction-oriented measures that are also non-parametric. Chin (1998) suggests the following tests as appropriate to use: the R-square for dependent LVs, the Stone-Geisser (Geisser, 1975; Stone, 1974) test for predictive relevance ($Q^2$), and Fornell and Larcker’s (1981) average variance extracted measure are used to assess predictiveness. Resampling techniques such as bootstrapping are used to examine the stability of estimates (Chin, 1998).

Evaluation of the PLS model follows a two step procedure; the first step involves an assessment of the outer model (i.e. the measurement models validity and reliability) and the second step involves the assessment of the inner model, as outlined by Henseler, Ringle and Sinkovics (2009) in Figure 7.3 below. The inner model should only be evaluated once the outer model shows evidence of reliability and validity.
Step 1: Assessment of the outer model

Chin (1998) suggests that for latent variables (LVs) with reflective indicators, the loadings should be inspected for determining the appropriateness of the indicators. Each loading represents the correlation between the indicator and the component score. Hence, indicators with low loadings imply that they have little relationship in terms of shared variance with the LV composite score.

![Diagram of the two-step process of PLS path model assessment](image)

Figure 7.3 The two-step process of PLS path model assessment (Henseler, Ringle & Sinkovics, 2009; p. 298).

1. Composite reliability ($p_c$)

Henseler, Ringle and Sinkovics (2009) suggest that Cronbach’s $\alpha$ tends to provide a severe underestimation of the internal consistency reliability of latent variables in PLS path models, and hence, it is more appropriate to apply a different measure, the composite reliability $p_c$ (Werts, Linn, & Jöreskog, 1974). The composite reliability takes into account that indicators have different loadings, and can be interpreted in the same way as Cronbach’s alpha.

2. Assessing convergent and discriminant validity

For assessing validity, Henseler, Ringle and Sinkovics (2009) recommend examining two validity types: convergent and discriminant. The average variance extracted (AVE) was suggested by Fornell and Larcker (1981) as an assessment of convergent validity. It attempts to measure the amount of variance that the LV captures from its indicators relative to the amount due to measure error. This measure can also be used as a measure of reliability for the LV component score and tends to be more conservative than the composite reliability (Chin, 1998). It is recommended that the AVE should be more than 0.5 meaning that 50% of the variance in the indicators should be accounted for (Chin, 1998; Henseler, Ringle & Sinkovics, 2009).

In PLS path modelling, two measures of discriminant validity have been put forward: The Fornell–Larcker criterion and the cross-loadings. The Fornell–Larcker criterion (Fornell & Larcker, 1981) postulates that a latent variable shares more variance with its assigned indicators than with any other latent variable (Henseler, Ringle & Sinkovics, 2009). As a means of
evaluating discriminant validity, the AVEs of the LVs should be greater than the square of the correlations among the LVs, which indicates that more variance is shared between the LV component and its block of indicators than with another component representing a different block of indicators (Chin, 1998).

Henseler, Ringle and Sinkovics (2009) suggest that a latent variable should explain at least 50% of each indicator’s variance (see AVE), and so, the absolute correlations between a construct and each of its manifest variables (i.e. the absolute standardized outer loadings) should be higher than 0.7(approx. √0.5).

3. Cross-loadings
Cross-loadings are a further test of discriminant validity, which calculates the correlations between LV component scores and other indicators besides its own block. If an indicator loads higher with other LVs than the one it is intended to measure, the researcher may wish to reconsider its appropriateness because it is unclear which construct or constructs it is actually reflecting. In addition, one would expect that each block of indicators loads higher for its respective LV than indicators of other LVs (Chin, 1998; Henseler, Ringle & Sinkovics, 2009). Although the Fornell–Larcker criterion assesses discriminant validity on the construct level, the cross-loadings allow this kind of evaluation on the indicator level (Henseler, Ringle & Sinkovics, 2009).

**Step 2: Interpretation of the inner model**
The path weighting scheme differentially weights neighbouring LVs depending on whether they are antecedents or consequences of the focal LV. Hence, the path weighting scheme attempts to produce a component that can both ideally be predicted and at the same time be a good predictor of subsequent dependent variable (Chin, 1998).

1. R-square
The R-square is an assessment of predictive relevance. The R-squares for each dependent LV are interpreted in the same manner as traditional regression. The correlated standardised path estimates can also be examined and interpreted in the same manner. The change in R-squares can also be explored to see whether the impact of a particular independent LV on a dependent LV has substantive power. The effect size can be calculated as:

\[
f^2 = \frac{[R^2_{\text{included}} - R^2_{\text{excluded}}]}{[1 - R^2_{\text{included}}]} \\
\]

Where \( R^2_{\text{included}} \) and \( R^2_{\text{excluded}} \) are the R-squares provided on the dependent LV when the predictor LV is used or omitted in the structural equation respectively.

\( f^2 \) of .02, .15, and .35 similar to Cohen’s (1988) operational definition can be viewed as an indication for whether a predictor LV has small, medium or large effect at the structural level (Chin, 1998).
2. $Q^2$ predictive relevance

$Q^2$ is a predictive relevance criterion which applies a predictive sample reuse technique developed by Stone (1974) and Geisser (1975). This technique is a synthesis of cross-validation and function fitting. The PLS adaptation of this approach follows a blindfolding procedure that omits a part of the data for a particular block of indicators during parameter estimations and then attempts to estimate the omitted part using the estimated parameters. The procedure is repeated until every data point has been omitted and estimated. As a result of this procedure, a generalised cross-validation measure and jack-knife standard deviations of parameter estimates can be obtained (Chin, 1998).

The blindfolding procedure takes a block of $N$ cases and $K$ indicators and takes out that portion of the $N$ by $K$ data points. Using an omission distance, $D$, the first point (case 1, indicator 1) would be omitted, and then every other $D$ data point would be omitted as one moves across each column and row. The sums of squares of prediction error ($E$) is calculated when the omitted data points are predicted. The sums of squares errors using the mean for prediction ($O$) is also calculated. The predictive measure for the block becomes:

$$Q^2 = 1 - \frac{\sum_D E_D}{\sum_D O_D}$$

Chin (1998; following Wold, 1982) suggests that the omission distance, $D$ should be a prime integer between the number of indicators $K$ and cases $N$, and the choice of the omission distance $D$ need not be large. Chin (1998) suggests that $D$ from 5 to 10 as long as $N$ is large is feasible.

Hence, without any loss of freedom, $Q^2$ represents a measure of how well-observed values are reconstructed by the model and its parameter estimates. $Q^2 > 0$ (greater than) implies the model has predictive relevance, whereas $Q^2 < 0$ (less than) represents a lack of predictive relevance. As in the case of $f^2$, changes in $Q^2$ can be used to assess the relative impact of a structural model on the observed measures for each dependent LV.

$$q^2 = \frac{Q^2_{\text{included}} - Q^2_{\text{excluded}}}{1 - Q^2_{\text{included}}}$$

As a by-product of estimating each blindfolded sample, jack-knifing standard deviations can also be obtained. Because a set of weights, loadings, structural paths, and latent component scores and correlations is obtained during each round, jack-knife estimates of standard errors can be calculated. The smaller the error the more stable and more precise the parameter estimates.

3. Bootstrapping

The bootstrap is a non-parametric approach for estimating the precision of the PLS estimates. $N$ sample sets are created in order to obtain $N$ estimates of each parameter of the PLS model. Each sample is obtained by sampling with replacement from the original data set,
typically until the number of cases are identical to the original sample set. A t value is generated which estimates the difference between the original sample set and the bootstrapped data set.

The above description offers some detail on the relevant parameters for conducting and evaluating a PLS path model. These criteria will be used in subsequent chapters when evaluating the various models proposed in the hypotheses.
SECTION 3: RESULTS
CHAPTER 8: Results: Cognitive Components

The discovery that two variables are related to each other is only one small part of the aim of psychology. Deeper understanding is gained when we comprehend the process that produces the effect.

(Preacher & Hayes, 2004; p. 717)

8.1. Review of the main research questions pertaining to the cognitive components.

The overall aim of the initial analysis presented in this chapter was to test the basic theoretical model pertaining to the cognitive components of the self-regulatory process. The main variables of interest to this section of the research were: goal orientations, goal-setting, planning, actions taken towards one’s goals, and goal attainment or success.

8.2. Investigating the relationship between goal orientation and success.

As a recap, Figure 8.1 presents the first model to be tested in this chapter, which relates to Hypothesis C1, and investigates the direct relationships between goal orientations and success.

![Diagram of hypothesised direct relationships between goal orientations and success.](image)

This model and the associated hypotheses were tested using Partial Least Squares (PLS) SEM, using the software package SmartPLS (Ringle, Wende & Will, 2005). In order to test the modelled relationships, it was first necessary to establish that the sample size is large enough to distinguish significant relationships. Due to the partial nature of the estimation procedure in PLS where only a portion of the model is involved, it is only necessary to find that part of the specified model that requires the largest multiple regression (Chin, 1998). In general, one has to look at the arrow scheme and find the larger of two possibilities:
Chapter 8

Results: Cognitive Components

a. The block with the largest number of formative indicators (not relevant to the present research as all the indicators are in the reflective mode)

b. The dependent LV with the largest number of independent LVs impacting it (i.e. the largest structural equation).

In the present research, success has three independent variables hypothesised to predict it. Hence, the largest number of independent LVs impacting any given DV is three. Using this as the basis of the sample size calculation, Henseler and Ringle (2009) suggest as a rule of thumb that the sample size should equal or exceed ten times the number of maximum arrowheads pointing towards a latent variable. In this case, this would suggest that a sample size of 30 (ten times three) would be sufficient. This rule of thumb is in line with recommendations by Aguinis and Harden (2009) who suggest that a ratio of at least 10 observations per estimated parameter is recommended for obtaining trustworthy estimates of parameters. However, they suggest that a larger number of observations is required to obtain trustworthy estimates of the statistical significance of parameters (Aguinis & Harden, 2009).

It is also possible to use an estimation of effect size to determine the appropriate sample needed by looking at the power tables of Cohen (1988) or Green’s (1991) approximation of these tables, which tends to be a more conservative estimate. Table 8.1 outlines the sample size required for small, medium and large effect sizes with three independent variables. Based on this table, a sample size of between 73 and 76 is required to see moderate effect sizes when alpha is set at .05 and power is set at .80 in the present model. Using both of these criteria, the present study is sufficient to estimate large and medium effect sizes, but will not detect small effect sizes.

Table 8.1 Sample size requirements for small, medium and large effect sizes with 3 independent variables (Green, 1991)

<table>
<thead>
<tr>
<th>Effect size for 3 independent variables</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harris (1975) rule of thumb</td>
<td>545</td>
<td>73</td>
<td>31</td>
</tr>
<tr>
<td>Cohen (1988) power analysis</td>
<td>547</td>
<td>76</td>
<td>31</td>
</tr>
</tbody>
</table>

As there were missing data for the external success measure (some external raters did not return the questionnaire for each participant), the model was calculated separately for this dependent variable. The sample size for this analysis was N = 48, which meets the rule of thumb with regard to having at least 10 observations per estimated parameters, but is below the criteria set out by Green (1991) and Cohen (1988).

Kramer and Rosenthal (1999) suggest that estimations of effect size may be more accurate and appropriate to interpret than significance effects in research with small samples, as
statistical significance is affected by the sample size, whereas effect sizes are not. Hence, effect size estimations are also presented throughout the analysis.

8.2.1. Estimation of the outer model

The first step in the interpretation of any PLS SEM is to firstly establish the robustness of the measurement model. The measurement in the present analysis is a reflective measurement model. Henseler, Ringle and Sinkovics (2009) outline the criteria for assessing reflective measurement models in PLS, which is summarised in Table 8.2 below.

Table 8.2 Criteria for the assessment of the outer (measurement) model in the case of reflective indicators (from Henseler, Ringle & Sinkovics, 2009; p. 300).

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite Reliability ($\rho_c$)</td>
<td>A measure of internal consistency. Must not be lower than 0.6.</td>
</tr>
<tr>
<td>Indicator Reliability</td>
<td>Absolute standardized outer (component loadings) should be higher than 0.7.</td>
</tr>
<tr>
<td>Average Variance Extracted (AVE)</td>
<td>Should be higher than 0.5.</td>
</tr>
<tr>
<td>Fornell-Larker criterion</td>
<td>In order to ensure discriminant validity, the AVE of each latent variable should be higher than the squared correlations with all other latent variables. In this situation, each latent variable shares more variance with its own block of indicators than with another latent variable.</td>
</tr>
<tr>
<td>Cross-loadings</td>
<td>Another check for discriminant validity. If an indicator has a higher correlation with another latent variable than with its respective latent variable, the appropriateness of the model should be reconsidered.</td>
</tr>
</tbody>
</table>

For the factor loadings, the majority of the indicators were above the recommended 0.7. However, one item pertaining to the performance avoid goal orientation loaded negatively. However, given that these variables were assessed at the goal level, and expected to vary at this level, this is not unexpected. It does mean that the results pertaining to these two goal orientations should be interpreted with caution. The analysis was rerun without the negatively loading item on the performance avoid LV, but this made no significant difference to the results. Hence, the item was retained to allow comparison across all models that included this variable.

The composite reliability and the AVE for all of the latent variables were above the cut-off criteria, except for the composite reliability of the Performance Avoid LV. However, the AVE for this variable was above 0.5. Table A8.2.i in Appendix 8.2 (see p. 38 of appendices) outlines the factor loadings, weights, composite scale reliability, and Average Variance Extracted (AVE) for the model which included the objective indicators of success and self-perceptions of success.

The measurement model for the model investigating external success is included in Appendix 8.1.

Moving to examine validity, the Fornell-Larker criterion was met for all LVs, as the square root of the AVE is higher than any of the correlations between LVs (see Table A8.2.ii on p. 38 of appendices), which provides evidence for convergent and discriminant validity. In
PLS, convergent and discriminant validity are assessed using criteria similar to the multitrait-multimethod analysis (Wold, 1985). Finally, looking at the cross-loadings as a second check on discriminant validity (Table A8.2.iii on page 38 of appendices), all of the items load more highly on their own LV than on any other latent variable.

Hence, while the performance avoid variable is somewhat problematic, overall, the other variables met all of the measurement criteria. Based on these results, the measurement model overall was deemed to be valid and reliable, except for one item in the Performance Avoid measure, which appeared to have little effect on the overall model.

### Table 8.3. Criterion for assessing the inner (structural model) (Adapted from Henseler, Ringle & Sinkovics, 2009).

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R² of endogenous latent variables</td>
<td>Chin (1998) recommends conventions for defining effect sizes for marketing research. However, Murphy (2004) uses the conventions reported in Cohen (1988) and Grissom (1994) which are more appropriate for organisational psychology. For R², .01 represents a small effect, .10 a medium effect, and .25 a large effect.</td>
</tr>
<tr>
<td>Estimates for path coefficients</td>
<td>The estimated values for path relationships in the structural model should be evaluated in terms of sign, magnitude, and significance (the latter through bootstrapping).</td>
</tr>
<tr>
<td>Effect size, f²</td>
<td>f² assesses the change in R² to explore whether the impact of a particular independent LV on a dependent LV has a substantive impact (Chin, 1998)</td>
</tr>
<tr>
<td></td>
<td>f² = (R² \text{with} - R² \text{without}) / (1 - R² \text{without})</td>
</tr>
<tr>
<td></td>
<td>Where R² \text{with} and R² \text{without} are the R-squares provided on the dependent LV when the predictor LV is used or omitted in the structural equation respectively.</td>
</tr>
<tr>
<td></td>
<td>f² of 0.02, 0.15, and 0.35 similar to Cohen's (1988) operational definition can be viewed as an indication for whether a predictor LV has small, medium or large effect at the structural level (Chin, 1998; Green, 1991).</td>
</tr>
<tr>
<td>Prediction relevance (Q² and q²)</td>
<td>The Q² is calculated based on the blindfolding procedure:</td>
</tr>
<tr>
<td></td>
<td>Q² = 1 - \frac{\sum\text{SSE}<em>{0}}{\sum\text{SSO}</em>{0}}.</td>
</tr>
<tr>
<td></td>
<td>D is the omission distance, SSE is the sum of squares of prediction errors, and SSO is the sum of squares of observations.</td>
</tr>
<tr>
<td></td>
<td>Q² values above zero give evidence that the observed values are well reconstructed and that the model has predictive relevance.</td>
</tr>
<tr>
<td></td>
<td>In correspondence to f², the relative impact of the structural model on the observed measures for latent dependent variables can be assessed:</td>
</tr>
<tr>
<td></td>
<td>q² = Q² \text{with} - Q² \text{without} / 1 - Q² \text{without}.</td>
</tr>
</tbody>
</table>

### 8.2.2. Estimation of the structural model

Having investigated the measurement model, the second step in the interpretation of the PLS model is to interpret the inner or structural model. Henseler, Ringle and Sinkovics (2009) also provide guidelines for the evaluation of the inner or structural model (see Table 8.3). The R² estimations suggest that in total, 12.2% of the variance in the objective indicators of success was explained and 14.9% of the variance in self-perceptions of success was explained, both of which are medium effect sizes using Cohen’s (1988) guidelines. To calculate the predictive relevance of each of the LVs, the blindfolding procedure was performed, with the omission distance set to 7. All of the Q² results, calculated using both the construct cross validated
commonality, and the construct cross validated redundancy were above 0, indicating that the model had predictive relevance (see Table A8.2.iv on page 41 of the appendices).

![Diagram of Partial Least Squares analysis](image)

**Figure 8.2.** Results of Partial Least Squares analysis for the model investigating the relationships between goal orientation and success. (**p < .001; *p < .01; * p < .05; dashed lined indicate small, but non-significant paths).**

Figure 8.2 (see also Table A8.2.v on p. 39 of appendices) demonstrates the significant and non-significant path coefficients, and $R^2$ estimations for the latent variables. The effect sizes ($f^2$) of each independent LV on each dependent LV were all in the small-medium range. With regard to the direct effects of the goal orientations on the success measures, mastery approach had a significant effect on both self-perceptions of success and objective success. However, both of these effects were negative which contradicts hypothesis C1. Performance avoid had a significant negative impact on self-perceptions of success and a negligible effect on objective success. Performance approach did not have a significant impact on either of the success indicators, although the associations were positive in direction. However, the $f^2$ effect size indicated that performance approach did have a small effect on self-perceptions of success. Effect size estimates of the sample size indicated that the model was not powerful enough to detect significant small effect sizes, indicating that this may be a relationship that would be significant in larger samples. Hence, there was limited support for hypothesis C1.

The direct effects of goal orientation on external success were investigated in a separate analysis due to the reduced sample size for this dependent variable ($N = 48$; see Appendix 8.1). Overall, the three goal orientations explained 9.2% of the variance in external success, although there was a potential problem with the predictive relevance ($Q^2$) of the model due most likely to the reduced N. None of the path coefficients were statistically significant, although the $f^2$ calculation indicated that mastery approach and performance approach had a small effect on external success. All of the path coefficients were in the same direction as those found with objective success and self-perceptions of success.
8.3. Investigating the relationship between goal orientation, planning and success.

This second model (see Figure 8.3) investigated the direct effects of goal orientation on planning, and planning on success, as well as the indirect effect of goal orientation via planning on success. Two versions of the model were calculated, the first with no direct path from goal orientations to success in order to test the direct effect of planning on success, and the second with the direct path from goal orientations to success included as controls, in order to test the indirect effects. For the first model, the sample size requirements were the same as outlined in Table 8.1 for three independent variables (from goal orientation to planning). For the model which included both the direct and indirect paths for goal orientation, the largest number of independent LVs impacting any given DV is four. Henseler and Ringle’s (2009) suggested rule of thumb would suggest that a sample size of 40 (ten times four) would be sufficient. Using Cohen’s (1988) tables or Green’s (1991) approximation of these power tables (see Table 8.4) suggests that a sample of between 81 and 84 is required to see moderate effect sizes when alpha is set at .05 and power is set at .80. Using both of these criteria, the present study is sufficient to estimate large effect sizes, and just under the criteria to detect medium effect sizes, but will not detect small effect sizes at a significant level.

![Figure 8.3. Hypothesised relationships between goal orientation, planning and success.](image)

Table 8.4 Sample size requirements for small, medium and large effect sizes with four independent variables (Green, 1991).

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harris (1975) rule of thumb</td>
<td>610</td>
<td>81</td>
<td>35</td>
</tr>
<tr>
<td>Cohen (1988) power analysis</td>
<td>599</td>
<td>84</td>
<td>39</td>
</tr>
</tbody>
</table>

8.3.1. Estimation of the outer model

The calculations are based on the model including the direct paths only. The model which also included the indirect paths did not show any significant difference in its
measurement estimation. For the factor loadings, the majority of the indicators are above the recommended 0.7, except for the goal 2 goal orientations, two of which are a little below the cut-off and the performance avoid orientation which demonstrates similar issues to the previous analysis. However, these variables were assessed at the goal level, and expected to vary somewhat at this level. It does mean that the results pertaining to the goal orientations should be interpreted with caution. One of the items pertaining to self-perceptions of success also had a low factor loading, but the composite reliability and AVE for the variable overall were above the cut-off. All other measurement criteria were met (see Table A8.3.i in Appendix 8.3 on p. 42 of the appendices).

Moving to examine validity, the Fornell-Larker criterion was met for all LVs, as the square root of the AVE is higher than any of the correlations between LVs (see Table A8.3.ii on p. 42 of appendices), which provides evidence for convergent and discriminant validity. Looking at the cross-loadings as a second check on discriminant validity (Table A8.3.iii on p. 43 of appendices), all of the items load more highly on their own LV than on any other Latent Variable, except for the Performance Avoid goal orientation, for which one item has quite a small loading on its own LV. Given the problematic item in the Performance avoid LV, the analysis was rerun without this item. However, the results of this altered analysis demonstrated negligible differences, and so the item was left in. Hence, while there were some issues with the goal orientation measurement, overall the measurement model was reasonably valid.

8.3.2. Estimation of the inner model

The $R^2$ estimations suggest that in total, 27% of the variance in Planning was explained by the goal orientation of the participants. With regard to the success variables, planning uniquely explained 7.5% of the variance in self-perceptions of success and 8% of the variance in the objective indicators of success, both of which constitute small-medium effects. Looking at the model that specified both the direct and indirect effects, goal orientations and planning combined explained 21.2% of the variance in self-perceptions of success and 17.2% of the variance in objective success, which are medium-large effects. To calculate the predictive relevance of each of the LVs, the blindfolding procedure was performed, with the omission distance set to 7. In the direct effects only model, all but one of the $Q^2$ results, calculated using both the construct cross validated commonality and the construct cross validated redundancy were above 0, indicating that the model had predictive relevance. However, the cross validated redundancy for objective success was below zero (the cross validated commonality was above zero) in the direct effects model. However, both of the $Q^2$ indices for this variable were above zero in the model specifying both direct and indirect effects, suggesting that this model had more predictive relevance for the objective success variable (see Table A8.3.iv on p. 43 of appendices).
Figures 8.4a and b demonstrate the significant and non-significant path coefficients, $\beta$, and the $R^2$ estimations for the latent variables for both versions of the model (see also Tables A8.3.v and A8.3.vi on p. 43-44 of appendices). The significant effect sizes ($f^2$) for each independent LV on each dependent LV are in the small-medium range. With regard to the direct effects of goal orientations on the success measures, mastery approach, had a significant negative impact on self-perceptions of success and objective success, while performance avoid had a negative impact on self-perceptions of success. However, the impact of mastery approach was in the opposite direction to that which was predicted (negative instead of positive). These findings are in line with the findings of the model specifying the direct effects of goal orientations on success (section 8.2) for mastery orientation. However, some of the confidence intervals contained zero, which would suggest that these results be interpreted cautiously.
The results also indicate that planning had a significant positive effect on both objective success and self-perceptions of success, providing support for hypothesis C2. Mastery approach and performance approach goal orientations have a significant positive effect on planning, while performance avoid had a non-significant negative impact. This analysis was also run with external success as the dependent variable and the reduced sample size of 48 (see Appendix 8.4). In line with the findings presented above, both mastery approach and performance approach had a significant positive impact on planning. However, in this analysis the negative relationship between performance avoid and planning was significant. Hence, hypothesis C3 is partially supported. However, planning failed to have a statistically significant impact on external success.

8.3.3. Estimation of the indirect effects.

To investigate the indirect effects of mastery approach and performance approach goal orientations on success via planning (hypothesis C4), the recommendations of Preacher and Hayes (2004) were followed. These authors make a distinction between an indirect effect and a mediated effect. A mediated effect is in essence, a special case of an indirect effect where there is only one intervening variable, and where it is implied that the total effect (X → Y) was present initially. This assumption is not made in the case of an indirect effect, where it is possible to find that an indirect effect is significant even when there is no evidence for a significant total effect (Preacher & Hayes, 2004). Preacher and Hayes (2004) recommend bootstrapping as a non-parametric alternative to the Sobel test, and recommend both over the method recommended by Baron and Kenny (1986), suggesting that a more powerful way to test mediation may be to require:

i. That there exists an effect of be mediated (i.e. c ≠ 0) and

ii. That the indirect effect be statistically significant in the direction predicted by the mediation hypothesis.

Preacher and Hayes (2004) note that the Sobel test only works well with large sample sizes (this being one of the assumptions of the test), and they recommend the use of bootstrapping to estimate indirect effects in smaller samples. Bootstrapping is a non-parametric approach to effect size estimation and hypothesis testing that makes no assumptions about the shape of the distribution of the variables or the sampling distribution of the statistics (Preacher & Hayes, 2004). Bootstrapping does not require multivariate normality, and can be used in small to medium sample sizes, in contrast to the Sobel test (Preacher & Hayes, 2008).

The bootstrap estimations and the associated results of the indirect effects are outlined in Table A8.3.vii (p. 44 of appendices). These estimations are based on the model which includes both the direct and indirect paths from goal orientations to success, in order to control
for the direct effects. The results indicate that mastery approach and performance approach had a significant indirect effect via planning on objective success, although the lower bound of the BC CI$_{95}$ for mastery approach was zero, so this result should be interpreted with caution. None of the other indirect paths reached significance. In the model investigating external success (see Appendix 8.4), no statistically significant indirect effects were found. Hence, there was limited support for Hypothesis C4.

### 8.4. Investigating the relationship between goal orientations, goal-setting, taking action and success.

The third model to be investigated in relation to the cognitive components of the self-regulatory process is similar to the second, but with goal-setting included instead of planning and with the addition of actions taken towards one’s goals (see Figure 8.5 by way of reminder), and pertains to hypotheses C5 through C9.

![Figure 8.5 Hypothesised relationships between goal orientation, goal-setting, actions and success.](image)

Prior to testing the fully mediated model, a number of the direct paths were calculated in separate analyses. In the first instance the direct influence of goal orientations on actions...
towards one’s goal was investigated, and secondly, the direct influence of goal setting (goal difficulty and goal specificity) on success was investigated. The results of these analyses can be found in Appendices 8.5 and 8.6 respectively. Performance approach was the only goal orientation to have a significant direct impact on actions (a positive relationship in the small-medium range). However, although non-significant, mastery approach and performance avoidance both had small negative impacts on actions. Goal-setting was not found to have a significant direct impact on either subjective perceptions of success or objective success. However, the effect size estimations suggested that goal difficulty had a small effect on objective success, and goal specificity had a small effect on self-perceptions of success. The analysis outlined below pertains to the full model.

8.4.1. Estimation of the outer model

As in the previous analysis, the measurement model was assessed in the first instance. The calculations outlined in this section are based on the model which specified only the direct relationships between each phase of the model (i.e. goal orientations to goal setting, goal-setting to actions, and actions to success). As in the previous analysis, a number of the factor loadings in the goal orientation variables were somewhat low, as was one of the items in the goal difficulty variable but the AVE and composite reliability were above the criteria. All other measurement criteria were met (see Table A8.7.i on p. 56 of appendices). Moving to examine validity, the Fornell-Larker criterion was met, with the square root of the AVE being higher than the correlations between the variables (see Table A8.7.ii on p. 56 of appendices), which provides evidence for convergent and discriminant validity. Finally, looking at the cross-loadings as a second check on discriminant validity (Table A8.7.iii on p. 57 of appendices), none of the individual indicators loaded more highly on another LV than on its own. Based on these results, the measurement model overall was deemed to be valid and reliable.

8.4.2. Estimation of the inner model

Having investigated the measurement model, the inner or structural model was interpreted. The $R^2$ estimations suggest that in total, 11.1% of goal difficulty, and 11.9% of goal specificity were explained by the goal orientations of the participants. In turn, 48.1% of the actions participants had taken towards their goals were explained by the levels of goal difficulty and goal specificity. Finally, the actions taken towards goals explained 10.8% of the variance in objective success, 6.9% of the variance in external success, and 6.5% of the variance in self-perceptions of success. To calculate the predictive relevance of each of the LVs, the blindfolding procedure was performed, with the omission distance set to 7. All of the $Q^2$ results, calculated using both the construct cross validated commonality, and the construct cross validated redundancy were above 0, indicating that the model had predictive relevance, except
for the cross validated redundancy of the self-perceptions variable. Although the cross validated commonality was above zero, this may suggest that this is a potential issue with the predictive relevance of the model in predicting this variable (see Table A 8.7.iv on p. 57 of appendices).

- **Figure 8.6.a** Results of Partial Least Squares analysis for the model investigating the direct relationships between goal orientations, goal-setting, actions, objective success and self-perceptions of success. (**p < .001; *p < .01; * p < .05; dashed lines indicate small, but non-significant paths).  

- **Figure 8.6.b** Results of Partial Least Squares analysis for the model investigating the direct and indirect relationships between goal orientations, goal-setting, actions, objective success and self-perceptions of success. (**p < .001; *p < .01; * p < .05; dashed lines indicate small, but non-significant paths).  

Figures 8.6a and b demonstrate the significant and non-significant path coefficients, β, and the $R^2$ estimations for the latent variables in the model (see Tables A8.7.v and A8.7.vi on p. 58 of appendices). The results indicate that all of the paths were significant except one from performance approach to goal difficulty, and one from performance avoid to goal specificity. Goal specificity has a large effect on taking actions towards one’s goals, while goal difficulty has a small-medium effect on the same variable. Actions taken had small effect on self-perceptions of success, a small-medium effect on objective success, and (in a separate analysis—see Appendix 8.8) a large effect on external success. All other significant paths were small in their effect. Hence, hypothesis C6 is supported (actions towards one’s goals predicted all three success measures), and hypothesis C7 is largely supported (goal orientations predict goal setting).
8.4.3. Estimation of the indirect effects

To investigate the indirect effects in the model, the recommendations of Preacher and Hayes (2008) were followed. The model tested in this part of the results represents a case of multiple mediation. Preacher and Hayes (2008) suggest that investigating multiple mediation involves two parts:

i. Investigating the total indirect effect, or deciding whether the set of mediators transmits the effect of X to Y.

ii. Testing hypotheses regarding individual mediators in the context of a multiple mediator model (i.e. investigating the specific indirect effect associated with each putative mediator).

Preacher and Hayes (2008) describe four approaches to assessing multiple mediation; (i) the causal steps approach, (ii) the product-of-coefficients approach (upon which the Sobel test is based), (iii) the distribution of the product strategy, and (iv) bootstrapping, but recommend the use of bootstrapping with bias corrected (BC) confidence intervals to assess multiple mediation. In the present situation, 5000 bootstrap samples were estimated, which were then used to create the bootstrapped ab term, and the associated standard deviation. The bootstrapped ab terms were then summed to find the total indirect effects, and the standard deviation of this was also calculated.

Preacher and Hayes (2008; p. 883) provide guidelines on the appropriate way in which the bias corrected (BC) Confidence Interval should be calculated:

“The bootstrap confidence interval (CI) for the population specific indirect effect through $M_i$ is derived by sorting the $k$ values of $ab_i^*$ from low to high. Values defining the lower and upper $100(1 - \alpha )\%$ CI for the population indirect effect, where $\alpha$ is the desired nominal Type I error rate. More specifically, the lower and upper bounds of a $100(1 - \alpha )\%$ CI are defined, respectively, as the $(.5\alpha)\text{th}$ and $1 + (1 - .5\alpha)\text{th}$ values of $ab_i^*$ in this sorted distribution. For instance, $\alpha = .05$ generates a 95% CI. With $k = 1,000$, the lower and upper bounds of the interval would be the $25\text{th}$ and $976\text{th}$ values of $ab_i^*$ in the sorted distribution of $ab_i^*$. This procedure yields a percentile bootstrap CI. This same approach would be used to calculate a percentile bootstrap CI for the total indirect effect, replacing $ab_i^*$ in the discussion above with $\sum(ab_i^*)$.

Unlike regular CIs, percentile bootstrap CIs can be asymmetrical because they are based on an empirical estimation of the sampling distribution of the indirect effect, rather than on an assumption that the sampling distribution is normal. The sampling distribution of $ab_i^*$ is skewed relative to a normal distribution (unless $a = b = 0$), and hence the confidence limits should not be equidistant from the point estimate. As Efron and Tibshirani (1993) suggest, the forced symmetry of ordinary CIs results in estimation inaccuracies and problems with Type I errors and power when used in hypothesis testing. Percentile bootstrap CIs can be improved by an adjustment to the percentile values of the sorted distribution of bootstrap estimates used for determining the bounds of the interval.”

So, in the present case, with 5000 bootstrap samples and a 95% CI, the calculation is as follows:

Lower Limit: $(.5\alpha)\text{th}$ value of $ab_i^*= (.5\times.05)(5000) = 125$

Upper Limit: $1 + (1 - .5\alpha)\text{th}$ values of $ab_i^*= 1 + (1 - .5\times.05)(5000) = 4876$
To find the confidence intervals of each of the indirect paths, the bootstrapped samples were sorted from lowest to highest, and the estimates for the 125th and the 4876th sample were used as the lower and upper bounds of the 95% Confidence Interval.

In the calculation of the indirect effects, the fully specified model (which specified all the potential direct and indirect paths) was used, in order to control for the direct effects (the c’ path). In the first instance, the model was broken into sections, and the indirect paths via one level of mediators (rather than the sequential mediators) were assessed (see Table A8.7.vii and A8.7.viii on p. 59 of appendices). The total indirect effects from all three goal orientations via the two goal-setting variables to actions was significant. However, only the total indirect effect for performance approach to actions had a BC confidence interval that did not include zero, so the other two results should be interpreted with caution. Results of the separate indirect paths indicated that the following indirect path was significant:

- Performance Approach → Goal specificity → Actions

Goal specificity mediated the relationship between performance approach goals and actions towards one’s goals.

With regard to the indirect effects of goal difficulty and goal specificity on success, these analyses represent a case of simple mediation (i.e. actions taken towards the goal is the single mediator), and so only the separate indirect paths are calculated. The significant indirect paths were:

- Goal difficulty → Actions → Objective success
- Goal specificity → Actions → Objective Success

Looking at the indirect relationship between goal-setting and success then, actions towards one’s goals mediated the relationship between goal setting and objective success. In the model examining external success (see Appendix 8.8), goal-specificity was found to have a significant indirect effect on external success, via actions. Hence, there is partial support for hypothesis C9.

Secondly, the indirect relationship between goal orientations and success, via both goal-setting and actions towards one’s goals was assessed (see Table A8.7.ix and A8.7.x). None of these sequential indirect paths reached significance. However, there was a significant total indirect path from performance avoid to objective success (via goal-setting and actions), but the BC CI95 included zero. In contrast, the total indirect effects from performance approach to objective success was not significant, but the BC CI95 did not include zero, suggesting that there may be a very small indirect effect in this case. Overall however, there is little support for hypothesis C8.
CHAPTER 9: Results: Motivational Components

A theory...is a set of “intervening variables”. These to-be-inserted intervening variables are “constructs” which we, the theorists, evolve as a useful way of breaking down into more manageable form the original complete...function.

(Tolmon, 1938; p. 9; cited in Mathieu, DeShon & Bergh, 2008; p. 211)

9.1. Review of the main research questions pertaining to motivational components.

The initial aim of the research questions pertaining to the motivational components of the model was to investigate the manifestation of motivation in the different action phases. Secondly, this section of the research aimed to quantitatively investigate the impact that motivational resources and volitional resources have on the cognitive elements of the model, as well as on entrepreneurial success.

9.2. The relationship between motivational and volitional resources, and success

Initially, the relationships between the motivational and volitional components of the model were investigated, as well as their relationship with success. As a recap, the model below presents the hypothesised relationships investigated in this section, which pertain to hypotheses M1 through M6 outlined in chapter 4.

![Figure 9.1. Hypothesised relationships between motivational resources, volitional resources, and success.](image)

As in chapter 8, these relationships were investigated using Partial Least Squares (PLS) SEM and the software package SmartPLS (Ringle, Wende & Will, 2005). Firstly, the sample size was assessed to establish that it was sufficient to distinguish significant relationships. As the model is specified in Figure 9.1, the largest number of arrows pointing to any given endogenous variable is two, which means that the present sample size is sufficient to detect large and medium effects (see Table 9.1). However, in the fully specified model, where both the direct and indirect effects are included, the highest number of arrows pointing to any one variable (success in this case) has five independent variables hypothesized to predict it, which, with the present sample, will only detect large effects.
A number of models investigating the direct relationships between the variables were assessed in the first instance. This discounted any potential suppressor effects in the direct relationships that may be due to the inclusion of the indirect paths. The models investigated included:

- The direct effects of entrepreneurial orientations and personal initiative on success.
- The direct effects of entrepreneurial orientations and personal initiative on work engagement.
- The direct effects of entrepreneurial and creative self-efficacy on success.

The results of these direct effects models are presented in Appendices 9.1, 9.2, 9.3, 9.5 and 9.6 respectively. With regard to the direct effects of entrepreneurial orientations and personal initiative on success (see Appendix 9.1.), entrepreneurial orientations and personal initiative combined explained 25.7% of the variance in self-perceptions of success and 6.1% of the variance in objective success, which are indicative of large and small-medium effects respectively. However, the only significant path found was from personal initiative to self-perceptions of success (a medium effect), although non-significant small effects were found from entrepreneurial orientations to both objective success and self-perceptions of success. Both entrepreneurial orientations and personal initiative significantly predicted work engagement, having a small and medium-large effect individually, and collectively explaining 29% of the variance in work engagement (a large effect) (see Appendix 9.2). Combined entrepreneurial orientations and personal initiative explained 15.1% of the variance in external success (a medium effect). Both variables had a small but not significant direct influence on external success (see Appendix 9.5).

The direct effects of entrepreneurial and creative self-efficacy on objective success and self-perceptions of success were also investigated (see Appendix 9.3). Collectively, these two forms of self-efficacy explained 23.4% of the variance in self-perceptions of success (approaching a large effect) and 5.1% of the variance in objective success (a small effect). Entrepreneurial self-efficacy had a significant and large direct effect on self-perceptions of success, but none of the other individual paths were significant. However, the effect size estimations suggested that creative self-efficacy had a small effect on objective success. Combined these two variables explained 11.7% of the variance in external success. Neither of the individual direct paths reached significant, but the effect size estimations suggested that entrepreneurial self-efficacy had a small-medium effect on external success, while creative self-efficacy had a small effect (see Appendix 9.6).
As in chapter 8, the effects of these variables on external success were investigated in a separate set of analyses, due to the reduced sample size for this variable. The results of these analyses are presented in Appendix 9.7. The findings of these models will be referred to in the relevant sections below.

