IMPLICIT THEORIES AND EMOTION REGULATION:
BELIEFS ABOUT EMOTIONS AND THEIR ROLE IN
PSYCHOLOGICAL HEALTH AND WELL-BEING

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DECLARATION

The research reported in this thesis, including both the research described and the document itself is my own original work and has not been submitted for a higher degree at any other institution. Individuals who provided either material or conceptual assistance are acknowledged on the following page.

_____________________________
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ABSTRACT

Implicit theories about emotion refer to people’s beliefs about whether their emotions are fixed (entity theory) or malleable (incremental theory). Growing research indicates that these beliefs influence emotion regulation efforts, psychological health and well-being, and may even play a key role in clinical disorders and their treatment. The aim of this thesis is to contribute to this growing body of literature. Across 10 studies and seven empirical chapters, I examine the associations between implicit theories of emotion, emotion regulation, and psychological health. Using the Process Model of Emotion Regulation as a framework, this thesis is divided into sections corresponding to different emotion regulation stages: Situation Selection; Attentional Regulation; Response Modulation and Cognitive Change. The first three studies are focused on measurement: The personal implicit theory scales are developed and evaluated, and qualitative measures are used to test whether implicit theories map onto different emotion regulation strategies. Studies 4 and 5 examine implicit theories of emotion and the first stages of the Process Model: Situation Selection and Situation Modification. In a Study 4 entity (versus incremental) beliefs were associated with poorer psychological health outcomes, and avoidance strategies mediated the links between implicit theories and psychological health. In Study 5, participants’ emotion beliefs were experimentally manipulated leading them to believe that they struggled (entity condition) or did not struggle (incremental condition) with controlling their emotions. Participants in the entity condition reported increased intentions to engage in avoidance strategies, were more likely to avoid emotion regulation stimuli, and reported greater avoidance of psychological help. Studies 6 and 7 examined implicit theories of emotion and the third stage of the Process Model:
Attentional Deployment. In a correlational study (Study 6), entity beliefs about emotions were positively associated with maladaptive attention regulation (e.g., catastrophizing) and negatively associated with adaptive attention regulation (e.g., mindfulness). Entity beliefs also predicted greater likelihood of using response modulation strategies like alcohol and medication as a means of regulating emotions. Attention regulation also indirectly explained links between emotion beliefs and response modulation. In a longitudinal Mindfulness-Based Stress Reduction (MBSR) intervention study (Study 7), MBSR led to a significant reduction in entity beliefs (compared to controls). Changes in emotion beliefs mediated MBSR-related reductions in stress, anxiety, depression and response modulation at 12-month follow-up. Studies 8, 9 and 10 examine implicit theories of emotion and the third stage of the Process Model: Cognitive Change. In a correlational study (Study 8), entity beliefs about emotions predict reduced likelihood of using cognitive reappraisal in daily life, which in turn predict poorer self-esteem and life satisfaction. In a clinical study (Study 9), patients with social anxiety disorder (compared to healthy controls) were more likely to view emotions as things that cannot be controlled (entity theory). These beliefs predicted anxiety symptom severity. Finally, in a waitlist-controlled, 12-week Cognitive Behavioural Therapy (CBT) intervention study (Study 10), changes in implicit theories of emotion explained CBT-related reductions in social anxiety symptoms and uniquely predicted treatment outcomes even when controlling for baseline anxiety and other kinds of maladaptive beliefs. Emotion beliefs also continued to predict social anxiety 12-months post-treatment. The final chapters of this thesis employ a clinical case study to demonstrate why emotion beliefs can be harmful, and why psychoeducation may not always be an effective intervention. The implications of these findings in relation to emotion regulation and clinical treatment are discussed.
1. THESIS OVERVIEW

1.1 Introduction

When you ask someone if they believe emotions are things they can control, many consider the answer to be obvious. Nonetheless, people differ widely in how they respond: Some people list a variety of strategies they have and use for managing difficult emotions when they arise; others explain that they are often at the mercy of their emotions, viewing them as things that come and go mostly of their own accord. These simple beliefs have important consequences for how people experience and manage their emotional world. When people believe emotions can be changed or controlled, it is more likely they will be motivated to use adaptive and flexible emotion regulation strategies in day-to-day life. Conversely, when people believe emotions are uncontrollable, they are more prone to experiencing negative emotions as threatening, and may rely on maladaptive and avoidance strategies for regulating their emotions or respond helplessly when distressed.

This thesis examines people’s beliefs about their emotions and how these beliefs are related both to emotion regulation and psychological health. It incorporates research from two traditions: implicit theories (beliefs about whether personal attributes can in principal be controlled) and self-efficacy (beliefs about one’s personal capabilities). Using the Process Model of Emotion Regulation as a framework, this thesis examines how beliefs about emotions are related to different emotion regulation strategies at different stages of the emotion-generation process. It also examines the clinical implications of these beliefs for anxiety and depression, as well as their role in treatment.
1.2 Overview of Thesis

This first chapter outlines the progression of thesis chapters and studies: Chapter 2 begins by defining emotion and emotion regulation, and by reviewing three different models that have historically been used to understand the emotion regulation process – these include the appraisal theory model, the modal model and the target function model. Chapter 3 then presents a fourth approach – the Process Model of Emotion Regulation, which serves as the organizing framework for the current thesis. It outlines the five stages of the Process Model (situation selection, situation modification, attention deployment, cognitive change and response modulation), how different emotion regulation strategies map onto each of these stages, and research on their effectiveness. Chapter 4 explores the question: “why is emotion regulation so difficult?” It examines why some people use more or less adaptive strategies for regulating their emotions and provides an overview of research on variables that influence the identification, selection and implementation of specific emotion regulation strategies. This chapter also examines points of failure in emotion regulation and their links with psychopathology. Chapter 5 introduces research on implicit theories – beliefs about the malleability of personal attributes and how much it is possible to change. Implicit theories are presented as a key variable that may impact emotion regulation identification, selection and implementation. This chapter reviews research on implicit theories across domains and introduces recent work on implicit theories of emotion. It ends with a review of research on a related construct – emotion regulation self-efficacy. Chapter 6 integrates research on implicit theories of emotion with the Extended Process Model of Emotion Regulation by considering the potential impact of these beliefs on the identification, selection and implementation of different adaptive and maladaptive emotion regulation strategies. Chapter 7 then summarizes the first 6
theoretical chapters, outlines hypotheses and provides an introduction to the subsequent empirical studies.

In Chapters 8 – 11 empirical work is presented which tests the hypotheses outlined in Chapter 7. Studies 1, 2 and 3 (Chapter 8) focus on developing and validating the Personal Implicit Theory Scales. Beginning first with the more widely researched construct of Implicit Theories of Intelligence, Study 1 tested the validity of a personal measure of Implicit Theories in a sample of 643 Australian high school students. The findings provide some initial evidence that personal beliefs (incorporating both implicit theories and self-efficacy) are a more powerful predictor of outcomes than general implicit theories. In this first study, the belief that intelligence is 'fixed' – and outside of one’s control – was predictive of fewer achievement goals, greater helplessness attributions and poorer self-reported academic grades. Fixed 'entity' beliefs were also predictive of increased self-handicapping, truancy and disengagement from school. Consistent with predictions, the new self-theory scale uniquely explained greater variance on all these measures over and above the General Implicit Theories of Intelligence Theory Scale. In Study 2 these findings were extended to the development of the Personal Implicit Theories of Emotion Scale (ITES) which was validated in a sample of 216 American university students. In this study, a perceived lack of control over emotions predicted increased stress and depression as well as reduced self-esteem and satisfaction with life. The revised Personal Scale also explained unique variance over and above the General Scale on all dependent variables. Finally, in a qualitative study (Study 3), open-ended responses helped contextualize the different ways entity and incremental theorists actually think about their emotions. Blind content analysis helped further validate the ITES and revealed differences in the kinds of strategies entity and incremental theorists
spontaneously refer to for regulating their emotions. These findings lend some preliminary support to hypothesized links between *Implicit Theories of Emotion* and different forms of emotion regulation.