9.2.1. Estimation of the outer model

Two versions of the model were specified; the first as outlined in Figure 9.1 above and the second, the fully specified model, with all the potential direct paths included also. Given that both measurement models were very similar, the findings are presented only once. The assessment of the measurement model outlined in this section refers to the model as specified in Figure 9.1. All of the reliabilities were above 0.7 indicating that the measures are reliable, and all of the AVEs, except two are above .50 indicating more than 50% of the variance in the indicators are accounted for in each LV. The AVE for personal initiative was slightly below the recommended criterion of 0.5 at 0.460, and the AVE for entrepreneurial orientations was somewhat lower at 0.310. Looking at the factor loadings, all of the loadings for entrepreneurial self-efficacy, creative self-efficacy and work engagement are above the recommended level of 0.7. One of the items for the self-perceptions of success is above this level, with a second quite close to this at .680 and the third item loading at .563. For personal initiative, two of the seven items are above 0.7, but four others are quite close loading between .6 and .7. The seventh item loaded at .590. Finally, for entrepreneurial orientations, none of the items loaded above 0.7, but loaded quite close to this at .687 and .671. Three items loaded between 0.5 and 0.6, and the final item had quite a poor loading at .344 (see Table A9.4i in Appendix 9.4, on p. 80 of appendices).

In order to provide a second check on the measurement model for entrepreneurial orientations and personal initiative, a Confirmatory Factor Analysis (CFA) was run in LISREL (see Figure A9.4.i on p. 81 of appendices). Results of the CFA indicated that the indicator paths for both latent variables were significant and the model was a reasonable fit to the data ($\chi^2 = 76.21; \text{RMSEA} = 0.051$), with the chi-square non-significant ($>.05$) and the RMSEA at the 0.05 mark. Hence, it was deemed appropriate to continue with these latent variables in the analysis of the structural model.

To evaluate discriminant validity, the square root of the AVEs were compared with the correlations between the LVs (displayed in Table A9.4.ii on p. 80 of appendices). The AVEs are all larger than the square of the correlations between LVs, indicating that more variance is shared between the LV and its block of indicators than with another variable- i.e. discriminant validity is evident. However, there were some correlations between variables that were quite large. For example, both types of self-efficacy are moderately correlated, as is entrepreneurial orientations with both personal initiative and entrepreneurial self-efficacy. However, given that
each of these variables represents a form of motivation in different stages of the action process, this is not surprising. In order to provide a second evaluation of the discriminant validity, the cross-loadings were examined (see Table A9.4.iii on p. 82 of appendices). None of the indicators for any latent variable loaded more highly on another latent variable than on its own. However, one of the indicators for entrepreneurial self-efficacy loaded reasonably highly on a number of other latent variables, although it still loaded more highly on its own LV. Hence, overall, the measurement model is adequate.

9.2.2. Estimation of the inner model

In the model specifying only the direct paths between each sequential step, 44.6% of the variance in entrepreneurial self-efficacy and 30.3% of the variance in creative self-efficacy were explained by entrepreneurial orientations and personal initiative. In turn, these two forms of self-efficacy explained 31.7% of the variance in work engagement and work engagement explained 7.1% of the variance in self-perceptions of success and none of the variance in objective success. Unsurprisingly, this version of the model had issues with the predictive relevance for both of the success indicators, but did demonstrate predictive relevance for all other variables (see Table A9.4.iv on p. 82 of appendices).

Looking at the fully specified model, entrepreneurial orientations and personal initiative explained slightly less of the variance in entrepreneurial self-efficacy and creative self-efficacy (42.4% and 29.4% respectively) in this model, but both effects were still large in size. Slightly more of the variance in work engagement was explained (35.1%) when there was a direct path from entrepreneurial orientations and personal initiative were included as well as the two forms of self-efficacy as predictors. Finally, this version of the model did demonstrate predictive relevance for both of the success variables, having a small effect on objective success (2.5%) and a large effect on self-perceptions of success (27.5%). This suggests that some of the more distal motivational constructs are more important than work engagement in predicting self-perceptions of success, and to a lesser extent, objective success (see Table A9.4.iv).

The results of the same model examining external success can be found in Appendix 9.7. In total, work engagement explained 2% of the variance in external success, while in the fully specified model, the motivational and volitional resources combined explained 5.8% of the variance in external success. None of the direct paths indicated that any of the variables had a significant effect on external success.

Looking at the direct paths (see Table A9.4.v in Appendix 9.4 and Figure 9.3.a below), both entrepreneurial orientations and personal initiative had a significant effect on entrepreneurial self-efficacy and creative self-efficacy, and entrepreneurial self-efficacy had a significant effect on work engagement. However, the effects of creative self-efficacy on work
engagement, and work engagement on self-perceptions of success and objective success were not significant. In the fully specified model (see Table A9.4.vi and Figure 9.3.b), the significant paths remained so. In addition, personal initiative and entrepreneurial self-efficacy had significant direct effects on self-perceptions of success. The original PLS output for both versions of the model can be found in Appendix 9.4. These significant direct paths are in line with the direct effects models that are outlined in Appendices 9.1 through 9.3. However, when only looking at the direct effects (i.e. when the indirect paths are not included), entrepreneurial orientations had a significant effect on work engagement (see Appendix 9.2).

Hence, hypothesis M1 is confirmed as both entrepreneurial orientations and personal initiative predict domain specific self-efficacy, and also have a direct effect on work engagement (see Appendix 9.2). Hypothesis M2 is partially supported as entrepreneurial self-efficacy predicted work engagement, but creative self-efficacy did not. Hypothesis M4 is rejected as work engagement did not have a significant effect on any of the three success variables.

![Figure 9.3.a](image1.png)

**Figure 9.3.a.** Results of Partial Least Squares analysis for the model investigating the relationships between entrepreneurial orientations, personal initiative, entrepreneurial self-efficacy, creative self-efficacy, work engagement, objective success and self-perceptions of success. (**p < .001; *p < .01; p < .05; dashed lined indicate small, but non-significant paths).  

![Figure 9.3.b](image2.png)

**Figure 9.3.b.** Results of Partial Least Squares analysis for the model investigating the relationships between entrepreneurial orientations, personal initiative, entrepreneurial self-efficacy, creative self-efficacy, work engagement, objective success and self-perceptions of success. (**p < .001; *p < .01; p < .05; dashed lined indicate small, but non-significant paths).
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9.2.3. Estimation of the indirect effects.
It is also necessary to test the significance of the indirect paths, and in line with the procedure adopted in chapter 8, the recommendations of Preacher and Hayes (2004, 2008) were followed. The bootstrap estimations and significance of the indirect effects can be found in Tables A9.4vii-ix (p. 84 of appendices). These were based on the fully specified model in order to control for any direct effects that the variables may be having (i.e. to control for the c’ paths).

The following indirect paths were significant:

- Entrepreneurial orientations → entrepreneurial self-efficacy → work engagement
- Personal initiative → entrepreneurial self-efficacy → work engagement
- Personal initiative → entrepreneurial self-efficacy → self-perceptions of success

None of the other indirect paths reached statistical significance. This suggests that both entrepreneurial orientations and personal initiative have indirect effects on work engagement via entrepreneurial self-efficacy, and personal initiative has a further indirect effect on self-perceptions of success also via entrepreneurial self-efficacy.

Hence, hypothesis M3(a) is supported as both entrepreneurial orientations and personal initiative had an indirect effect on work engagement, via entrepreneurial self-efficacy. However, hypothesis M3(b) is rejected as there was no evidence for a significant indirect effect via creative self-efficacy. Hypothesis M5(a) is partially supported as entrepreneurial self-efficacy had a significant effect on self-perceptions of success, had a non-significant effect on external success, which was in the small-medium range, and creative self-efficacy had a small, negative, but non-significant effect on objective success (see Appendix 9.6). Hypothesis M5(b) is rejected as neither type of self-efficacy had an indirect effect on success via work engagement.

Hypothesis M6 which expected entrepreneurial orientations and personal initiative to have both direct and indirect effects on success had limited support. There was no evidence for statistically significant indirect effects for entrepreneurial orientations. However, personal initiative had an indirect effect on self-perceptions of success via entrepreneurial self-efficacy. However, personal initiative had a significant direct effect on self-perceptions of success, and entrepreneurial orientations had small, but non-significant effects on both objective success and self-perceptions of success (see Appendix 9.1). Similarly, both entrepreneurial orientations and personal initiative had small, but non-significant direct effects on external success (see Appendix 9.5).

9.3. The relationship between motivational and volitional resources, cognition, and success

While the focus of the research in section 9.2 was to investigate the inter-relationships between the motivational and volitional components of self-regulation, this section moves to integrate both cognitive and motivational components of self-regulation, and examine how this
integration is related to entrepreneurial success. Two versions of this integrated model are investigated, the first examines goal orientations as a form of motivational cognition, and volitional cognition in the form of planning. The second model substitutes goal-setting for planning in the pre-actional volitional phase, and also includes the actions one has taken towards one’s goals (which resides in the volition actional phase).

9.3.1. The relationship between motivational and volitional resources, goal orientations, planning and success.

Figure 9.4 summarises the model to be investigated in this section of the analyses, and pertains to hypotheses M7 through M11 as specified in chapter 4. Considering firstly, the power of the sample to assess this model, the highest number of predictor variables is four (for planning and work engagement) in Figure 9.4. However, if the model is fully specified, i.e. with all direct and indirect paths included, this number would increase to eight (for the success variables), and six for the variables of planning and work engagement. Table 9.2 demonstrates that for first model, with a maximum of four independent variables for a given dependent variable, the sample size is sufficient to determine large effects, and just shy of the required sample for detecting medium effects. However, with eight independent variables, the sample size will only detect large effects.

Table 9.2 Sample size requirements for small, medium and large effect sizes (Green, 1991).

<table>
<thead>
<tr>
<th></th>
<th>Effect size for 4 independent variables</th>
<th>Effect size for 8 independent variables</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
<td>Medium</td>
</tr>
<tr>
<td>Green (1991) rule of</td>
<td>610</td>
<td>81</td>
</tr>
<tr>
<td>thumb analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohen (1988) power</td>
<td>599</td>
<td>84</td>
</tr>
</tbody>
</table>

9.3.1.1. Estimation of the Measurement model

The results of the measurement model which are shown in this section pertain to the model as specified in Figure 9.4. The fully specified model was also calculated, but as the results of the measurement model for both versions are very similar, they are presented only once.
The average variance extracted for all variables except entrepreneurial orientations and personal initiative are above the recommended level of 0.5. However, the composite reliability for these two variables, and all the others, is above the recommended level of 0.6. As was found in the previous analysis in section 9.2, the low AVE for entrepreneurial orientations and personal initiative may be due to a number of indicator loadings which are suboptimal. With regard to entrepreneurial orientations, all of the indicator loadings are below the recommended level of 0.7, although two are very close to this. Of the seven indicators for personal initiative two are above 0.7, four are between 0.6 and 0.7 and one is slightly below 0.6 at .593. The indicators for entrepreneurial self-efficacy, work engagement, planning and self-perceptions of success are all above the recommended loading of 0.7. With regard to creative self-efficacy, two of the three indicators load very highly, while the third is slightly below the cut-off at 0.651. Similarly, for mastery approach, one of the indicators loads very highly, while the second is slightly low at 0.670, and for performance approach, one indicator loads highly, but the second is low at .476 (see Table A9.8.i in Appendix 9.8 on p. 100 of the appendices).

The Fornell-Larker criterion is met as none of the latent variables are correlated more highly with another latent variable than their square root of the AVE (see Table A9.8.ii). This provides evidence of discriminant validity. The correlations between both types of self-efficacy, entrepreneurial orientations and personal initiative are quite high however, but this is not unexpected as these variables are all hypothesized to be forms of motivation at varying levels of proximity. Looking at the cross-loadings of the indicators (see Table A9.8.iii) provides a second check on the discriminant validity. All of the indicators load more highly on their own latent variable than on any others, except for two of the entrepreneurial orientations indicators (innovative orientations and learning orientations), which load slightly higher on planning than on their own latent variable. However, this may be due to the fact that the loading on their own latent variable is quite low, rather than any real overlap with the planning construct.

Hence, although there were some minor issues with the measurement model, it was deemed appropriate to continue with the interpretation of the structural model.

9.3.1.2. Estimation of the structural model

In the model which included only the direct effects between each sequential phase, entrepreneurial orientations and personal initiative combined explained 45.1% of the variance in entrepreneurial self-efficacy, and 30% of the variance in creative self-efficacy (both large effects), but explained only a small amount of the variance in the mastery approach goal orientations (4.3%) and the performance approach goal orientations (8.3%) (see Table A9.8.iv on p. 102 of the appendices).
Looking at the effects of the four variables in the proximal motivational phase, combined domain self-efficacy and goal orientations explained 27% of the variance in planning and 33.7% of the variance in work engagement (both large effects). Finally the volitional variables (planning and work engagement) had small effects on both success variables, explaining 9.9% of the variance in self-perceptions of success and 5.4% of the variables in objective success. The $Q^2$ estimations were all above zero, except for the cross validated redundancy for objective success, indicating that predictive relevance was observed for all variables except this one. This is not surprising given the small percentage of the variance that was explained in objective success.

The results of the fully specified model resulted in largely similar findings, with the effect sizes of the same magnitude for any of motivational and volitional variables. However, the inclusion of the direct paths from all variables to the success measures resulted in a much larger percentage of the variance in these variables to be explained. Overall, 37.6% of the variance in self-perceptions of success was explained (a large effect), while 21.7% of the variance in objective success was explained (a medium-large effect). The $Q^2$ estimations were all above zero, and there was no problem with the predictive relevance for objective success in this version of the model.

To explain these effects in more detail, the individual paths were examined. Figure 9.5.a (see also Table A9.8.v) outlines the results of the path coefficients for the model specifying the direct paths between each sequential phase of the model only. The results indicate the entrepreneurial orientations and personal initiative had significant effects on both types of self-efficacy. In addition entrepreneurial orientations had a significant effect on performance approach goals. The effect size estimations further suggested that entrepreneurial orientations had a small negative effect on mastery approach goals, while personal initiative had a small positive effect, although both were non-significant.

Figure 9.5.b (see also Table A9.8.vi) outlines the results for the fully specified model. In this model, all the significant paths above remained so. In addition, entrepreneurial orientations and creative self-efficacy had a significant effect on planning, personal initiative and entrepreneurial self-efficacy had a significant positive effect of self-perceptions of success, and mastery approach goals had a significant negative effect on both self-perceptions of success and objective success. A number of non-significant, but small effects were also observed; both entrepreneurial orientations and personal initiative had small positive effects on work engagement, performance approach goals had a small negative effect on work engagement, and creative self-efficacy had a small negative effect on self-perceptions of success. For ease of interpretation, only the significant paths and the non-significant but small effects paths are included in Figure 9.5.b.
Figure 9.5.a. Results of Partial Least Squares analysis for the model investigating the relationships between motivational resources, volitional resources, goal orientations, planning, objective success and self-perceptions of success. (** p < .01; * p < .05; dashed lines indicate small, but non-significant paths).
Figure 9.5.b. Results of Partial Least Squares analysis for the fully specified model investigating the relationships between motivational resources, volitional resources, goal orientations, planning, objective success and self-perceptions of success. (** p < .001; * * p < .01; * p < .05) (dashed lines indicate non-significant small effects).
9.3.1.3. Estimation of the indirect effects

The final stage of the assessment of the structural model necessitates the investigation of the significance of the indirect paths. The bootstrap estimations and significance of the indirect effects were based on the fully specified model in order to control for any direct effects that the variables may be having (i.e. to control for the c’ paths; see Table A9.8.vii). The following indirect paths were significant (see Tables A9.8.viii and A9.8.ix):

- Personal initiative → entrepreneurial self-efficacy → work engagement
- Mastery approach → planning → objective success
- Mastery approach → planning → self-perceptions of success
- Performance approach → planning → objective success
- Performance approach → planning → self-perceptions of success

The following paths approached significance, with the lower bound of the BC CI$_{95}$ at zero (see Table A9.8.x):

- Entrepreneurial orientations → performance approach → planning → objective success
- Entrepreneurial orientations → performance approach → planning → self-perceptions of success

Finally, a number of alternative indirect paths were investigated. These are termed alternative as they omit one step of the sequential model. The following paths reached significance (see Table A9.8.xi):

- Entrepreneurial orientations → planning → objective success (BC CI$_{95}$ included zero)
- Entrepreneurial orientations → planning → self-perceptions of success (lower bound of BC CI$_{95}$ was at zero)
- Personal initiative → entrepreneurial self-efficacy → self-perceptions of success

None of the other indirect paths reached statistical significance. This suggests that entrepreneurial orientations have an indirect effect on both objective success and self-perceptions of success via the following mediators: (a) performance approach and planning, and (b) planning alone. Personal initiative has an indirect effect on both work engagement and self-perceptions of success via entrepreneurial self-efficacy. Finally, both mastery approach and performance approach goals have indirect effects on objective success and self-perceptions of success via planning.

Finally, the total indirect effects were calculated across each sequential phase of the model (see Table A9.8.xii). The following total indirect effects were significant:

- Personal initiative → work engagement
• Entrepreneurial orientations → self-perceptions of success
• Mastery approach → objective success (lower bound of BC CI_{95} was below zero)
• Mastery approach → self-perceptions of success (lower bound of BC CI_{95} was at zero)
• Performance approach → objective success (lower bound of BC CI_{95} was at zero)
• Performance approach → self-perceptions of success.

These results suggest personal initiative had a significant indirect effect on work engagement via both types of self-efficacy and both goal orientations. Furthermore, both mastery approach and performance approach goal orientations had significant indirect effects on objective success and self-perceptions of success via planning and work engagement.

Finally, it is necessary to consider whether these findings support the hypotheses which were specified in relation to this model (hypotheses M7 through M11 in Chapter 4). Hypothesis M7 stated that entrepreneurial orientations and personal initiative would positively predict (a) mastery approach goal orientations and (b) performance approach goal orientations. There was limited support for this hypothesis. Entrepreneurial orientations significantly predicted performance approach goals, but not mastery approach goals, while personal initiative predicted neither goal orientations at a significant level. In the direct effects model, entrepreneurial orientations had a small but non-significant negative effect on mastery approach goals, while personal initiative had a small non-significant positive effect. However, in the fully specified model these non-significant small effects became negligible.

Hypothesis M8 stated that entrepreneurial orientations and personal initiative would have a direct and an indirect effect on planning via (a) mastery approach and (b) performance approach goal orientations. The results indicated that entrepreneurial orientations had a significant positive direct effect on planning (see also Appendix 9.10). However, none of the other direct or indirect paths reached significance. Hence, there was limited support for hypothesis M8.

Hypothesis M9 stated that entrepreneurial orientations and personal initiative would have an indirect effect on success via (a) mastery approach, (b) performance approach goal orientations, and (c) planning. The results indicated that entrepreneurial orientations had an indirect effect on both objective success and self-perceptions of success via the following mediators: (a) performance approach and planning, and (b) planning alone. Personal initiative did not have an indirect effect on success via these variables. Appendix A9.9 outlines the results of the analysis pertaining to external success. No significant indirect effects were found with regard to the relationship between entrepreneurial orientations, personal initiative and external success. Hence, there was limited support for hypothesis M9.
Hypothesis M10 stated that entrepreneurial and creative self-efficacy would have a direct effect on planning. This hypothesis was partially supported, with creative self-efficacy, but not entrepreneurial self-efficacy having a direct effect on planning. Finally, hypothesis M11 stated that mastery and performance approach goal orientations would have a direct effect on work engagement. No support was found for this hypothesis.

9.3.2. The relationship between motivational and volitional resources, goal orientations, goal-setting, actions and success.

Figure 9.6 summarises the model to be investigated in this section of the analyses, and pertains to hypotheses M12 through M15 as specified in chapter 4. In terms of the sample size requirements for the model as it is outlined in Figure 9.6, the requirements remain the same as the previous model in section 9.3.1, with a maximum of four predictors for any one variable (see Table 9.2). However, the fully specified model, where all direct and indirect paths are included, has a maximum of ten predictors for both of the success variables, and the sample size for this model is not sufficient. However, both versions of the model are calculated for comparative purposes. The direct effects of the entrepreneurial orientations and personal initiative on goal-setting and actions, and the direct effects of the two forms of domain-specific self-efficacy on actions are calculated in separate models, outlined in Appendices 9.11, 9.12 and 9.13.

Appendix 9.11 demonstrates that combined entrepreneurial orientations and personal initiative had a large effect on goal-setting, explaining 25.5% of the variance in both goal-difficulty and goal-setting. Entrepreneurial orientations had a significant medium-large effect on both goal-setting variables, but the paths from personal initiative did not reach significance. Appendix 9.12 looks at the direct effects of these same two variables on actions towards the goals. Combined entrepreneurial orientations and personal initiative explain 32.5% of the variance in actions taken towards the goal (a large effect). Entrepreneurial orientations has a medium-large positive effect on actions, while personal initiative has a small, but non-significant effect. Appendix 9.13 looked at the direct effects of entrepreneurial self-efficacy and creative self-efficacy on actions taken towards the goal. These domain specific self-efficacy variables explained 8.2% of the variance in actions, but neither of the direct paths reached significance.

9.3.2.1. Estimation of the Measurement model

The results of the measurement model which are shown in this section pertain to the model as specified in Figure 9.6. The fully specified model was also calculated, but as the results of the measurement model for both versions are very similar, they are presented only once. Similar to the previous analyses in this chapter, all of the AVEs were above the required
criteria of 0.5, except those pertaining to entrepreneurial orientations and personal initiative, which were .308 and .459 respectively. However, the composite reliability for these variables, and for all others in the analysis were above the required 0.6. Looking at the factor loadings for entrepreneurial orientations, none of the indicators loaded above 0.7, although two loaded between 0.6 and 0.7, two loaded between 0.5 and 0.6 and the final two indicators were lower. These poor factor loadings may explain the low AVE. For personal initiative, two of the seven indicators loaded above 0.7, but another two were just under this. The final three indicators ranged from .594 to .667. The factor loadings for the indicators pertaining to entrepreneurial self-efficacy, work engagement, goal specificity, actions and self-perceptions of success were all high. For creative self-efficacy two of the indicators were above 0.7, while the third was a little below this at .658. Similarly, for goal difficulty, three of the four indicators loaded highly, but the fourth loaded at .555. For both of the goal orientations, one of their respective indicators loaded above 0.7, but the second was below this (see Table A9.14.i in Appendix 9.14 on p. 130 of the appendices).

None of the correlations between two variables are higher than the square root of the AVE for each latent variable, which provides one form of support for discriminant validity in the model (see Table A9.14ii), and similarly, none of the indicators except two loaded more highly on another latent variable than on their own (see Table A9.14.iii). However, IO loaded on its own latent variable (entrepreneurial orientations) at .472, and loaded on goal-difficulty at .500. LO loaded on its own latent variable (entrepreneurial orientations) at .343, on goal-difficulty at .383 and goal-specificity at .408.

Hence, although there were issues with the measurement of entrepreneurial orientations and personal initiative, other than this, the measurement model met the required criteria.
9.3.2.2. Estimation of the structural model

In the model which included only the direct effects, entrepreneurial orientations and personal initiative combined explained 45.3% of the variance in entrepreneurial self-efficacy, and 29.9% of the variance in creative self-efficacy (both large effects), but explained only a small amount of the variance in the mastery approach goal orientations (4.3%) and the performance approach goal orientations (8.4%) (see Table A9.14.iv on p. 134 of the appendices). Looking at the effects of the four variables in the proximal motivational phase, combined entrepreneurial and creative self-efficacy, and mastery and performance approach goals explained 16.8% of the variance in goal-difficulty (a medium effect), 12.5% of the variance in goal-specificity (a medium effect), and 34.1% of the variance in work engagement (a large effect). The volitional variables (goal-difficulty, goal-setting and work engagement) combined had a large effect on actions towards the goal, explaining 48.2% of the variance. Finally, actions towards the goal explained 6.9% of the variance in self-perceptions of success (a small effect) and 10.9% of the variance in objective success (a medium effect). All of the $Q^2$ results were above zero indicating that the model had predictive relevance.

The results of the fully specified model resulted in largely similar findings (see Table A9.14.iv), with the effect sizes of the same magnitude for most of the motivational and volitional variables, although slightly less of the variance in mastery approach was explained, and the effect size increased from medium to large for both goal-setting variables (explaining 26.6% and 26.5% of the variance in goal-difficulty and goal-setting respectively). However, the inclusion of the direct paths from all variables to the success measures resulted in a much larger percentage of the variance in these variables to be explained. Overall, 23.9% of the variance in objective success was explained (a medium-large effect), while 34.4% of the variance in self-perceptions of success was explained (a large effect). All of the $Q^2$ results were above zero, except for the cross-validated redundancy for the mastery approach LV, which was at zero. However, given that only 2% of the variance in this LV was explained, this is not surprising.

Looking at the individual path coefficients for the model specifying the direct effects only (see Table A9.14.v in the appendices and Figure 9.7.a below), entrepreneurial orientations had significant positive effects on entrepreneurial self-efficacy (a small-medium effect), creative self-efficacy (a small effect), and performance approach goals (a small effect). It also had a small, but non-significant negative effect on mastery approach goals. Personal initiative had significant positive effects on entrepreneurial self-efficacy (a large effect) and creative self-efficacy (a medium effect), but did not significantly predict either of the goal orientations.

Mastery approach goals had a significant effect on both goal-difficulty and goal-specificity (both small in magnitude), but did not predict work engagement. Performance
approach goals had a small, significant effect on goal-specificity, and a small, but non-significant effect on goal-difficulty. It also had a small negative effect on work engagement, which was non-significant. Entrepreneurial self-efficacy had a medium-large positive effect on work engagement, but did not predict goal-setting. Creative self-efficacy had a small positive effect on goal-difficulty, which was significant.

Goal-specificity had a large positive effect on actions, while goal-difficulty had a small-medium positive effect. Work engagement did not significantly predict actions. Finally, actions towards the goal positively predicted both self-perceptions of success and objective success at a significant level.

The results for the fully-specified model resulted in similar findings as that for the previous model for the paths between each sequential phase of the model (see Table A9.14.vi in the appendices and Figure 9.7.b). However, the significant path from entrepreneurial orientations to entrepreneurial self-efficacy became non-significant, although a small effect was still evident. In addition, the small, but non-significant effect from entrepreneurial orientations to mastery approach became negligible. The significant effects from mastery approach to goal difficulty and goal-specificity became non-significant, but there was still a small effect evident. Finally, the significant effect from actions to self-perceptions of success became non-significant. However, given that the power of this model to detect significant effects was lower than the previous model, these changes are not unexpected.

A number of additional significant paths were observed in the fully specified model. Entrepreneurial orientations had a significant direct effect on goal-specificity and goal-difficulty, and a small, but non-significant effect on work engagement. Personal initiative had a significant direct effect on self-perceptions of success, and a small, but non-significant effect on work engagement. Entrepreneurial self-efficacy had a significant direct effect on self-perceptions of success and a small, but non-significant effect on actions, while creative self-efficacy had a significant negative effect on actions. Mastery approach had a significant negative effect on objective success, and a small, but non-significant negative effect on actions and self-perceptions of success. Figure 9.7.b outlines the significant paths, as well as any small effects that were non-significant. Other non-significant paths that were either negligible or very small are not shown for ease of interpretation.
Figure 9.7.a Results of Partial Least Squares analysis for the model investigating the relationships between motivational resources, volitional resources, goal orientations, goal-setting, actions, objective success and self-perceptions of success. (**p < .001; * p < .01; * p < .05; red/blue dashed lines indicate small but non-significant effects).
Results: Motivational Components

Figure 9.7.b. Results of Partial Least Squares analysis for the fully specified model investigating the relationships between motivational resources, volitional resources, goal orientations, goal-setting, actions, objective success and self-perceptions of success. (*** p < .001; ** p < .01; * p < .05) (dashed lines indicate non-significant small effects; all other non-significant effects are not shown).
9.3.2.3. Estimation of the indirect effects

The final stage in the assessment of the structural model necessitates the investigation of the significance of the indirect paths (see Tables A9.14.vii-xi). The following indirect paths reached significance:

- Personal initiative → entrepreneurial self-efficacy → work engagement
- Performance approach → goal specificity → actions (however, the BC CI_{95} contained zero)
- Entrepreneurial orientations → goal-difficulty → actions
- Entrepreneurial orientations → goal specificity → actions
- Personal initiative → entrepreneurial self-efficacy → self-perceptions of success (however, the BC CI_{95} contained zero)

None of the other indirect paths reached significance. These results indicate that personal initiative had an indirect effect on both work engagement and self-perceptions of success via entrepreneurial self-efficacy. Entrepreneurial orientations had an indirect effect on actions via both goal specificity and goal difficulty. Finally, performance approach goals also had an indirect effect on actions via goal-specificity.

Finally, the total indirect effects were calculated across each sequential phase of the model (see Table A9.14.xii). The following indirect effects were significant:

- Entrepreneurial orientations → actions
- Personal initiative → work engagement
- Performance approach → actions (however, the BC CI_{95} contains zero)

These results suggest the total indirect effect of entrepreneurial orientations on actions via the mediators of goal orientations, domain self-efficacy, goal-setting and work engagement was significant. Secondly, the total indirect effect of performance approach on actions, via goal-setting and work engagement was significant. Finally, the total indirect effects of personal initiative on work engagement via goal orientations, and domain self-efficacy was significant.

The results address a number of the specified hypotheses. Hypothesis M12 predicted that entrepreneurial orientations and personal initiative would have a direct and an indirect effect on goal-setting (goal difficulty and goal specificity) via mastery approach and performance approach goal orientations. The findings indicated that entrepreneurial orientations had a direct effect on both goal-difficulty and goal-specificity (see also Appendix 9.11), but the indirect effect via goal orientations did not reach significance. Personal initiative had neither a significant direct nor indirect effect. Hence, there was limited support for hypothesis M12.
Hypothesis M13 specified that entrepreneurial orientations and personal initiative would have a direct and an indirect effect on actions via (a) goal orientations and (b) goal-setting (goal difficulty and goal specificity). The direct effects were investigated in Appendix 9.12, and demonstrated that entrepreneurial orientations had a medium-large direct effect on actions, while personal initiative had a small, but non-significant effect. Entrepreneurial orientations also had a significant indirect effect on actions via both goal-specificity and goal-difficulty. Furthermore, the total indirect effects from entrepreneurial orientations to actions were significant. Personal initiative did not have a significant indirect effect on actions. Hence, hypothesis M13 had reasonable support.

Hypothesis M14 stated that entrepreneurial orientations and personal initiative would have an indirect effect on success via (a) mastery approach, (b) performance approach goal orientations, (c) goal-setting, and (d) actions. This hypothesis was not confirmed. However, this could be due to the number of sequential steps in the indirect model, which resulted in the series of multiplied $ab$ paths becoming extremely small in magnitude. In other words, the effect may have become diluted because of the number of steps in the model. Similar results were found for external success (see Appendix 9.15).

Finally, hypothesis M15 stated that domain specific self-efficacy (entrepreneurial and creative) would have a direct effect on goal-setting. Creative self-efficacy had a significant positive effect on goal difficulty, but did not have an effect on goal-specificity. Entrepreneurial self-efficacy predicted neither of the goal-setting variables significantly. Hence, there was limited support for hypothesis M15.
CHAPTER 10: Results: Emotional Components

Cognitive, affective and motivational processes are inextricably linked in the way people perceive and respond to environments. (Forgas & George, 2001; p. 28)

10.1. Review of the main research questions pertaining to emotional components.

The overall aim of the analysis presented in this chapter was to test the integration of the emotional components of the model with the cognitive and motivational components presented in the previous chapters. The additional variables added in this chapter are: anticipatory goal-directed emotions (positive and negative), individual differences in emotion regulation (reappraisal and suppression), and problem-focused coping strategies. The emotion regulation strategies of reappraisal and suppression were measured as individual differences, and hence are representative of distal concepts. In the theoretical model, they fall into the distal motivational pre-decisional phase. Goal-directed emotions are more proximal as they relate specifically to the two goals that entrepreneurs identified as being most important for their venture, and so fall into the volitional pre-actional phase of the theoretical model. Finally, coping strategies are a proximal behaviour-based concept, and hence, these fall into the volition actional phase of the theoretical model.

10.2. Preliminary analysis

Given that the measure of anticipated goal-directed emotions had not previously been used in an entrepreneurial sample, it was first factor analysed to establish the presence of a two-factor structure (in line with the approach to analysis adopted by Bagozzi, Baumgartner and Pieters, 1998). Anticipatory emotions focus on a single goal and the emotions reflect how positively one would feel if the goal were achieved and how negatively one would feel if it were not (Bagozzi, Baumgartner & Pieters, 1998). Hence, the experience of positive and negative emotions should reflect the characteristic pattern of emotional responding for a given individual (Larsen & Diener, 1987). In other words, people who experience emotions more or less intensely should do so consistently between all items, and produce a pattern of high positive correlations between positive and negative affect (Bagozzi, Baumgartner & Pieters, 1998).

A confirmatory factor analysis was conducted for anticipatory emotions in relation to the two goals identified as the most important for each entrepreneur. The model did not fit the data very well, with the factor loading for self-assurance on the latent variable of positive emotions being the only path that was not significant. In addition, looking at the correlations (see Table A10.1.i in Appendix 10.1 on p. 160 of the appendices) between the emotions, self-
assurance significantly correlated (at the 0.5 level) with only two of the other positive emotions (gladness and satisfaction) and did not correlate significantly with pride, which it was designed to represent. All of the other positive emotions were significantly correlated with each other with the exception of satisfaction which did not correlate with excitement and delight, but was correlated with all the other positive emotions. All of the negative emotions were significantly correlated with one another. The relatively high inter-correlations justify the averaging of the individual positive and negative emotions into composites (Bagozzi, Baumgartner & Pieters, 1998).

The original development of the scale by Bagozzi, Baumgartner and Pieters (1998) used two different types of positive emotions relevant to the goal context, namely, event-based emotions and agent-based emotions. An event-based emotion is an affective reaction to desirable or undesirable events, with examples of such emotions being joy, happiness, distress, sadness. In contrast, agent-based emotions are affective reactions to the action of an agent based on a judgment of praiseworthiness or blameworthiness, with examples of such emotions being pride and shame (Bagozzi, Baumgartner & Pieters, 1998). In the development of the scale, the authors also drew on the circumplex model of Watson and Tellegen (1985) in deciding on the emotions which were relevant to goals. Watson and Tellegen (1985) found two main dimensions that underlie emotions; positive and negative affect, and suggested that all other emotions could be arranged in a circumplex pattern in relation to these dimensions (Bagozzi, Baumgartner & Pieters, 1998). The circumplex is further divided into eight quadrants, and Bagozzi et al. (1998) concluded that four of these quadrants had relevance to the goal context, namely, high positive affect, high negative affect, pleasantness and unpleasantness.

Table 10.1 outlines the emotions included in the scale of goal-directed emotions, and shows their classification into the type of emotion and the emotion quadrant they are most closely associated with. From this table, it is clear that the item “self-assurance” was designed to tap into the agent-based emotion of self-assurance. However, qualitative comments made by a number of participants while completing this goal-directed emotions scale (see Table A10.1.ii on p. 161 of the appendices) indicated that (a) some participants were confused by the meaning of self-assurance, and (b) participants appeared to interpret self-assurance as confidence or self-efficacy rather than pride. Hence, it was decided to remove self-assurance from the measure. Previous uses of this scale have related to non-work related contexts, such as weight management (Bagozzi, Baumgartner & Pieters, 1998; Leone, Perugini & Bagozzi, 2005) or with undergraduate students as the sample (Bagozzi, Dholakia & Basurow, 2003; Leone, Perugini & Ercolani, 2004), and this may further explain why the factor structure did not completely replicate in the present study.
A second CFA was run excluding self-assurance as an indicator of positive anticipated emotions, and this model was a significantly better fit to the data ($\Delta \chi^2 = 47.35; \Delta df = 29$). This second model demonstrated a reasonable fit to the data, based on the CFI, which is the only goodness of fit statistic not influenced by sample size ($\chi^2 = 180.84; df = 89; p < .001; \text{RMSEA} = .128; \text{CFI} = .90$). All indicators loaded significantly on their respective latent factor (see Figure A10.1.i on p. 160 of the appendices). Hence, this model was used in the analysis.

Secondly, a CFA was performed to confirm the factor structure of the emotion regulation strategies, reappraisal and suppression. In the PLS analysis, the AVEs for both of these latent variables was somewhat below the recommended level of 0.5, so the CFA was performed to examine the measurement model independently of the structural model. The CFA for both of these variables demonstrated a good fit to the data ($\chi^2 = 28.21; df = 34; p > .05; \text{RMSEA} = .000; \text{CFI} = 1.00$), with all indicators significantly loading on their respective latent factor (see Figure A10.1.ii in the appendices).

Finally, a CFA was performed on the problem-focused coping strategies. Previous research has reported varying results for the factor structure of the COPE (Carver, Scheier & Weintraub, 1989), and hence, it was deemed important to establish that the factor structure held in the present data. In their original development of the scale, Carver, Scheier and Weintraub (1989) found that all the problem-focused coping scales loaded on distinct factors, with the exception of the active coping and planning items, which all loaded on a single factor. Carver (1997) also found that a briefer two-item version of these two scales loaded on a single factor also. However, in reporting their results, Carver, Scheier and Weintraub (1989) stress that these two scales were designed to be independent. In addition, in the formulation of the Brief COPE, Carver (1997) omitted the Restraint Coping and Suppression of Competing Activities scales, as the former had not proven to be of value in previous research, and the latter because its value had proven redundant with that of the Active Coping Scale.

Five different models of the problem-focused coping scale were assessed to confirm that the original 5-factor model best fit the data:
• Model 1 tested a two-factor model which just included active coping and planning.
• Model 2 tested a three-factor model which included active coping, planning and seeking instrumental social support.
• Model 3 was a variation on model 2, which tested a two-factor model where active coping and planning were combined into one factor, and seeking instrumental social support was included as the second factor.
• Model 4 included all the items in a four-factor model where active coping and planning were combined as one factor, and the other three factors of seeking instrumental, social support, restraint coping and suppression of competing activities formed the other three factors.
• Model 5 tested the five-factor model as it was originally designed (active coping, planning, seeking instrumental, social support, restraint coping and suppression of competing activities).

The results of the five CFAs were as follows: Models 1 and 3 did not converge, and model 2 was a very poor fit. Models 4 and 5 were both a good fit to the data, and there was not a significant difference in the goodness of fit between the two models ($\Delta \chi^2 = 1.22; \Delta df = 3; p > .05$). Parsimony would suggest the acceptance of the simpler (4-factor) model. However, a number of the fit indices (e.g. RMSEA, CFA) in the 5 factor model were better than the four factor model (see Table A10.1.iii on p. 162 of the appendices). Hence, the 5 factor model was accepted. All of the indicators loaded significantly on the latent factor (see Figure A10.1.iii on p. 163 of the appendices).