Studies 4 and 5 (Chapter 9) focus on the first and second stages of the Process Model: Situation Selection and Situation Modification. More specifically, these studies examine the use of avoidance as a common and often maladaptive antecedent-focused strategy. In Study 4 (a correlational study) a perceived lack of control over emotions was associated with poorer psychological health outcomes (increased self-reported avoidance, lower well-being and higher levels of clinical symptoms). Avoidance strategies also mediated the links between emotion beliefs and psychological health. In Study 5 (an experimental study), participants’ emotion beliefs were manipulated by leading them to believe that they struggled (low perceived control) or did not struggle (high perceived control) with their emotions. Participants in the low perceived control condition (compared to the high perceived control condition) reported increased intentions to engage in avoidance strategies to manage their emotions over the next month and reported being more likely to avoid seeking psychological help. When asked if they would participate in follow-up studies, participants in the low perceived control condition were also significantly more likely to avoid studies that could be potentially distressing. These findings provide evidence for the causal role of emotion beliefs in avoidance-based emotion regulation, and document their impact on well-being.

Studies 6 and 7 (Chapter 10) focus on the third stage of the Process Model: Attentional Deployment. In Study 6 (a correlational study) people who believed they could not control their emotions, were less likely to report engaging in adaptive
mindfulness-based attention regulation strategies and were more likely to engage in catastrophizing. People holding entity beliefs about their emotions were also more likely to report using later-stage response modulation strategies like alcohol use and medication as a means of regulating their emotions, and this link between beliefs and response modulation was indirectly explained by attention regulation strategies. Study 7 (a longitudinal treatment study), examined the role of emotion beliefs as a mediator of treatment in mindfulness-based stress reduction (MBSR). At the end of an 8-week mindfulness meditation program, participants in the MBSR group (compared with the control group) were more likely to view their emotions as things they could control. This change in thinking also persisted 12-months after completing MBSR and predicted improvements in psychological symptoms (reduced loneliness, stress, anxiety, depression and response modulation), mediating treatment outcomes at one year follow-up. These findings indicate that targeted interventions can bring about long-term changes in people’s perceived control over their emotions and these changes predict the utilization of adaptive attention-regulation strategies for managing their emotions in daily life.

Studies 8, 9 and 10 (Chapter 11) focus on the fourth stage of the Process Model: Cognitive Change. In Study 8 (a correlational study), a perceived lack of control over emotions predicted reduced use of adaptive cognitive change strategies like cognitive reappraisal in daily life. Cognitive reappraisal also mediated links between implicit theories of emotion, stress, depression, self-esteem and satisfaction with life. In Study 9 (a clinical study) patients with social anxiety disorder (SAD) were more likely than healthy control subjects to believe that their emotions and anxiety could not be changed or controlled. Even when controlling for social anxiety severity, patients with SAD differed in their beliefs about their emotions, and these beliefs explained unique variance in
perceived stress, trait anxiety, negative affect, and self-esteem. Importantly, individuals with SAD viewed their own emotions and their social anxiety as more fixed than other people’s emotions generally, demonstrating that personal emotion beliefs play a stronger role in pathological levels of distress, at least within the context of SAD. Study 10 (a treatment study) examined implicit theories of emotion in the context of randomized clinical control trial of cognitive behavioural therapy (CBT) – a cognitive change based treatment – for social anxiety disorder. Implicit beliefs about emotions and social anxiety were assessed at baseline and at the completion of a 16-week randomized control trial of CBT for SAD. The aim of this study was to examine whether patients’ implicit theories of emotions changed through treatment, and if so, whether they might also explain CBT-treatment outcomes. As predicted, patients receiving CBT (compared to waitlist controls (WL)) were less likely to hold entity beliefs about their anxiety post-treatment. This shift in thinking mediated treatment-related reductions in social anxiety. The degree of change in patients’ implicit beliefs also uniquely predicted how much they benefited from treatment, even when controlling for baseline social anxiety and changes in other maladaptive beliefs such as perceived social costs, social self-efficacy, and maladaptive interpersonal beliefs. Finally, follow-up assessments at 12-months revealed that these changes were maintained, indicating a reliable long-term shift in patients’ implicit theories about emotion and their anxiety symptoms. These findings suggest that cognitive treatments like CBT can also be a means of promoting a more incremental theory of emotion, and this change in beliefs predicts tangible therapeutic improvements and decreased anxiety symptoms.