10.3. Relationships between emotional components and entrepreneurial success

Figure 10.1 provides an overview of the model tested in this section of the analysis. This model tests the inter-relationships between the emotional variables in the model and also assesses the extent to which these variables have an influence on entrepreneurial success. It relates to hypotheses E1 through E6 as outlined in chapter 5.
As with previous analyses, this model and its associated hypotheses were tested using PLS SEM through the software package SmartPLS (Ringle, Wende & Will, 2005). The sample size with available emotion data was somewhat smaller than in previous analyses due to the fact that these variables were added after initial data collection had begun, as it emerged that they were important variables to consider. Hence, the sample size for this chapter is 64.

In the model outlined in Figure 10.1 above, the maximum number of arrows to any one latent variable is three. Using Henseler and Ringle’s (2009) rule of thumb, this would suggest that a minimum sample size of 30 (ten times the maximum number of arrowheads to any variable). Using estimations of effect size, suggests that the sample size is a little lower than that required to detect medium effect sizes as significant, but large effect sizes will be significant. Effect sizes are unrelated to the significance of a path, and may be more relevant to interpret in small samples (Kramer & Rosenthal, 1999), hence both significance and effect size will be considered in the analyses which follow.

As in previous analyses in Chapter 9 and 10, two versions of each model were tested, the first with only the direct paths between each sequential phase of the model included, and the second with all direct and indirect paths included. In this latter version of the analysis, the largest number of arrowheads to any given latent variable was six, and according to Green (1991), the present sample will only detect large effects as significant.

Table 10.2. Sample size requirements for small, medium and large effect sizes with three independent variables (Green, 1991).

<table>
<thead>
<tr>
<th>Effect size for 3 independent variables</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Harris (1975) rule of thumb]</td>
<td>545</td>
<td>73</td>
<td>31</td>
</tr>
<tr>
<td>[Cohen (1988) power]</td>
<td>547</td>
<td>76</td>
<td>31</td>
</tr>
</tbody>
</table>

For the analyses pertaining to external success, there were 39 cases where data was available for both the emotion variables and the external success measure. Hence, this was the sample utilized for all supplementary models looking to confirm the relationships with entrepreneurial success. This sample size will only detect large effect sizes as significant (see Table 10.2), so again, effect sizes were considered in addition to significance.

Gross and John (2003) found gender differences in the use of reappraisal and suppression, as did Carver, Scheier and Weintraub (1989) in the use of their coping strategies. However in the present sample, no significant gender differences were evident for reappraisal, but men were found to engage in suppression more than women (t = 2.54; df = 59.81; p < .05). No significant differences between males and females were evident for any of the five coping strategies. Given the lack of significant differences for two of the three variables, and the fact
that the difference in suppression was only at the .05 level, gender was not controlled for in the analysis.

10.3.1. Estimation of the measurement model

In line with the previous analyses, the assessment of the measurement model presented below pertains to the direct effects only model, as the model which included both direct and indirect effects showed little differences in the measurement. The AVE for problem-focused coping, both types of anticipated emotions and self-perceptions of success were above the recommended level of .5, and their respective composite reliabilities were high. However, a number of items had factor loadings that were somewhat suboptimal. For reappraisal and suppression the AVE was a little low, but the composite reliability was high for reappraisal and approached .6 for suppression (see Table A10.1.vi on p. 163 of the appendices). Furthermore, a number of the factor loadings for both of these variables were on the low side. However, the CVA performed on these variables demonstrated a good fit to the data, with all of the indicators loading significantly on their respective latent variable.

The Fornell-Larcker criterion was met as all of the correlations between the latent variables are lower than the square root of each variables AVE (see Table A10.1.v). Furthermore, looking at the cross-loadings, it is clear that all of the indicators load most highly on the own latent variable (see Table A10.1.vi). Hence, discriminant validity is evident in the model. Hence, overall, the measurement model was deemed relatively satisfactory.

10.3.2. Estimation of the structural model

The structural model allows for assessment of the relationships between the latent variables. In the direct effects only model, anticipated positive and negative emotions explained 17.7% of the variance in problem-focused coping, which is indicative of a medium effect. Individual differences in emotion reappraisal and suppression explained 10.2% of the variance in positive anticipated emotions and 17% of the variance in negative anticipated emotions, both of which are medium effects. However, problem-focused coping on its own explained only a small portion of the variance in both of the success factors, 8.1% of the variance in self-perceptions of success, and 1.3% of the variance in objective success (see Table A10.1.vii on p. 166 of the appendices).

In the fully specified model, the percentage of variance explained in problem-focused coping increased to 33.7% (a large effect) when reappraisal and suppression were added as direct predictors. The percentage of variance explained in positive anticipated emotions remained relatively stable, but the variance explained in negative anticipated emotions dropped to from 17% to 7.9%, which may be due to the indirect effect of emotion regulation on problem-
focused coping in the first model, which was not controlling for the direct effect. A much higher amount of the variance in self-perceptions of success was explained in the second model with 20.7% (a medium-large effect) of the variance explained. However, there was little change in the variance explained in objective success, save for a marginal increase to 3.2%. Given the small amount of variance explained in objective success, it is not surprising that the model did not have predictive relevance for this variable. However, for all other endogenous variables, the $Q^2$ estimations indicated that the model did have predictive relevance (see Table A10.1.vii).

Moving to examine the effect of each individual variable for the first model (see Table A10.1.viii in the appendices and Figure 10.2.a above), the results indicate that only two of the variables had significant effects. Problem-focused coping had a significant positive effect on self-perceptions of success, and anticipated positive emotions had a significant effect on problem-focused coping. However, looking at the effect size estimations indicates that a number of small effects were also evident which did not reach significance due to the sample size. Reappraisal had a small positive effect on positive anticipated emotions, and a small negative effect on negative anticipated emotions.

In the second version of the model, where all direct and indirect paths were included (see Table A10.1.ix in the appendices and Figure 10.2.b above), the two significant paths...
remained so; problem-focused coping had a significant effect on self-perceptions of success and positive anticipated emotions had a significant effect on problem-focused coping. However in this version of the model, the positive effect from reappraisal to anticipated positive emotions reached significance, and was medium in size, but the path from reappraisal to anticipated negative emotions remained small in magnitude. Reappraisal also had a medium-large significant effect on problem-focused coping. Suppression had a small positive effect on anticipated negative emotions, and a small negative effect on self-perceptions of success, although neither path reached statistical significance. Finally, anticipated positive emotions had a small, but non-significant negative effect on self-perceptions of success.

10.3.3. Estimation of the indirect effects

Following a similar approach to the analyses performed in the previous two chapters, the indirect effects were calculated using bootstrapping and following the recommendations of Preachers and Hayes (2004, 2008). In the calculation of the indirect effects, the fully specified model (which specified all the potential direct and indirect paths) was used, in order to control for the direct effects (the c’ path). In the first instance, the model was broken in sections, and the indirect paths via one level of mediators (rather than the sequential mediators) were assessed (see Table A10.1.x and A10.1.xi on p. 167 of the appendices). None of the total indirect effects reached significance (Table A10.1.xii). Results of the separate indirect paths indicated that the following indirect path was significant:

- Reappraisal → problem-focused coping → self-perceptions of success

Hence, reappraisal had a significant indirect effect on self-perceptions of success via problem-focused coping.

With regard to the hypotheses, hypothesis E1 stated that problem-focused coping would have an effect on the three forms of success. The results indicated that problem-focused coping had a medium positive effect on self-perceptions of success, and a small positive effect on external success (see Appendix 10.2). However, this latter relationship did not reach statistical significance. The effect on objective success was negligible. Hence, there was some support for hypothesis E1.

Hypothesis E2 stated that anticipated emotions would predict problem-focused coping. Anticipated positive emotions had a significant positive effect on problem-focused coping, which was medium in magnitude in the direct effects only model, but small in magnitude in the fully specified model. Anticipated negative emotions did not have an impact on problem-focused coping in either version of the model. Hence, there was some support for hypothesis E2.
Hypothesis E3 suggested the anticipated emotions would have an impact on all three of the success variables. In the fully specified model in the main analysis, anticipated positive emotions had a small non-significant negative effect on self-perceptions of success. Appendices 10.6 and 10.7 investigated the effects of these variables on the three success measures in the absence of all the other variables in the model. The findings of these analyses suggested that anticipated positive emotions had a small, positive (but non-significant) effect on external success, but this effect was negative in the full model (see Appendix 10.2). In relation to anticipated negative emotions, it was found to have a small positive (but non-significant) effect on self-perceptions of success when all other variables were excluded (see Appendix 10.6), but this effect disappeared in the full model. It also had a small non-significant negative effect on external success (see Appendices 10.2 and 10.7). None of the indirect effects were significant. Overall, there was little support for hypothesis E3.

Hypotheses E4a and E4b investigated the relationships between reappraisal, suppression and anticipated emotions. The findings indicated that reappraisal had a positive effect on anticipated positive emotions. In the direct effects only model, this relationship was small-medium in magnitude and did not reach significance, but in the fully specified model, it was medium in magnitude and significant. In both models, reappraisal had a small negative influence on anticipated negative emotions, which was non-significant. Suppression had a small positive, but non-significant effect on anticipated negative emotions in the fully specified model, but this did not appear in the direct effects only model. No relationship was found with anticipated positive emotions. Hence, support was found for hypothesis E4a, but was very limited in nature for E4b.

Hypothesis E5a and E5b investigated the relationships between reappraisal, suppression and problem-focused coping. Appendix 10.5 investigated the direct effects of the emotion regulation strategies on problem-focused coping in the absence of all other variables, and found that reappraisal had a medium-large positive (and significant) effect on problem-focused coping, but no discernable relationship for suppression. In the main analysis, similar results were found. Hence, there was support for hypothesis E5a, but not for hypothesis E5b.

Finally, hypotheses E6a and E6b investigated the direct and indirect effects of reappraisal and suppression on the three success variables. Looking at the direct effects, the results indicated that reappraisal had a medium-large negative effect on self-perceptions of success, a small negative effect on objective success (see Appendix 10.3), and a large negative effect on external success (see Appendix 10.4). However, only the path to self-perceptions of success reached significance. These relationships were in the opposite direction to what was predicted. In the main analysis, reappraisal did not demonstrate a direct relationship with any of the success variables. This may be due to the one indirect effect that reached significance,
which demonstrated that reappraisal had an indirect effect on self-perceptions of success via problem-focused coping, which overall was positive in nature. Hence, there was little support for hypothesis E6a. Suppression had a small negative effect on self-perceptions of success (see Appendix 10.3 and the main analysis), and a small positive effect on external success, neither of which reached significance, and no effect on objective success (see Appendix 10.4). Hence, there was little support for hypothesis E6b.

10.4. Relationships between emotional and cognitive components

This section of the analysis considers the relationships between the emotional and cognitive components of the model. As was outlined in chapter 5, two versions of the cognitive variables are modelled, the first tests the cognitive components with planning included as the form of volitional cognition, while in the second version, this variable is replaced with goal-setting and actions taken towards a goal.

10.4.1. Model with planning

Figure 10.3 outlines the hypothesized relationships to be tested in this section of the analysis. This model pertains to hypotheses E7 through E13 as outlined in chapter 5.

Figure 10.3. Hypothesized relationships between emotional and cognitive elements of the model (planning).

Considering firstly, the power of the sample to assess this model, the highest number of predictor variables is five (for both anticipated emotions variables, and planning). However, if the model is fully specified, i.e. with all direct and indirect paths included, this number would increase to nine (for the success variables). Table 11.11 demonstrates that for both models, the sample size is sufficient to determine large effects at a significant level. Hence, effect size estimations were also considered in establishing whether small or medium effects occur.
Table 10.3. Sample size requirements for small, medium and large effect sizes (Green, 1991).

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10.4.1.1. Estimation of the Measurement model

The results of the measurement model which are shown in this section pertain to the model as specified in Figure 10.3. The fully specified model was also calculated, but as the results of the measurement model for both versions are very similar, they are presented only once. The AVE for all variables except reappraisal and suppression is above the recommended level of 0.5. However, the composite reliability for these two variables is above the recommended level of 0.6, as it is for all variables with the exception of the performance avoid construct, which has a very low composite reliability. This may be due to the fact that one of its two indicators loaded negatively. Although this is suboptimal, both indicators were retained in order to ensure that the composition of the measurement model was comparable with other models tested in the research (see Table A10.8i in Appendix 10.8 on p. 194 of the appendices).

With regard to the factor loadings for the other latent variables, one of the reappraisal indicators was above 0.7, with three above 0.6 and the final two just below this. Two of the suppression indicators were above 0.7, but the remaining two loaded quite poorly. However, given that the CFAs indicated that the measurement of suppression was a good fit, all indicators were retained. All of the positive anticipated emotions indicators loaded highly, with the exception of satisfaction, which was somewhat lower at .540. Seven of the negative anticipated emotions indicators loaded above 0.7, with the remaining three loading above 0.6. Three of the problem-focused coping indicators were above 0.7, with the other two below this. For each of the goal orientations, one of the two indicators loaded highly, but the other loaded suboptimally. All of the planning indicators loaded above 0.7, as did the indicators for self-perceptions of success (see Table A10.8.i).

None of the correlations were higher than the square root of the AVE for each latent variable (see Table A10.8.ii). Hence, the Fornell-Larcker criterion is met, and discriminant validity is evident. As a second check on discriminant validity, the cross-loadings were compared (see Table A10.8.iii). The negative loading of the second performance avoid indicator meant that some of the cross-loadings for this indicator were higher for other constructs. One of the suppression indicators loaded similarly on the performance avoid construct as it did on its own latent variable, but this is likely due to a low loading in the first place. All other indicators loaded more highly on their own latent variable than on any other.
Overall, the discriminant validity was reasonably good. Hence, although there were some minor issues with the measurement model, it was deemed appropriate to continue with the interpretation of the structural model.

**10.4.1.2. Estimation of the structural model**

In the model which included only the direct effects between each sequential phase, reappraisal and suppression, combined with the goal orientation variables explained 24.9% of the variance in anticipated positive emotions (a large effect), and 18.9% of the variance in anticipated negative emotions (a medium effect). Goal orientations, combined with both types of anticipated emotions combined explained 29% of the variance in planning (a large effect). Anticipated emotions explained 17.6% of the variance in problem-focused coping (a medium effect). Finally, problem-focused coping combined with planning explained 8.6% of the variance in self-perceptions of success, and 3.4% of the variance in objective success (both small effects). The model had predictive relevance for all variables, except for self-perceptions of success, for which the cross-validated redundancy figure was negative. However, the cross-validated commonality figure was above zero (see Table A10.8.iv on p. 198 of the appendices).

The results of the fully specified model resulted in largely similar findings, with the effect sizes of the same magnitude for both types of anticipated emotions, which is to be expected as the predictors for these two variables remained the same. The addition of reappraisal and suppression, and the goal orientations increased the percentage of variance explained in problem-focused coping to 36.8% (a large effect). The percentage of variance explained in planning remained relatively similar and actually decreased slightly with the addition of reappraisal and suppression as predictors. The inclusion of all variables in the model as direct predictors of both success variables resulted in the percentage of variance explained increasing to 19.1% for objective success (a medium effect) and 26.8% for subjective perceptions of success (a large effect). Given that reappraisal and suppression are placed in a more distal phase in the theoretical model than goal orientations, arrows were also included to explore whether these more distal concepts would have an impact on the more proximal goal orientations. Reappraisal and suppression had a small effect on mastery approach and performance approach, explaining 3.7% and 3.2% of the variance in each respectively, and had a slightly larger impact on performance avoid, explaining 8.7% of the variance in this variable (see Table A10.8.iv).

To explain these effects in more detail, the individual paths were examined. Figure 10.4.a (see also Table A10.8.v) outlines the results of the path coefficients for the model specifying the direct paths between each sequential phase of the model only. The results indicate that reappraisal had a small positive effect on positive anticipated emotions, and a small
negative effect on negative anticipated emotions, while suppression had small effects in the opposite direction. However, these effects did not reach significance. In addition, both mastery approach and performance avoid goal orientations had a significant small negative effect on positive anticipated emotions. As in previous analyses, mastery approach and performance approach had significant positive effects on planning (which were small-medium in size) while performance avoid had a small (non-significant) negative effect. Positive anticipated emotions had a significant positive effect on problem-focused coping, and a small, but non-significant effect on planning. Finally, planning had a small, but non-significant effect on objective success, and problem-focused coping had a small, but non-significant effect on self-perceptions of success.

Figure 10.4.b (see also Table A10.8.vi) outlines the results for the fully specified model. Reappraisal had a small, but non-significant negative effect on mastery approach goals, while suppression had small but non-significant effects on all three goal orientations, negative for both approach goals, and positive for performance avoid. The effect of reappraisal on positive anticipated emotions became significant, but the effect on negative anticipated emotions remained small, negative and non-significant. Reappraisal also had a significant direct, positive effect on problem-focused coping. The effect of suppression on both anticipated emotions remained the same. Suppression also had a small direct positive effect on planning, and negative effect on self-perceptions of success, but neither of these reached significance. Performance approach had a small positive, but non-significant direct effect on problem-focused coping. Positive anticipated emotions had a small negative effect on both success variables, but again, these did not reach significance. The effect of planning on objective success and problem-focused coping on self-perceptions of success both became significant.

For ease of interpretation, only the significant paths and the non-significant but small effects paths are included in Figures 10.4.a and b. Figures A10.8.i and ii in Appendix 10.8 demonstrates the original PLS outputs for both version of the model, which shows all the paths included in the analyses.
Figure 10.4.a. Results of Partial Least Squares analysis for the model investigating the relationships between emotional variables, cognitive variables with planning, objective success and self-perceptions of success. (**p < .001; *p < .01; *p < .05; dashed lined indicate non-significant paths; blue dashed paths- small positive effects, red dashed paths- small negative effects).
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Figure 10.4.b. Results of Partial Least Squares analysis for the fully specified model investigating the relationships between emotional variables, cognitive variables with planning, objective success and self-perceptions of success. (** * p < .001; **p < .01; * p < .05) (dashed lines indicate non-significant small effects).
10.4.1.3. Estimation of the indirect effects

The final stage of the assessment of the structural model necessitates the investigation of the significance of the indirect paths. The bootstrap estimations were based on the fully specified model in order to control for any direct effects that the variables may be having (i.e. to control for the c’ paths). None of the single indirect effects were significant (see Tables A10.8.vii, viii, and ix in the appendices). Finally, the total indirect effects were calculated across each sequential phase of the model (see Table 10.8.x in the appendices). None of the total indirect effects reached significance.

Looking at the hypotheses, hypothesis E7 suggested that anticipatory emotions would have a positive effect on planning. In the direct effects model, positive anticipated emotions had a small positive effect on planning, which was non-significant, and in the fully specified model, this became even smaller. Negative anticipated emotions did not have an effect on planning in either version of the model. Hence, hypothesis E7 was largely unsupported.

Hypothesis E8 investigated the indirect effect of anticipated emotions on success via planning. No support was found for this hypothesis.

Hypothesis E9 considered the direct effects of reappraisal and suppression on planning, while hypothesis E10 investigated their indirect effects via anticipated emotions. Reappraisal had a very small effect on planning, while suppression had a small positive effect on planning, but neither were significant. Hence, there was little support for hypothesis E9a, and some support for hypothesis E9b. No support was found for an indirect effect, and hence hypothesis E10 was rejected.

Hypothesis E11 considered the effects of goal orientations on anticipated emotions. In the direct effects only model, both mastery approach and performance avoid had significant negative effects on positive anticipated emotions, but no effect on negative anticipated emotions. Performance approach goals had no effect on either form of anticipated emotions. In the fully specified model, mastery approach also had a small non-significant negative effect on negative anticipated emotions, and performance avoid had a non-significant small negative effect on the same variable. As the valence of the effect of mastery approach on anticipated emotions was in the opposite direction to that predicted, and performance approach had no effect, hypothesis E11a is rejected. The negative effect of performance avoid on positive anticipated emotions provides partial support for hypothesis E11b, as does the small non-significant effect on negative anticipated emotions in the fully specified model.

Hypothesis E12 suggested that the effect of goal orientations on planning would be mediated by anticipatory emotions. No support was found for this hypothesis.
Hypothesis E13 investigated the effect of goal orientations on problem-focused coping strategies. Performance approach had a small positive, but non-significant effect on problem-focused coping in the fully-specified model. However, neither of the other two goal orientations had a discernable effect. Hence, there was limited support for hypothesis E13a, and no support for hypothesis E13b.

10.4.2. Model with goal-setting and actions

Figure 10.5 outlines the hypothesized relationships to be tested in this section of the analysis. This model pertains to hypotheses E14 through E18 as outlined in chapter 5. Considering firstly, the power of the sample to assess this model, the highest number of predictor variables is five (for anticipated emotions variables). However, if the model is fully specified, i.e. with all direct and indirect paths included, this number would increase to eleven (for the success variables). Table 10.3 demonstrates that for both models, the sample size is sufficient to determine large effects at a significant level. The table shows the estimates for five variables and ten variables as Green (1991) does not outline the sample size requirements for eleven predictors. As a result of the power of the sample size, effect size estimations were also considered in establishing whether small or medium effects occur.

Table 10.3 Sample size requirements for small, medium and large effect sizes (Green, 1991).

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Figure 10.5 Hypothesized relationships between emotional and cognitive elements of the model (goal-setting and actions).
10.4.2.1. Estimation of the Measurement model

The results of the measurement model which are shown in this section pertain to the model as specified in Figure 10.5. The fully specified model was also calculated, but as the results of the measurement model for both versions are very similar, they are presented only once. The AVE for all variables except reappraisal, suppression and performance avoid was above the recommended level of 0.5. However, the composite reliability for these three variables was above the recommended level of 0.6, as it was for all other variables (see Table A10.10i in Appendix 10.10 on p. 218). With regard to the factor loadings for the latent variables, one of the reappraisal indicators was above 0.7, with three above 0.6 and the final two above 0.5. Two of the suppression indicators were above 0.7, but the remaining two loaded quite poorly. However, given that the CFAs indicated that the measurement of suppression was a good fit, all indicators were retained. All of the positive anticipated emotions indicators loaded highly, with the exception of satisfaction, which was somewhat lower at .527. Seven of the negative anticipated emotions indicators loaded above 0.7, with the remaining three loading above 0.6. Three of the problem-focused coping indicators were above 0.7, with the other two below this. For each of the goal orientations, one of the two indicators loaded highly, but the other loaded between 0.5 and 0.7. Both goal specificity indicators loaded highly, as did both actions indicators. Three of the four goal difficulty indicators loaded highly, but the fourth loaded a just below 0.6. All of the indicators for self-perceptions of success loaded highly (see Table A10.10.i).

None of the correlations are higher than the square root of the AVE for each latent variable (see Table A10.10.ii). Hence, the Fornell-Larcker criterion is met, and discriminant validity is evident. As a second check on discriminant validity, the cross-loadings were compared (see Table A10.10.iii). All of the indicators loaded more highly on their own latent variable, then on any other, indicating once again, the discriminant validity was evident. Hence, it was deemed appropriate to continue with the interpretation of the structural model.

10.4.2.2. Estimation of the structural model

In the model which included only the direct effects between each sequential phase, reappraisal and suppression, combined with the goal orientation variables explained 16.7% of the variance in anticipated positive emotions (a medium effect), and 21.9% of the variance in anticipated negative emotions (a medium effect). Goal orientations, combined with both types of anticipated emotions combined explained 16.4% of the variance in goal difficulty (a medium effect), and 10.0% of the variance in goal-specificity (a medium effect). Anticipated emotions explained 17.3% of the variance in problem-focused coping (a medium effect). Goal-setting, combined with problem-focused coping explained 52.3% of the variance in actions. Finally, problem-focused coping combined with actions explained 10.4% of the variance in self-
perceptions of success, and 6.4% of the variance in objective success (medium and effects respectively). The model had predictive relevance for all variables, but the cross-validated redundancy figure was very close to zero for goal-specificity, suggesting that the predictive relevance for this variable may need to be improved in future research by including additional predictors (see Table A10.10.iv).

The results of the fully specified model resulted in largely similar findings, with some changes. The percentage of variance explained for positive anticipated emotions increased to 23.9%, but for negative anticipated emotions decreased to 9.2%. The addition of reappraisal and suppression, goal orientations and goal-setting increased the percentage of variance explained in problem-focused coping to 37.5% (a large effect). The percentage of variance explained in both goal-setting variables remained largely stable, and there was a small increase in the percentage of variance explained in actions (which increased to 59.1%). The inclusion of all variables in the model as direct predictors of both success variables resulted in the percentage of variance explained increasing to 20.2% for objective success (a medium effect) and 28.3% for subjective perceptions of success (a large effect). Given that reappraisal and suppression are placed in a more distal phase in the theoretical model than goal orientations, arrows were also included to explore whether these more distal concepts would have an impact on the more proximal goal orientations. Reappraisal and suppression had a small effect on mastery approach and performance avoid, explaining 3.5% and 3.1% of the variance in each respectively, and had a slightly larger impact on performance avoid, explaining 6.0% of the variance in this variable (see Table A10.10iv).

To explain these effects in more detail, the individual paths were examined. Figure 10.6.a (see also Table A10.10.v in the appendices) outlines the results of the path coefficients for the model specifying the direct paths between each sequential phase of the model only. The results indicate that reappraisal had a small positive effect on positive anticipated emotions, while suppression had a small positive effect on negative anticipated emotions. However, these effects did not reach significance. In addition, both mastery approach and performance avoid goal orientations had a small negative effect on positive anticipated emotions, the former of which was significant. Performance avoid also had a small, but non-significant positive effect on negative anticipated emotions. Mastery approach had a small positive effect on goal difficulty and goal specificity, the former of which was significant. Performance approach also had small positive effects of both goal-setting variables, but neither reached significance. Performance avoid also had a small negative, but non-significant effect on goal-difficulty. Positive anticipated emotions had a medium significant positive effect on problem-focused coping. Both goal setting variables had significant positive effects on actions, and problem-focused coping a positive, but non-significant effect on actions. Actions had a significant positive effect on objective success, and a small, but non-significant effect on self-perceptions.
of success. Problem-focused coping had small, positive effects on both success variables, but neither path reached significance.

Figure 10.6.b (see also Table A10.10.vi in the appendices) outlines the results for the fully specified model. Suppression had small but non-significant negative effects on both approach goal orientations, but reappraisal demonstrated no effect on goal orientations. Reappraisal had significant positive effects on positive anticipated emotions and problem-focused coping, and a small negative effect on negative anticipated emotions, which did not reach significance. Suppression had a small negative, non-significant effect on positive anticipated emotions, but none on negative anticipated emotions. Suppression also demonstrated a small direct effect on self-perceptions of success, which was negative, but non-significant. Mastery approach had significant negative effects on positive anticipated emotions and objective success, and also had small non-significant negative effects on self-perceptions of success and actions. However, it had small positive effects on both goal-setting variables. Performance approach had a significant positive effect on goal-specificity, and small positive, but non-significant direct effects on goal-difficulty, actions and problem-focused coping. Performance avoid had small negative effects on goal-difficulty, actions, positive anticipated emotions and self-perceptions of success, but none of these effects reached significance. Positive anticipated emotions had a small negative effect on both success variables and on actions, but again, these did not reach significance. It also had a small positive effect on problem-focused coping. Problem-focused coping had a significant positive effect on self-perceptions of success. Both goal setting variables had a significant positive effect on actions, and actions had small positive effects on both success variables, but neither of these paths reached significance.

For ease of interpretation, only the significant paths and the non-significant but small effects paths are included in Figures 10.6.a and b. Figures A10.10.i and ii in Appendix 10.10 demonstrates the original PLS outputs for both version of the model, which shows all the paths included in the analyses.

**10.4.2.3. Estimation of the indirect effects.**

The final stage of the assessment of the structural model necessitates the investigation of the significance of the indirect paths. Only the indirect effects that pertained directly to the variables of goal-setting and actions were calculated as all others were estimated in the previous analysis. The bootstrap estimations were based on the fully specified model in order to control for any direct effects that the variables may be having (i.e. to control for the $c'$ paths) (see Tables A10.10.vii-ix). Finally, the total indirect effects were calculated across each sequential phase of the model (see Table A10.10.x). None of the individual indirect effects or the total indirect effects reached significance.
Figure 10.6.a Results of Partial Least Squares analysis for the model investigating the relationships between emotional variables, cognitive variables with goal-setting and actions, objective success and self-perceptions of success. (** p < .01; * p < .05; blue dashed paths- small positive effects, red dashed paths- small negative effects).
Figure 10.6.b. Results of Partial Least Squares analysis for the fully specified model investigating the relationships between emotional variables, cognitive variables with goal-setting and actions, objective success and self-perceptions of success. (** p < .01; * p < .05) (dashed lines indicate non-significant small effects).
Looking at the hypotheses, hypothesis E14 suggested that anticipated emotions would have an impact on goal-setting and actions. In the direct effects only model (see Figure 10.6.a), positive anticipated emotions had a small positive effect on goal difficulty, but this effect disappeared in the fully specified model. In this latter model, positive anticipated emotions demonstrated a small but non-significant negative effect on actions, which is in the opposite direction to that predicted. Hence, hypothesis E14 is largely unsupported.

Hypothesis E15 investigated the indirect effects of anticipated emotions on success via goal-setting and actions. No support was found for this hypothesis, as none of the indirect effects reached significance. This hypothesis was further investigated for external success in Appendix 10.9. As in the main analysis, no support was found for this hypothesis.

Hypothesis E16 considered the impact of reappraisal and suppression on goal-setting. No support was found for this hypothesis. Hypothesis E17 investigated the indirect effects of reappraisal and suppression on goal-setting via anticipated emotions. Again, no support was found for this hypothesis.

Hypothesis E18 considered the indirect effect of goal orientations on goal-setting via anticipated emotions. No support was found for this hypothesis.

10.5. Relationships between emotional and motivational components

Figure 10.7 summarises the model to be investigated in this section of the analyses, and pertains to hypotheses E19 through E32 as specified in chapter 5. Considering firstly, the power of the sample to assess this model, the highest number of predictor variables is four (for anticipated emotions) in Figure 10.7. However, if the model is fully specified, i.e. with all direct and indirect paths included, this number would increase to ten (for the success variables). Table 10.4 demonstrates that for first model, with a maximum of four independent variables for a given dependent variable, the sample size is sufficient to determine large effects, but is not sufficient to detect medium and small effects at a significant level. Similarly, in the fully specified model, the power of the sample is sufficient to detect large effects at a significant level. As a result, effect size estimations will also be considered in the interpretation of the results.

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As a result, effect size estimations will also be considered in the interpretation of the results.
Figure 10.7 Hypothesised relationships between motivational and emotional components of the model.
10.5.1. Estimation of the Measurement model

The results of the measurement model which are shown in this section pertain to the model as specified in Figure 10.7. The fully specified model was also calculated, but as the results of the measurement model for both versions are very similar, they are presented only once.

The AVEs for entrepreneurial orientations, personal initiative, reappraisal and suppression were below the recommended level of .5, but the composite reliability for each of these variables were all high and above the recommended level of 0.6. The AVE and composite reliability for all other variables were above the recommended levels (see Table A10.12.i in Appendix A10.12 on p. 247 of the appendices).

Looking at the factor loadings, for entrepreneurial orientation, one of its indicators was above the recommended level of 0.7, two were above 0.6, one was above 0.5, and the final two were somewhat lower. For personal initiative, two of the indicators were above 0.7, while all the others were above 0.6, except for one indicator which loaded at .540. For entrepreneurial self-efficacy, creative self-efficacy, and work engagement all indicators had high loadings. For reappraisal, one indicator loaded above 0.7, three loaded above 0.6 and the final two were just below this. For suppression, one indicator loaded above 0.7, a second loaded just below this, but the final two were quite low in the range of 0.2 to 0.3. For positive anticipated emotions, all of the indicators loaded highly except for satisfaction which loaded at .532. For negative anticipated emotions, seven of the ten indicators loaded above 0.7, and the remaining three were above 0.65. For problem focused coping, three of the five indicators loaded very highly, but the other two demonstrated suboptimal loadings in the range of 0.4 to 0.5. Finally, for self-perceptions of success two of the three indicators loaded above 0.7, which the third loaded above 0.6 (see Table A10.12.i). Although a number of loadings were less than ideal, they were in line with previous analysis, and the previous CFAs justified their factor structure. Hence, the measurement model was retained, which allowed for direct comparison with the other models in the research, and with previous research in the literature.

The Fornell-Larker criterion is met as none of the latent variables are correlated more highly with another latent variable than their square root of the AVE. This provides evidence of discriminant validity (see Table A10.12.ii). In addition, looking at the cross-loadings (see Table A10.12.iii), which provides a second method of checking the discriminant validity, none of the indicators load more highly on another latent variable than they do on their own. However, ESE1 does also load quite highly on creative self-efficacy (although not more highly than on entrepreneurial self-efficacy). As these are two domain specific forms of self-efficacy relevant to entrepreneurship, this is not that unusual however. Hence, discriminant validity was evident.
10.5.2. Estimation of the structural model

In the model which included only the direct effects between each sequential phase (see Table A10.12.iv), entrepreneurial orientations and personal initiative explained 18.3% of the variance in reappraisal, which is indicative of a medium effect, but did not explain any of the variance in suppression. These variables, combined with reappraisal and suppression explained 26.9% of the variance in creative self-efficacy and 48.2% of the variance in entrepreneurial self-efficacy (both large effects). Both forms of self-efficacy, combined with reappraisal and suppression predicted 11.3% of the variance in positive anticipated emotions and 18.1% of the variance in negative anticipated emotions, which are both medium effects. Self-efficacy combined with anticipated emotions had a large effect on work engagement, explaining 30.2% of its variance. Anticipated emotions combined with work engagement explained 25.6% of the variance in problem-focused coping (a large effect). Finally, problem-focused coping explained 1.3% of the variance in objective success and 7.3% of the variance in self-perceptions of success, which are both small effects. For the majority of variables, the \( Q^2 \) estimations were above zero. However, for suppression and self-perceptions of success, the cross-validated redundancy figure was below zero, although the cross-validated commonality figure was above zero. Hence, the model did not demonstrate predictive relevance for these two variables, but for all other predictive relevance was evident.

The results of the fully specified model resulted in largely similar findings (see Table A10.12.iv), with the effect sizes of the same magnitude for the majority of variables. The impact on suppression increase from zero to 2.6% which is a small effect, and the percentage of variance for negative anticipated emotions actually decreased from 18.1% to 7.6% (a small effect). The variance explained for reappraisal, entrepreneurial self-efficacy and creative self-efficacy remained relatively stable. The variance explained for positive anticipated emotions increased from 11.3% to 21.2%, for problem-focused coping the increase was from 25.6% to 43.6%, and work engagement increased from 30.2% to 39.4%. For the success variables, there was a small increase in the variance explained for objective success, increasing from 1.3% to 6.6%, but the increase for self-perceptions of success was much more pronounced, increasing from 7.6% to 39.6% (a large effect).

To explain these effects in more detail, the individual paths were examined. Figure 10.8.a (see also Table A10.12.v in the appendices) outlines the results of the path coefficients for the model specifying the direct paths between each sequential phase of the model only. The results indicate that entrepreneurial orientations had a small significant positive effect on creative self-efficacy and a small positive effect on entrepreneurial self-efficacy, which did not reach significance. Personal initiative had a positive significant effect on both forms of self-efficacy and on reappraisal. The effect on creative self-efficacy was small-medium in size,
while on entrepreneurial self-efficacy and reappraisal, the effects were medium in size. Reappraisal had a small significant positive effect on entrepreneurial self-efficacy. However, the CI$_{95}$ for the path from reappraisal to entrepreneurial self-efficacy included zero indicating that the effect was marginal. In addition, reappraisal had a small positive effect on positive anticipated emotions, and a small negative effect on negative anticipated emotions, but neither of these effects reached significance. Suppression had a small positive effect on negative anticipated emotions, but this did not reach significance. Entrepreneurial self-efficacy had a significant positive effect on work engagement, and a small, but non-significant effect on anticipated negative emotions which was positive in nature. Creative self-efficacy did not have any discernable effect on work engagement, nor either form of anticipated emotions. Anticipated positive emotions had a significant positive effect on work engagement (a small effect) and on problem-focused coping (a small-medium effect). Work engagement had a significant positive effect on problem-focused coping, which was small-medium in nature. Problem focused coping had a significant positive effect on self-perceptions of success, but did not significantly affect objective success.

Figure 10.7.b (see also Table A10.12.vi in the appendices) outline the results for the fully specified model. In this model, all the significant paths above remained so, except for the relationship between work engagement and problem-focused coping. The path from reappraisal to entrepreneurial self-efficacy, although significant, had a CI$_{95}$ that contained zero, so was marginally significant. Similarly, the path from positive anticipated emotions to problem-focused coping was significant, but the CI$_{95}$ contained zero.

A number of significant direct relationships were found between variables in non-sequential phases of the model. Entrepreneurial orientations had a significant direct effect on positive anticipated emotions, which was positive in nature. Reappraisal had a direct effect on problem-focused coping. Suppression had a direct negative effect on self-perceptions of success. However, although these findings were significant, the CI$_{95}$ for both of these relationships contained zero, so the results needs to be interpreted caution.

For ease of interpretation, only the significant paths and the non-significant but small effects paths are included in Figure 10.7.b. Figures A10.12.i and ii in Appendix 10.12 demonstrate the original PLS outputs for both version of the model, which shows all the paths included in the analyses.
Figure 10.7a. Results of Partial Least Squares analysis for the model investigating the relationships between emotional variables, motivational resources, objective success and self-perceptions of success. (**p < .001; *p < .01; *p < .05; dashed lined indicate non-significant paths; blue dashed paths- small positive effects, red dashed paths- small negative effects).
Figure 10.7.b Results of Partial Least Squares analysis for the fully specified model investigating the relationships between emotional variables, motivational resources, volitional resources, objective success and self-perceptions of success. (** p < .001; * p < .01; * p < .05) (dashed lines indicate non-significant small effects).
10.5.3. Estimation of the indirect effects

The final stage of the assessment of the structural model necessitates the investigation of the significance of the indirect paths. The bootstrap estimations and significance of the indirect effects were based on the fully specified model in order to control for any direct effects that the variables may be having (i.e. to control for the c’ paths). None of the indirect paths reached significance (see Table A10.12.vii, viii and ix in the appendices). As none of the indirect paths with one mediator were significant, the indirect effects via two sequential mediators were not assessed, as these would be smaller again in magnitude. Finally, the total indirect effects were calculated across each sequential phase of the model (see Table A10.12.x).

The following total indirect effect was significant:

- Personal initiative → problem-focused coping

No other total indirect effects reached significance.

Finally, it is necessary to consider whether these findings support the hypotheses which were specified in relation to this model. Hypothesis E19 investigated whether work engagement predicted problem-focused coping. In the first analysis, which considered only the direct effects between each sequential phase of the model work engagement has a significant small-medium effect on problem-focused coping, which is in support of this hypothesis. However, in the fully specified model, this finding became non-significant.

Hypothesis E20 suggested that work engagement in turn would be predicted by anticipated goal directed emotions. In the first version of the model, positive anticipated emotions had a significant, but small, positive effect on work engagement. In the fully specified model, this effect was still evident, but did not reach significance. However, negative anticipated emotions did not demonstrate a relationship with work engagement. Hence, hypothesis E20 was partially supported.

Hypothesis E21 stated that self-efficacy would predict engaging in problem-focused coping. Entrepreneurial self-efficacy had a small, but non-significant relationship with problem-focused coping in the fully-specified version of the model. However, creative self-efficacy was not related. Hence, there was some limited support for hypothesis E21.

Hypothesis E22 investigated the impact of self-efficacy on anticipated emotions. In both versions of the model, entrepreneurial self-efficacy had a small, but non-significant positive relationship with the anticipated of negative emotions, but no relationship with the anticipation of positive emotions. Creative self-efficacy did not demonstrate any relationship with either type of anticipated emotions. As the relationship with entrepreneurial self-efficacy was in the opposite direction to that which was hypothesised, hypothesis 46 was rejected.

Hypothesis E23 investigated the indirect effect of self-efficacy on anticipated emotions and work engagement. As no indirect effects reached significance, this hypothesis was rejected.
Hypothesis E24 investigated the impact of emotional reappraisal and suppression on self-efficacy. Reappraisal had a significant positive effect on entrepreneurial self-efficacy, but did not have an impact on creative self-efficacy. Hence, hypothesis E24a is partially supported. No relationship between suppression and either form of self-efficacy was evident, and so hypothesis E24b was rejected.

Hypothesis E25 investigated the impact of both emotional regulation strategies on work engagement. Suppression demonstrated a small, but non-significant positive effect on work engagement (the opposite direction to that which was predicted), but reappraisal did not demonstrate any relationship. Hence, hypothesis E25 was rejected.

Hypothesis E26 investigated in the indirect effects of reappraisal and suppression on work engagement via anticipated emotions. As no indirect effects reached significance, this hypothesis was rejected.

Hypothesis E27 suggested that personal initiative would predict engaging in emotion regulation. Personal initiative had a medium positive effect on reappraisal (which was significant) in both versions of the model, but no effect on suppression. Hence, hypothesis E27 was partially supported.

Hypothesis E28 investigated the relationship between personal initiative and problem-focused coping. Personal initiative had a small-medium positive effect on problem-focused coping in the fully-specified version of the model, but this did not reach significance. Hence, hypothesis E28 was supported.

Hypothesis E29 suggested that entrepreneurial orientations would have an impact on emotion regulation strategies. In the first version of the model, entrepreneurial orientations had no effect on either reappraisal or suppression. In the fully specified version of the model, entrepreneurial orientations, had a small positive (but non-significant) effect on suppression. As this was in the opposite direction to that predicted, hypothesis E29 was rejected.

Hypothesis E30 investigated the relationship between entrepreneurial orientations and problem-focused coping. This hypothesis was rejected as no relationship was found.

Hypothesis E31 considered the direct and indirect effects of personal initiative on anticipated emotions. This hypothesis was rejected.

Hypothesis E32 considered a similar hypothesis, investigating the direct and indirect effects of entrepreneurial orientations on anticipated emotions. Entrepreneurial orientations had a significant direct positive effect on the anticipation of positive emotions, but no direct effect on the anticipation of negative emotions. None of the indirect effects were significant. Hence, there was partial support for hypothesis E32.
## 10.6. Summary of findings

Chapters 8, 9 and 10 presented the findings for the distal and proximal relationships between the cognitive, motivational and emotional components of the self-regulation model in turn. Secondly, each chapter investigated the inter-relationships between the three self-regulation paths, and finally, the extent to which each variable predicted three forms of entrepreneurial success was examined. Table 10.5 presents a summary of the significant effects found throughout the three results chapters. For ease of reference, only significant effects are presented here. Small, but non-significant effects, were omitted from the table. The table indicates whether a given variable had a direct (D) and/or indirect effect (I), and also whether this effect was positive (+) or negative (−) in valence.
Table 10.5. Summary of Significant Results

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D = Direct effect; I = Indirect effect; + = Positive effect; - = Negative effect

Abbreviations: E.O. = entrepreneurial orientations; P.I. = personal initiative; M.A. = mastery approach goal orientation; P.A. = performance approach goal orientation; P.Av. = performance avoid goal orientation; Reap = reappraisal; Suppr = Suppression; ESE = entrepreneurial self-efficacy; CSE = creative self-efficacy; PAE = positive anticipated emotions; NAE = negative anticipated emotions; G.Spec = goal specificity; G.Diff = goal difficulty; Plan = planning; W.Eng. = work engagement; P.F.C. = problem focused coping; Obj.Succ = objective indicators of success; Self-Perc. = self-perceptions of success; Ext.Succ = external success.
SECTION 4: DISCUSSION AND CONCLUSIONS
CHAPTER 11: Advancing theory and research in self-regulation

Developing an integrative theory of self-regulation is not only desirable on abstract theoretical grounds. It is also of immensely practical value, because it can guide the development of effective instruments and evaluations.

(Kuhl, Kazén & Koole, 2006; p. 409)

11.1. Introduction

A central objective of the present research was to advance theory and research in self-regulation. An abundance of well-developed and complex theories of self-regulation abound, but there has been relatively little emphasis in past theory and research on the integration of cognitive, motivational and emotional forms of self-regulation. Although self-regulation is generally seen as a motivational construct (e.g. Kanfer, 1992), and some theories of self-regulation do emphasise the interplay of cognition and emotion (e.g. Control Theory), this has not been a central focus for self-regulation theorists up to this point. By integrating distal and proximal manifestations of cognition, emotion and motivation within the action process, the objective of the present research was to further advance theorising in self-regulation and allow future research to more fully appreciate the inherent complexities and interconnectedness of these three facets of human functioning that fall under the umbrella of self-regulation.

In this chapter, the results pertaining to each path (cognitive, motivational and emotional) will be described and explained first, before moving to explain the inter-connections between the three paths. The findings will be reflected upon in light of past research and theory. Following this the theoretical and practical implications of these findings will be considered. Finally future research suggestions will be made with regard to the further development of the model. More global suggestions for future research in the broader field of self-regulation will be made in the final chapter (chapter 13).

11.2. The proximal-distal nature of self-regulatory processes: Support from cognitive, motivational and emotional processes

In this section, the findings in relation to the individual cognitive, motivational and emotional paths will be outlined and connected with past research. The objective in this section is to establish the proximal-distal phases of the action process can pertain not just to goals, but to motivational and emotional concepts also. This is a fundamental premise of the present research, and so it is important to establish this prior to considering the inter-relationships between the paths.
11.2.1. Proximal distal cognitive/goal processes

Forgas, Baumeister and Tice (2009) stated that the psychological mechanisms that are involved in goal pursuit and self-regulation are so closely related that the best strategy appears to be to treat them as an integrated whole. The examination of the cognitive aspects of the model aimed to establish the core elements of the self-regulation process and to build on past research to integrate theory in the domains of goal-setting, Action Theory, the Rubicon model of action phases, and Motivated Action Theory. To a large extent, the findings supported this theoretical integration at the cognitive level, as well as past research in these domains.

Looking firstly to goal-setting (see Figure 8.6.a, b), the setting of more specific and difficult goals led entrepreneurs to take more action towards achieving their goals. This resulted in more goal-oriented behaviour and ultimately, led to higher success, both from at a venture level (objective and external success) and at a personal level (self-perceptions of success). Engaging in more elaborate and proactive planning (see Figure 8.4.a, b) also had a direct effect on increasing success at these levels, although for external success, while there was evidence of a small effect, it did not reach significance. Planning is similar to the attribute of goal intensity, which is a broad term referring to the scope, clarity, and mental effort involved in a mental process (Rand, 1990). Gollwitzer, Heckhausen and Ratajczak (1990) found that participants who thought more intensely and comprehensively about how to solve a problem related to a personal goal, were more likely to become committed to solving it, and were more likely to take action to solve it. Frese et al. (2007) previously established a link between planning and entrepreneurial success. However, the present research further explicates this relationship by also investigating goal-setting and goal-oriented behaviour. Goal setting (difficulty and specificity) also had an indirect effect on objective success via goal-directed behaviour, with goal specificity having an additional indirect effect on external success.

These findings provide initial support for the proximal cognitive elements of the model. The findings suggest that the volitional or more proximal components of the goal-setting and implementation process had a direct impact on taking action and success. Moreover, goal-setting had its effects on success through the more proximal process of taking action. Locke and Latham (1991) stated that, from a self-regulatory perspective, a specific difficult goal clarifies for a person what constitutes effective performance. In addition, Gollwitzer, Fujita and Oettingen (2004) suggest that making if-then plans (i.e. forming implementation intentions) that specify an anticipated critical situation and linking it to an instrumental, goal directed response is an effective self-regulatory strategy. Engaging in actions to achieve a goal suggests a level of goal commitment beyond that of someone who has not taken action (Locke & Latham, 1991).

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1 The implications for entrepreneurial success will be discussed in more detail in chapter 12.
Hence, the setting of goals and their translation into action is a volitional process in which self-regulation is evident, as the setting of a goal is foremost a discrepancy-inducing process (Locke & Latham, 1991). The findings in relation to goal-setting, planning and goal-oriented behaviour support these explanations, demonstrating that engaging in such self-regulatory strategies, particularly at a volitional level can enhance success at the level of the entrepreneurial venture.

These findings also corroborate the sequence of actions as outlined in Frese’s action theory (Frese, 2007, Frese & Zapf, 1994). However, much of the past research in entrepreneurship using this theory has focused on planning (e.g. Frese et al., 2007). The present research moves beyond this by examining both the impact of planning, and the impact that goal-setting has on actions, which in turn influence entrepreneurial outcomes. It demonstrates the active approach taken by entrepreneurs in the sequence of goal-directed action regulation (see Frese, 2009). Goals are proactive when future opportunities are transformed into goals, and plans are self-starting when it is oriented towards the longer term future and are sufficiently detailed (Frese, 2009). Hence, the present research also demonstrated that taking an active approach in each of the action phases has a positive impact on the venture’s success.

According to MAT (DeShon & Gillespie, 2005), goal orientation refers to the clusters of actions undertaken in the pursuit of achievement goals in specific situations, and as such, they are best viewed as a specific instantiation of more general models of self-regulation and action. Looking to the findings for goal orientations in the present research, both mastery approach and performance approach were found to positively predict goal-setting (both difficulty and specificity; see Figure 8.6), and planning (Figure 8.4), while a performance avoid goal orientation negatively predicted goal difficulty. Hence, entrepreneurs who predominantly adopt mastery and performance approach goals tend to set more difficult and specific goals, and engage in more elaborate and proactive planning. VandeWalle, Brown, Cron and Slocum (1999) found mastery orientation to be related to the performance of salespeople via goal-setting, effort and planning, which is largely corroborated in the present research, but found no relationship with performance orientation, as was found in the present research. In the context of entrepreneurship, where the continued existence of a venture depends on its performance, maintaining a performance approach goal orientation may be more important and more adaptive than in the context of paid employment. This may explain the discrepant findings between the present research and that of VandeWalle et al. (1999). In support of the findings of the present research, Dragoni (2005) suggested that engaging in a performance approach goal orientation may be adaptive in some circumstances, and so this is likely to be positively related to task performance. These findings demonstrate the importance of considering context as a variable that can result in discrepant outcomes in determining the influence of goal orientations.
For an entrepreneur, holding a performance avoid goal orientation with regard to the two most important venture goals negatively predicted goal difficulty, and had an indirect negative effect on taking action via goal-setting, which is in line, both with the hypothesised relationships, and with past findings in relation to this goal orientation (e.g. VandeWalle, Cron & Slocum, 2001), and with regard to possessing a prevention focus from the perspective of regulatory focus theory (Higgins, 1997). Holding an avoid orientation suggests that one is primarily concerned with the avoidance of failure, on avoiding tasks where one may be seen as incompetent and on avoiding making a negative impression on others (VandeWalle et al., 1997). For someone holding such a goal orientation, it would not be sensible to set a difficult goal, as this makes the task more difficult, and makes the chances of failure all the more possible. It is likely that the indirect effect on actions is primarily due to the fact that easier goals are set.

The total indirect effects from all three goal orientations to actions via goal-setting (specificity and difficulty) were significant. The indirect effect from mastery and performance approach was positive in nature, while from performance avoid was negative in nature. Mastery approach and performance approach had a significant indirect effect via planning on objective success. These indirect relationships provide quite strong support for DeShon and Gillespie’s (2005) Motivated Action Theory, which among other things, proposed that action is directed towards the attainment of goals, and goals are hierarchically structured within the individual, such that high-level goals are distal desired states and lower level goals are means to obtain the higher level goals. DeShon and Gillespie (2005) also suggest that the goal hierarchy can be likened to Frese and Zapf’s (1994) action theory which also consists of four distinct hierarchical levels. Hence, although action theory does not specifically include goal orientations, the present findings provide support for such an addition. Frese (2007) suggests that intermediate goals are more often in the foreground of our attention than more distal goals. Furthermore, adopting a performance-approach goal along with a mastery-approach goal has been posited as promoting optimal motivation, as these goals are associated with high performance levels and high interest (Harackiewicz, Barron, Pintrich, Elliot & Thrash, 2002). The results found in the present research would appear to corroborate this.

Kanfer and Heggestad (1987) suggested that distal goals may be less effective than effective metacognitive and self-management skills in complex jobs. This would appear to be borne out in the present research where the more distal goals (goal orientations) had their effect through the more proximal ones. These findings are also consistent with previous research in the goal-orientations and goal-setting literature. Brett and VandeWalle (1999) found that goal orientations did not affect performance directly, but were mediated by the goals that are set. In a meta-analytic study, Payne, Youngcourt and Beaubien (2007) found that state goal
orientations tended to have stronger relationships with distal outcomes (in their study conceptualised as learning, academic performance, task performance and job performance) than did trait goal orientations.

DeShon and Gillespie (2005) suggest that the study of goal orientation is fundamentally an examination of choice behaviour in achievement contexts, and as goals are hierarchically structured, one’s goal orientation will influence the choice to engage in certain behaviours in achievement situations, the level of goal difficulty to set, whether to select challenging goals, and whether to persist when obstacles are encountered. The findings of the present research supported these assumptions underlying MAT. Furthermore, MAT suggests that in order to understand and predict an individual’s goal-oriented behaviour in an achievement context, it is important to understand the goal being pursued, the difficulty level of the pursued goal, and the specificity of the goal being pursued. The present findings also support this contention.

Frese (2007) suggest that at the level of metacognitive heuristics in Action Theory, generalized and automatic heuristics with regard to action regulation (termed action styles) may be evident, which can function as equivalents to personality traits. Goal orientations may be seen as a similar type of concept. These findings support the integration of Action Theory and MAT into Heckhausen’s Rubicon model of action phases. The first phase in this model (pre-decisional motivation) is one of choosing between alternative goals (J. Heckhausen, 2007), and the function of this phase is ultimately to decide which wish an individual wants to pursue (Achtziger & Gollwitzer, 2008). Goal orientations represent this phase, and could be considered a type of metavolition. Depending on the choice that is made between these alternative goals, they influence the goals in the next phase (volition pre-actional). Hence, goal orientations, as metavolitions impact the difficulty and specificity of the goals set and the level of planning engaged in. Planning and goal setting ultimately result in the taking of action, which is the next phase in the Rubicon model. In turn, taking action leads to the evaluation of success which is representative of the final phase; the post-actional motivation phase. Hence, overall, the results from the cognitive path of the model demonstrated strong alignment with past research. It confirmed the robustness of the Rubicon model of action phases as well as Action Theory. It further suggested that there is merit in considering a wider range of hierarchical goals, with particular emphasis on the introduction of goal orientations, in line with Motivated Action Theory.

Previous research has also suggested that the influence of goal orientations may depend on whether the situation is characterised as a strong or weak one. Adler and Weiss (1988) suggested that setting a specific, challenging goal creates a strong situation, which in turn, attenuates the influence of personality on a person’s behaviour. Seijts, Latham, Tasa and Latham (2004) demonstrated that imposing a specific difficult learning goal creates a strong
situation, and that this state, led to better performance, regardless of a person’s dispositional goal orientation. Hence, previous research would imply that the relationship between personality and performance is mediated by situationally specific goals and self-efficacy (Baum, Locke & Smith, 2001; Locke, 2001). Furthermore, in a study of entrepreneurs, Baum and Locke (2004) demonstrated that personality traits had an indirect effect on performance through visions, goal-setting and self-efficacy. This provides further corroboration of the present findings.

Future research will need to further investigate the role that goal orientations have in the workplace and in entrepreneurship. The findings outlined above suggest that there is merit in investigating such orientations at the goal level, rather than at the dispositional level. Assessing goal orientations at this level suggests that it is quite possible for an individual to simultaneously hold mastery and performance goals for the same activity, and potentially may even hold approach and avoidance goals for different components of an activity. Hence, the interaction of the goal orientations will also be important to investigate going forward. Payne, Youngcourt and Beaubien (2007) found a small positive correlation between learning and performance prove goal orientations in their meta-analysis, and suggest that researchers should not always assume that these two dimensions will relate differentially to various outcomes. Dragnoni (2005) theorized on the emergence of state goal orientation over time in work groups, and suggested that leadership and multilevel climate perceptions could influence goal orientations conceptualized as a state. Another interesting direction for future research would be to conduct diary studies to investigate the potential evolution and interaction of mastery approach, performance approach and performance avoid goals over time, while controlling for their dispositional goal orientation, and considering the impact of these on various measures of performance as they develop. The role of context and environment on such development is likely a critical variables that will influence such developmental progression, and so will need to be considered in future research also.

11.2.2. Proximal-distal motivational processes

Kanfer and Heggestad (1997) suggested that individual differences in motivational traits influence individual differences in motivational skills, by differentially affording individual opportunities for skill development. In a similar vein, the aim of this section of the research was to investigate the relationships between different types of motivational constructs that manifest at varying levels of proximity throughout the action process. In the distal motivation pre-decisional phase, entrepreneurial orientations and personal initiative represented motivational resources at a dispositional or distal level. More proximal motivational resources were represented by domain specific self-efficacy (entrepreneurial and creative), and volitional resources in the volition pre-actional phrase were represented by work engagement.
Looking firstly to the impact of the more distal motivational resources, both entrepreneurial orientations and personal initiative had significant positive effects on both forms of domain-specific self-efficacy (entrepreneurial self-efficacy and creative self-efficacy; see Figures 9.3 a, b). Personal initiative has been posited to be positively related to the concept of self-efficacy, because a person needs to believe in his or her ability to do things competently to show initiative (Fay & Frese, 2001). Fay and Frese (2001) cited a number of validity studies which have found a relationship between personal initiative and both work-related self-efficacy and study-related self-efficacy. The present findings suggest that dispositional initiative can increase an entrepreneur’s belief in his/her ability to perform the tasks required to begin and run a new venture.

Personal initiative was measured at the dispositional level in the present research, but can also be assessed as a behaviour (Bledow & Frese, 2009; Fay & Frese, 2001; Frese et al., 1997). Similar trait-state issues regarding the conceptualisation of self-efficacy are evident in past literature, and there is now reasonable consensus that self-efficacy can be measured at a general level (more global and stable), a domain specific level, and a task specific level (Bandura, 1977; Chen, Gully & Eden, 2001; Woodruff & Cashman, 1993). Previous research has also found that general self-efficacy can predict personal initiative measured at a more behavioural level, as situated action (Bledow & Frese, 2009). This raises the question as to the direction of causality of the relationship between self-efficacy and personal initiative. One possible explanation is that these two concepts have reciprocal relationships, where high self-efficacy results in an increase in the likelihood of engaging in proactive behaviour, and such initiative leads to positive outcomes for the individual, which in turn enhances their self-efficacy.

Fay and Frese (2001) describe personal initiative as an active orientation. Entrepreneurial orientations can also be conceived as an active approach (Frese, 2009), but are more specific to the context of entrepreneurship than personal initiative, which relates to work in general. Hence, the finding that entrepreneurial orientation was also a predictor of self-efficacy was unsurprising, and provides further support for the robustness of the relationship between active or proactive dispositions and one’s belief in one’s ability. Research by Poon, Raja, Ainuddin and Junit (2006) investigated whether firm-level entrepreneurial orientations mediated the effects of self-concept traits and firm performance. Their findings indicated that generalised self-efficacy influenced firm performance through its effect on entrepreneurial orientations, which was conceptualised as an indicator of firm behaviour in their study. However, this is a classic example of cross level confusion as addressed by Davidsson (2007). While self-efficacy has been linked to motivation and behaviour at the level of the individual (Bandura, 1986), it is difficult to justify a prediction and empirical finding that the general self-
efficacy of an owner has an impact on the entire behaviour of a firm. At best, this effect would have to be mediated by the founders’ behaviour, but also likely by the behaviour of other members of the organisation also. The present findings provide a theoretical rationale for why entrepreneurial orientations, as a more distal dispositional variable of an individual, will have an effect on the domain specific self-efficacy of the same entrepreneur. Although the direction of causality cannot be established in cross-sectional research, there appears to be a stronger theoretical rationale for the way in which the relationships were manifested and measured in the present research.

Entrepreneurial orientations and personal initiative had direct effects, and an indirect effect on work engagement, via entrepreneurial self-efficacy. The relationship between personal initiative and engagement is in line with past research. Schaufeli et al. (2001) suggest that engaged employees take personal initiative. Salanova and Schaufeli (2008) found that there was a positive relationship between work engagement and self-reported personal initiative. Sonnentag (2003) found various relationships between trait and day-level measures of personal initiative and engagement. However, there is the possibility of reciprocal determinism here also. Hakanen, Perhoniemi and Toppinen-Tanner (2008) examined longitudinally the effects of job resources on work engagement, work engagement on personal initiative, personal initiative on work engagement, and work engagement on job resources. The findings indicated that there are reciprocal influences of work engagement and personal initiative.

Furthermore, these findings provide support for the arguments of Frese (2008), who considers engagement and personal initiative to be similar concepts developed in the general domain of active performance, and questions the need to differentiate between them. The present research provides some support for the contention that both variables are forms of proactivity, but argues that they reside in distinct stages of the action process. Hence, for any researcher taking a dynamic process perspective, there is merit in their distinction. Taking such a dynamic process perspective (e.g. Vancouver, 2008; Vancouver & Day, 2005) may also aid future research in explaining the disparate findings in relation to why engagement behaviour is often shown in negative situations and with low positive state affect, as mentioned by Frese (2008). Recently, it has also been suggested that proactivity can be a factor in counterproductive work behaviours as well as in organisational citizenship behaviours (Semmer et al., 2010; Spector & Fox, 2010). This presents an interesting question as to the contextual conditions that result in proactive employees using their initiative for more destructive acts, rather than constructive acts, and whether work engagement may be a determining factor in this. Hagedoorn and colleagues (Hagedoorn et al., 1999; VanYperen et al., 2000) proposed a model which suggested that employees could respond to job dissatisfaction in a number of ways that vary along two axes, one from active to passive, and the second from constructive to
destructive. It may be that when in a negative situation, the experience of engagement results in a proactive employee engaging in behaviour to try to elicit positive change rather than destructive acts.

Looking to the relationship between entrepreneurial orientations and work engagement, Frese (2009) states that entrepreneurial orientations can be seen as an active performance dimension, and as such, these findings provide further support for Frese (2008) suggestion that work engagement is a form of proactivity. Beyond this, the relationship between entrepreneurial orientations and engagement make sense. If an individual is more suited or more “oriented” towards an entrepreneurial career it is also likely that they find such work to be more rewarding, and experience a higher level of engagement. Support for this interpretation comes from the work of Cardon et al. (2009) who suggest that passion is aroused because entrepreneurs are engaged in something that relates to a meaningful and salient self-identity for them. Entrepreneurial orientations may be seen as a form of self-concept to an extent, and paired with the suggestion of Bierly, Kessler and Christensen (2000) that passion may increase the belief that one’s work is meaningful, the relationship between entrepreneurial orientation and work engagement appears to fit quite well with the research on entrepreneurial passion. This may also provide further support for the relationship between entrepreneurial orientations and self-efficacy. Cardon et al. (2009) postulate that the positive valence of passion bolsters success beliefs for activities that affirm and validate the identity associated with that passion, thus increasing self-efficacy.

Looking to the more proximal motivational resources, entrepreneurial self-efficacy had a significant positive effect on work engagement, but the effect of creative self-efficacy was not significant. Previous research has demonstrated the existence of a gain spiral between self-efficacy, job resources and engagement (Llorens, Schaufeli, Bakker & Salanova, 2007). The present findings suggest that there is a relationship between self-efficacy and engagement in entrepreneurs also. In this research, entrepreneurial self-efficacy predicted work engagement. However, it may be interesting for future research to examine whether such a gain spiral exists in the domain of entrepreneurship also. Such research would be of particular interest as a number of researchers have suggested that overconfidence or chronic high self-efficacy may have a negative impact in the domain of entrepreneurship (Vancouver, Thompson, Tischner & Putka, 2002; Vancouver, Thompson & Williams, 2001).

Overall, motivational resources are an important predictor of volitional resources. This finding goes some way towards answering the call by Kanfer and Heggestad (1997) with regard to how individual differences in motivational traits influence individual differences in motivational skills. The present findings suggest that more distal motivational constructs influence more proximal volitional forms of motivation. This research also speaks to Locke’s
(1991) motivation sequence model, which started with needs and values and ended with rewards and satisfaction. Self-set goals and self-efficacy were the mediators in the model. However, Locke’s model also suggests that self-set personal goals and self-efficacy are the most immediate, motivational determinants of action (Locke, 2001). This is not case, which was demonstrated in the present research, whereby there were both cognitive and motivational variables in more proximal phases of the action process.

These findings also provide support for the integration of the distal-proximal categorisation of variables and the models focusing on action and action phases. Furthermore, they support the incorporation of a motivational path into Heckhausen’s Rubicon model of action phases, suggesting that motivation manifests itself in different, but related ways, in each of the action phases. However, where previous investigations of each phase have tended to focus on cognitive components, the present research suggests that motivational components can also be mapped along the various action phases also by using the conceptualisation of distal and proximal motivational and volitional resources. The model suggests that these variables may mediate or link the effects of other motivators, which was borne out in the findings.

11.2.3. Proximal-distal emotional processes

The aim of this section of the research was to investigate whether the pertinent emotional variables could be mapped along a proximal-distal action path as the cognitive and motivational ones were (see Figures 10.2.a, b). Reappraisal and suppression were dispositional emotion regulation strategies and so were classed as a distal variable and placed in the distal motivation pre-decisional phase. Anticipated goal-directed emotions were more proximal, but because they were anticipated they were placed in the volition pre-actional phase. Finally, problem-focused coping strategies were placed in the actional phase of the model.

Reappraisal had a positive effect on anticipated positive emotions. In the direct effects model, this relationship was small-medium in magnitude and did not reach significance, but in the fully specified model, it was medium in magnitude and significant. In both models, reappraisal had a small negative influence on anticipated negative emotions, which was non-significant. Suppression had a small positive, but non-significant effect on anticipated negative emotions in the fully specified model, but this did not appear in the direct effects model. No relationship was found with anticipated positive emotions. These findings fit quite well with Gross’ (1998) process model of emotion regulation. John and Gross (2007) demonstrated that reappraisal, as an antecedent focused strategy, permits the modification of the entire emotional sequence, including the experience of more positive or negative emotion. In contrast, suppression primarily modifies the behavioural aspect of emotion-response tendencies, without reducing the experience of negative emotion. However, Koole (2009a) has critiqued Gross
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(1998, 2001) process model of emotion regulation, noting that this model assumes that emotion responses are generated in a fixed cycle, when in fact research suggests that the order in which emotion responses are generated are, in fact, variable.

The effects of the emotion regulation strategies on problem-focused coping were also investigated, and it was found that reappraisal had a medium-large positive (and significant) effect on problem-focused coping, but there was no discernable relationship for suppression. Kim, Cable, Kim and Wang (2009) suggest that individuals who are high in emotional competence (which include emotion regulation), are more likely to adopt positive coping strategies in the workplace. The findings of the present research are in line with this. Reappraisal has generally been conceived as a more beneficial form of emotional regulation (Gross & John, 2003), while problem-focused coping can be seen as a positive and active form of coping, as it has been shown to be more beneficial in reducing the effects of the stressor or removing it altogether (Carver, Scheier & Weintraub, 1989; Frese et al., 1997). Hence, these findings suggest that reappraisal, as a more proactive form of emotion regulation has benefits in terms of allowing an individual to use more active and effective coping strategies to deal with stressors. The lack of a relationship between suppression and problem-focused coping is in line with Baker and Berenbaum’s (2007) finding that participants who were clear and attentive about expressing their emotions had higher levels of positive affect if they engaged in problem-focused coping. Suppression involves the dampening down of emotions, and so it is unlikely that this strategy will result in the expression of emotions.

Anticipated positive emotions were found to have a significant positive effect on problem-focused coping, which was medium in magnitude. However, negative anticipated emotions had no effect. These findings are in line with research findings stemming from Control Theory, which found that positive affect influences one’s preference for effective coping strategies (Carver & Scheier, 2001), and which found that more optimistic individuals use different coping strategies than more pessimistic individuals, such as more planning and problem-focused coping when the event was controllable, more positive reframing, and more acceptance of the situation when the stressor was not controllable (Scheier & Carver, 1992). Moreover, this finding is in line with research from proactive coping, which found a link between positive emotions and more effective coping (Aspinwall & Taylor, 1992; Diamond & Aspinwall, 2003). This finding also fits quite well with Frederickson’s (1998) broaden and build theory of positive emotions, and research in this area has shown that positive states are associated with the broadening of attention, (Amabile et al., 2005; Fredrickson, 2004; Fredrickson & Branigan, 2005). Similar findings have also been seen in the creativity literature, whereby positive emotions expand our thinking allowing us to consider more possibilities and
come up with a wider range of solutions to problems (Baas, DeDreu & Nijstad, 2008; Estrada, Isen & Young, 2004).

Past research with regard to the impact of negative emotions on coping has been more mixed, with some researchers findings an association with both avoidant coping and effective coping (Aspinwall & Taylor, 1992) and others suggesting that the anticipation of negative emotions may stimulate coping behaviours to prevent a failure (Baumgartner, Pieters & Bagozzi, 2008). Such a rationale was not borne out in the present findings. However, the present research did not consider less effective forms of coping, and future research will need to examine whether the negative goal-directed emotions lead entrepreneurs to engage in more avoidant coping.

Hence, the findings in relation to the affective and emotion regulation path suggests that the more distal emotion regulation variables impacted both more proximal anticipated emotions and more action oriented coping strategies. In turn, the positive anticipated emotions also had an impact on the coping strategies utilised. Hence, these findings provide quite strong support for the integration of the emotional path of self-regulation along similar lines as the cognitive and motivational paths.

**11.2.4. Section conclusions**

Action theory suggests that there are three foci of regulation, the task, the social context in which the task is done, and the self (Frese, 2007). However, the majority of research using this theory has focused on the task or task goals, and Frese (2007) suggests that there is some need to explicate the role of motivation and emotion within the theory. The regulation of the self includes aspects such as self-management, self-efficacy and the switch from self to task. Although included in the theory, the self is rarely studied from an action theory perspective. In order to integrate the motivational and emotional aspects of regulating the self, in addition to the focus on regulating the tasks, theories of motivation regulation and emotion regulation were drawn on. Overall, the findings supported the contention that the cognitive, motivational and emotional self-regulatory paths can be mapped onto the action process along a distal-proximal continuum.

**11.3. Integrating cognitive, motivational and emotional components in the process of self-regulation**

This section of the research reviews the findings in relation to the overlap between the cognitive, motivational and emotional paths of the self-regulation process.

**11.3.1. The interplay of motivation and cognition in self-regulation**

Human action is a combination of motivation and cognition, and strategies for achieving goals can be both cognitive and motivational (Locke, 2000). The aim of this section
of the research was to investigate the inter-relationships between cognitive and motivational components in proximal and distal phases of the self-regulatory process (see Figures 9.5a, b for the models with planning, and Figures 9.7a, b for the models with goal-setting and actions).

Overall, a number of significant results were found. The more distal motivational resources consisted of entrepreneurial orientations and personal initiative. Entrepreneurial orientations significantly predicted performance approach goals, but not mastery approach goals, while personal initiative predicted neither goal orientations at a significant level. Kraus et al. (2005) state that there are some overlaps between the individual factors of entrepreneurial orientations and goal orientations. However, in the present research, entrepreneurial orientations were classified as a motivational resource, while goal orientations were classified as a cognitive variable. Furthermore, goal orientations were posited to be a somewhat more proximal set of concepts than entrepreneurial orientations.

In their meta-analysis, Payne, Youngcourt and Beaubien (2007) found that need for achievement related positively to a learning goal orientation, negatively to a performance avoid orientation and was unrelated to performance prove orientation. An achievement orientation is one component of the broader concept of entrepreneurial orientations, and so there are overlaps between this concept and the concept of need for achievement. It is interesting then, that in the context of entrepreneurship, it is the performance approach orientation that is significantly predicted by entrepreneurial orientations, but not the mastery approach orientation. Similarly, Kraus et al. (2005) likens the learning orientation to a learning goal orientation. As discussed above, this again suggests that context is all-important when investigating goal orientations, which are a form of motivational cognition, and again indicates that in the context of entrepreneurship holding a performance approach goal orientation may be a more adaptive strategy. With regard to personal initiative, one can be proactive in both positive and negative ways (e.g. OCBs vs. CWBs), although the definition of personal initiative does state that it should be directed positively towards the organisation. In a similar vein, one could show initiative in both approaching and avoiding tasks or situations, and equally, proactiveness could be evident whether one is pursuing a mastery or performance goal. This may explain why personal initiative did not have an effect on goal orientations.

Entrepreneurial orientations had a significant positive direct effect on planning, and on both goal-setting components (goal-difficulty and goal-specificity). It also had an indirect effect on taking actions, via both goal-difficulty and goal-specificity. Furthermore, the total indirect effects from entrepreneurial orientations to actions were significant. Frese (2009) suggests that entrepreneurial orientations are related to the concept of active performance and Frese (2007) suggests that in the entrepreneurial context, the concept that comes closest to personal initiative is the proactive stance in entrepreneurial orientation. Frese (Frese, 2001; Rauch & Frese, 2000)
sees entrepreneurial orientations as an attitude towards one’s entrepreneurial strategies. Furthermore, Rauch and Frese (2000) consider entrepreneurial orientations to represent a general strategic orientation that is dependent on environmental and organisational factors, and Kraus et al. (2005) state that the psychological conceptualisation of entrepreneurial orientations entails psychological orientations of the owner that relate to the owners’ daily tasks and fit with the environmental requirements. Given these definitions, it is clear that one’s dispositional approach to strategising will have an impact on the plans that one makes, the goals that one sets, and the actions one take in the context of one’s venture. Parker and Collins (2010) recommend that future planning (or strategy process characteristics) should be included in the higher order category of proactive strategic behaviour. The present research suggests that both entrepreneurial orientations and planning are both forms of proactivity, but are more distal and proximal manifestations. Furthermore, Frese et al. (1997) found that there was a relationship between need for achievement and behavioural initiative. Although the present research only measured the taking of action and not how proactive one was in taking action, these previous findings provide support for those of the present research, as holding an achievement orientation is one aspect of the broader entrepreneurial orientations concept.

Personal initiative did not demonstrate a significant relationship with either planning or goal-setting. However, given that Frese (2007) suggested a relationship between entrepreneurial orientations and personal initiative, it may be that entrepreneurial orientations are the more contextually relevant concept. Indeed Kraus et al. (2005) incorporated personal initiative into the entrepreneurial orientation construct. Given that personal initiative was not specific to the entrepreneurial context, while entrepreneurial orientations were, it may be that entrepreneurial orientations better accounted for the variance in cognition and action than holding a proactive orientation was having in this context. Furthermore, personal initiative had a small, but non-significant effect on taking actions, while entrepreneurial orientations had a medium-large direct effect on actions.

The findings in relation to personal initiative are somewhat inconsistent with past findings. Fay and Frese (2001) describe personal initiative both as an active orientation, and as a self-starting behaviour. The present research investigated personal initiative as a distal motivational resource, similar to the concept of proactive personality, in order to assess the impact that both entrepreneurial orientations and initiative had on more proximal self-regulation. Frese (2007) suggests that personal initiative can be applied to each of the action steps (goal-setting, planning, monitoring etc.), but this implies a more behavioural conceptualisation. Past research which has found stronger relationships between the action steps and personal initiative have tended to use both a behavioural and a dispositional assessment of personal initiative (e.g. Frese et al., 2007). This may account for the discrepant
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findings in the present research. Furthermore, in a longitudinal study, Frese et al. (1997) found that only the behavioural measure of personal initiative predicted being able to get a job when unemployed, whereas the personality measure did not. Hence, Frese and Fay (2001) conclude that the behavioural measure predicts certain behaviours better than the personality measure. Future research would benefit from incorporating multiple measures and manifestations of personal initiative to isolate the impact of dispositional and behavioural forms. Indeed, Parker and Collins (2010) have demonstrated that different forms of proactive behaviour have both similar and discrepant distal antecedents. Furthermore, Frese et al. (2007) failed to find a relationship between motivational resources and planning when they also included cognitive resources in the model, although they did find a relationship when cognitive resources were not included. In this study, the motivational resources consisted of dispositional personal initiative, self-efficacy, need for achievement, and internal locus of control. It appears that there is need for clarity in terms of the role that dispositional proactivity or personal initiative has in the entrepreneurial context.

Creative self-efficacy, but not entrepreneurial self-efficacy had a direct effect on planning. Creative self-efficacy had a significant positive effect on goal difficulty, but did not have an effect on goal-specificity. Entrepreneurial self-efficacy predicted neither of the goal-setting variables significantly. Goal setting theory suggests that self-efficacy has an impact on the goals chosen by an individual (Latham & Locke, 2007). Hence, it is quite surprising that entrepreneurial self-efficacy did not demonstrate a significant effect on goal-setting or planning in this instance, but that creative self-efficacy did. These results may suggest that it is important to consider multiple forms of domain specific self-efficacy, and also, that it may be important to assess self-efficacy at the goal or task level, rather than the domain or general level, as espoused by Bandura (1977).

There is ample evidence from goal-setting research to suggest that self-efficacy affects goal level, task performance, goal commitment (when the goal is self-set) and the choice to set a specific (quantitative) goal rather than a non-specific goal (e.g. Locke et al., 1984). Furthermore, Frese (2007) discusses self-efficacy as one component of regulating the self (as opposed to the task). The results found in this section of the research suggest that creative self-efficacy is important for the development of elaborate and proactive planning. Kanfer (2005) posits that self-efficacy plays a key role in determining the initiation, direction and maintenance of goal/self-regulation processes, and as such, its influence tends to be initially seen in what goals an individual chooses to set and to act upon. The finding that self-efficacy has an impact on planning supports this reasoning. In the context of entrepreneurship, there is some evidence that self-efficacy is an important explanatory variable in determining both the strength of entrepreneurial intentions and the likelihood that those intentions will result in entrepreneurial
actions (Boyd & Vozikis, 1994; Kickul & Kreugar, 2004), both of which involve the development of plans.