Studies 1 – 8 demonstrate that people’s beliefs about their ability to control their emotions influence emotion regulation efforts, psychological health and well-being, and
even play a key role in depression and anxiety disorders. Given these findings, some researchers suggest that clinicians should focus on addressing these beliefs using psychoeducation at the outset of therapy (Kneeland, Dovidio, Joormann & Clark, 2016). However, no research to date has investigated the efficacy of this approach. Chapter 13 uses a clinical case study to examine difficulties that can arise when working with patients who hold fixed entity beliefs about their emotions. The case study illustrates why these beliefs can feel protective for clients (even when they are harmful), and why psychoeducation may not always be the most effective intervention for targeting people’s beliefs about their emotions. A revised case formulation and treatment plan is presented which focuses on using the therapeutic alliance, empathic responding, and interventions aimed at emotional awareness to affect therapeutic change. Finally, Chapter 14 provides an overview of the findings in previous chapters discusses some of the major themes and implications of this work both for research on implicit theories and emotion regulation, and more broadly for clinical practice.
2. EMOTIONS AND EMOTION REGULATION EXPLAINED

2.1 What is Emotion?

There is arguably no aspect of mental life more important to the quality and meaning of our existence than emotions. Our emotions are the very things that make life worth living, and in some cases, worth ending (de Sousa, 2013). It therefore comes as no great surprise that inquiry into the nature of emotions dates right back to the work of the great classical philosophers of our time – Plato, Aristotle, Spinoza, Descartes, Hobbes, and Hume – all of whom had recognizable theories of emotions and their role in human life (de Sousa, 2013).

Contemporary research indicates that emotions play an important role in empathy and empathic accuracy (Soto & Levenson, 2009); in nonverbal communication (Ekman, Friesen, 1971); interpersonal interactions (Keltner & Kring, 1998); learning (Cahill, Prins, Weber, & McGaugh, 1994); and decision-making (Damasio, 1994; Oatley & Johnson-Laird, 1987) and understanding the intentions of others (Ekman, Friesen, & Ellsworth, 1972; Fridlund, 1994). More biologically driven approaches focus on the neural mechanisms of emotions (Dalgleish, 2004), and the physiological changes that take place when emotions are experienced are believed to promote specific action tendencies (Frijda, 1993, 1987); to enhance perception (Vermeulen, Godefroid & Mermillod, 2009); facilitate responses to important challenges or opportunities (Levenson, 1994); improve detection of threatening stimuli (e.g., Ohman et al., 2001; Williams et al., 2005); and to enhance our memory for important events (Luminet and Curci, 2009; see Phelps, 2006 for
a review). Despite a great deal of research on emotion and its many functions, researchers still lack consensus around how this term can be defined (Gendron, 2010).

In 1884, William James famously asked: “What is an emotion?” (James, 1884). Now, over 130 year later, many would argue that he still hasn’t received a satisfactory answer (Gendron, 2010; Gotlib, 2007; Gross, 2015; Scherer, 2005). This is because despite widespread intuitive understanding, and common usage of the term, emotion remains exceptionally difficult to study and describe. Some researchers believe the task of defining emotions is “virtually impossible, except in terms of conflicting theories” (English & English 1958). As Young explains:

"Almost everyone except the psychologist knows what an emotion is... The trouble with the psychologist is that emotional processes and states are complex and can be analyzed from so many points of view that a complete picture is virtually impossible. It is necessary, therefore, to examine emotional events piecemeal and in different systematic contexts” (1973, p.749).

Over the years, researchers in this field appear to have done just that – defining emotions in the terms most appropriate to their respective methods of study. For example, from the biological perspective, emotion has been defined in physiological and neurological terms – as “hereditary 'pattern-reaction' involving profound changes of the bodily mechanism...including visceral and glandular systems” (Watson, 1924); as “a state of arousal tending to disrupt homeostatic baselines” (Bruno, 1980); and more recently, as “action-requiring neurological programs” (Damasio, 2010). From the cognitive perspective, emotion has been defined in terms of thought process – as “phases of an individual’s intuitive appraisals...” (Bowlby, 1969), or as “informationally
encapsulated brain processes” (LeDoux, 1996). From a behavioural perspective, emotion has been defined in terms of observable behaviour and learned responses – as “the association between widespread changes in ongoing operant behaviours and the presentation or removal of reinforcers” (Millenson, 1967). From an evolutionary perspective, the opposite has been put forth: “expressive actions, exhibited by man and by lower animals... innate or inherited... not learnt by the individual” (Darwin, 1965). From the perspective of motivation research, emotion is defined as “the fundamental means of motivation in the higher animals” (Leeper, 1948); and as “action tendencies like physiological appetites” (Arnold, 1960). From a clinical perspective, it has been referred to as a “process of discharge, the final expression of which is perceived as feeling” (Freud, 1915; 1949); or as “a kind of judging” that differs from intellectual judgment “a subjective criterion of acceptance or rejection” (Jung, 1923). And finally, from a social constructivist perspective, “emotion is fundamentally an attribute of interactions between people rather than of individuals” (Parkinson, 1995).

Defining emotion is clearly no easy task, and any definition contains within in it built in assumptions about the nature of emotion as a phenomenon, and the methods needed to study it. Gross (2010) – a pioneering researcher in the field of emotion and emotion regulation – explains that catching emotions as they unfold is rather like catching butterflies, only harder. This is made all the more complicated when one considers that many real-life emotional events simultaneously touch on multiple concerns (Sonnemans & Frijda, 1995); that it is possible to experience multiple emotions at the same time (Mesquita & Frijda, 2011); that emotions trigger multiple and discrete patterns of behaviour, physiology, thoughts and feelings (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005); that there is no clearly marked non-emotion baseline (Davidson, 1998); and
that *emotion* is a term lifted from common language that refers to an astonishing array of happenings “from the mild to the intense, the brief to the extended, the simple to the complex, and the private to the public” (Gross & Thompson 2007, p. 4).

According to Gross (2015), emotions simply cannot be defined in the tidy classical sense – by their necessary conditions (what is needed for something to be an emotion), or by their sufficient conditions (what guarantees that something is an emotion). Instead, researchers have been increasingly forced to rely on prototype conceptions of emotions which emphasize typical features that may or may not be evident, at a given point in time, but whose presence makes it more likely that something *is* an emotion.

Kleinginna and Kleinginna (1981) set out to provide a clear prototypical definition when they conducted a review of 92 definitions and 11 sceptical statements about emotions by prominent psychologists. They searched for trends, common themes and theoretical issues, and identified 11 discrete categorical perspectives. The authors then developed, to the best of their ability, a prototypical definition that was broad enough to include traditionally significant aspects, and narrow enough to differentiate emotion from other psychological processes:

“Emotion is a complex set of interactions among subjective and objective factors, mediated by neural-hormonal systems, which can (a) give rise to affective experiences such as feelings of arousal, pleasure/displeasure; (b) generate cognitive processes such as emotionally relevant perceptual effects, appraisals, labeling processes; (c) activate widespread physiological adjustments to the arousing conditions; and (d) lead to behaviour that is often, but not always, expressive, goal directed, and adaptive”

Over the years, this and other prototypical definitions have been further refined and simplified with most emotion researchers now acknowledging *thoughts, feelings, physiology* and *behaviour* as four core components of an emotional response. In addition, many contemporary researchers also agree: 1) that emotions arise when an individual *attends* to a situation deemed relevant to his or her goals; 2) that emotions *unfold over time*; and 3) that emotions can be either *helpful or harmful* depending on the context (Cacioppo, Berntson, & Klein, 1993; Frijda, 2006; Gross, 2008; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005).