More recently, Vancouver et al. (2010) have argued that there is merit in distinguishing goal-striving processes from goal choice processes, as this plays a role in determining the direction of the within-individual effect of self-efficacy. These authors suggest that when participants are planning for accepted goals, their self-efficacy beliefs relate negatively to their performance, as self-efficacy involves a higher expectancy of reaching the goal and leads to less resources in terms of effort and performance being allocated to a task. However, when individuals are involved in the goal choice process the effect of self-efficacy will be positive as higher self-efficacy may lead to higher goals being set (Vancouver et al., 2010). However, Seo and Ilies (2009) suggest that in dynamic task environment (akin to the environments in which entrepreneurs operate), higher self-efficacy may encourage individuals to continually set and reset higher levels of meaningful goals without developing overconfidence or lowering motivational resources which could lead to higher performance.

The results of the present research add to the debate with regard to the role of self-efficacy in the goal regulation process. The results suggest that the type of domain specific self-efficacy one considers will impact the relationships found. The present findings suggest a relationship between creative self-efficacy and planning, but no significant relationship for entrepreneurial self-efficacy. However, there was some evidence to suggest that entrepreneurial self-efficacy had a direct impact on self-perceptions of success. This may suggest that entrepreneurial self-efficacy plays a role in the acquisition of skills that are necessary for early stage entrepreneurs to achieve success in an entrepreneurial endeavour.

Entrepreneurial self-efficacy had a small positive effect on taking actions in the full model, but its impact was negligible in the model where only the two forms of self-efficacy were included as predictors of actions. Hence, there was little evidence found that self-efficacy has an impact on taking action. Recently, Parker and colleagues (Parker, Bindl & Strauss, 2010; Parker & Collins, 2010) have suggested that self-efficacy is important for engaging in proactive behaviours, but only in certain forms of proactive behaviours. The lack of relationship found in the present research may be due to the fact that the research only captured the level of activity, but did not capture specific types of behaviours, nor did it investigated proactive or adaptive behaviours. Hence, it is likely that future research will find a relationship between self-efficacy and actions if specific behaviours or specific categories of behaviours are considered. For example, role-breadth self-efficacy has been shown to predict a number of proactive behaviours such as, proactive job performance (Griffin et al., 2007), suggesting improvements (Axtell et al., 2000) and proactive problem solving (Parker et al., 2006) (see Parker & Collins, 2010). On the other hand, Parker and Collins (2010) found that role-breadth self-efficacy mediated the
relationship between dispositional antecedents and proactive work behaviour. The present research found that entrepreneurial self-efficacy mediated the relationship between personal initiative and self-perceptions of success (discussed in more detail in chapter 12). This suggests that both personal initiative and self-efficacy may have an important role to play in entrepreneurial performance.

A negative relationship between performance approach goals and work engagement was found, which was not predicted. However, Cardon et al. (2009) hypothesise that goal striving may diminish absorption in identity-relevant activities because, it shifts attention away from strategic goals activated by entrepreneurial passion, to more immediate tactical goals and associated feedback, resulting in an interruption of flow experiences that come from effortlessness in goal-directed actions. A similar rationale may be used to explain the negative relationship between performance approach goals and work engagement. Performance goals are associated with the achievement of more immediate goals that will lead to achievement of some sort, which is evidenced in their positive association with goal-setting and planning. However, as Cardon et al. suggest, such a focus may draw an entrepreneur’s focus away from goals that are of more intrinsic interest to them, thus diminishing the levels of engagement experienced. Such a rationale also fits with Sansone and Thoman’s (2005) self-regulation of motivation (SRM) model. This model suggests that there are goal-defined and experience-defined motivations which can influence each other and which can be regulated. Experience-defined motivation is associated with intrinsic motivation stemming from interest, for example, while goals-defined motivation is a form of extrinsic motivation. A performance approach goal orientation can be associated with extrinsic motivation. However, work engagement can be seen as a type of intrinsic motivation or “interested engagement” (Sansone, 2009; p. 47). Of note is that SRM postulates that there may be trade-offs between maintaining interest and maintaining performance. The negative relationship between performance approach goals and work engagement found in the present research may be an example of such a trade-off.

The present research elicited a number of interesting findings with regard to the interrelations of motivational and volitional components of the action phases. At a theoretical level, it demonstrated that there are advantages to integrating Action Theory (Frese & Zapf, 1994; Frese, 2007) with the Rubicon Model of Action Phases (Heckhausen, 1991). Furthermore, Kanfer’s (1992) proximal-distal distinction also provides a valuable added dimension for the conceptualisation of motivational and volitional resources into the relevant action phases. The empirical findings suggest that there is utility in examining the influence of distal motivational resources on more proximal volitional resources and cognition, and that to some extent such proximal processes mediate the effect of motivational resources on success in entrepreneurs. Furthermore, the results provide general support for the growing research stream
into active and proactive concepts (e.g. Frese, 2009; Parker, Bindl & Strauss, 2010). The findings also fit with research in the entrepreneurship field specifically. Locke and Baum (2007) demonstrated that a number of distinct motivational factors within the entrepreneurship domain, namely motivational traits, values and motives (independence, general self-confidence, achievement motivation, and drive which comprises proactivity, ambition and energy) were mediated by situationally specific motivators (self-efficacy, goals and vision) in terms of impacting performance.

The relationship between motivational and volitional resources and volitional cognition provide further support for the need to integrate motivational and cognitive factors in research on self-regulation. Motivational resources predicted both volitional resources and cognition in the present research, suggesting that distal motivational concepts are important for the prediction of more proximal concepts, located in the volitional pre-action phase of the Rubicon model, whether they be cognitive or motivational in nature. Baum, Locke and Smith (2001) also highlighted the importance of cognitive and motivational relationships, demonstrating that both cognitive and motivational predictors were important for venture growth, having both direct and indirect effects. Baum et al. demonstrated that more distal cognitive predictors (such as general and specific competencies) can predict more proximal situational motivation (vision, goals and self-efficacy). Taken together both the present results and those of Baum et al. suggest that whether cognitive or motivational in nature, distal predictors have their effect through more proximal predictors.

The motivational and volitional resources examined in this section of the research pertained to the first two phases of the Rubicon model only. Future research will need to further this examination by investigating how motivation in the actional and post-actional phase, relate to the motivational and volitional resources examined in the two pre-actional phases examined in the present stage. Furthermore, future research will benefit from a more thorough investigation of the inter-relationships between cognition and motivation in all of the action phases.

Although there were some interactions between the cognitive and motivational paths, the distal-proximal nature of each path held more strongly within the path rather than across paths, with the distal motivational resources largely predicting work engagement, and the distal cognitive variables largely predicting planning and actions. This was particularly evident in the case of personal initiative (a motivational resource) which was quite a strong predictor of self-efficacy and work engagement (volitional resources), but which was less important as a predictor of goal orientations of volitional cognition (goal-setting and planning). These particular findings advance previous findings and suggest that future research should quite
carefully consider the combination of predictor, outcome and mediating variables when choosing between cognitive and motivational paths.

### 11.3.2. The interplay of emotional and cognitive components in self-regulation

Hodgkinson and Healey (2008) highlight the challenge of incorporating emotions into current cognitive theories explaining workplace behaviour. A similar challenge can be advanced in the area of self-regulation, where the regulation of emotional and cognitive processes have largely been studied independently. Koole (2009b) suggests that affect regulation does not just serve hedonistic purposes but can also play a crucial role in supporting volitional action. The aim of this section of the research was to investigate the relationships between the cognitive and emotional paths of the model.

Reappraisal had a very small positive effect on planning, while suppression had a small positive effect on planning, but neither were significant. Neither form of emotion regulation had an impact on goal-setting. Regulation of emotion has been posited to use cognitive resources which may take one’s focus away from the task at hand, or at least consume resources that could otherwise be applied to the task. However, Action Theory (Frese & Zapf, 1994; Frese, 2007) would suggest that over time regulatory efforts become routinised, and hence, take less conscious effort and may become automated. Given that reappraisal and suppression were assessed as one’s chronic tendency to engage in one strategy or the other, rather than as a state, these regulatory strategies may be automated and hence require little cognitive resources. This may explain why both emotion regulation strategies had a positive effect on planning. Being able to quickly regulate one’s emotions through automatised and well-practiced emotion regulation strategies may be more important for conserving regulatory resources than the specific strategy employed. However, the effect was small in the present research.

Research has long supported a link between goals and emotions. Locke (1976) suggested that the more important the goal, the stronger the positive affect experienced after success, and the stronger the negative affect experienced following failure. However, the present research did not examine experienced emotions post goal attainment or non-attainment, but rather examined the influence of emotions associated with anticipated success or failure of a goal. Positive anticipated emotions had small positive effects on planning and goal-difficulty, which were non-significant, while negative anticipated emotions did not have an effect on planning or goal-difficulty. Anticipated emotions engender volitional processes that are concerned with the formation of goal intentions, planning and monitoring, and as such represent the motivational function of emotions (Bagozzi, Dholakia & Basuroy, 2003). In the present research, however, there was only evidence to suggest that the positive emotions associated with the anticipation of success had a motivational function. However, the model of goal-directed emotions proposed by Bagozzi, Baumgartner and Pieters (1998) would suggest that the
anticipation of both positive and negative emotions may have motivational effects. Bagozzi, Baumgartner and Pieters (1998) do state that the relationship between emotions and the achievement of goals is neither automatic nor direct, and emotions function in complex ways to motivate, direct and regulate actions in the service of goal pursuit (Bagozzi, Baumgartner, & Pieters, 1998). Somewhat in line with the present findings, Seo and colleagues (Seo, Barrett & Bartunek, 2004; Seo, Bartenuk & Feldman Barrett, 2009) demonstrated that positive core affect activates an approach action tendency, while other research has demonstrated that positive affect promotes the setting of more challenging goals (Ilies & Judge, 2005). The present findings go some way towards extending these findings to the concept of anticipated positive emotions. They also suggest that further research is needed to explicitly understand the relationships between anticipated emotions and the self-regulation of goals in more detail.

This finding is also in line with previous research which has found a relationship between experienced emotions and future orientation and proactive behaviours (Foo, Uy & Baron, 2009; Grant & Ashford, 2008). The research by Taylor and Gollwitzer (1995) may explain why this effect was small. They found that illusions of optimism were lower in a pre-actional state before one has developed an action plan, or has started acting, whereas illusionary optimism was higher once a person had started to act to achieve a certain goal. The anticipatory emotions assessed in the present measure were a pre-actional form of emotion, and hence, may be subject to the same conditions as the illusionary optimism in Taylor and Gollwitzer’s (1995) study. It may be that anticipated emotions are not as strong in their magnitude as felt emotions, and so their impact may be less. This may account for the small effect that positive anticipated emotions had on planning and goal-difficulty, and the lack of relationship with taking action. Future research may gain insights from investigating in-action emotions as outlined by Beal et al. (2006) in their episodic model of performance.

Erez and Isen (2002) suggested that one way in which positive affect may influence instrumentality is through its effect on cognitive organisation; positive feeling states may increase in individual’s ability to arrange ideas in varied ways, to see varied aspects of concepts, and may increase people’s access to alternative cognitive perspectives (Erez & Isen, 2002). This may further explain the relationship between positive anticipated emotions and planning. Erez and Isen (2002) suggest that because positive affect influences valence and expectancy, it may also influence goal commitment, and hence, goal-setting, and similarly, may influence individuals’ decisions of how to allocate their cognitive resources in line with Kanfer and Ackerman’s (1989) integrative resource model.

Neither anticipated emotion had a discernable effect on taking actions. However, Bindl and Parker (2010) suggested that activated positive affect such as feeling enthusiastic (which has overlaps with engagement) is more important for stimulating proactive action than is
inactivated positive action, such as feeling contented. The present research did not account for the passive or active component of the anticipated emotion, and hence future research may find a relationship if this attribute is incorporated. Furthermore, Efklides and Volet (2005) distinguished between metacognitive feelings versus emotions, and suggest that the function of meta-cognitive feelings is to monitor cognitive processing and trigger control decisions related to it, which has some overlap with the emotion control loop in Control Theory. Furthermore, they suggest that emotions control action that leads to the engagement in or suspending of action. Hence, there may also be merit in the investigation of metacognitive feelings in future research also.

Both mastery approach and performance avoid had significant negative effects on positive anticipated emotions, but no effect on negative anticipated emotions. Performance approach goals had no effect on either form of anticipated emotions. As experienced positive emotions are normally associated with approach orientations (Locke, 2000), it makes sense that holding a performance avoid orientation will decrease positive emotions directed towards anticipation of goal achievement. The valence of the effect of mastery approach on anticipated emotions was in the opposite direction to that predicted and also contradicts past findings. For example, Van Yperen (2006) found that, among other things, a mastery approach orientation was associated with positive affectivity, while a performance avoid orientation was associated with negative affectivity. However, Lord et al. (2010) suggest that affect can influence multiple goal processes. Negative affect can encourage increased effort towards the focal goal when it is close, while positive emotions facilitate effort towards distant goals (Lord et al., 2010). It is plausible that mastery approach goals remind an early-stage entrepreneur of how much they need to learn and how quickly they need to acquire knowledge, and this may decrease the entrepreneur's perception of the likelihood of success. This in turn may lower the anticipation of success and the positive emotions surrounding that. Negative affect indicates a necessity for greater effort and sustained attention (Carver & Scheier, 1998; Goette & Huffman, 2007) and mastery approach goals may stimulate anticipated negative affect as it keeps the entrepreneur focused on the gaps in their knowledge or skill that will prevent success if not addressed. However, this is a tentative explanation and would require further research to establish the validity of this interpretation, and the conditions under which such a relationship may manifest.

Austin and Vancouver (1996) argued that goals cannot be understood when isolated from the cognitive, behavioural and affective responses organised by pursuing goals. They stated that past research indicates that goal striving and goal attainment might be processed with different implications for affective responding. Affect is regulated by goal outcomes of attainment, frustration or abandonment, and emotions can also be regulated as goals themselves (Austin & Vancouver, 1996). Seo and Ilies (2009) suggest that positive and negative affective
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reactions have important motivational implications during the process of goal regulation. However, relatively little research has investigated the role that anticipated goal-directed emotions have. Bagozzi et al. (2003) noted that future research needs to better understand whether anticipated emotions function differently for different types of decisions, such as those that are discrepancy reducing and those that are discrepancy enlarging (in the terminology of Control Theory). The present research investigated this gap by considering the influence of goal orientations on anticipated goal-directed emotions. While previous research had investigated the relationship between goal orientations and currently experienced emotions (e.g. Cron et al., 2005; Payne et al., 2007), no research to date could be found which considered this relationship for anticipated emotions. However, the findings in this component of the model were somewhat ambiguous, and did not point to a decisive conclusion as to the relationship between goal orientations and anticipated goal-directed emotions. It may be that this relationship can only be investigated thoroughly at a more fine-grained level, for example, using controlled experimental designs, and day-level designs.

Performance approach had a small positive, but non-significant effect on problem-focused coping in the fully-specified model. However, neither of the other two goal orientations had a discernable effect. Stress and its associated behavioural responses represent a potential threat to performance unless dealt with. Holding a performance approach orientation means that one is focused on achieving one’s goals and succeeding, and in this sense, feelings of stress need to be dealt with effectively before they influence performance. Problem-focused coping has been shown to be an active and effective way of dealing with stress (Carver, Scheier & Weintraub, 1989; Frese et al., 1997), and so, it appears that performance approach goals may stimulate active behavioural responses. The finding also fits with the statement of Baker and Berenbaum (2007) who suggested that in order to consider whether coping was adaptive and led to goal attainment, one also needed to consider the type of goal and the type of coping strategy.

Finally, problem focused coping had a small positive effect on taking action, which did not reach significance. Forgas, Baumeister and Tice (2009) stated that individuals who are action oriented also tend to be better at affect regulation and tend to coordinate their affective states with the functional constraints associated with goal pursuits. This relationship between problem focused coping and taking action further supports the contention that problem-focused coping is an active performance concept, which is effective in dealing with stress. It further suggests that actively dealing with stressors has beneficial effects on allowing the individual to maintain on-task activities.

Overall, the investigation of the interactions between the emotional and cognitive paths indicated that there was merit in their investigation. However, as with the previous analysis of the motivational and cognitive path, each path predicted its own variables to a greater extent.
than any others (e.g. the distal emotional variables predicted the proximal ones, and the distal cognitive variables predicted the proximal cognitive variables more than any cross-path variables did). Daniels, Harris and Briner (2004) suggested that there are reciprocal influences between cognition and affect. Although the present research did not explicitly test such reciprocal influences, it did clearly show that more distal emotional concepts can have an influence on more proximal cognitive ones, and vice versa.

11.3.3. The interplay of emotional and motivational components in self-regulation

In order to complete the picture that is emerging, this section considers the relationships between the emotional and motivational elements of the model (see Figures 10.7a, b).

Personal initiative had a medium positive effect on reappraisal (which was significant), but no effect on suppression. Personal initiative also had a small-medium positive effect on problem-focused coping in the fully-specified version of the model, but this did not reach significance. Frese and Fay (2001) discuss the concept of the active coping strategy (Lazarus & Folkman, 1984) suggesting that problem-focused coping may be another example of an active performance concept. Furthermore, Rank and Frese (2008) suggest that problem-focused coping may be seen as an act of personal initiative or innovative behaviour in response to perceived stress. As such, one would expect that it would be predicted by dispositional proactivity or personal initiative. Furthermore, Frese and Fay (2001) suggest that the component of personal initiative that deals with overcoming barriers is also based on successfully regulating the emotions that arise when barriers appear repeatedly, which may account for the relationship between personal initiative and reappraisal. Furthermore, they state that active coping with stress helps to deal with the strain that may accompany the use of personal initiative (Frese & Fay, 2001). Frese et al. (1997) found an empirical relationship between problem-focused coping and personal initiative, explaining this by suggesting that problem-focused coping suggests that one attempts to actively do something to change a stress situation.

The hypothesized relationships between personal initiative, entrepreneurial orientations and anticipated emotions were exploratory in nature, and so, it is not unsurprising that no relationships were found between personal initiative and anticipated emotions. It may be that personal initiative is more relevant for influencing the active or passive nature of an emotion, rather than the positivity or negativity of an emotion. Indeed, Frese and Fay (2001) demonstrate that the experience of both positive and negative emotions may lead to self-starting behaviour, but suggest that personal initiative will not be related to concepts such as job satisfaction (a passive state) because it does not contribute to energizing behaviours.
However, entrepreneurial orientations did have a significant direct positive effect on the anticipation of positive emotions, but did not have an effect on the anticipation of negative emotions. Past research has demonstrated the entrepreneurial orientations at the firm level is associated with strategic adaptiveness (Dean & Thibodeaux, 1994). At the level of the individual, some research has suggested that emotions may serve an adaptive function (Koole, 2007; 2009b; Tice, 2009). Hence, this may go some way to explaining the impact of entrepreneurial orientations on anticipated goal-directed emotions. A second explanation may be that those high in entrepreneurial orientations may exhibit a better fit between their chosen occupation (that of an entrepreneur) and their interests and values. Hence, they may experience more fulfillment from the role, have high expectations of success, and hence, may anticipate higher levels of positive emotions in when their goals are reached.

Entrepreneurial orientations had no effect on either reappraisal or suppression, nor problem-focused coping. Given that both personal initiative and entrepreneurial orientations have been classified as active performance concepts (Frese, 2009), it is interesting that entrepreneurial orientations had a number of significant effects on the cognitive elements of the model, while personal initiative had a number of significant effects on the emotional elements of the model, in addition to their effects on the motivational elements. In this research, it would appear that entrepreneurial orientations were more effective in regulating the task, while personal initiative was more effective in regulating the self.

Reappraisal had a significant positive effect on entrepreneurial self-efficacy, but did not have an impact on creative self-efficacy. Reappraisal allows an individual to maintain a more positive and possibly optimistic outlook, and there is some research which points to the possibility of enhanced self-efficacy resulting from more positive emotions (Baron, 1990). Lord et al. (2010) explains that when doubts about potential success develop, attention disengages, allowing one to protect the self from more severe disappointment and negative feedback associated with unexpected failure. Effective reappraisal may counter such doubts, or negative thoughts (for example, by reappraising a problem as a challenge), which in turn means that the individual does not need to protect the self, and positively influences one’s self-efficacy for the task or role.

Suppression demonstrated a small, but non-significant positive effect on work engagement (the opposite direction to that which was predicted), but reappraisal did not demonstrate any relationship. PSI theory may play a role in explaining this finding. Koole and Jostman (2004) found that under stressful conditions, individuals who are action oriented (which is associated with self-regulation rather than self-control), mobilize central executive systems, such as extension memory and engage in implicit down-regulation of negative affect (ibid.). Hence, Koole and Jostman (2004) concluded that intuitive affect regulation is a highly
adaptive volitional tool. Although suppression of emotions is generally seen as a more effortful and hence, less effective form, of emotion regulation (John & Gross, 2007), it does often rely on the down-regulation of negative affect. In addition, assessed at the level of an individual difference, such suppression may be done on an intuitive or automatic basis. If this were the case, suppression may indeed form an adaptive response to stress, and in turn, enhance the level of engagement ones feels in ones work. Gross and John’s (2003) measure of emotion regulation does not take into account the extent to which different emotion regulation strategies are conducted on a more implicit or explicit basis, and it would appear that this may be an important characteristic of the strategy employed in future research. The lack of a relationship between reappraisal and work engagement is more difficult to explain, especially in light of past research by Gross and John (2003), which found that individuals who habitually use reappraisal had higher levels of environmental mastery, personal growth and a clearer purpose in life. Overall, these results suggest that future research is needed to further understand the relationship between individual differences in emotion regulation and work engagement.

Entrepreneurial self-efficacy had a small, but non-significant relationship with problem-focused coping in the fully-specified version of the model. However, creative self-efficacy was not related. Holding a strong belief in one’s entrepreneurial abilities means that one is more likely to feel efficacious with regard to dealing with whatever situations and events may need to be dealt with in order to further the venture. Hence, one is more likely to deal with any stress that arises in an effective and active manner. This is in line with research by Greenglass and Fiskenbaum (2009) who reported an association between proactive coping and self-efficacy and vigor. The relationship between self-efficacy and coping may also be explained through the appraisal processes inherent in coping. Lazarus (1991) suggests that the particular way in which one copes depends partly on secondary appraisal processes, which considers the resources or options for coping with internal or situational conditions, including one’s appraisal of self-efficacy with regard to acting on the situational conditions, self-efficacy with regard to regulating one’s own internal states, among other things. Although these two self-efficacy appraisals are more task-oriented than the domain level concept of entrepreneurial self-efficacy, it is plausible that high self-efficacy at work or role level will result in higher task related self-efficacy in terms of dealing with the demands that may come with such a role.

Entrepreneurial self-efficacy had a small, but non-significant positive relationship with anticipated negative emotions, but no relationship with the anticipation of positive emotions. Creative self-efficacy did not demonstrate any relationship with either type of anticipated emotions. The relationship with entrepreneurial self-efficacy was in the opposite direction to that which was hypothesised. One possible explanation may be that individuals with higher self-efficacy also have higher expectations for themselves and their performance, and hence
may experience more negative emotions in relation to their goals if they feel that progress is not sufficient or is not progressing as expected.

In the first version of the model, positive anticipated emotions had a significant, but small, positive effect on work engagement. In the fully specified model, this effect was still evident, but did not reach significance. However, negative anticipated emotions did not demonstrate a relationship with work engagement. From a theoretical perspective, work engagement is associated with positive emotions (Bakker, 2009; Parker & Bindl, 2010). Furthermore, Moriano and Gorgievski (2011) investigated the differential impact of workaholism and work engagement for Spanish entrepreneurs. They found that work engagement related to positive affective states, which in turn had a positive influence on both performance and entrepreneurial satisfaction. The present research suggests that goal-directed emotions, which are anticipatory in nature, can also enhance the experience of engagement.

Research in the area of work engagement has increasingly begun to investigate gain spirals between work engagement, personal resources and job resources (e.g. Xanthopoulou et al., 2009) and between resources, efficacy beliefs and engagement (Llorens et al., 2007). Combined with the results of the present research, these findings suggest that there may also be merit in the future investigation of gain spirals between positive emotions and work engagement also. From a more general perspective, a number of researchers have hypothesised and found that emotional processes and motivational processes are inherently interlinked (Pintrich, 2003; Seo, Barrett & Bartenuk, 2004). Furthermore, Parker et al.’s (2010) model of proactive motivation suggested that activated positive emotions represented a type of energized to motivational state. Hence, the relationship found between work engagement and problem-focused coping is in line with current theorising both in the work engagement literature and in the entrepreneurial emotions literature, as well as the emotions and emotion regulation literatures more generally (Andrade & Cohen, 2007; Brown et al., 2005; Forgas, Baumeister, & Tice, 2009; Forgas & George, 2001; George & Brief, 1996; George & Zhou, 2001; Goette & Huffman, 2007; Koole, 2009a, b; Seo, Barrett & Bartenuk, 2004).
11.3.4. Subsection conclusion

The investigation of the individual cognitive, motivational and emotional paths demonstrated reasonably strong evidence that each of these intrapsychic self-regulatory processes can have distal and proximal manifestations and can be mapped along the action phases. Moreover, the distal variables predicted the proximal variables within each path. The findings in relation to the cross relationships between paths was somewhat more mixed. At a very broad level, there was support for the contention that distal variables (whether cognitive, motivational or emotional in nature) predict more proximal ones. However, there were a number of distinct variables that stood out as relatively robust predictors. In addition to their effects on the motivational variables, entrepreneurial orientations were quite a good predictor of the variables in the cognitive path also, while personal initiative was a relatively good predictor of a number of the variables in the affect path. There was some evidence that emotion regulation impacted cognition and motivation in the volitional pre-actional phase, in addition to its effects on the variables in the affective path. With regard to domain specific self-efficacy, creative self-efficacy predicted volitional cognition, while entrepreneurial self-efficacy predicted coping and actions, both in the actional phase of the model.

11.4. Theoretical contributions to the self-regulation literature

Sansone (2009; p. 47) suggested that “successful self-regulation involves the regulation of both goals-defined and experience-defined motivation”. The present study tested this by integrating the cognitive (goals-defined) with the motivational and emotional (experience-defined) paths of the action process. As outlined above, there was quite good support for the contention that distal variables affect more proximal ones, and also have indirect effects through these proximal variables also. Hence, the model developed and tested in this research adds to the already considerable body of research on self-regulation, and serves an integrative function by providing a means through which cognitive, motivational and emotional aspects of self-regulation can be conceptualised along parallel dimensions and processes.

Self-regulation is a complex and intricate phenomenon, which is difficult to adequately explain without drawing on almost every basic and applied field of psychological science. While the present research certainly cannot claim to have drawn on the full breadth of research in basic and applied fields, it did draw on quite a significant body of theory and research in self-regulation, motivation, cognition and emotion research in the development of the model. For example, the development of the model drew on: Heckhausen’s (1991) Rubicon Model; Frese’s (Frese & Zapf, 1994; Frese, 2007) Action Theory; Locke and Latham’s (1990, 2000) Goal-Setting Theory; Kanfer’s (1992) proximal-distal distinction in classifying motivation theories; Kehr’s (2004) Model of Work Motivation and Volition; DeShon and Gillespie’s (2005)
Motivated Action Theory; Carver and Scheier’s (2000, 2009) Control Theory; Bagozzi, Baumgartner and Pieters (1998) Model of Goal-Directed Emotions; Gross and John’s (2003) Model of Emotion Regulation; and Lazarus and Folkman’s (1984) Model of Coping. By drawing on such a range of theories, the present research demonstrated that there is ample potential to integrate previously distinct theories of self-regulation, and to further develop these by drawing on motivational and emotional theories also. Indeed, the present research would point to the inherent benefits of such an integration, and suggest that future research will need to engage further assimilatory work of this manner if it is to continue advancing and making a fuller contribution to the explanation of human behaviour. Key to future research will be attempting to explain the interaction of different self-regulatory processes, and this is difficult to achieve without first developing a model of how such processes can be integrated.

The present research also demonstrated the importance of considering interactions between cognition, motivation and emotions in explaining the regulation of the self. Baum, Locke and Smith (2001) also highlighted the importance of cognitive and motivational interactions, demonstrating that both cognitive and motivational predictors were important for venture growth, having both direct and indirect effects. Baum et al. (2001) demonstrated that more distal cognitive predictors (such as general and specific competencies) can predict more proximal situational motivation (vision, goals and self-efficacy). Taken together both the present results and those of Baum et al. suggest that whether cognitive or motivational in nature, distal predictors have their effect through more proximal predictors. However, the present research also furthered this by considering the importance of emotions also. Previous research has demonstrated the importance of emotions for cognition (e.g. Carver & Scheier, 2000, 2009; Frederickson, 1998, 2001, 2004; Oatley & Johnson-Laird, 1987; Pekrun, 2006; Swarz & Clore, 1988), but it is rare that cognition, motivation and emotion are incorporated in such detail into one model, as in the present research.

Seo and Ilies (2009) note that most studies which have investigated the role of affect in the processes of motivational self-regulation did not consider cognitive processes, and as a result little is known about how affective and cognitive processes simultaneously explain motivational self-regulation. Although Seo and Ilies (2009) went some way towards addressing this gap in the literature with respect to goals, self-efficacy and affect, the present research and its associated model attempted a more comprehensive integration of the cognitive, motivational and emotional processes at play during the action sequence. One reason to explain the lack of such a comprehensive integration in previous research may lie in the inherent complexity of the relationships between variables in difference phases of the action process and at varying levels of proximity.
In addition to the theoretical contribution, the present research also made a number of more specific contributions by testing relationships that had either previously not been considered or for which there was little findings in previous research. For example, Payne, Youngcourt and Beaubien (2007) concluded in their meta-analysis of goal orientations that the extent to which self-regulatory constructs and processes mediate the relationships between goal orientations and distal outcomes needed to be tested. Furthermore, Yeo et al. (2009) encouraged researchers to continue to integrate goal orientation with self-regulation theories. The present research made some strides towards achieving this by incorporating goal orientations into the broader model of self-regulatory processes being tested. It demonstrated that there is merit in DeShon and Gillespie’s (2005) contention of goal hierarchies and the integration of goal orientation and self-regulation theories in the Motivated Action Theory (MAT).

A second specific contribution with regard to unexplored relationships relates to the role that self-regulatory variables play in explaining work engagement. This is discussed in more detail in the next section.

11.5. Theoretical contributions to other areas: Advancing the theory of work engagement

This research suggested that work engagement is a psychological state, and as such can be conceptualised as a volitional resource within the action process. In this way, the present theoretical model provided a method for integrating work engagement with self-regulatory aspects of motivation, cognition and emotions, using an action theory perspective (Frese, 2007; Frese & Zapf, 1994; Heckhausen, 1991; Heckhausen & Kuhl, 1985). The concept of volitional resources mirrors recent research by Frese et al. (2007), investigating cognitive and motivational resources, and by Bledow, Schmidt, Frese and Kühnel (2010), which suggest that the interplay of engagement, emotions and resources is an important consideration for engagement as a dynamic process.

The present research hypothesised that, as a state, work engagement manifests itself within the volitional phase of the action process, with its cognitive equivalents in the same action phase being, for example, goal-setting and planning. It was hypothesised that these volitional constructs (work engagement and planning) would be predicted by more distal motivational, cognitive and emotional constructs, residing in more distal phases of the action process. The findings confirmed that work engagement is a volitional resource within the action process and is predicted by more distal motivational resources. The results suggested that work engagement was most strongly predicted by entrepreneurial self-efficacy and to a lesser extent by personal initiative and entrepreneurial orientations. Personal initiative also had a significant indirect effect on work engagement via entrepreneurial self-efficacy. In addition, anticipated
positive emotions predicted work engagement. Interestingly, however, it was not significantly predicted by cognitive variables, such as goal orientations. These findings imply that work engagement itself is largely a motivational construct, and addresses the gap identified in the literature with regard to adequately considering the meaning of work engagement (Bakker et al., 2008; Macey & Schneider 2008). It also moves some way to address the question posed by Bakker et al. (2008) regarding the impact of regulatory focus on work engagement, as there is considerable overlap between regulatory focus and goal orientations.

Bakker and Leiter (2010) report that for engaged employees work is fun, and this provides further potential for future integration with self-regulation. Sansone (Sansone 2009; Sansone & Thoman, 2005; 2006; Thoman, Sansone & Pasupathi, 2006) suggests that interest may be the missing link in explaining the self-regulation of motivation, and in a related manner, Mayer and Gagné (2008) demonstrate the potential for integration between work engagement and self-determination theory. The concept of “interest” has considerable overlaps with the concept of work engagement, and this research stream provides much scope for future research to consider the role of work engagement in the self-regulation of motivation. Similarly, the concept of flow appears as quite pertinent to both self-regulation and work engagement research. Flow could be considered as an “in-action” or more transient state form of work engagement. Furthermore, Kehr’s (2004) model of compensatory work motivation and volition has as its central component the state of flow (The integration of flow into the model is discussed in more detail in section 11.7.1.4).

Hence, as an aside to the main objectives of the present research, the findings also provide a first test of a model which embeds work engagement within the work motivation and self-regulation literature. As such, it advances the theoretical development of the construct, and provides significant scope for future research in these areas.

11.6. Practical Implications

It has been argued that everyone attempts to self-regulate his or her functioning in some way to gain goals in life (Zimmerman, 2000). Hence, it is inaccurate to speak about un-self-regulated people, or even the absence of self-regulation (Winne, 1997, Zimmerman, 2000). What distinguishes effective from ineffective forms of self-regulation is the quality and quantity of one’s self-regulatory processes (Zimmerman, 2000). However, Kuhl, Kazén and Koole (2006) note that although insights into self-regulation processes are directly relevant to all disciplines that seek to promote people’s physical health, psychological well-being and job performance, putting self-regulation theory into practice is quite difficult. However, much research has supported the idea that self-control is highly beneficial for individuals (see Baumeister & Alquist, 2009 for a review), and the practical implications of the present findings
advancing theory & research in self-regulation

point to the role of self-regulation in the enhancement of performance and well-being, as well as the importance of training such self-regulatory skills to further enhance such relationships.

11.6.1. Performance

Wood (2005) contends that as organisations seek to replace bureaucracy, hierarchical structures, and authoritarian leadership styles with more autonomous work practices, initiative and entrepreneurship, self-regulation theory is a good fit with the emerging demands of modern organisations. Previous research has shown that there are performance benefits to possessing higher levels of self-control or better skills in self-regulation. For example, Tsui and Ashford (1994) considered the role of self-regulation in managerial effectiveness, and outlined a set of processes involved in attaining managerial effectiveness, which form components of an adaptive self-regulation framework. Kanfer and her colleagues (2010) found that individual differences in self-management explained variance in academic performance beyond that of cognitive abilities. The present research points to the role of self-regulation in the performance of entrepreneurs and their ventures, a finding which is both in line with, and extends, past research (Frese et al., 2007). Hence, it is clear that those with better developed skills in self-regulation tend to perform better, regardless of the context in which this performance takes place.

Performance is a concept that has sparked much interest, not only in organisational psychology, but also in other applied areas of psychology such as sports and education. A central issue in organisational psychology is the prediction of job performance, and the identification of relevant psychological variables that can be used to select individuals to perform well in a given job (e.g. Schmidt & Hunter, 1998; Robertson & Smith, 2001). Given that the employment context is increasingly moving towards more autonomy and frequent change (e.g. Frese, 2000; Griffin, Neal & Parker, 2007), self-regulatory skills will only become increasingly more relevant to help employees perform well and effectively in such environments. While selecting individuals who have better skills in self-regulation is one option, a more sustainable approach is to train employees in such skills (e.g. Forgas, Baumeister & Tice, 2009). Going forward increasing employees, students and athletes skills in self-regulation and self-management provides a promising avenue for enhancing performance levels.

The findings of the present research then begs the question as to which self-regulatory processes are key to performance. In the present research, the cognitive variables, such as goal-setting and planning had the largest effect on taking action (which is usually a pre-condition for performing). However, in many jobs, especially at managerial levels and above, planning is often considered a key component. Hence, motivational resources, such as one’s role orientations may also influence this process, as does one’s self-efficacy. Similarly, the ability to regulate one’s emotions also has an influence. Hence, although the cognitive variables had the
strongest effect on performance relevant concepts such as taking action and planning, it is clear that motivational and emotional components also have an influence.

11.6.2. Training

Closely linked to the performance implications is the issue of how to train individuals in self-regulation skills. Latham and Locke (1991) state that skill in self-regulation must be acquired through experience, training and effort, and there is ample evidence that such self-regulatory skills can be trained. Research has demonstrated that metacognitive goals that regulate the action hierarchy are trainable (e.g. Austin & Vancouver, 1996; Karoly, 1993). Frayne and Geringer (1990) identified that the setting of both proximal and distal goals was an effective behavioural pattern of people who lead joint ventures, while Frayne and Geringer (2000) demonstrated that effectiveness of self-management training for salespeople.

Recently, there has been quite a bit of research which has demonstrated that training interventions based on action theory can have beneficial effects. For example, Raabe, Frese and Behr (2007) demonstrated the effectiveness of career self-management training, Keith and Frese (2005, 2008) examined the utility of error management training, and Bishop, Gielnik and Frese (2011) evaluated the effectiveness of training entrepreneurs in self-regulatory mechanisms. Utilising alternative approaches to self-regulation and focusing simultaneously on goal processes as well as motivational processes, Kehr, Bles and Von Rosenstiel (1999) demonstrated the benefits of self-regulation over self-control in transfer of training, while Kehr and Von Rosenstiel (2004) demonstrated the utility of meta-motivational and meta-volitional interventions. Hence, there can be little doubt that training in self-regulation can have clear benefits for increasing performance. Moreover, this finding has been demonstrated utilising interventions relying on a variety of theoretical models of self-regulation, which further demonstrates the robustness of the benefits. Beyond the benefits of self-regulation skills for performance, research has also suggested that training in such skills can have benefits for overcoming employment barriers (Yanar, Budworth & Latham, 2009) and that training aiming to enhance self-efficacy can speed re-employment (Edem & Avarim, 1993).

In other areas, self-regulated learning has become a pivotal construct in contemporary accounts of effective academic learning (Winne, 1995), and researchers argue that the capacity to self-regulate is central to our assumptions about learning, decision-making, problem solving, and resource management in education (Boekaerts & Corno, 2005). Models of self-regulated learning have allowed researchers to describe the various components involved in successful learning, explain reciprocal and recurrent relationships established between these components, and directly relate learning with the self and with goals, motivation, will and emotions (Valle et al., 2003). Hence, beyond the role that training in self-regulation can play in enhancing performance, it can also aid in the development of enhanced learning effectiveness.
11.6.3. Well-being

By-and-large, the focus of self-regulation research within the field of well-being has focused on issues pertinent to emotion regulation. For example, quite a bit of research on emotion regulation and coping considers well-being as its outcome variables (e.g. Greenglass & Fisk, 2009; Gross & John, 2003). An interesting angle has stemmed from Bryant’s (1989, 2003) research on savouring the positive in life, a strategy that falls under the umbrella of emotion regulation (Quoidbach, Berry, Hansen & Mikolajczak, 2010). Bryant (1998) suggests that one’s ability to savour stems from one of four types of control beliefs, and empirically demonstrated that beliefs about savouring and obtaining positive outcomes related more strongly to well-being, while beliefs about avoiding and coping related more strongly to subjective distress. In a related area, Zapf (2002) has looked at the role of action regulation in emotional labour and emotion work.