Gross (2015) argues that in many ways, saying what emotions are *not*, is easier than saying what they *are*. Clarifying the difference between *emotions* and the many related terms is also important for navigating what has been described as the “conceptual and definitional chaos” of emotion and emotion regulation literature (Buck, 1990). Based on the work of Gross and colleagues (Gross & Thompson, 2007; Gross, 2008; 2015), this thesis uses the following model for categorizing and understanding the differences between affect, emotions and other related concepts (see Figure 1 below). These terms are defined as follows:

1) **Affect**: A superordinate category or ‘umbrella term’ for various states that involve attention and quick valence (positive or negative) judgments. Affective states have also been defined as neurophysiological changes experienced as feelings, moods, or emotions organized in terms of at least two dimensions: valence and arousal (Russell & Barrett, 1999; Larsen & Diener, 1992).

2) **Moods**: Typically more diffuse and longer lasting affective states that give rise to broad tendencies to approach or withdraw (Lange, 1994).
3) *Emotions:* “Multifaceted, whole-body phenomena that involve loosely coupled changes in the domains of subjective experience [thoughts and feelings], behaviour and central and peripheral physiology” (Gross, 2015, p.4)

4) *Stress:* Typically refers to negative (but otherwise unspecified) affective states occasioned by an inability to manage situational demands (Lazarus, 1993)

5) *Coping:* Typically refers to regulation efforts aimed at reducing negative affect (e.g., stress). Coping may also refer to longer period of time (e.g., coping with bereavement).

6) *Impulses:* All other motivational states (e.g., eating, sex, aggression, pain).

7) *Defences:* Psychological defences typically have as their focus the regulation of unconscious and automatic impulses (e.g., aggression and sexual desire), and their associated negative emotions, particularly anxiety. They are also most often studied as stable individual differences (Cramer, 2000).

Figure 1. *A Hierarchical Model of Affect and Related Terms.*
2.2 What is Emotion Regulation?

Unlike *emotion*, there has been much less contention among theorists about the definition of *emotion regulation*. It is broadly accepted that *emotion regulation* refers to any process by which individuals modify the trajectory of an emotional response. This includes influencing the kinds of emotions one experiences, their intensity, duration, and/or their expression (Gross, 2008). Emotion regulation can be conscious and effortful, or unconscious and automatic (Mauss et al., 2005). It can be intrinsic/ intrapersonal (e.g., regulating one's own emotions) or extrinsic/interpersonal (regulating someone else's emotions) (Gross & Jazaieri, 2014). It can also involve external efforts to control or change one’s environment, or internal efforts to regulate one’s subjective inner experience (Cicchetti, Ganiban, & Barnett, 1991). Finally, emotion regulation encompasses all aspects of an emotional response – including physiological, cognition, and behavioural components. For this reason, it is not surprising that adaptive emotion regulation is widely regarded as essential for well-being and psychological health (Werner & Gross, 2009; Aldao & Nolen-Hoeckema, 2012; Gross, 2008; Webb, Miles, & Sheeran, 2012), physical health (Sapolsky, 2007), academic achievement (Valiente, Swanson & Eisenberg, 2012 for a review), work performance (Côté & Morgan, 2002) and healthy relationships (Murray, 2005; Bloch, Haase & Levenson, 2014). Emotion dysregulation is also linked with a range of troubling outcomes including increased negative and decreased positive affect (Berking, Orth, Wupperman, Meier, & Casper, 2008), increased risk-taking and harmful behaviours (Gratz, 2007), as well as pathological, compulsive, and addictive behaviours (e.g., eating disorders, substance use, and gambling) (Nolen-Hoecksema, Stice, Wade, & Bohon, 2007; Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Ricketts & Macaskill, 2003; Sim & Zeman, 2004).
The last decade has seen a tremendous growth in research on emotion regulation. From only a small number of papers published each year throughout the 1990s, to more than 10,000 papers published on the topic of emotion regulation in 2013 alone (See Figure 1 below – adapted from Gross 2015). With such exponential growth, emotion regulation is now widely regarded as one of the fastest growing areas of research within the field of modern psychology (Gross, 2015).

Figure 2. *Growth in Emotion Regulation Citations 1990 - 2013*

Note: Figure 1 adapted from Gross (2015). Number of publications containing the exact phrase “emotion regulation” in Google Scholar each year from 1990 to 2013 (solid line). This is not a cumulative plot—each data point represents 1 year’s citations. For comparison purposes, the number of publications containing the exact phrase “mental control” is also provided for the same period (dashed line).
One reason for the exponential growth in research on emotion regulation appears to be connected to the importance of emotion regulation for many sub areas of psychology (see Figure 2). These overlapping fields include: personality psychology (Gross & John, 2003; Mayer & Salovey, 1995), clinical psychology (Webb, Miles & Sheeran, 2012; Werner & Gross 2009), health psychology (DeSteno, Gross, & Kubzansky, 2013), biological (Hartley & Phelps, 2010), cognitive (Miller, Rodriguez, Kim, & McClure, 2014), developmental (Thompson, 2014), social (Shaver & Mikulincer, 2014), and organizational psychology (Grandey, Diefendorff & Rupp, 2013). Still other overlapping areas of research including neuroscience and neurobiology (Barrett, Mesquita, Ochsner & Gross, 2007), economics (Harris, Hare, & Rangel, 2013), Education (Boekaerts & Pekrun, 2015), Law (Maroney, 2006), political science (Halperin, 2014), anthropology (e.g., Tarlow, 2012), business (e.g., Cote, 2005), and medicine (Haque & Waytz, 2012).

Figure 3. The Centrality of Emotion Regulation.
Across fields of research, much of this work has focused on understanding exactly what constitutes adaptive and maladaptive emotion regulation responses, and why people choose to regulate their emotions the way they do. These questions are complicated, in part, because what constitutes ‘adaptive’ and ‘maladaptive’ emotion regulation is largely context dependent. While many individuals use emotion regulation to decrease the experience or expression of negative emotions (Gross et al., 2006), emotion regulation can also be used to decrease (down-regulate) positive emotions (e.g., to ‘play it cool’ in order not to look desperate on a date; or to look less happy after acing a test that a friend failed), or to increase (up-regulate) negative emotions (e.g., to increase feelings of anger an assertiveness in preparation for a difficult conversation or to increase feelings of sadness at a funeral). These strategies can also be applied interpersonally in attempts to help someone else regulate their emotions. Some strategies can also prove adaptive for managing emotions in the short-term (e.g., avoiding airplanes if one has a fear of flying), but can prove maladaptive if they interfere with longer-term goals (e.g., the desire to travel). See Figure 4 for a visual depiction of these different kinds of emotion regulation goals according to Gross’ (2014a) 2 x 2 model. In this light, the same emotion regulation strategies can be deemed adaptive or maladaptive depending on the specific individual, the context, the emotion and its intensity (Bonnanno et al., 2004; Sheppes et al., 2011; Aldao & Nolen-Hoeksema, 2012).
Figure 4. Examples of Different Emotion Regulation Goals