However, there is some evidence to suggest that beyond the self-regulation of emotions, all aspects of self-regulation (cognitive, motivational and emotional) can have an impact on well-being. For example, Kehr (2003) examined the relationship between goal conflicts, the attainment of new goals and well-being in managers. Furthermore, Kehr (2004) demonstrated discrepancies between implicit and explicit motives can lead to decreases in volitional strength over time, and also that volitional strength can mediate the relationship between such motive discrepancies and impaired subjective well-being. Wrosch et al. (2003) demonstrated that being able to disengage from unattainable goals and re-engage in alternative goals was associated with higher levels of subjective well-being. Wrosch et al. (2003) suggest that in situations where people are confronted with unattainable goals, there are benefits to being able to abandon goal-directed activities and to reengage in valued alternatives. These authors suggest that this form of adaptive self-regulation has benefits for one’s well-being as it reduces the distress that arises from desiring to attain the unattainable. Similarly, self-determination theorists quite often examine the relationships between motivation and well-being, with research demonstrating a positive relationship between intrinsic motivation and well-being, as well as between more internalised forms of external motivation and subjective well-being (e.g. Ryan & Deci, 2000; Ryan, Deci & Grolnick, 1995).

In the present research, work engagement can be seen a work related form of well-being, and has been suggested to be the opposite of burnout (e.g. Demerouti, Mostert & Bakker, 2010; Schaufeli et al., 2002). Motivational states like work engagement can have positive benefits for well-being. The present research suggested that the experience of engagement in one’s work is determined more strongly by motivational resources, and to some extent by anticipated positive emotions. In turn, the research suggested that the experience of engagement could help individuals to engage effective coping strategies in stressful situations. As there
have been clear links between well-being concepts, such as job satisfaction, and job performance (e.g. Iaffaldano & Muchinsky, 1985; Judge, Thoreson, Bono & Patton, 2001), it would appear important to incorporate self-regulatory mechanisms that improve well-being into the design of any training interventions, as well as to include mechanisms that will improve performance outcomes. The self-management training programme outlined by Kehr and Von Rosenstiel (2004) presents aspects that have the potential to influence both performance and well-being, although empirical support for the success of the training intervention is still needed.

11.7. Future Research: Self-regulation

The present research attempted to advance a more complete picture of self-regulatory processes in cognition, motivation and emotion. However, it was not possible to include the entire array of cognitive, motivational and emotional variables that could potentially play a role in these processes. Future research will need to attempt to incorporate a wider and more complete array of variables that come under the heading of cognition, motivation and emotion. In the review below, a number of suggestions for how this may be done are outlined.

11.7.1. Expanding on self-regulatory processes in the action phase

In the present research, the focus in the actional phase was largely on the behavioural aspect, or the taking of action towards the achievement of a goal. However, there are a wider range of behaviours, meta-cognitive skills and meta-motivational skills in this phase that are also important for the self-regulatory process. A brief overview of these and how they fit into the future development of the model are outlined below.

11.7.1.1. Considering additional pre-actional and actional cognitive processes.

The present research considered only the taking of action to achieve a goal in the actional phase of the action model. However, the cognitive elements pertinent to this phase could be expanded to incorporate a broader understanding of how action occurs and is regulated in this phase. Two specific cognitive variables that are certain to be relevant in this phase are problem-solving and decision-making.

Kehr (2004) distinguishes between problem-solving and volition in his model of work motivation and volition. He suggests that problem solving compensates for insufficient abilities and overcomes environmental difficulties, or difficulties that are external to the individual (extrapersonal). In contrast, he suggests that volition compensates for insufficient motivational support and resolves intrapersonal conflicts for competing behavioural impulses originating in implicit/explicit motive discrepancies. In this sense, problem-solving may be seen as the
cognitive variant of motivational regulation strategies and may be seen as a form of cognitive regulation in and of itself.

Decision-making can be seen as a special form of problem-solving where the possible solutions or options are already known. There has been some research which has focused on how self-regulatory mechanisms can influence one’s decision making. For example, Wood and Bandura (1989) investigated that impact that self-efficacy had on self-regulatory mechanism and decision making. Bryant and Dunford (2008) investigated the influence of regulatory focus on risky decision making, and Leone, Perugini and Bagozzi (2005) found that regulatory focus moderated the influence of anticipatory emotions on decision-making (in terms of action evaluation). Other research streams have evaluated the extent to which emotions can help or hurt decision-making (e.g. Seo & Barrett, 2007; Vohs, Baumeister & Loewenstein, 2007). Hence, decision-making appears to be another key cognition that will be important to investigate in future research. However, the Rubicon model of action phases would suggest that action cannot take place until one makes a decision to act, and so decision-making processes likely take place in the pre-actional phase. On the other hand, problems need to be solved as they arrive, and hence, this form of cognitive processing is likely occurring in conjunction with taking action.

In future research and future development of the model of self-regulation outlined in this research, it will be important to consider both problem-solving and decision-making as two cognitive variables relevant to the action process. In particular, it will be important to establish whether the variables in the more distal phases impact these cognitions, as well as which distal variables are most important in their prediction. In addition, it will be important to consider the impact that these cognitions have on relevant outcome variables in the model also (e.g. success or performance).

11.7.1.2. Additional goal striving behaviours: Monitoring and Feedback.

The goal striving phase of the process relates to taking of action and monitoring of the consequences of such actions (Austin & Vancouver, 1996). This phase occurs in the volition actional phase of the model. Two processes are key to goal striving; a focus on the actions needed to achieve a goal versus the information needed to assess goal progress (Austin & Vancouver, 1996). The present research focused largely on the actions needed to achieve a goal, rather than the information needed to assess goal progress. However, these second process is also key to effective self-regulation. The meta-cognitive skills or behaviour that will need to be investigated in future research using the current model are: monitoring and feedback.

Monitoring of goal status requires the comparison of desired states with current, estimated or anticipated states (Vancouver, 2008). Monitoring is closely linked to the planning
process, and Frese and Zapf (1994) acknowledge that it is superfluous to separate the phase of execution from the phase of planning, as planning always implies some kind of operation. Nonetheless, they state that it is important to distinguish between the execution of a plan and the waiting period in higher-order plans. Monitoring of execution draws heavily on working memory processes, and hence, strategies (e.g. chunking) for overcoming working memory limitations are important here (Frese, 2007).

Feedback is information about how far one has progressed towards a goal (Frese & Zapf, 1994). Frese (2007) suggests that important parameters with regard to feedback are: process vs. outcome feedback, the degree of realism versus self-striving interpretations, feedback search rate, and how active this search for feedback is. Hence, taking a proactive approach to feedback appears to be a key issue, whereby one actively and frequently seeks feedback in order to revise goals and learn from mistakes. Taking such an approach to feedback is likely to alter both the actions being taken, and the direction of action, in order to stay on track. Hence, feedback is an important meta-behaviour to incorporate into future research using the present model.

These goal striving processes can also be seen as serving an adaptive function, and it would appear that monitoring, evaluation and feedback are pertinent self-regulatory processes required to effectively adapt to one’s environment, or to changing circumstances or events. This is not an area that has been investigated up to now, but presents an important way forward in advancing the present model of self-regulatory processes. In addition, such adaptive behaviours likely interact with proactive behaviours. For example, Frese (2009) suggests that in entrepreneurship, being active often means engaging in experimentation. However, this is not just in a trial and error way, but rather successful entrepreneurs attempt to achieve the best combination with what one has available in terms of skills, money, material, access to market and other resources. Sarasvathy (2001, 2008) has termed this effectuation, which in essence, can be seen as a form of adaptive behaviour. However, given that effectuation also entails active shaping of the environment (Frese, 2009), it can be seen as a combination of proactive and adaptive behaviour.

In short, monitoring and feedback serve important functions for self-regulation. It seems likely however, that the extent to which these are engaged in proactively, and the extent to which they result in adaptive responses will determine their regulatory success.

### 11.7.1.3. Motivation Regulation Strategies

The motivational and volitional resources examined in the present research pertained to the first two phases of the Rubicon model only. Future research will need to further this examination by investigating how motivation manifests itself in the actional and post-actional
phase, and how these relate to the motivational and volitional resources examined in the two pre-actional phases examined in the present stage. For example, little research has investigated the role that motivation regulation strategies play in the self-regulatory process, but these would fit neatly into the actional phase of the Rubicon model. Limited research has begun to investigate such strategies in the context of self-regulated learning (Wolters, 2003), but there is a clear gap with regard to investigating motivation regulation strategies in more general self-regulation models, which future research will need to address. Future research would benefit from identifying the motivation regulation strategies employed outside the educational context, and secondly, proposing an integrated framework which aids in determining the effectiveness of such strategies.

Using SRM, SDT and PSI may also be informative in the future incorporation of motivation regulation strategies into the model. Given the link that Sanone (2009; Sansone & Thoman, 2005) makes in relation to interest and self-regulation in the educational domain, it would appear that engaging in strategies to regulate our motivation is of particular relevance when interest is lacking or waning. This would suggest that motivation regulation strategies may be most pertinent when the more controlled forms of extrinsic motivation are being used than when a person is intrinsically motivated or integrated extrinsically motivated. Koestner and Losier (2002) demonstrated that intrinsic motivation yielded better performance on tasks that were interesting, but that autonomous extrinsic motivation yielded better performance on tasks that were not in themselves interesting but that were important and required discipline or determination. Similar arguments have been posited by Kuhl (2000) and Kehr (2004a) suggesting that volition compensates for insufficient motivation due to discrepancies between implicit and explicit motives. However, Kehr’s (2004b) empirical research in support of this used the Volitional Components Inventory (VCI) as a measure of volitional strength. The disadvantage of such an approach is that it does not capture the inherent in-action nature of such volitional strategies.

Investigating motivation regulation strategies in conjunction with goal-directed behaviour or action during the actional phase may also provide valuable information from the perspective of models of self-regulation as a limited resource (e.g. Baumeister & Alquist, 2009) and strength models of self-regulation (Muraven & Baumeister, 2000). The need to engage in motivation regulation strategies in order to stay on task may deplete self-regulatory resources, which may actually negate the positive impact of the strategy engaged in. Alternatively, the effectiveness of different motivation regulation strategies may depend on the extent to which they tax self-regulatory resources, or the extent to which engaging in such processes represent well-practiced activities.
11.7.1.4. The motivational state of Flow

Critical to future research is the integration of more distal concepts of individual differences, states, skills etc., and the in-action processes such as engaging in on-task behaviour, flow, and motivation and emotion regulation strategies. To date, such in-action processes have been studied through experiments and experience sampling methodologies, while more distal concepts tend to be assessed via questionnaires. In order to truly advance theory and research in this domain, it is imperative that we can reconcile and integrate the inter-relationships between these stable and transient processes in a temporally cognisant way. Life-span development research may provide some insights into ways in which such integration of theory, method, context and time may be possible (e.g. Diamond & Aspinwall, 2003).

Baum and Locke (2004) considered the impact of passion and tenacity as traits on venture growth. Davidsson (2007) argues that rather than traits, these are latent qualities that people marshal when they work on ideas they find important, interesting and challenging. Hence, there are clear overlaps between these concepts of passion and tenacity, and the positive psychology concepts of work engagement and flow. Such research provides a strong rationale that there are distal concepts which can influence the in-actional experience of flow.

Kehr’s (2004) model of compensatory motivation and volition presents some interesting insights into how flow fits with motivational and self-regulatory processes, and represents the congruence of implicit and explicit motives. The model also points to the relevance of incorporating motivation regulation strategies in conjunction with flow. Kehr’s (2004) model has some clear overlaps with the work of Sansone (2009, Sansone & Harakiewicz, 1996; Sansone & Thoman, 2005) who suggests that students who demonstrate high levels of interest (typically associated with the experience of flow), may not need to regulate their motivation. Hence, motivation regulation strategies may be seen as a compensatory mechanism in Kehr’s (2004a) terminology. The model proposed in the present research would suggest that such compensatory mechanisms need to be assessed on the goal or task level in order to adequately understand their underlying processes and interactions. For example, in the present research, there were a number of entrepreneurs (particularly those in the high tech industries) who demonstrated a very high level of intrinsic interest and motivation for the core function of the venture, which may pertain to the invention of a new product for example, but who appeared to struggle to motivate themselves with the business tasks of the venture.

This suggests that the incorporation of flow, interest and motivation regulation strategies will provide further insights into determining what task entrepreneurs take action on. One interesting avenue for future research pertains to the impact that flow has on actions. On one level, being engaged in a state of flow should mean that one is more focused and hence,
should complete a task more quickly. On the other hand, a characteristic of flow is that one is not aware of time passing, and hence, the high level of absorption associated with flow may mean that an individual spends longer at a task that they enjoy, and is less inclined to move onto a different task which may hold less intrinsic interest for them. Hence, the regulation of motivation may also be pertinent when one is highly interested in an activity, not to compensate for a lack of motivation, but to stay on track, and ensure that adequate time is spent on the multiple goal activities required to perform.

11.7.2. Establishing relevant motivational processes in other work contexts

The present research utilised a number of motivational concepts which were specific to the context of entrepreneurship, specifically, entrepreneurial orientations and entrepreneurial self-efficacy. However, the model of the self-regulation of cognition, motivation and emotion presented in this research has much broader implications to all work contexts. In order to establish the generalisability of the model in future research however, it will be necessary to examine the appropriate contextually relevant motivational constructs.

In the area of self-efficacy, it is a straightforward process to substitute entrepreneurial and creative self-efficacy with other domain specific forms. Research in the field of self-efficacy has long debated the relevant level of analysis with which to measure the phenomenon, with Bandura (1977) advocating the task level, and other researchers finding the domain and general (trait) level to be beneficial levels to measure (e.g. Shelton, 1990; Sherer et al., 1982; Woodruff & Cashman, 1993). There are a number of work-related self-efficacy scales, and hence, this does not pose a challenge to the generalisability of the model.

With regard to entrepreneurial orientations, the solution comes to mind less immediately. Entrepreneurial orientations refer to psychological orientations of the owner that relate to the owner’s daily tasks and fit with the environmental requirements (Kraus et al., 2005). Drawing on this definition of entrepreneurial orientations makes it more apparent as to how the model can be generalized to other working conditions. At a more general level, orientations may represent the degree of fit between an employee and their job or role. For example, Parker (2000) discusses the concept of flexible role orientations as an element of proactive motivation, and this provides ample evidence that the concept of entrepreneurial orientations can be substituted with a context relevant orientation construct.

11.7.3. Expanding on emotional processes in self-regulation

Research on emotions has quite a long history, and is much broader in scope than the limited number of emotional concepts relevant to self-regulation that were incorporated into the
present model. However, incorporating some of the sophistication evident in emotions research into the already complex self-regulation research proves to be a challenge.

Dealing firstly, with emotions (rather than emotion regulation), it is clear that anticipated emotions will become experienced emotions during the actional phase of the model, and that these will have their own effects on the regulation of action and motivation. In the post-actional phase of the model, emotions will manifest themselves as outcome emotions (e.g. Pekrun, 2006), and outcome emotions from previous action processes will likely influence the development of anticipated emotions in future action processes.

Beyond this, we can also consider distal or stable emotional dispositions which will likely have an influence on the more proximal emotional variables. For example, passion has recently become a concept of interest in the domain of entrepreneurship (e.g. Cardon et al., 2009). Given that passion, in this conceptualisation, is relevant to a particular domain (i.e. entrepreneurship), it likely resides in a similar phase of proximity as other domain specific concepts such as entrepreneurial self-efficacy. More distal again is optimism. Seligman (1998) defines optimists as those who make internal, stable, and global attributions regarding positive events (e.g., task accomplishment) and those who attribute external, unstable, and specific reasons for negative events (e.g., a missed deadline). Optimism has also been incorporated into the concept of psychological capital, comprised of optimism, hardiness, hope and efficacy (Luthans et al., 2007). The authors describe psychological capital as state-like, but other researchers who consider such positive psychological resources have used these as stable dispositions that moderate more day-level states (e.g. Hobfoll et al., 2003; Xanthopoulou et al., 2009). Hence, it is likely that such psychological resources are similar in conceptualisation to the motivational resources examined in the present research. The incorporation of such distal emotional variables also pose the question as to the impact that these have on emotion regulation and coping strategies, which will need to be examined in future research.

Future incorporation of a large array of cognitions, such as problem-solving and decision-making will also require further examination of the relationships between cognition and emotion in the model in more depth. For example, it is likely that Frederickson’s (1998, 2001) broaden and build theory of positive emotions may be beneficial in examining such relationships within the model. Such extensions of the model will also bring to light other outcome variables that may be relevant to self-regulation researchers also. For example, positive states have been associated with the broadening of attention, (Amabile et al., 2005; Fredrickson, 2004; Fredrickson & Branigan, 2005), which in turn has been shown to enhance levels of creativity (Baas, DeDreu & Nijstad, 2008; Estrada, Isen & Young, 1994). Hence, it is possible that self-regulation may be pertinent to outcomes such as creativity also.
11.8. Chapter Summary

The model of cognitive, motivational and emotional self-regulation presented here represents a sophisticated attempt to further research through modelling the three paths along parallel dimensions. The findings reviewed in this chapter demonstrated that there is support for the model as developed in the present research. The findings supported the distal-proximal conceptualisation of each path, and also demonstrated that there is merit to the investigation of the cross-over influences between the three paths. In addition, this chapter has demonstrated how future research can incorporate a wider range of variables within each action phase, further demonstrating the robustness of the model. In this sense, the present model is most accurately conceptualised as a grand theory, which Frese (2005) characterises as being large, all-encompassing, and often complex, mirroring the complexity of the world. However, it is also possible for the model to be partitioned and so, it can be parcelled into a number of mid-range theories also. Middle-range theories consist of a limited number of variables, and their strength lies in their high problem specification. Frese (2005) suggests that a grand theory makes it easier to accumulate knowledge in research areas, but that being able to incorporate middle-range theories into grand theories makes it possible to combine knowledge. As a combination of both these approaches to theory, the present model has the potential to significantly advance the field, as well as the way in which we conceptualise the gestalt of self-regulation.
CHAPTER 12: Predicting entrepreneurial success through intra-individual processes

The findings, methods, principles and theories of I/O psychology can assist entrepreneurship in answering several of its most basic questions. Conversely, ...the field of entrepreneurship, with its focus on new ventures, can provide I/O psychology with a novel and potentially valuable arena for testing and extending its findings and theories.

(Baron, Frese & Baum, 2007; p. 347)

12.1. Introduction

One of the central objectives of this research was to examine the role that the entrepreneur plays in directly influencing the success of their venture. For this reason, the research focused on entrepreneurs who were in the early stages of starting their venture, during which time the entrepreneur is largely synonymous with the venture. By examining those cognitive, motivational and emotional processes engaged in by the individual entrepreneur and how they contribute to success at the level of the organisation, this chapter provides answers to this question.

Defining entrepreneurial success at the organisational level can be quite challenging at the early stage of development, where more often than not, the company has not yet started to turn a profit. For this reason, three success indicators were assessed. Firstly, an objective indicator of success, which assessed whether the company had passed certain milestones which have been demonstrated to be linked to success in the early phase. Secondly, the entrepreneurs’ self-perceptions of their own success in the venture was assessed, and finally, an external evaluation from a third party known to the entrepreneur was also obtained where possible.

As in the previous chapter, the individual paths of cognition, motivation and emotion will be examined firstly in order to establish their unique influence on entrepreneurial success. Following this, the various combinations of the variables from each path (cognitive, motivational and emotional) to investigation their collective influence on entrepreneurial success. Finally, the theoretical and practical implications will be discussed.
12.2. The relevance of intra-individual processes in cognition, motivation and emotion in explaining venture success

This section of the research summarises the findings in relation to entrepreneurial success, and the role that each of the cognitive, motivational and emotional paths play in determining success.

12.2.1. The role of cognition in predicting entrepreneurial success.

The aim of this section of the research was to investigate the relationships between distal and proximal cognitive processes and entrepreneurial success. Overall, the cognitive variables had the largest impact on entrepreneurial success, in comparison with the motivational or emotional components.

Looking firstly to the impact of goal-orientations on entrepreneurial success (see Figure 8.2), some interesting findings were demonstrated here. In contrast to the stated hypothesis, mastery approach had a negative direct effect on all three success measures, although the effect for external success did not reach significance and was small in nature. Interestingly, mastery approach had a positive indirect effect via planning on objective success, but the significance was marginal. At first glance, these discrepant findings appear difficult to explain. The negative direct effect of mastery approach on success was evident even in the absence of potential mediating variables, so suppressor effects are ruled out as a potential explanation for this finding. Holding a mastery approach goal orientation is quite frequently considered to be an advantage, as it facilitates learning and as a result, facilitates performance (e.g. Payne, Youngcourt & Beaubien, 2007; VandeWalle et al., 1999). However, from the perspective of an early stage entrepreneur, time to market is often a key issue of concern. If one considers that holding a mastery approach orientation promotes the learning of a competence or skill that is necessary for the business, then it is likely that this learning process will lead to the venture being slower in reaching the objective success indicators, such a reaching break-even point, making the first sale and so on.

Similarly, for the entrepreneur, recognising that there is a gap in his/her knowledge set that requires the acquisition of a new skill (i.e. metacognitive awareness) may lead to temporally lower estimates of their own success until this skill has been acquired and implemented. This may account for the negative direct relationship between mastery approach and the success indicators used in the present research. Such a rationale is somewhat borne out by past research using simulations, which demonstrated that those who used a learning goal orientation were able to keep simulated firms running longer than those who used a performance outcome goal (Noel & Latham, 2006). This would suggest that it is important to consider success over longer
time periods when looking at the impact of mastery approach goals in the entrepreneurial context. Furthermore, some researchers have argued that a mastery-approach orientation may not relate to performance because performance success requires a focus on external evaluations that is beyond the task and intrapersonal focus associated with this orientation (see Yeo et al., 2009 for a review).

In contrast to the direct effect of mastery goals to success, it appears that holding such an achievement tendency leads an entrepreneur to engage in more elaborate and proactive planning, which in turn has a positive effect on success. Considering that this achievement tendency relates to the pursuit of excellence (Kanfer & Heggestad, 1997; Pintrich, 2005; VandeWalle, 1997), it makes sense that entrepreneurs high in this tendency will make more detailed and long-terms plans with regard to how to achieve such excellence and mastery in their venture. It is planning then that is directly related to venture success. This finding may also be linked to the development of knowledge and skill. Acquiring the necessary skill or knowledge will allow the entrepreneur to engage in setting more realistic and accurate goals, engaging in more elaborate and proactive planning, and engaging in more action likely to lead to successful achievement of the goal. The research by Noel and Latham (2006) also demonstrated that the impact of mastery goals of the simulated firms’ success was mediated by strategy and self-efficacy. These results are somewhat similar to those found here, where planning can be seen as a form of strategic thinking.

The present research findings in relation to mastery approach goal orientations present interesting questions to be addressed in future research. Most obvious is the question as to whether the impact that mastery approach has on venture success is time dependent. The proposed explanation of the findings outlined above suggests that holding a mastery orientation may potentially slow an entrepreneurs’ progress in the early stages of venture success. However, the question remains as to whether holding a mastery approach goal orientation will have a positive impact on the venture in the longer term. This would appear likely given the positive nature of the indirect effect via planning.

Performance approach goal orientation did not have a significant impact on any of the three measures of entrepreneurial success, although the effect sizes indicated that it did have a small positive effect on self-perceptions of success and external success. Seijts, Latham, Tasa and Latham (2004) suggest that setting a performance goal is effective when people already have the ability to perform a particular task effectively, whereas on a task that requires learning, a specific challenging learning goal should be set. As the entrepreneurs in this study were in the early stages of their ventures, they may have still have been learning the requisite knowledge and skills to perform effectively. This finding again suggests that there may be merit in examining the role of goal orientations over time, and in entrepreneurs with varying levels of
experience in setting up and running businesses. However, there is a controversy over the
directionality of the performance approach orientation effects on performance (Yeo et al.,
2009), and Parker and Collins (2010) demonstrated that performance goal orientation was
negatively associated with some forms of proactive behaviour, and positively associated with
others. Hence, there is a clear need for clarity around the impact of this goal orientation in
future research. Context and time appear to be key boundary conditions the need to be
explicitly incorporated into such future research.

Performance avoid had a small negative effect on self-perceptions of success which
reached significance. Performance avoid also had a significant negative indirect effect on
objective success via goal-setting and actions. The performance avoid orientation is viewed as
maladaptive due to its association with avoid-related processes (Yeo et al., 2009), and this was
also demonstrated to be the case in the present research. Prevention focused goals (which have
similarities to performance avoid orientations) are more anxiety related, and the strategy that is
pursued is more concerned with avoiding things than trying to achieve certain things, and may
actually lead entrepreneurs to take more risks (Frese, 2007). Entrepreneurs who tend to avoid
situations where they may fail, or are focused on preventing the occurrence of failure are likely
to be slower to engage in activities such as officially incorporating the business, taking on staff,
and making a first sale.

Button et al. (1996) highlighted that a performance goal orientation is necessary in an
organisational context, and suggested that a balance of both performance and mastery
orientations is adaptive in most work settings. Importantly however, the present research
suggests that these effects appear to be indirect via processes that occur in the volitional phases
of the Rubicon model. Yeo et al. (2009) demonstrated that mastery-approach orientation was
positively related to performance at the intra-individual level, but not at the inter-individual
level. Performance approach positively predicted performance at the inter-individual level, and
at the intra-individual level the direction of its effect switched as a function of task demands.
Performance-avoid negatively predicted performance at the inter-individual level but did not
predict it at the intra-individual level. This paper demonstrates the importance of considering
person-situation interactions when studying goal orientations with a self-regulatory framework,
and also demonstrate the advantages of considering time-scales.

Moving to examine the impact of the cognitive processes in the volition pre-actional
phase of the action process, planning had a significant positive effect on objective success and
self-perceptions of success which was small-medium in magnitude. Planning did not have a
significant impact on external success, although the effect size estimations indicated that it had a
small positive effect. Planning is a key process in self-regulation (Wood, 2005), and Frese et al.
(2007) demonstrated that planning was a key predictor of success in business owners. Proactive
business owners tend to be more focused on the long term and consider more potential issues and signals, and hence, they tend to develop more elaborate plans (Frese et al., 2007). Planning also allows the person to cope with the inherent insecurities of being a business owner by making good use of scarce resources (Rauch & Frese, 1998), and this is also likely to contribute to success, particularly the components assessed in the objective success measure. Frese (2007) suggests that more successful entrepreneurs have more ready made plans available, which may lead to the paradox that effective entrepreneurs may actually plan less at any given moment, because they already have plans available in memory. Furthermore, because action plans can be conscious or unconscious, owners may actually tell an observer that they do not consciously plan at all and that they just follow intuition (Frese, 2007). This may potentially account for the lesser relationship between planning and the external evaluation of success, compared to the other success measures. External evaluators, who are essentially observers of the entrepreneur and the venture, may not be able to observe such intrapsychic processes, and so may assume that entrepreneurs plan less than they actually do, and hence, rate their perceptions of the ventures success as lower. Goal difficulty had a small, but non-significant effect on objective success, while goal-specificity had a small, but non-significant effect on self-perceptions of success. They did not have any direct effects on external success. Both goal-setting variables had an indirect effect on objective success via taking actions, and goal specificity had a significant indirect effect on external success via taking actions. Taking actions towards one’s goal had a significant effect on all three success measures, having the largest impact on external success, then objective success and finally self-perceptions of success. Research has demonstrated that goals help to motivate people to use suitable task strategies or to search for suitable strategies if they lack the knowledge that they need (Locke & Baum, 2007). Hence, goals will help entrepreneurs to take appropriate action, and will contribute to their venture’s success. These findings corroborate the application of action theory to entrepreneurship (see Frese, 2007), demonstrating that the goal-setting and action process has a direct impact on entrepreneurial outcomes. Investigating both goal-setting and planning separately provides further support for the Rubicon model of action phases. Different processes are at play before one crosses the Rubicon and afterwards, and it is planning that makes people cross (Frese, 2007). Hence, the findings provide support for the differential importance of goal setting and planning.

These findings also provide support for the contention that the individual entrepreneur plays a key role in directly impacting the success of the entrepreneurial venture influencing such aspects as accessing financing, reaching break-even point, time to first sale, taking on employees of the business and being able to pay wages and salaries. It also makes sense that an individual who is external to the business would rate the entrepreneur as more successful if they could observe them taking actions towards meeting the key goals of the venture. Hence, the
individual entrepreneur plays a key role and has a direct impact on a venture, especially in the early stages of a venture. Frese (2007) argues that his psychological theory of action regulation (Frese & Zapf, 1994) is of particular importance for entrepreneurship research due to the fact that the nature of entrepreneurship is to proactively produce effective solutions to problems and opportunities. The present findings corroborate this. However, the findings also suggest that the goal sequence can be extrapolated to less proximal goals forms, such as goal orientations, which provides some preliminary support for Rauch and Frese’s (2007a) personality approach to entrepreneurial success.

12.2.2. The role of motivational and volitional resources in predicting success

The role of this section of the research was to examine the effect that the differing proximal and distal motivational and volitional resources had on entrepreneurial success.

Personal initiative, as a motivational resource, had a significant positive direct effect on self-perceptions of success, and an indirect effect via entrepreneurial self-efficacy. It also had a small, but non-significant direct effect on external success, which was negative in valence. However, when included in the model with more proximal variables this effect became negligible, suggesting that it had little effect on this variable. Past research has found a relationship between personal initiative and entrepreneurial intentions and success (Crant, 1996; Koop, DeReu & Frese, 2000), and hence, the findings for personal initiative only partially support past research. However, although Frese et al. (2007) found a relationship between motivational resources and business success, this effect became non-significant when they included cognitive resources. Using a behavioural assessment of personal initiative Utsch and Rauch (2000) also failed to find a relationship with venture performance. Frese and Fay (2001) suggest that there may be situations in which personal initiative does not have positive outcomes, for example, if knowledge and skills are inadequate. Given that all entrepreneurs in the present research were in the early stages of venture development, personal initiative, in the absence of knowledge and skill could potentially have negative outcomes, which may account for the small negative effect on external success. However, the veracity of this small effect is in question, so future research is needed.

Frese and Fay (2001) suggest that personal initiative is particularly important when employees work outside a rigid structure, when they have to motivate themselves, and when they have to rely on their own decisions; all of which are characteristics of the entrepreneurial context. Hence, it is rational the personal initiative has an influence on self-perceptions of success. Entrepreneurs who are high in personal initiative likely experience high motivation, are making lots of decisions and so, are relatively satisfied with their progress. It also makes sense that dispositional personal initiative has its influence through more proximal volitional
resources such as self-efficacy, which may in turn influence proactive behaviours, and it is this then that influences success. In line with this, Baum, Locke and Smith (2001) found motivational traits to have an indirect effect on venture growth, mediated by situationally specific motivation and competencies (both general and specific). Although such sequential mediation was tested in the present research, it is difficult to find significant indirect effects through multiple mediators in sequence, as the multiplication of the path values means that the beta value is reduced with each sequential multiplication. Hence, these results will need further exploration in future research.

Researchers have suggested that entrepreneurs are proactive rather than passive (Baron, Frese & Baum, 2007; Locke & Baum, 2007). Fay and Sonnentag (2010) suggest that as personal initiative can fluctuate substantially from day to day, and as a result, bouts of personal initiative are probably associated with low levels of task performance, followed by phases of low personal initiative and high levels of task performance. Another mechanism that could lead to a temporary negative link between personal initiative and task performance originates from its potential to change work tasks (Fay & Sonnentag, 2010). Changing work tasks may necessitate learning new ways of doing a task or trying out new ways of doing a task, not all of which may be successful. This reasoning may explain the lack of a relationship between personal initiative and objective or external success. Although personal initiative was measured at the dispositional level in the present research, it is likely that entrepreneurs in the early phases of venture start-up are engaging in quite a lot of exploration. They may be trying out new ways of developing a product, new applications of an existing product, different ways of marketing their product or service and so on. Equally, they may need to take initiative in solving any issues that come their way, for example, in relation to finding finance, or in finding new ways of doing things and so on. Such behaviours may ultimately be beneficial to the entrepreneur and the venture in the long-term, but to an outsider looking at the business, the venture may appear to be making little progress during such episodes and may result in an external evaluation of lower success in the early stage. Similarly, such behaviours may slow the short to medium term advancement of the business, and so the venture may be slower to reach the key success milestones that formed part of the objective success indicator. Fay and Frese (2001) posit a similar argument with regard to employees who are proactive and introduce a new innovation or initiative, but subsequently need to convince others in their organisation to adopt the change. Entrepreneurs who introduce a radical new product or new innovation are showing initiative, but it may take time for the market and consumers to catch up.

By the same token, entrepreneurs who can reflect and monitor their activities in areas such as these, may be likely to rate themselves more highly in terms of their success, especially if they can see the progress such activities are contributing to their longer terms vision or goals. Locke and Baum (2007) describe proactivity as an element of drive, with another element of
drive being ambition. They also suggest that ambitions that are too large in scope can lead to
errors in judgement, such as overly rapid expansion so that costs exceed cash flow. A similar
reasoning may be applied to personal initiative. No research to date has investigated this
potential dark side of excessive proactiveness or excessive initiative, although as mentioned in
the previous chapter there is the suggestion that counterproductive work behaviours may be
active (Spector & Fox, 2010). Such potential curvilinear relationships will need to be
investigated in future research, but are evident in other motivational and positive concepts; for
example, over-control in self-regulation, overconfidence in self-efficacy (Simon, Houghton &
Aquino, 2000; Vancouver, Thompson, Tischner & Putka, 2002; Vancouver, Thompson &
Williams, 2001), the role of extreme engagement (e.g. Bakker & Leiter, 2010; Beckers et al.,

Another line of reasoning may suggest that macro environmental characteristics may
influence the extent to which personal initiative is required to make a success of a venture.
Previous research which has reported a relationship between entrepreneurial success and
personal initiative were conducted in East Germany (Zempel, 1999), Uganda (Koop et al.,
2000) and Zimbabwe (Zempel, 1999; reported in Fay & Frese, 2001). These countries can be
classified as developing or emerging economies, likely characterised by quite high levels of
uncertainty. However, the present research was conducted in Ireland during the “Celtic Tiger”,
a time of unprecedented economic prosperity, where consumers had large buying power,
unemployment was extremely low, and employees could change jobs with ease. New ventures
had quite a high chance of success in this climate, indicating a much lower degree of economic
uncertainty. Griffin, Neal and Parker’s (2000) model of work role performance suggested that
proactive behaviour was required in uncertain environments. This may suggest that macro
economic conditions may need to be considered in future research considering the role of
personal initiative in entrepreneurial success. For example, Rauch, Frese and Sonnentag (2000)
reported on a comparison of cultural differences in planning and success relationships of small
enterprises in Ireland, West Germany and East Germany. Their results presented quite strong
support for the argument above. They found that in Germany, planning had a positive influence
on success, while in Ireland, this effect was negative. Furthermore, they found that the
meditational relationship from achievement orientations to planning to success was positive in
Germany and negative in Ireland.

Entrepreneurial orientations had small, but non-significant effects on all three success
variables. Meta-analysis has demonstrated that entrepreneurial orientation is consistently
related to success (Rauch et al., 2009), and other quantitative reviews have demonstrated that
many of the individual components that comprise entrepreneurial orientations uniquely
contribute to various dimensions of venture success (e.g. high need for achievement, low risk-
taking orientation, see Rauch & Frese, 2000 for a review). However, this past research was not exclusively limited to the psychological conceptualisation of entrepreneurial orientation. Given that the present research used an individual level measure of entrepreneurial orientations, this may account for the smaller effect sizes.

Kraus et al. (2005) found a significant relationship between overall entrepreneurial orientations, measured as an individual difference, and business success. Rauch et al. (2009) suggest that firm level entrepreneurial orientations should have a larger effect on financial performance than on non-financial measures such as satisfaction and global success ratings made by owners and business owners. The present research supports this meta-analytic finding at the level of the individual entrepreneur also, and suggests that if entrepreneurial orientations is assessed at the level of the individual entrepreneur, then there are clear direct effects on both firm and personal indicators of success. The present findings, in conjunction with the results of Rauch et al., may suggest that in the early phases of business start-up, it is particularly important for the entrepreneur to hold high levels of entrepreneurial orientations in order to navigate the perils of start-up. Hence, there is support for Davidsson’s (2007) contention that there is a level of analysis mix-up in the measurement of entrepreneurial orientations.

In future research, there may also be merit in considering the impact of broader contextual implications for such distal motivational resources as personal initiative and entrepreneurial orientations. For example, Frese et al. (1996) found evidence of cultural differences resulting in varying levels of personal initiative between East and West Germany. Rauch et al. (2009) found evidence to suggest that country may have a moderating influence on the firm-level entrepreneurial orientations – performance relationship. Tang et al. (2008) also found evidence that the relationship between firm-level entrepreneurial orientations and performance is u-shaped rather than linear in China.

As mentioned above, entrepreneurial self-efficacy had a significant positive effect on self-perceptions of success. It also had a small-medium positive effect on external success, but this did not reach significance. Creative self-efficacy had a small positive, but non-significant direct effect on objective success. Hence, self-efficacy in the volitional pre-actional phase of the Rubicon model also appears to be important for self-efficacy judgements in the motivational post-actional phase of the Rubicon model (i.e. self-perceptions of success). The role that self-efficacy plays in the success of a venture has been an issue of some debate in previous literature. A number of researchers support the notion that self-efficacy is very important for entrepreneurs (Baum, Locke & Smith, 2001; DeNoble et al., 1999; Locke & Baum, 2007; Markman et al., 2002), and the present research is in line with this. Frese (2007) suggests that self-efficacy is more likely to be more highly related to performance in novel situations. However, research by Vancouver and colleagues (Vancouver, Thompson, Tischner & Putka, 2002; Vancouver,
Thompson & Williams, 2001) found that self-efficacy can have a negative effect on performance. Other research has demonstrated that overconfidence may cause problems for entrepreneurs (Simon, Houghton & Aquino, 2000). It would appear from the present findings, and past research outlined above, that high self-efficacy is important in the early stages of venture creation. This is in line with the views of Baron (2007) who suggests that entrepreneurial self-efficacy may be highly predictive of entrepreneurial intentions and of success during relatively early phase, but may be somewhat less important in later phases. The topic of optimism has received some treatment in the entrepreneurial context, and can in some ways be seen as a related concept to that of self-efficacy. Hmieleski and Baron (2009) showed the there was a negative relationship between entrepreneurs optimism and the performance of the venture in terms of revenue and employment growth. Future research will need to investigate the role that self-efficacy plays in entrepreneurial success over time as the venture progresses through the phases of the entrepreneurship process.

The findings in relation to creative self-efficacy and objective success also support past findings. Tierney and Farmer (2002) demonstrated that entrepreneurs creative self-efficacy was positively related to the number of patents sought and actually obtained. Baron and Markman (2004) found that during the middle stages of the entrepreneurial process, creative self-efficacy was positively related to efforts by entrepreneurs to obtain intellectual property protection for their inventions. This latter findings suggests that creative self-efficacy may become increasingly more important as the venture progresses through the entrepreneurial and organisational life-cycle. This is an area that will need to be investigated in future research.

Work engagement did not demonstrate significant relationships with success. This may be due to the nature of the success measures which were at the level of the venture. Gorgievski, Bakker and Schaufeli (2010) found that in a sample of entrepreneurs, work engagement was related to task performance and innovativeness. However, these researchers measured performance at the level of the individual. Furthermore, work engagement has been found to predict very specific performance outcomes such as service quality in hotel and restaurant employees (Salanova, Agut & Peiro, 2005). This suggests that work engagement may be beneficial at the level of individual performance, but this effect becomes too diluted at the level of the venture to show any significant effect. However, there is some research demonstrating a relationship between work engagement and business unit performance (Harter, Schmidt & Hayes, 2002), but again, the unit of analysis was quite specific (e.g. customer loyalty, profit and productivity).

Kuratko, Hornsby and Naffziger (1997) suggest that entrepreneurial motivation is a key factor that influences venture performance. The meditational model of entrepreneurial motivation has been generally supported and has demonstrated that it can influence the direct
motivation to perform, and performance itself (Baum et al., 2001; Baum & Locke, 2004; Locke & Baum, 2007). The present research provides further support that distal motivational processes can have both direct and indirect effects on success. Furthermore, the research addresses the recommendations of Locke and Baum (2007) who suggest that future studies of entrepreneurs that include trait variables should include both general and situationally specific variables into their research.

12.2.3. The role of emotions and emotion regulation in predicting success

The aim of this section of the research was to investigate the distal and proximal components of the emotional process that have an impact on entrepreneurial success (see Figure 10.2a, b).

Reappraisal had a significant negative effect on self-perceptions of success and a small, but non-significant negative effect on objective success. However, this direct effect disappeared in the full model, where it had a positive indirect effect on self-perceptions of success via problem-focused coping. It also demonstrated a negative effect on external success, but this did not reach significance. Suppression had a small negative effect on self-perceptions of success, and a small positive effect on external success, but neither reached significance. Tice (2009) suggests that emotions may benefit self-regulation through their capacity to counteract the effects of depletion. In line with this, it appears that if one can reappraise one’s emotions so that it is possible to engage in effective coping strategies, then the negative effects on success are dissipated. In this sense, problem-focused coping may be seen as an adaptive mechanism, and it is the combination of both reappraisal and effective coping that allows an entrepreneur to maintain a focus on the task and their venture. Beal et al. (2005) suggest that emotions are a form of off-task attentional demand that use cognitive resources. In a similar vein, it could be argued that if reappraisal leads one to engage in problem-focused coping, rather than some other form of off-task behaviour, the problem-focused nature of the coping leads to a renewed focus for on-task behaviour. This is similar to the argument for the emotion regulation strategy of attentional deployment – if an individual chooses to think about their work instead of the details surrounding an emotional event, then the emotion will not interfere with performance.

It is also possible that chronic reappraisers who do not also engage in high level of problem focused coping, are overly focused on their emotions, and may come across as quite emotional, which may result in a lowered evaluation of their success from an external evaluator, who may have less confidence in them as a result. This may also account for the small positive relationship between suppression and external success, where suppressors may come across as less emotional. However, suppression is generally considered to use more resources than reappraisal because of where in the emotion cycle the regulation occurs (Gross & Thompson,
2007). Furthermore, Bledow and Frese (2009) suggest that managing one’s emotions rather than changing the situation are a feature of actions low in personal initiative. Although, Gross (1999) suggested that emotion regulation strategies could vary along a continuum from conscious and effortful to automatic and effortless, the findings of the present research are more in line with Bledow and Frese (2009), and appear to suggest that emotion regulation strategies are beneficial for performance or success when they lead to an active approach such as problem-focused coping.

The findings with regard to anticipated emotions were somewhat ambiguous. In the main analysis, anticipated positive emotions had a small non-significant negative effect on self-perceptions of success and external success. However, when this effect was investigated in the absence of all the other variables, anticipated positive emotions had a small, positive (but non-significant) effect on external success and a negligible effect on self-perceptions of success. Research has demonstrated that perceptions of entrepreneurial passion by venture capitalists and angel investors influence their investment decisions (Cardon, Sudek & Mitteness, 2009; Chen, Yao & Kotha, 2009), which would support the finding that anticipated positive emotions may have a positive effect on external success. In relation to anticipated negative emotions, they were found to have a small positive (but non-significant) effect on self-perceptions of success when all other variables were excluded but this effect disappeared in the full model. It also had a small non-significant negative effect on external success.

Overall, it would appear that anticipated goal-directed emotions had little or no effect on entrepreneurial success. Baumeister et al. (2007) suggested that emotions serve an adaptive function. However, whether these consequences of emotions are harmful or helpful largely depends on the nature of the task, the kind of information processing strategy used, and the characteristics of the person and the situation (Forgas, 1995, 2002). Hence, it would appear that a much finer-grained analysis of specific events and episodes is required, perhaps drawing on Beal et al.’s (2005) episodic process model, in order to ascertain in more depth the influence of anticipatory emotions on performance and success. A further possibility is that emotion regulation strategies act as a moderator of the relationships between anticipated emotions and entrepreneurial outcomes. Cardon et al. (2009) argued that emotional regulation could moderate the influence of attributed affect on behavioural outcomes. Given the theoretical representation of the model in the present research, it made more sense to examine mediated relationships. However, this does not preclude the possibility that some of the more distal variables could indeed act as a moderator for some of the more proximal processes. Certainly, there is merit in the investigation of such possibilities in future research.

Problem-focused coping had a significant positive effect on self-perceptions of success that was medium in magnitude, and a small but non-significant positive effect on external
success. The effect on objective success was negligible. Baum et al. (2007) argue that, as the direct personal implications of performance are typically higher for entrepreneurs and business-owners than for employees, and as a result, characteristics that support coping, including knowledge, skills, ability and motivation are relevant for understanding coping and the entrepreneurship process. Furthermore, Patzelt and Shepherd (2011) found that over and above the effects of positive emotions, the self-employed experienced fewer negative emotions than those who are employed, contingent on their regulatory coping behaviours. The present findings indicate that engaging in active coping with stress can enhance one’s satisfaction with the progress of the venture. Actively coping with stress may reduce the negative outcomes of stress, and allow the entrepreneur to get on with the many activities required in starting and running a new venture. Equally, an entrepreneur who manages their stress well may appear more competent and composed, which may result in outsiders perceiving the entrepreneur and their venture to be more successful. This finding also fits well with the theoretical proposition that problem-focused coping strategies are adaptive strategies, and hence, may be more effective in terms of leading to goal attainment (Carver, Scheier & Weintraub, 1989).

Baron (2008) states that including affect as a variable of interest in ongoing entrepreneurship research may contribute to the development of comprehensive theoretical frameworks which entrepreneurship scholars seek. The present research indicated the in particular, coping and to some extent, emotion regulation, may be of relevance in the context of entrepreneurship. Overall, the role of emotions and emotion regulation did not appear to be as strong as for the cognitive processes. However, they do appear to represent an important aspect of the self that needs to be regulated and harnessed in order to get the most out of an entrepreneurial endeavour. One potential explanation for this is that the role that emotions and emotion regulation has on the success of the venture may depend on how it influences other cognitive processes (e.g. Baron, 2008). Hence, it may be that emotions and emotion regulation serve an adaptive function for the entrepreneur, which influences success in a very roundabout way. This may provide an interesting avenue for future success.

12.2.4. Combinations of cognitive, motivational and emotional processes in predicting entrepreneurial success.

In addition to investigating the direct and indirect effects of the separate cognitive, motivational and emotional processes that contribute to entrepreneurial success in isolation, the combinations of the three paths were also investigated. This section primarily deals with the indirect effects of more distal variables via more proximal variables. A number of indirect effects of this nature reached significance.
Entrepreneurial orientations had an indirect effect on both objective success and self-perceptions of success via planning. It also had an indirect effect on these two variables via performance approach goals and planning sequentially. This latter indirect effect, which incorporated two sequential mediators, was only marginally significant. However, given that each additional mediator makes the likelihood of detecting significance lower (given the multiplication of each beta value), this effect is worth noting also. Previous research on firm-level entrepreneurial orientations has demonstrated that entrepreneurial strategies are most strongly related with success when combined with strategies and environmental conditions (Dess, Lumpkin & Covin, 1997). Furthermore, in its original conceptualisation as a firm level construct, entrepreneurial orientations grew out of research in the strategy making process literature, which incorporates planning, analysis and decision making (Rauch et al., 2009). The present research suggests that such processes hold at the individual level also. The present findings provide clear support that entrepreneurial orientations are a distal individual disposition of the entrepreneur which affect success via more proximal goal processes. Hence, these findings provide further support for the conceptualisation of entrepreneurial orientations as an individual level variable (see Davidsson, 2007), and furthermore, suggest that individual level processes mediate its effect on venture success, certainly during the early stages of business ventures. In later stages of entrepreneurship, the firm level concept may become more important.

This finding is also in line with broader motivation research. Entrepreneurial motivation incorporates both cognitive and motivational components (Locke & Baum, 2007), and previous research has demonstrated that both motivational resources and planning had a significant effect on entrepreneurial success (Frese et al., 2007). Locke (2000) summarised that there are two paths to performance, one motivated by goals, and another motivated by other factors. The present research would indicate that there is merit in this distinction.

A number of the models tested also demonstrated significant total indirect effects (testing the paths from the distal variables through all of the more proximal variables) on success. For the model investigating the cognitive (with planning) and motivational paths in combination; entrepreneurial orientations via goal orientations and planning in addition to domain specific self-efficacy had a significant total indirect effect on self-perceptions of success. This is in line with goal-setting theory, which has posited that self-efficacy has an indirect effect via the goal (Latham & Locke, 1991). These findings further those of Frese et al. (2007) who found a similar pattern of results using somewhat different indicators of motivational resources and success in an African sample. Demonstrating that this result holds in a European context provides reasonably strong empirical support that both psychological planning and motivational resources are important factors to consider at the level of the
individual entrepreneur when investigating the wider entrepreneurship phenomena. These results also provide support for Rauch and Frese (2007a) who espouse the need to place a bigger emphasis on the person in entrepreneurship research, moving beyond traditional personality approaches.

Personal initiative did not demonstrate any significant indirect effects via the cognitive or emotional paths beyond the indirect effect on self-perceptions of success via entrepreneurial self-efficacy. Frese and Fay (2001) suggested that taking the initiative means that one leaves behind routine work and changes the situation, which increases the likelihood of making errors, as changes and nonroutine actions increase work complexity. Given that the entrepreneurs in this research were still in the early stages of venture development, such a relationship between personal initiative and errors was likely as the entrepreneurs learned what was needed to develop a successful business. This may explain the lack of significant findings in relation to personal initiative, objective success and external success. However, entrepreneurs will themselves be able to see the progress they are making and the learning they have achieved which should both increase their self-efficacy as an entrepreneur and make them more likely to hold a positive view of their success to date (self-perceptions of success).

No indirect effects on success were found for the models that investigated the cognitive and emotional paths in combination. However, this may be due to the both the difficulty in reaching significance in mediation and indirect effects models (Cohen, 1994; MacKinnon, Fairchild & Fritz, 2007; Preacher & Hayes, 2008) combined with the relatively small sample size. Kim, Cable, Kim and Wang (2009) developed and tested a model where emotional competence influences work performance through employee’s proactive behaviour towards their supervisors. Their findings provided support for this meditational model. These authors use a definition of emotional competence that incorporates the concept of emotion regulation. In their study, emotional competence is defined as a set of skills used to perceive one’s own feelings and others emotions, to regulate them, and to use this information to guide one’s thinking and actions (Giardini & Frese, 2008; Mayer & Salovey, 1997). This suggests that although the present research did not find any significant indirect effect, there may be merit in further investigations of the interactions of cognition and emotion, perhaps using variations on the variables used in this research, and their measures, in the future.

12.2.5. Section conclusion

Previous research has suggested that starting a business or business growth may be driven by specific behaviours, and therefore proximal constructs should be more closely related to the task of entrepreneurs than broad traits (Baum & Locke, 2004; Rauch & Frese, 2007a). However, Rauch and Frese (2007a) argue that broad traits do have an influence on
entrepreneurial success, although this effect is often via the more proximal traits and behaviours. The present research did not assess broad personality constructs such as the Big Five, but focused on how more specific traits or dispositions have their influence on success via the proximal or volitional variables. By-and-large, this distal-proximal conceptualisation combined with the process of action phases had relevance for explaining entrepreneurial success.

Overall, the findings suggest that cognitive and goal concepts are most relevant for determining objective success. Motivational variables consistently demonstrated a relationship with self-perceptions of success, but entrepreneurial orientations and self-efficacy also appeared important for objective success and to some extent, external success. The role of emotions and emotion regulation appeared to have little effect on objective success of the venture, nor on external evaluations. This is not unsurprising as such processes may be less observable, and are more related to the regulation of the self, rather than the task. They do however, appear to be relevant for the individual own perceptions of their success, which again points to the role they play in managing the self. Hence, it appears that all three paths of self-regulation have a role to play in the ultimate success of the entrepreneur and his/her venture.

12.3. Theoretical contribution to the entrepreneurship literature

This research contributed to advancing our knowledge at the intersection of psychology and entrepreneurship. Gartner (2007) suggests that building knowledge at this intersection, and contributing to the organising of the disparate body of scholarship that touches on both psychology and entrepreneurship is a difficult task. However, as Gartner (2007) espouses, this research works to inform both the disciplines of psychology and entrepreneurship.

In particular, models of self-regulation, such as the one presented in this research, have the potential to serve an integrative function, and align many of the angles from which entrepreneurship has been studied from a psychological perspective (e.g. entrepreneurial personality; Rauch & Frese, 2007a, b; motivational and cognitive approaches; Locke & Baum, 2007; Busenitz & Arthurs, 2007; process perspective, Baron, 2007, 2008; competence approach, Markman, 2007). For example, Haynie, Grégorie and Shepherd (2004) suggest that metacognition is naturally suited to studying individuals engaged in a series of entrepreneurial processes, and for examining cognitive processes across a series of entrepreneurial endeavours. In addition, they suggest that given the dynamism and uncertainty of entrepreneurial contexts, metacognition facilitates studying how entrepreneurs adapt to their evolving and unfolding contexts. In the sections which follow, a more detailed overview of the theoretical contribution of the present research will be outlined.
12.3.1. Advancing understanding of entrepreneurial success at the level of the individual

The role that personal characteristics play in entrepreneurship has been a highly contentious area, which began with McClelland’s (1961) work on achievement motives. However, Baum et al. (2007) note that a new cohort of psychology-based researchers have broadened and deepened the search for individual differences that cause entrepreneurship, and such research is uncovering personality traits, competencies, cognitions, behaviours and environmental conditions that impact new venture creation and success (e.g. Baum, Locke & Smith, 2001, Baum & Locke, 2004). Davidsson (2008) makes quite a strong argument for trained psychologists engaging in research of this nature, suggesting that if such researchers do not devote their expertise to studying the role of individuals in entrepreneurial processes, others will, but likely with less suitable tools, or less skilful application of such tools.

The present research advances research on the person approach to entrepreneurship in a number of ways. In their psychological model of entrepreneurial success (Rauch & Frese, 2000) and their personality approach to entrepreneurship (Rauch & Frese, 2000, 2007a, 2007b), Rauch and Frese suggest firstly, that the psychological processes engaged in by entrepreneurs are key to their success, and secondly, that more dispositional or distal variables (such as personality) have their impact through more proximal variables. Both of these contentions were borne out in the present research. Moreover, by adding the emotional path, and an additional range of proximal constructs, the present research added additional explanations, and also offered the ability to integrate modern personality approaches to entrepreneurial success with recent theorising on entrepreneurial affect (e.g. Baron, 2008). Furthermore, by applying the model of cognitive, motivational and emotional self-regulation to the context of entrepreneurship the present research demonstrated the complexity of intrapsychic processes interacting with trait and behavioural phenomena that ultimately lead to an explanation of how individual factors influence entrepreneurial success. Hence, the model presented in the present research can account for an additional range of findings in the literature that other, more narrowly focused, approaches do not always address, or have not been able to explain.

The distal-proximal distinction in the psychology of entrepreneurs is gaining momentum, and beyond the model proposed by Rauch and Frese (2007a), it is also evident in Baum, Locke and Smith’s (2001) multidimensional model of venture growth, Baum and Locke’s (2004) research on the psychological determinants of venture growth, Escher et al.’s (2002) work demonstrating the interaction between cognitive ability and planning strategies in predicting small business success, Unger et al.’s (2009) work looking at the role of deliberate practice in African business owners, and Antonakis and Autio’s (2007) process model of entrepreneurial leadership, among others. A number of researchers are now in agreement that
broad distal personality characteristics may be important in the prediction of success and business creation, but that there is a need to also include more proximal variables such as motivational, cognitive, action styles and strategies, or leadership approaches, in order to maximise explained variance (Baron, Frese & Baum, 2007; Markman, 2007; Rauch & Frese, 2007a). The present research further added to this growing body of knowledge by incorporating the distal and proximal manifestations of cognition, motivation and emotion in examining their role on venture success.

Broad personality traits are related to success because they impact specific traits, goals, and strategies, which in turn, affect business success, but in entrepreneurship research, mediating relationships such as these are rarely studied (Rauch & Frese, 2007a). The present research tested a comprehensive model based on these premises, and so makes an important contribution to this literature by explicating and testing such mediating relationships. The findings demonstrated that there was merit in considering such indirect effects, and confirmed that a number of more distal personal characteristics have their effect through more proximal and dynamic volitional processes.

12.3.2. Understanding the role that micro-level variables play in explaining macro-level variables in entrepreneurship.

The research contributed to the growing interest in the role that individual factors play in firm-level success. Baron (2010) identified as a key issue in current entrepreneurial research the question of how micro level variables such as the skills, motives, values, and characteristics of individual entrepreneurs influence firm level outcomes such as the survival, growth and profitability of new ventures. The present research provided support for Rauch and Frese’s (2000) contention that entrepreneurship can profit from the interface between business and psychology because psychology variables are related to entrepreneurial success. Furthermore, the findings provide support for the suggestion that psychological variables, and in particular, action related concepts, function as mediators in the processes that leads to success (Rauch & Frese, 2000).

Davidsson (2008) describes the type of study that was conducted in the present research as a type of cross-level design (as described by Klein & Kozlowski, 2000; Rousseau, 1985), where personal characteristics are related to the success of a specific firm or venture. He states that such designs should stand a strong theoretical chance of explaining the variance in performance, as venture or firm performance is an aggregate of multiple behaviours. In this category of studies, Davidsson (2008) sees studies that he considers to be amongst the strongest contributions of any in entrepreneurship research. One of the reasons for this is that such studies include “both distal and proximal psychological constructs and modelling the influence of the former as mediated by the latter” (Davidsson, 2008; p. 155). Hence, the present study,
including its theoretical model and empirical findings, contributes to the advancement of research and theory within this important facet of entrepreneurship research.

A contribution of the present study is that although it focused on the self-regulatory processes of individual entrepreneurs, which are micro-level phenomena, the ultimate dependent variable was at the macro level. In line with Baum and Locke (2004) the dependent variable was not just individual performance, but also included the performance of the venture as a whole. In the early stages of a venture, the individual entrepreneur is often synonymous with the firm, and so it is logical to expect relationships between the individuals’ thoughts, actions, motivations and emotions, and the functioning of the new firm. In addition, the present study captured a range of performance and success indicators relevant to the early stages of new ventures. The objective indicators of success provided a firm level indication of how well the venture was progressing, which was suitable to the stage of development (in line with Baron, 2007). The external rating provided a verification of the findings and hence represented a methodological strength. In their model of entrepreneurial motivation, Naffziger, Hornsby and Kuratko (1994) suggested that entrepreneurs will compare actual outcomes accruing as a result of ownership to their expectations, and the outcome of this comparison will then influence the decision to sustain entrepreneurial behaviour. The measure of self-perceptions of success in the present research was essentially a measure of the outcome of this comparison, and so was an important motivational success outcome to capture also.

The incorporation of cognition, motivation and emotions into one model in the explanation of individual factors influencing entrepreneurial success represents a further contribution. Baron (2008) suggests that affect may be one potential mediator between individual level variables and macro-level variables in entrepreneurship. More specifically he suggests that affect may be a potential mediating variable that may bridge the gap between the characteristics, skills, motives and abilities of individual entrepreneurs and measures of entrepreneurial performance. Baron states that the confirmation of such a relationship in future research would constitute a useful contribution to the field of entrepreneurship. The present research makes significant strides in this direction.

12.4. Practical applications to entrepreneurship

Research has demonstrated that entrepreneurs themselves see their decisions and actions as the most important reasons for their business’ survival (Baum et al., 2007). Hence, understanding the particular combination of self-regulatory functions that have an influence on performance and ultimate survival provides important insights into the ways in which entrepreneurs need to manage their thoughts, feelings and motivations in order to optimise their chances of success. It is important to note that the practical applications outlined below can
only pertain to early stage business ventures, as Baron (Baron, 2007, Baron & Markman, 2004) demonstrated that the role that the individual entrepreneur plays in determining venture success changes over the course of the entrepreneurial process and life-cycle. As the present research only investigated early stage entrepreneurs, the implications also pertain only to such entrepreneurs.

12.4.1. Developing self-regulation skills in entrepreneurship to facilitate success.

Baron, Frese and Baum (2007) note with surprise that I/O psychology is silent on the major focus of entrepreneurship education, which they describe as the function of developing a business plan for the survival and business growth. This is even more surprising given the depth of expert knowledge in learning that exists in cognitive and educational psychology, and the emphasis placed on the domain of training as an area of speciality in organisational psychology. Hence, psychologists are well placed to advance training in the workplace, and in entrepreneurship more specifically.

The findings of the present research specifically point to the value of training in self-management skills or self-regulation skills. Markman (2007) suggests that as new ventures are the product of individual-level of action, a theory of individual-level competencies can enhance our understanding of entrepreneurship. A key component of such an approach are self-regulatory skills and meta-skills. Markman (2007) further suggests that we may distinguish successful entrepreneurs from less successful one’s by (a) what they know, (b) how much knowledge they can absorb and access, (c) how effectively they can distinguish between relevant and irrelevant knowledge, and (d) how quickly and effectively they can learn, reabsorb, disseminate, and appropriate their knowledge insights. To an extent, this also depends on how aware an individual entrepreneur is of their current skill level in each of these domains, i.e. it depends on their meta-cognitive awareness. One can further extrapolate such competency needs to the area of motivation and emotion, where it is particularly important for entrepreneurs to be able to manage the self as well as the task. Hence, meta-motivational, meta-volitional and meta-emotional awareness and skill play an equally important role as meta-cognitive skills (e.g. Boekaerts, 1995; Kehr & Von Rosenstiel, 2004; Keith & Frese, 2005).

Frese (2007) suggested that entrepreneurs need to regulate more on the conscious level than other occupations. Inherent in this is that entrepreneurs require skill in self-regulation and self-management in order to successfully accomplish this. In past research that has demonstrated the effectiveness of self-regulation or self-management training, the focus has almost exclusively been on the regulatory benefits of the cognitive aspects of self-regulation; goal-setting, planning, monitoring, evaluating and so on. Such training has been shown to have significant benefits on performance in multiple domains (e.g. Frayne & Geringer, 2000; Latham
& Frayne, 1989; Raabe, Frese & Beehr, 2007; Unger et al., 2009; Yanar, Budworth & Latham, 2009). Training in metacognitive skills has also been shown to be of benefit for the decision making of entrepreneurship (Haynie, Grégorie & Shepherd, 2004). However, relatively little research has examined the importance of meta-volitional and meta-motivational training (Boekaerts, 1995; Kehr & Von Rosenstiel, 2004), nor on the role of meta-emotional skills (e.g. Keith & Frese, 2005), although there is some emphasis on these types of skills in emotional intelligence research (e.g. Cross & Travaglione, 2003; Rhee & White, 2007; Zampetakis et al., 2009).

Some of the research on entrepreneurial cognition has focused on the cognitive biases and errors that entrepreneurs fall prey to (e.g. Baron, 2006; Busentiz & Barney, 1997; Simon, Houghton & Aquinas, 2000). The management of and learning from errors is one area of applied self-regulation research that has shown high levels of success in terms of performance and behaviour change. Action theory has been used as a theoretical basis for the development of an error management training (EMT) programme which resulted in participants being less likely to make subsequent errors in performance (e.g. Keith & Frese, 2005, 2008). It would appear that such training could make a valuable contribution to reducing the likelihood of entrepreneurs making such cognitive errors and ultimately increase their chances of success.

However, going forward, the present research suggests that it may be as important to train self-management skills beyond those pertaining to the cognitive domain. Focusing on training individuals to self-manage in their personal management skills such as managing emotions, coping, and managing motivation levels also appear to be important. Research in the educational sphere has tended to maintain a stronger focus on both emotional and motivational issues in learning as well as cognitive issues, and how to self-regulate each of these intrapsychic processes (e.g. Boekaerts, 1996; 2001; Efklides & Volet, 2005; Järvelä, & Volet, 2004). Drawing on the sophistication of theory, methodology and learning techniques from the educational psychology domain will certainly speed progress towards achieving this important aim of developing cognitive, motivational and emotional self-regulatory skills in entrepreneurs.

12.5. Future Research: Entrepreneurship

Although the present findings added to the growing body of research examining the role of the individual in entrepreneurship, there is much still to discover. In the subsections which follow, an overview of recommendations for specific areas of future research are made.

12.5.1. The role of self-regulatory processes throughout the life-cycle of the venture

The role of experience and learning is an interesting area for future research in the self-regulation of entrepreneurs. Over time, conscious regulation can become more automatic,
which means that self-regulatory effort will cause less depletion. However, this also means that entrepreneurs may fall prey to habits that they develop over time. Actions are regulated on a higher level when barriers, opportunities for new goals, or environmental pressures appear (Frese, 2007). Given that these represent common actions and contexts experienced by entrepreneurs, one can presuppose that entrepreneurs are more likely to regulate their actions at the conscious or heuristic levels. However, with practice in redundant environments, actions can become routinized and automatic (Frese & Zapf, 1994), and Frese (2007) suggests that entrepreneurs can develop routines to search for opportunities. New opportunity recognition should be easier for entrepreneurs who have been in business for some time, because they can regulate most other actions on a lower level of regulation (Frese, 2007), but this also means that such entrepreneurs are like to use more heuristics in their thinking. This presents an interesting question as to how self-regulation and self-regulatory skills are used over the life-time of an individual (who may be engaged in a number of different ventures, or may even return to paid employment), and for an individual entrepreneur as they gain more experience over the life-time of a venture.

Furthermore, traditional research on expert-novice differences can inform research of this nature. Busenitz and Barney (1997) suggest that entrepreneurs have the ability to think differently than others, which allows them to use heuristics and make decisions in ways fundamentally different from managers (Markman, 2007). Furthermore, Fiet (2002) suggested that the ability to systematically search is a more effective technique for discovering opportunities when coupled with prior experience, and that this ability to discover opportunities can be taught. This fits with cognitive theories of expertise and experience, which suggests that, with experience, we tend to grasp complex patterns more quickly, and so, experts may also take less time analyzing environmental factors while still developing more adequate ideas about the environment (Frese, 2007). Baron and Henry (2010) outlined a number of proposals for how insights from research into expert performance could be used to understand how and why entrepreneurs succeed or excel. They suggest that the learning strategy of deliberate practice has a key role to play here, which was confirmed in the research by Unger, Keith, Hilling, Gielnik and Frese (2009). Baron and Henry (2010) suggest that deliberate practice leads to enhanced metacognition and intuition, suggesting that experts in a given field not only demonstrate superior performance but are also better than novices at reflecting on their own thoughts and actions and, hence, better able to understand the factors that have influenced their performance. Furthermore, Salas, Rosen and DiazGranados (2010) have suggested that such expertise-based intuition, characterised by extensive domain-specific knowledge, pattern recognition and automaticity, can result in more rapid decision-making. It would appear that research into the development of expertise can help to inform research on how self-regulatory processes change over time and over the life-span of an individual and of a venture.
Hence, the ways in which self-regulation changes over provides interesting scope for future research in the psychology of entrepreneurship. Related to this is the issue of whether the level of regulation, which likely becomes more automatic and less conscious over time has positive or negative consequences for the entrepreneur.

12.5.2. Expanding the cognition horizon

The cognitive perspective adopted in the present research was predominantly based on the goal and achievement context. Other cognition researchers have expanded the range of cognitions that are being fruitfully investigated in the entrepreneurship domain. Ucbasaran, Westhead and Wright (2001) noted that the area of entrepreneurial cognition was a particularly promising research focus. The approach to entrepreneurship that focuses on the cognitive processes of entrepreneurs argues that the differences between entrepreneurs and non-entrepreneurs may be in the way that they think, or in the way that they make sense of the world around them (Baron, 1998). It is argued that entrepreneurs often work in situations that tend to overload their information-processing capacity and in situations that are characterised by high levels of uncertainty, novelty, emotion and time pressure (Baron, 1998). Together, Baron (1998) suggests that these factors may increase entrepreneur’s susceptibility to a number of cognitive biases, including counterfactual thinking, affect infusion, attributional style, the planning fallacy and self-justification.

Hmieleski and Corbett (2006) suggest that there is a growing view in the literature that entrepreneurship research should be centred on the process through which individuals identify and exploit opportunities. Research pertaining to innovation, intuition and learning are likely to be of particular relevance to entrepreneurship (Hmieleski & Corbett, 2006). Findings from their study indicated that improvisation is an important construct to consider in regard to entrepreneurial intentions, as it appears to add explanatory value above and beyond other significant predictors, such as measures of personality, motivation, cognitive style, and social models (ibid.). This research suggests that nascent entrepreneurs exhibit a proclivity for improvisation (ibid.). Hence, improvisation may be an interesting individual level variable to consider as an outcome variable that could add to the present model.

The field of cognitive science and its application to entrepreneurship is much broader than that covered in the present research, which focused on the self-regulatory processes of the goal sequence (e.g. see Baron, 1999; Busenitz & Barney, 1997; Mitchell et al., 2000, 2002). To the authors’ knowledge, little research has attempted to incorporate self-regulation and such cognitive phenomena as outlined above, and it would appear that fruitful insights may be gleaned, both in terms of explaining cognition in the domain of entrepreneurship and to other contexts beyond this. One study which has attempted to incorporate both self-regulation and
cognitive phenomena is that of Busenitz and Arthurs (2007), who presented a model of entrepreneurial cognition and dynamic capabilities. Investigating the extent to which the model presented in the present research can be expanded or adapted to incorporate a broader range of cognitive mechanisms will further test its robustness.

12.5.3. Expanding the success indicators

The present research focused on success indicators at the firm level. Davidsson (2008) suggests that from a psychological perspective, there is also merit to investigating success indicators at the person level, for example, he suggests variables such as personal financial success, goal achievement, learning, satisfaction and changes in values, motivations and attitudes as relevant concepts at this level. The model presented in this research provides a clear framework for how to incorporate such person level success indicators. In a sense, these would represent more proximal success indicators than firm-level success variables.

Recent work on the outcomes of proactive behaviour may be informative with regard to considering more proximal outcomes or success in this context. For example, Bindl and Parker (2010) suggest that by being proactive, individuals seem to be able to craft better jobs for themselves and to achieve jobs that represent advances in their career, and jobs that are more satisfying. This idea of crafting presents an interesting angle from which to investigate the impact of active self-regulation on the part of the entrepreneur. Much research in the entrepreneurial domain has focused on the recognition and exploitation of opportunities as key processes in entrepreneurship. Moving to a more active or proactive conceptualisation of these processes suggests that not only should entrepreneurs be able to recognise and exploit opportunities (which suggest somewhat of a reactive strategy), but they should be able to actively craft opportunities and the ways in which they go about developing them. Furthermore, proactive behaviours such as crafting may lead to a better fit. In organisational settings, this is normally conceptualised as a better fit between the job and the individual (Bindl & Parker, 2010), but in entrepreneurial terms could be seen as a better fit between the venture offering and the market, the opportunities available and the direction of research and development in the new venture, and so on. Hence, proactive behaviour may be an important proximal outcome to consider in future research on the present model.

12.6. Summary

Overall, the findings reviewed in this chapter demonstrated that there is merit to the consideration of self-regulation mechanisms in determining entrepreneurial success in the early stages of new ventures. Although the cognitive or goal processes had the most significant impact the success of the venture itself, the research demonstrated that motivational and emotional self-regulation are important for the maintenance of positive self-perceptions of
success. Given that maintaining positive evaluations of the self (or self-efficacy) is a well established concept for persistence, it would appear that all three self-regulatory paths (cognitive, motivation and emotion) have a role to play in the success of a venture. On a broader level, this research suggests that the individual entrepreneur plays a key role in determining success in the early stages of entrepreneurship, and moreover, that research stemming from psychology can make important contributions to explaining the phenomenon of entrepreneurship.
CHAPTER 13: Contributions of the Research and Conclusions

Strong self-regulatory abilities could yield great achievements, at both the personal and the societal level. Remarkable accomplishments will be achieved, however, only by developing, using, and strengthening self-regulatory processes to the utmost of our capacities.

(Baumeister & Vohs, 2003; p. 213)

13.1. Introduction

Intrapsychic processes, such as cognitive, motivational and affective strategies play a key role in self-regulation (Forgas, Baumeister & Tice, 2009). The present research investigated the ways in which these processes can be theoretically and empirically integrated into a single model of self-regulation. This chapter will summarise the main contributions made by this research, outline some of the limitations and strengths of the research, and finally, will comment on the way forward for research in self-regulation and entrepreneurship as fields of research.

13.2. Summary of key contributions of the research

Bandura and Locke (2003; p. 94) stated that a comprehensive theory of self-regulation “must encompass the variety of agentic factors known to influence self-regulation....These factors include proactive adoption of aspirant standards serving valued purposes; self-appraisal of personal efficacy to fulfil various goal challenges; anticipatory regulation of the strategies, resources, and effort needed to turn cognized standards into reality; material and social outcome expectations for fulfilling or failing to meet the standards; affective self-evaluative reactions to the quality of ones performances; and self-reflective metacognition focused on the accuracy of one’s efficacy appraisals, the appropriateness of one’s goals and the adequacy of one’s strategies for realizing them, and the meaning of one’s pursuits.” From this quote, it is clear that theories of self-regulation tend to be complex in their conceptualisation, and grand in their scope. The aim of the present research was not to add further to the complexity which already exists, but rather to bring together and clarify the relationships between self-regulation across domains of intrapsychic functioning, specifically, cognitive, motivational and emotional. Secondly, it integrated the more proximal and in-action forms of regulation with more distal pre-actional and pre-decisional influences. In doing so, this research developed and tested a model which contributes to research in self-regulation in a number of ways; (a) it demonstrates the need to consider cognitive, motivational and emotional regulation and their inter-relationships when researching self-regulation, (b) it demonstrates the importance of considering the distal or proximal manifestation of each of these paths, as well the phase in the
action sequence to which the concept fits, and (c) through the use of previous theory in self-regulation, cognition, motivation and emotion to build the model, it draws out the points of integration across previous research and theory.

From the perspective of entrepreneurship, Gartner (2004; p. 207) stated that “in the entrepreneurship field, there simply isn’t enough evidence”, and further critiques the field by stating that there has been a bias in the entrepreneurship field toward assuming that increasing methodological sophistication is an important characteristic of a mature scholarly discipline. This research was designed using the principles of methodological fit as advocated by Edmondson and McManus (2007), and so although theory in self-regulation is reasonably sophisticated, the mixed-method design of the research was the most appropriate both for the variables of interest, and for the state of development of the entrepreneurial context. From a more general perspective, Baron, Frese and Baum (2007) express the viewpoint that increased cooperation between the two fields of entrepreneurship and psychology can be very beneficial. In the present research, the sophistication of theory and method from psychology was brought to bear on entrepreneurship in order to examine the role of the individual entrepreneur in the early stages of a venture. On the other hand, examining such psychological concepts in the context of entrepreneurship provides valuable insights for psychologists studying the impact of changing employee-employer relationship, contexts and organisational structures. Examining the impact of self-regulatory processes in the entrepreneurial environment has much relevance to organisational structures and contexts more typically studied by psychologists, and provides valuable insights into the ways in which employees may go about coping with change, taking a more proactive and adaptive approach to their jobs, or engaging in job crafting, to give a few examples.

Furthermore, using the taxonomy introduced by Colquitt and Zapata-Phelan (2007) to classify the contribution of a piece of research, the present research can be classified as making a high theoretical contribution. Firstly, it is high in theory testing as it “grounds predictions in existing theory” (p. 1283), which is the highest level at which theory can be tested (level 5). The present research drew on the relevant theories from the fields of self-regulation, entrepreneurship, cognition, motivation and emotion in the development of the theoretical model, and tested these relationships in a series of empirical models. Secondly, it is reasonably high in its level of theory building. The model certainly “examines a previously unexplored relationship or process” (p. 1283), which is at level 4 in Colquitt and Zapata-Phelan’s (2007) taxonomy, and can serve as the foundation for brand new theory. It does not introduce a new construct, but whether it will reconceptualise the way in which we conceive (level 5) the relationships between intrapsychic processes in self-regulation, or the way in which we research the individual entrepreneur and the role that they play, will only become evident with time.
Overall, however, using this taxonomy, it would appear that the present research makes a significant contribution to theory and research. It can be considered an example of an expander, which Colquitt and Zapata-Phelan (2007) define as being relatively high on both theory building and theory testing. Expanders focus on constructs, relationships or processes that have not been the subject of prior theorising, but conduct the examination while testing some existing theory (Colquitt & Zapata-Phelan, 2007).

13.3. Limitations and strengths

Lord et al. (2010) identify recent trends in self-regulation research as emphasising longitudinal and within-person approaches, and they view this as a challenging, but positive change. The result of this emphasis requires applied researchers to (a) rethink theory, (b) adopt new methodologies and analytic techniques, (c) carefully consider how the phenomena of interest unfolds over time and in the context of competing task and social demands, and (d) incorporate knowledge from research on basic cognitive and affective processes (Lord et al., 2010; p. 2). The present addresses the former two of these requirements; it proposes an extension and elaboration of current self-regulatory process models, which explicates the integration of cognitive, motivational and emotional influences at proximal and distal levels. However, the cross-sectional design meant that the unfolding of these processes over time could not be investigated in its full complexity. This also resulted in the pre-actional and actional phases being investigated in more depth than the post-actional phase. Previous experimental research on the action phases in the Rubicon model have tended to adopt quite a narrow approach, focusing on one or two of the action phases (e.g. Bayer & Gollwitzer, 2007; Cohen et al., 2008; Sheeran, Webb & Gollwitzer, 2005). Research that comprehensively incorporates all phases of action in a longitudinal framework poses a daunting undertaking, but would be invaluable in forwarding theory and research in this area.

Secondly, the focus of this research was on self-regulatory mechanisms that are consciously accessible. From the perspective of organisational psychology, this has the practical advantage of being amenable to change, and hence, a skill that can be learned and practiced. However, as noted in the first chapter, there are quite a few self-regulatory phenomena that are automatic and nonconscious (e.g. impulse strength, willpower, ego-protection), and in reality, it is likely that most self-regulatory tasks involve a combination of both conscious and nonconscious processes (Forgas, Baumeister & Tice, 2009). Future development of the present model could benefit from considering how such nonconscious processes could be incorporated.

Thirdly, the research design adopted pushed the boundaries of methodological and analytical techniques, through the adoption of a mixed-method approach to the assessment of
the key variables. However, while this approach was justified, as explained in the methodology section, it meant that the overall sample size available for statistical analysis of the results was quite small, with the result being that very complex models could not be investigated. In addition, the sample size was a little lower for the testing of the emotional models, due to the iterative nature of mixed-methods research. The relatively small sample meant that it was also not appropriate to use traditional co-variance based SEM methods. Although PLS SEM has been shown to be a valid alternative to co-variance based SEM for use with small samples (see Chin & Newsted, 1999), one of the limitations of PLS modelling is that it does provide goodness of fit statistics for the overall model that are available with traditional covariance based SEM methods. Future research will benefit from the replication of these results with larger samples and covariance-based SEM methods. On the other hand, Frese et al. (2007) identify the combination of qualitative structured interviews and quantitative coding as a way of overcoming many of the problems of questionnaire research, such as “unclear representation of constructs to participants, erratic answers to questionnaire items, and problems of interpreting what the answer really mean” (p. 1495). The use of structured interviews allows the interviewer to probe the answers of the participants, and request clarification when needed. Furthermore, the fact that the majority of participants completed the questionnaire component of the research directly following the interview, and in the presence of the researcher, meant that it was possible to clarify any items that the participants found ambiguous.

The sample size also meant that some of the smaller effects did not reach significance. However, Kramer and Rosenthal (1999) caution that it is important to consider effect size estimations, so as not to mistakenly accept the null hypothesis. Effect size estimations are not affected by the size of the sample (Kramer & Rosenthal, 1999), and it is important to consider the explanatory potential that these small effects hold in explaining the complex web of intrapsychic processes that influence entrepreneurial success and self-regulation. Rauch and Frese (2007a) state that because entrepreneurship is multiply determined, no one predictor of success is likely to be found, and we should expect only small to moderate correlations. Furthermore, Rauch and Frese (2000) stated that any one personality trait will never have a strong relationship with any outcome variable, and hence the multiple effects of several relevant personality characteristics rather than single traits should be analysed. Hence, it would appear that even small effect sizes can be of importance in the context of entrepreneurship, and furthermore, it appears that the indirect effects of more distal traits through more proximal states and processes are key to explaining entrepreneurial outcomes.

The present model was based on a meditational model whereby distal variables had their effect through more proximal variables and processes. This is based on a sound theoretical rationale (e.g. Rauch & Frese, 2007a). However, alternative moderated relationship
are conceivable, whereby for example, personality variables do not necessarily have their effect through more proximal variables, but actually moderate the relationship of these proximal variables and their outcomes. This is an angle that will need to be further investigated in future research.

The present research used three assessments of entrepreneurial success that were pertinent to the early stage of development. This conceptualisation of success, paying attention to the stage of the entrepreneurial process, can be considered a strength (Baron, 2007). However, some researchers suggest that there should be a closer match between the independent and dependent variables. For example, some researchers question the relevance of individual variables for predicting venture or firm level success (Davidsson, 2007; Klein, Dansereau & Hall, 1994). The present research also used a measure of self-perceptions of success, but all three success indicators were aimed at the firm level. However, Rauch and Frese (2007a) state that in microbusinesses, which are defined as those with up to ten employees, it makes sense that the personality of entrepreneurs has a direct relationship with business success, as the individual owner is likely making most of the important decisions and his or her actions are most important for the success of the company. Secondly, there are researchers who suggest that specific independent variables will only predict relevant specific dependent variables, and that researchers should develop differential hypotheses on the relationship between specific traits with specific dependent variables (e.g. Rauch & Frese, 2007a). Davidsson (2007) suggests that going forward research should clearly distinguish between entrepreneurial performance, which he defines as an aggregation of entrepreneurial actions, and business performance, measured as firm or venture profitability and growth for example. Hence, future research using the model of self-regulatory processes developed in the present research will need to test its influence on more specific and proximal outcomes.

The time at which data was collected in Ireland is also note. From the mid-1990s through to approximately 2008, Ireland experienced an unprecedented period of economic growth and prosperity, which became known as the “Celtic Tiger”. The interviews for the present research took place between September 2007 and September 2008, and while there were some murmuring that the economy was beginning to take a downturn during this time (and indeed this is something that was noted by a number of the entrepreneurs in the sample), there was little awareness in the general public of the severity of the recession and bank crisis that would subsequently hit Ireland in the years following this. Hence, the economic environment of the time represents a boundary condition of the present research, and has implications for the generalisability of the findings.

Common-method variance is an issue in many self-report and cross-sectional studies. However, in the present research, this was countered in the assessment of entrepreneurial
success by using three different assessments, one of which was external, and one of which comprised of objective indicators of success. Hence, the external evaluation clearly overcame the limitation of common method variance. In addition, the use of the interview, in combination with the questionnaire further buffered against common method variance. Common method variance tends to be lower in interviews, because interviewers question and probe respondents answers and the responses are not taken at face value when coding (Frese et al., 2007). Each of the variables assessed via interview were independently rated by the researcher using a detailed rating scheme to assess the level of the construct demonstrated by the participant. Hence, even though the information was derived from a common source, the multi-method approach provided protection from common method variance unduly influencing the findings (see Podsakoff et al., 2003 on multitrait-multimethod approach). Similar approaches have been used in studies published in top tier journals (e.g. Frese et al., 2007; Frese, Garst & Fay, 2007).

One of the main theoretical underpinnings of the present research lay in the action process (e.g. the Rubicon model, Action Theory). Such models reflect a focus on the actions needed to achieve goals, rather than on the information needed to assess goal progress (Austin & Vancouver, 1996). Hence, one of the limitations of the present research is that it did not elucidate how entrepreneurs acquire the information needed to assess goal progress (e.g. feedback and monitoring processes). This is an aspect of self-regulation that will need to be incorporated into the model in the future. On the other hand, one of the strengths of only focusing on the action perspective is that it allows one to examine the influence of multiple regulatory hierarchies (of goals, of motivation, of emotions), and this is something that is seen quite occasionally (Austin & Vancouver, 1996). Austin and Vancouver (1996) summarise the trend in different domains of psychology in this area, stating that cognitive researchers have focused on lower level goals, motivational researchers have focused on middle-level task goals, while personality researchers have tended to focus on middle- and higher-level goals. Hence, the focus on multiple levels of proximity or of hierarchy across multiple paths (cognitive, motivational and emotional) was a strength of the present research.

13.4. Overarching Directions for Future Research in Self-regulation

A number of specific areas in need of further research have been described in each of the pertinent subsections throughout the previous two chapters. In this section, more overarching recommendations will be offered with regard to future research that is needed aimed at developed the field. These will be broken into two main sections: (i) future research in self-regulation and (ii) future research in entrepreneurship.
13.4.1. Self-regulation, proactive behaviour and adaptive behaviour.

Two of the key themes identified across multiple domains of self-regulation is that of proactiveness and adaptability. Frese (2009) recently published an interesting chapter espousing the usefulness of an active approach to entrepreneurship, largely based on his work on Action Theory. This builds on his previous conceptualization of planning in terms of proactiveness and elaborateness (Frese et al., 2007) which was earlier labelled strategy process characteristics (Frese et al., 2000; Frese, Brantjes & Hoorn, 2002). However, Frese is not the only researcher to note the active and adaptive characteristics of self-regulation. Many descriptions and definitions of self-regulation contain some reference to one or both of these characteristics (e.g. Boekaerts, Maes & Karoly, 2005; DeWitte & Lens, 1999; Frese & Zapf, 1994; Tsui & Ashford, 1994; Winne & Perry, 2005), and research in the areas of emotions (e.g. Baumeister et al., 2007; Forgas & George, 2001; Keith & Frese, 2005; Koole & Jostman, 2004; Tice, 2009), work performance (e.g. Griffin, Neal & Parker, 2007), work design and job crafting (e.g. Berg, Wrzesniewski & Dutton, 2010; Grant & Parker, 2009) and proactive motivation (e.g. Parker, Bindl & Strauss, 2010; Parker & Collins, 2010) all incorporate these concepts of proactiveness and adaptivity, and are gaining momentum. Similar trends are evident in relation to active approaches to regulating emotions and proactive approaches to coping with stress (Aspinwall, 2005; Aspinwall & Taylor, 1997).

Parker and colleagues have emphasised the proactive aspect of motivation. Parker (2000) looked at the differences between passive and proactive motivation, and more recently, Parker and Collins (2010) provided a taxonomy of proactive motivations, while Parker, Bindl and Strauss (2010) incorporated this into a model of proactive motivation. These concepts fit well with the research of Frese and colleagues outlined in the previous paragraph. However, where these viewpoints begin to diverge is when the concept of adaptivity is introduced. Frese and Fay (2001) express the viewpoint that adapting is a more passive activity. However, in contrast to this, Griffin, Neal and Parker (2007) suggest that both proactive and adaptive performance is required in environments or work contexts characterised by uncertainty. In addition, Straus et al. (2009) demonstrated in a longitudinal study that proactiveness was important for engaging in both proactive behaviour and adaptive behaviour over time.

Frese (2007) suggests that an active approach increases chances to learn, to control the environment, to reach one’s goals, and to reach positive consequences. Active approaches are powerful because they can influence events before they appear, which is linked to proactiveness. Furthermore, active approaches make it possible to adjust the task to one’s knowledge, skills and aptitudes, and hence, the environment is made to fit the person better (Frese, 2007). Such adjustments and learning could be considered adaptations. In a similar vein, definitions of self-regulation often state that it is an adaptive response, or leads to adaptive
success (e.g. Boekaerts, Maes & Karoly, 2005). Hence, it appears key to investigate both the proactive and the adaptive characteristics of self-regulatory processes across all levels of proximity going forward.

Proactivity is a concept evident in the area of emotion regulation also. There is a growing body of literature investigating the concept of proactive coping, referring to efforts undertaken in advance of a potentially stressful event to prevent it or modify its form before it occurs (Aspinwall, 2005; Aspinwall & Taylor, 1997; Greenglass, 2002; Greenglass & Fiskenbaum, 2009). In addition, Frese et al. (1997) suggested that problem-focused coping was an active approach to dealing with a stressor. Quoidbach et al. (2010) also demonstrated that regulatory diversity in emotion regulation, which they defined as the use of various strategies, rather than a few specific ones, had a more beneficial impact on well-being. Such findings point to the importance of adaptability; being able to engage the use of multiple and different emotion regulation strategies is indicative of being able to adapt one’s regulation of emotions to different contexts, situations and events. Future research will benefit from investigating in more detail the overlap between proactiveness and adaptiveness in cognitive, motivational and emotional domains of self-regulation, as well looking for the synergy with such related concepts as proactive coping.

Although not focused on in the present research, the research domains of learning and self-regulated learning also demonstrate themes in the areas of proactiveness and adaptiveness. For example, there has been some research conducted which demonstrates the importance of deliberate practice as a learning strategy both in the development of expert performance (Eriksson, Krampe & Tesch-Romer, 1993; Eriksson & Lehman, 1996), in the workplace (Sonntag & Kline, 2000) and in the case of entrepreneurial learning (O’Shea & Buckley, 2010; Unger et al., 2009). Deliberate practice entails taking an active approach to learning (Frese, 2009). Furthermore, in the area of work-based learning, Simons, Van der Linden and Duffy (2000) discussed three approaches to learning in the workplace, guided instruction, experiential learning and self-directed learning. Self-directed learning is another example of taking an active approach to learning. Simons (Doornbos, Bolhuis & Simons, 2004; Simons, 2000; Simons & Ruijters, 2004, 2008) conceive of self-directed learning as an active constructive form of learning in which learners are becoming better and better in designing their own learning environments. Hence, using this definition, self-directed learning can be seen as both proactive (active constructive form of learning) and adaptive (designing one’s own learning environment). Hence, the concepts of proactiveness and adaptiveness appear key to the understanding of self-regulated learning also.

One of the key characteristics of proactiveness and personal initiative is that it incorporates plans for the future and takes a long-term perspective (Fay & Frese, 2001; Frese et
In addition, self-regulation also links to a growing body of literature in the area of future oriented thinking. Aspinwall (2005) identifies new research on multiple aspects of future-oriented thoughts, feelings, behaviours and their relevant self-regulatory processes as an important way forward. Self-regulatory skills involved in such future-oriented thinking include trying to anticipate future circumstances and their impact on ourselves and others, taking such expected future consequences as well as a variety of goals and standards into account when deciding on current actions, and balancing long- and short-term interests in cases where actions may serve one goal at the expense of another (Aspinwall, 2005). Hence, plans and goals are two important aspects of future oriented thinking. Indeed, a goal has been defined as “a cognitive representation of a future object that the organism is committed to approach or avoid” (Elliot & Fryer, 2008; p. 244). Additionally, Aspinwall (2005) suggests that effective future oriented behaviour may frequently involve a trade-off between motivations to enjoy the present, and motivations to accomplish tasks that will bring future gains or avoid future losses. This also echoes research being conducted in the area of well-being, where the distinction between hedonic and eudaimonic well-being appears frequently (e.g. Diener, Lucas & Scollon, 2006; Ryan & Deci, 2001; Waterman, 1993). Dynamic process theories and resource allocation theories of self-regulation are moving towards explaining such choices and motivations. Hence, individual differences in the degree to which participants think about and plan for their futures or use information about future outcomes in judging current outcomes are important in the study of proactive processes because an individual must be able to anticipate the future and modify one’s current behaviour to behave proactively (Aspinwall & Taylor, 1997). Frese (2009) acknowledges the inherent relatedness between proactiveness and time, suggesting that the more business owners’ mental simulations reach into the future, the more proactive is their approach.

Although up to now the value of proactive behaviour has been advocated to a greater degree than adaptive behaviour, there is emerging research to suggest that it is the combination of the two that leads to optimal functioning and performance (e.g. Griffin, Neal & Parker, 2007; Kraus et al., 2009). Furthermore, a recent article by Spector and Fox (2010) identified both counterproductive work behaviours (CWBs) and organisational citizenship behaviours (OCBs) as two forms of active and volitional behaviours directed towards the organisation. These authors propose that both CWBs and OCBs can stem from similar antecedent events, for example, under-stimulation at work, organisational constraints, lack of performance from a co-worker, lack of expected rewards, and/or guilt over past actions. Such research has particular implications for self-regulation. Given the emerging emphasis on actively and indeed proactively engaging in regulation of the self, it seems timely to also suggest that the active regulation must also serve some adaptive function for the person.
Chapter 13

Conclusions

Such research also suggests that there may be a threshold at which self-regulation becomes maladaptive. For example, in the area of health, chronic self-regulation or over-control has been demonstrated to be a factor in some eating disorders (Friese, Wänke & Hofmann, 2009; Kahan, Polivy & Herman, 2003; Vohs & Heatherton, 2000). This is also a theme that comes across in Kuhl’s PSI theory when he makes the distinction between self-regulation and self-control (Kuhl, 2000; Kuhl & Fuhrmann, 1998). Hence, it seems that it is important to consider the direction in which one’s self-regulation is aimed towards (i.e. how adaptive it is), and also to consider threshold models to estimate the point at which excessive self-regulation or self-control may become maladaptive.

13.4.2. Further integration of the theoretical framework advanced in the present research with previous self-regulation theories.

Although the present research drew on quite a number of theories in the areas of self-regulation, goals, motivation and emotion in the development of the model, there are a number of important theories that were to some extent sidelined. The future incorporation of such theories into the present model represents an important way of adding to the comprehensiveness of the model and its development over time. Some of these theories and suggestions for their incorporation are outlined below.

13.4.2.1. Incorporating dynamism into the model

Self-regulation and the action process are by their nature iterative processes. In this way, it is to be expected that outcomes from a previous action cycle (e.g. the motivation post-actional phase) will influence the pre-decisional phases of subsequent action cycles. This notion has already been acknowledged in a number of theories, but is less commonly assessed in research. For example, Frese and Zapf (1994) refer to the goal hierarchy as a weak hierarchy because the process can be both top-down and bottom-up. Top-down approaches to action generation must be supplemented with a bottom-up approach whereby information that pertains to the pursuit of goals create current states that indicate discrepancies (Austin & Vancouver, 1996). Such bottom-up approaches can lead to the activation of different goals, or to goal revision (Austin & Vancouver, 1996).

Dynamic process perspectives of self-regulation (e.g. Vancouver, 2008; Vancouver & Day, 2005; Vancouver, Weinhardt & Schmidt, 2010) have begun to examine such iterative processes, and there is much scope to integrate this iterative aspect into the present model of self-regulation. To date, testing such approaches has been difficult, and necessitates a fine-grained analysis of progress through the action phases using experience sampling approaches (ESM), or diary studies, coupled with multi-level analysis. Such methodologies appear with greater frequency in research which considers flow and work-engagement, and in the areas of
occupational health. For example, Sabine Sonnentag has spearheaded such day-level perspectives in areas such as recovery from work (Binneweis, Sonnentag & Mojza, 2009; 2010; Fritz & Sonnentag, 2009; Sonnentag, 2003), while Remus Ilies has significantly advanced and advocated the combined use of diary studies with multi-level modelling approaches in the area of well-being (e.g. Ilies & Judge, 2002, 2004; Judge, Scott & Ilies, 2006). These types of fine-grained and time-bound analyses are appearing with greater frequency across many research fields however. Beal et al. (2005) proposed the concept of a performance episode, a temporal unit of performance, defined as behavioural segments that are thematically organized around organisationally relevant goals or objectives. Multiple performance episodes can co-exist and occur concurrently, in a similar vein as suggested by polychronicity (e.g. Bluedorn, 2002). Hence, performance episodes describe the temporal progression of people’s work-related activities through the day (Beal et al., 2005). These authors also incorporate the resource allocation principle into their episodic process model, suggesting that performance during an episode would be a function of resource level and resource allocation. Beal et al. (2005) suggest that emotions can influence episodic performance by taking up cognitive resources and taking people off task.

The future of self-regulation lies in the adoption of such fine-grained and time-bound approaches which can demonstrate reciprocal determinism of various action cycles. This can only be advanced by engaging in sophisticated and innovative methodological and analytical designs. Longitudinal research will certainly benefit the field in this regard. Diary studies and experience sampling methodologies would seem particularly appropriate for moving this theoretical domain forward, and multi-level modelling can take into account the impact that more stable or distal factors may be having on more proximal or in-action variables. Such approaches had already demonstrated that within person variability is evident in proactive behaviours such as personal initiative (Binnewies, Sonnentag, & Mojza, 2009; Sonnentag, 2003). Secondly, Beal et al. (2005) also suggest the use of experimental designs in order to test such in-action processes and their interactions.

13.4.2.2. Incorporating the resource based view of self-regulation into the model

Frese (2009) notes that engaging in elaborate and proactive planning, although very beneficial, does have its costs. Elaborate and proactive planning is a complex, conscious activity, and as such increases the need for cognitive resources (Frese, 2009). Planning takes time and the psychological investments required when engaged in planning may increase the tendency to stick to plans developed earlier, even if they are no longer adequate (Frese, 2009). This tendency may be explained using the resource based view, where it can be proposed that sticking with an already developed plan conserves cognitive resources. On the other hand, planning can reduce one’s cognitive load during action, as some parts of the action have been
planned beforehand, and so, less decisions have to be made, and it prepares individual to have a ready-made answer if something goes wrong (Frese, 2009). Frese (2009) suggests that action theory and resource allocation theory (Kanfer & Ackerman, 1989) both argue that the resources of energy, motivation and working memory are needed to develop elaborate and proactive plans.

Resource allocation, use and depletion become particularly important to consider when examining the interactions of regulation, for example, between the regulation of cognitive tasks (such as planning, decision-making, processing information), and emotion regulation, coping mechanisms or motivation regulation. On the one hand, if one needs to engage in off-task activities such as managing one’s emotions, or enhancing the interest or motivation one has for a task this depletes regulatory resources for the on-task (often cognitive) activity, and may leave one with less energy and time to complete the task. On the other hand, not dealing with such regulatory issues (e.g. suppressing emotions, or not increasing one’s motivation for an undesired task) when required has negative consequences for well-being (in the case of emotion regulation) or may result in procrastination (in the case of motivation regulation) both of which can also impact on ultimate performance or achievement. These relationships become further complicated when one takes into account regulatory skill, or expertise in regulation. Findings suggest that over time and with practice, tasks that once required conscious and active regulation become automatic and require less conscious effort in their regulation (e.g. Frese & Zapf, 1994). Similarly, one can enhance one’s self-regulatory resources and skill with practice. Such varying perspectives have not fully taken into account the implications for self-regulation when multiple domains of functioning are considered simultaneously. One exception to this is in the educational domain, where theories and research on self-regulated learning often incorporated both cognitive and motivational considerations for learning or studying. Clarifying the relationships between resource based models of self-regulation with other self-regulation theories will add much coherence and clarity in future research.

13.4.2.3. Incorporating multiple goal processes into the model

Linked to the dynamic process perspective and the resource based view of self-regulation is the suggestion that goals cannot be considered in isolation. However, relatively few researchers have investigated the impact that adding more than one goal into a model can have on its robustness. A number of researchers have demonstrated the importance of considering multiple goals, and in particular, the interaction of these goals over time. Mitchell and colleagues (Mitchell, Harman Lee & Lee, 2008; Mitchell, Lee, Lee & Harman, 2004) presented an approach to self-regulation that focuses on goal striving when working on multiple assigned goals. Mitchell et al. (2004) proposed a theory of pacing and spacing in this context. Pacing refers to the resources in terms of time and effort that people allocate to a single task,
while spacing refers to the resources that they use across tasks. Mitchell et al. (2008) extended the model by considering the potential obstacles that may occur in multiple goal pursuit, such as the negative psychological and behavioural effects of interruptions and procrastination on goal-striving activities. In a similar vein, Kirchberg, Roe and VanEerde (2009) reported that employees can use a variety of goal management strategies to accomplish multiple tasks (spacing in the terms of Mitchell’s theory), which can potentially have an impact on performance. Very few theories of self-regulation, motivation or goal processes consider the impact of multiple goals, despite the fact that every individual is faced with multiple, and often competing goals, not just in a work context, but in many life domains. Mitchell et al. (2008) acknowledges that even their model is very limited in its focus, and as a result, has limited generality. However, multiple goals and their effects on each other and on task pursuit are an issue of outstanding concern for self-regulation theories and research, and need to be addressed. In addition, considering the effect of distal variables on multiple goals and multiple actions in multiple situations and contexts would significantly add to the field of self-regulation.

13.4.2.4. Incorporating intrinsic and extrinsic motivation into the model

Taking a different perspective on how to further develop the model in the present research, many of the theories from which the present model relies (e.g. Action Theory, Goal-setting theory, Kanfer’s model of task-based motivation) have been criticized by self-determination theory (SDT) researchers for using a unitary conceptualization of motivation, and not distinguishing between intrinsic and extrinsic motivation. Gagné and Deci (2005) argue that SDT, which explicitly uses the differentiated concepts of autonomous and controlled types of motivation, can more fully explain effective performance, different types of performance (heuristic versus algorithmic) and health. SDT was largely ignored in the development of the present theoretical model, but it does have potential for informing the model, and for future development of the model. Specifically in relation to entrepreneurs, it is easy to envisage a situation where an entrepreneur is high on intrinsic interest with regard to the core development or invention that will become the product of the venture, but is very low on intrinsic interest in relation to tasks that relate to the everyday running and operating of the business. This one example demonstrates the potential for SDT to explain further variance in the self-regulation of entrepreneurs. The former (inventing) task is autonomously controlled, whereas the latter task would require some form of controlled motivation, and depending on the type of extrinsic motivation used (introjection, identification or integration) the entrepreneur is likely to perform differentially well in managing the venture.

Past research has investigated the relationships between goal-setting, goal orientations and intrinsic motivation. Elliot and Harackiewicz (1994) demonstrated the interactive effects of achievement orientation and evaluative focus of assigned, task-specific goals on intrinsic
motivation. More specifically, they demonstrated that the effect of performance or mastery-focused goals on intrinsic motivation varied as a function of achievement orientation. This research further suggests that there may be merit in the consideration of multiple conceptualisations of motivation in future developments of the model. The form of motivation that one experiences for any given goal may also determine whether regulation is required for cognitive, motivational or emotional processes that are more proximal to action. For example, if one is intrinsically motivated, it is unlikely that one will need to enhance one’s motivation for a task using strategies to regulate motivation, and so one can likely progress with decision-making, goal-setting, planning and engaging in action etc. SDT may also have some overlaps with recent models of proactive motivation (e.g. Parker, Bindl & Strauss, 2010) which distinguish between can do, will do and energised to forms of proactive motivation, and with compensatory models of motivation (e.g. Kehr, 2004a) where, for example, one needs to compensate when intrinsic forms of motivation are not present. Hence, it quickly becomes clear that SDT (a) could be incorporated into the present model and its theoretical underpinnings, and (b) has the potential to explain additional variance in the model.


Self-regulated learning represents an application of self-regulation that represents a significant body of research within the domain of educational psychology. Self-regulated learning is defined as “a complex interactive process involving not only cognitive self-regulation but also motivational self-regulation” (Boekaerts, 1997; p. 161). Although this body of research has largely been applied to how children and students study or do their homework, it seems plausible that self-regulated learning could be incorporated into the model of self-regulation developed in the present research. One of the differences between learning in an academic setting and learning in a work-based context pertains to the explicitness of the learning goal. In work settings, learning is often more implicit, or at least experiential, outside of formal training sessions. The incorporation of a self-regulated learning component would add a further dimension to the present model.

Work-based learning is quite different to the learning that occurs in formal educational contexts, or even in formal training programmes that may take place in the workplace. Doornbos, Bolhuis and Simons (2004) view work-related learning as an integrated process involving the interaction between workers and their environment and as an internal process of inquisition, elaboration and construction leading to a learning result. Boekaerts and Minneart (1999) suggested that the goals individuals set for themselves when learning in an informal learning context are different from the goals they set for themselves in a formal learning context. One of the key questions to be answered then is how the self-regulation of work-based learning can be integrated with other self-regulatory processes, for example, with the cognitive,
motivational and emotional paths in the present model. Doornbos, Bolhuis and Simons (2004) suggest that from a non-educational perspective, work-related learning can happen both deliberately and spontaneously as a direct or indirect results of work-related interactions, which has overtones with Frese (2007), who suggests that learning can take place on several levels of regulation as outlined in Action Theory, on a more intuitive and automatic level and on a more conscious level. Equally, learning processes can be more active in, for example, seeking negative feedback in order to learn from it, which has been associated with gaining a competitive advantage (Baron, Frese & Baum, 2007). O’Shea and Buckley (2010) reported on a qualitative investigation of the learning strategies of entrepreneurs, and proposed a taxonomy of self-regulated learning strategies. Their findings indicated that learning strategies can be mapped along of continuum of intentionality, which fits with the concepts of personal initiative (Fay and Frese, 2001) or proactiveness, with active performance (Frese, 2009) and with Frese’s (Frese, 2007; Frese & Zapf, 1994) levels of regulation in Action Theory.

A number of emotion theorists also suggest that emotions have their effect on cognitive and behaviour by contributing to learning, and by serving a feedback function (Tice, 2009). Emotions can lead to adaptive improvements in behaviour by improving learning (Tice, 2009). Alternatively, behaviour may also be chosen to pursue, or avoid, anticipated emotional outcomes (Baumeister et al., 2007). Hence, the incorporation of a learning path into the present model may provide scope to explain in more depth the relationship between the cognitive and emotional paths of the model.

Hence, it would appear that there is merit to the future addition of a learning path to the present model. The question then remains as to what are the distal and proximal antecedents and outcomes of learning strategies (which can be considered behaviours, and placed within the action phase of the Rubicon Model). Domain specific self-efficacy in the form of learning self-efficacy would certainly be an important proximal antecedent, and may also be a proximal outcome variable, as enhanced learning is associated with gains in self-efficacy. However, the knowledge gained, transferred and applied would also be a key outcome. Learning styles (e.g. Berings, Poell & Simons, 2008; Berings et al., 2007; Vermunt, 1996) would likely be a somewhat more stable and distal antecedent. Goal orientations would be an important pre-decisional antecedent variable, which originated in the educational realm (Dweck, 1986). At a more distal level, cognitive ability has been shown to be important for learning also (e.g. Escher et al., 2002; Kanfer & Ackerman, 1989; Unger et al., 2009). This rudimentary application of the model demonstrates that there would be merit in the addition of learning. Further evidence as to the relevance of such a future development comes from the research of Bell and Kozłowski (2008). These researchers conducted a comprehensive examination of the cognitive, motivational and emotional processes underlying active learning approaches, their effects on
learning and transfer, as well as the influence of training design element, and individual differences. Their findings demonstrated that exploratory learning and error encouragement framing had a positive effect on adaptive transfer performance and interacted with cognitive ability and dispositional goal orientation to influence trainee’s metacognition and state goal orientation. The model outlined in the research by Bell and Kozlowski fits quite well with the present model of cognitive, motivational and emotional processes in self-regulation, and further demonstrates the potential benefits of further developing the model to incorporate learning components.

13.5. Overarching Directions for Future Research in Entrepreneurship

Entrepreneurship research has made significant strides forward in recent years, and is an area that is attracting an increasing amount of researchers from diverse fields. However, this multi-disciplinary research has led to a lack of coherency in the field, with many researchers attempting to develop a theory of entrepreneurship (e.g. Baumol, 1993; Bull & Willard, 1993; Bygrave, 1993; Covin & Slevin, 1991; Dew, Read, Sarasvathy & Wiltbank, 2008; Langlois, 2007; Ripsas, 1998; Shane & Ventakaraman, 2000), others questioning whether a comprehensive theory of entrepreneurship is possible (Davidsson & Wiklund, 2008; Gartner, 2001; Ucbasaran, Westhead & Wright, 2001; Zahra, 2007), and others criticising the “paradigm soup” (Buchanan & Bryman, 2007; p. 486) or “critical mess” (Gartner, 2007; p. 327) that the comprehensive and complicated approach to understanding entrepreneurship has been labelled. The present research can only claim to add to the psychological literature on entrepreneurship, although many would argue that as actions are essential to include in any entrepreneurship research (Frese, 2007; Rauch & Frese, 2000), the implications are much broader than this. Hence, this section makes some suggestions for how to develop entrepreneurship as a field, and how the domain of organisational psychology and in particular, self-regulation, can aid in more fully explaining entrepreneurial phenomena.

13.5.1. The future of entrepreneurship – The need for integration across disciplines.

If one considers the state of current entrepreneurship research and theory, it becomes clear that there is a certain lack of coherence in the way in which researchers are going about developing a comprehensive body of knowledge and research in the field. Much of this lack of coherency stems from the fact that entrepreneurship is by its nature cross-disciplinary, and researchers from the various disciplines informing the field have distinct approaches, which are often mutually exclusive, or at best partially overlapping. One reason for this is that research in the field of entrepreneurship has tended to run ahead of theoretical developments and be carried out in an ad-hoc fashion without theoretical underpinnings being developed and, while much research activity has occurred over the last decade or so, only a modest level of academic
legitimacy has been achieved (Harrison & Leitch, 2005). Harrison and Leitch (2005) state that the basic problems which the field faces, stem on the one hand from the number of issues to be explored, and on the other hand, from the diverse range of disciplines from which these issues might be examined. It is clear that first and foremost, researchers need to acknowledge the discipline from which they are approaching their study as influencing their research. Griffin (2007) advocates the systematic study of context, meaning that context is theorized as a conceptual construct, operationalized as a variable in the study, and that variance associated with the context is directly incorporated into the analyses. Such a systematic approach to the study of context in the field of entrepreneurship can do much to establish the academic legitimacy of the field.

Psychology as a discipline, and work and organisational psychology as an applied area of psychological study, has much to offer entrepreneurship, which can aid in the development of the field and in the sophistication with which research is designed. For example, Davidsson (2007) concluded that the influx of trained psychologists into the field of entrepreneurship research has led the quality of operationalizations of variables to increase in recent years. However, Gartner (2007) does comment on how the use of a more focused and unitary disciplinary view in entrepreneurship scholarship, which only explains narrow aspects of what the phenomenon of entrepreneurship is, may contribute to driving out a more complicated and comprehensive understanding of the phenomenon. Hence, it is important to consider how we can draw on the strengths that each discipline brings to the field, or as Gartner (2007; p. 330) puts it, to “uncover the exemplars of scholarship in one’s own discipline that provides insights into the phenomenon of entrepreneurship.”

Davidsson, Low and Wright (2001; p. 7) suggest that to progress entrepreneurship, “the challenge is to create a community of scholars who bring insights from multiple disciplines to investigate the set of phenomena that are neither too broad as to defy the notion of intellectual community, nor so narrow that we lose sight of our goal.” This is a formidable challenge but achieving such a feat would significantly advance theory and research in entrepreneurship. Baron (2007) suggests that placing an emphasis on entrepreneurship as a process may facilitate the development of closer conceptual ties between entrepreneurship and related fields. The focus on process is an area of strength for self-regulation research, and ways in which this can be useful for the development of entrepreneurship are discussed in the next section. In addition, Davidsson (2007) suggests that psychological theories have been very beneficial, especially with regard to the theoretical underpinning and selection of person level constructs, the introduction of cognitive theories and concepts, and the use of more proximal variables such as perceptions, goals, intentions and self-efficacy.
Baron (2002, 2007) noted that establishing closer conceptual ties across disciplines informing entrepreneurship can facilitate its development as a field. However, in order to do this, it is first necessary to understand the points of intersection where disparate disciplines cross paths, with regard to their understanding of entrepreneurship and ways of researching entrepreneurship. Secondly, to be able to cross-reference the contribution made by research from different disciplines in relation to one another would be very beneficial. Buckley and O’Shea (in preparation) are currently in the process of developing such a road-map for entrepreneurship research, using the insights gleaned from management science in the areas of level of analysis, context and time issues. This has the potential to allow researchers from disparate traditions and disciplines to orient their research along a classification system common to entrepreneurship research stemming from any discipline, which allows for a more complete understanding of the contribution of both an individual research paper, and more general contributions from various disciplines.

### 13.5.2. Dynamic process perspectives on entrepreneurship.

Baron (2007) critiques much of the cross-sectional research on entrepreneurship stating that it cannot directly assess the question of change, e.g. how the behaviour, cognitions, activities, attitudes, visions and goals of entrepreneurs shift over time. Baron (2007) advocates the need to conceptualise psychological research in entrepreneurship in a different light; towards viewing the process truly as a process, in which continuous and rapid change in an inherent part. It may be possible to draw on the recent trends towards dynamic process models of self-regulation to inform the development of such a dynamic process approach to entrepreneurship. New ventures provide organisational psychology research with a natural setting in which to examine the ways in which organisations evolve over time (Baron, Frese & Baum, 2007). Davidsson (2007) notes that there has been a clear drift towards emphasizing the perspective that views entrepreneurship as a process (e.g. Brazeal and Herbert, 1999; Bygrave and Hofer, 1991; Gartner, 1985) in which, different individuals and/or team members may contribute in different roles over time. However, despite this Baron, Frese and Baum (2007) state that we still know little about the specifics of the relationships between entrepreneurship and process. However, they state that I/O researchers can lead the study of the effects of relevant skills and behaviours across stages.

In many instances, it may be neither possible nor practical to examine the entire entrepreneurial process using a longitudinal design. An alternative approach may be to study events or incidents within a stage of the entrepreneurial process. The advantage of such an approach is that it captures the person or organisation in context, and maintains a focus, not just on the main variables of the study, but also on the salient contextual features that may be having an influence. Methods which have employed the critical incidents technique (Chell, 1998;
Flanagan, 1954) have made some strides with regard to the investigation of important events in the entrepreneurial process. For example, Deakins and Freel (1998) used an initial interview with entrepreneurs to highlight potential critical incidents and issues to be taken up with subsequent open-ended interviews. The critical incidents were used to encourage the entrepreneur to expand on the process that led to the incident, how it was resolved, and what was learned from the incident (ibid.). Cope and Watts (2000) looked at critical moments in the history of the business and of the owner-manager as a research focus, giving the reason for this as being that these critical moments offered the researcher access to studying entrepreneurial learning. Chell (1998) cites one of the major advantages of the CIT as being that it is context rich, but unlike participant observation, the context is developed entirely from the subject’s perspective. Furthermore, the analysis of the CIT allows the researcher to relate context, strategy, and outcomes, to look for repetition or patterns of ways of doing (ibid.).

Even beyond this, it is argued here that the theories and research methods in self-regulation are ideally placed to add to the sophistication of the way in which process is measured and researched in entrepreneurship. Dynamic process models of self-regulation (e.g. Vancouver 2008, Vancouver & Day, 2005) present complex models which are using quite innovative methodologies. For example, the research on performance episodes which are context and time bound by Beal et al. (2005) presents an interesting way of conceptualizing the actions of entrepreneurs. One of the advantages of such an approach to entrepreneurship is that it becomes possible to examine proximal outcomes of a performance episode as well as more distal (and broader) outcomes of multiple performance episodes over time. The operationalisation of such research studies still presents challenges in terms of magnitude and generalization, however.

Researchers are also demonstrating the utility of considering dynamic performance concepts, which conceptualise performance change and performance fluctuations over time (e.g. Sonnentag & Frese, 2009). Such approaches incorporate life-span perspectives to explain within-person fluctuations in performance. Combined with the emerging dynamic approach to self-regulation, such dynamic performance concepts provide scope for a more in-depth explanation of entrepreneurial performance and success over the life-cycle of the enterprise. On the other hand, the entrepreneurial context may present an interesting context in which to examine such dynamic models for psychologists.

13.6. Conclusion

In conclusion, the development of a comprehensive theory of self-regulation which adequately incorporates cognitive, motivational and emotional aspects within the process of self-regulation or action represents a significant theoretical advancement. Much of the current
theorizing on self-regulation has not attempted such a comprehensive integration in the past. The present research addressed this gap by proposing and testing a model of cognitive, motivational and emotional aspects of self-regulation, which provides a foundation for integrating proximal-distal perspectives and action perspectives. Future research will need to establish the usefulness of this theory beyond the entrepreneurial context, and in other work contexts. However, beyond the applied field of work, the model has relevance to many applied domains of psychology (e.g. educational psychology and health psychology), and indeed, to any achievement domain of human functioning. Although the model presented in this research was reasonably comprehensive in the incorporation of previous theory from self-regulation, cognition, motivation and emotions research, this chapter has demonstrated the potential for future development of the model in the future.

Secondly, this research demonstrated that work and organisational psychology can, and is, making significant contributions to the field of entrepreneurship. In particular, the sophistication of theory and method in psychology can aid the advancement of entrepreneurship as a field of research in its own right. Similarly, the entrepreneurial context presents an interesting domain for psychologists to apply their theories, and informs more mainstream research in work and organisational psychology investigating employees, managers and leaders operating in increasingly autonomous and changing environments. Overall, the research demonstrated that applying a self-regulation approach to understanding entrepreneurship has significant merit.
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