<table>
<thead>
<tr>
<th>Decrease</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative Emotion</strong></td>
<td><strong>Increase</strong></td>
</tr>
<tr>
<td>Trying to calm oneself down when angry (INT)</td>
<td>Firing oneself up before a big game (INT)</td>
</tr>
<tr>
<td>Helping a tearful child untangle his kite (EXT)</td>
<td>Reframing a friend’s &quot;little fight&quot; with a spouse as serious (EXT)</td>
</tr>
<tr>
<td><strong>Positive Emotions</strong></td>
<td></td>
</tr>
<tr>
<td>Wiping a smile off one’s face at a funeral (INT)</td>
<td>Sharing great news with close friends (INT)</td>
</tr>
<tr>
<td>Helping giggling girls calm down at bedtime (EXT)</td>
<td>Telling someone a joke to cheer them up (EXT)</td>
</tr>
</tbody>
</table>

Note: Figure adapted from Gross (2014a). Emotion regulation goals may include decreasing or increasing either negative emotion or positive emotion. Decreasing negative emotion appears to be the most common regulation goal in everyday life, followed by increasing positive emotion. Strategies are listed as intrinsic (Int) or extrinsic (Ext).

For this reason, Gross and Thompson (2007) have typically defined emotion regulation strategies as ‘contextually adaptive’ if they are flexible and meet the regulator’s goals (regardless of social norms or long-term adaptive values) (Gross & Thompson, 2007). Over the years, several models have been developed to understand the ‘emotion-generation process’ and the points at which it is possible to intervene for the purposes of emotion regulation. Three of these models will be covered in the next sections – they include 1) The Appraisal Theory Model; 2) The Modal Model; and 3) The Target Function Model.
2.3 The Appraisal Theory Model

According to appraisal theory, emotions are elicited not by situations, events or objects themselves but by perceivers’ cognitive appraisals of them (Frijda, 1993; Lazarus, 1991a, 1991b; Smith & Lazarus, 1993). From this perspective, emotional states can be differentiated according to patterns of key underlying cognitive appraisals (or evaluations). Roseman and Smith (2001) explain that appraisal theories developed to explain a number of previously unaccounted for elements of emotional experience. For example: why people experience so many distinct emotions; why the same event or situation can elicit very different emotional reactions both across people and within the same person over time; why emotions can be elicited by an endless number of events with which one has no prior learning or experience; and why emotional responses can sometimes be irrational (e.g., in the case of paralyzing fear or anxiety).

One of the most well-known appraisal theory models is Lazarus’ cognitive-motivational-relational theory of emotion (Lazarus, 1991a, 1991b; Smith & Lazarus, 1993). In this model, Lazarus identifies key appraisal components necessary for the production of wide array of emotions. These include: (a) a relational component (e.g., that a situation, event or object is relevant to the perceiver), (b) a motivational component (e.g., that a situation, event or object is congruent or incongruent to the perceiver’s goals), and (c) a cognitive aspect (e.g., the perceiver’s appraisal of the situation and its relevance to one’s life). Furthermore, Lazarus differentiates primary appraisals (which concern relevance and meaning) from secondary appraisals (which concern a perceiver’s assessment of their coping abilities and of the target responsible for the situation). See Figure 5 for a summary of the primary and secondary appraisals necessary for emotion.
By focusing on these cognitive components of emotions, appraisal theories explain how emotions develop and can be regulated. One can predict emotions by examining individual appraisals, or gain insight into a person’s thinking by examining their emotions. From the perspective of appraisal theory, one can regulate one’s own emotions by changing the cognitive appraisals they have about a situation, event or object. An example can be seen in the case of fear. According to Lazarus (1991a, 1991b), three key appraisals are necessary for the production of fear: the appraisal that a situation is (1) personally relevant, (2) potentially harmful (primary appraisals) and (3) that one may not be able to cope with the present threat (secondary appraisal). If, however, a person appraises a situation as (1) relevant and (2) harmful but focuses instead on (3) attributions of other blame or accountability, it is more likely the individual will experience anger rather than fear as the primary emotional response.

In terms of emotion regulation, there are number of ways to work with one’s emotions from the perspective of appraisal theory. Because multiple appraisal elements are necessary for any one emotional response, there are also multiple ways to re-appraise a situation, event or object in order to change the ensuing emotion. For example, someone
who is afraid of sharks and fearful of swimming in the ocean, might tell themselves (1) that this fear isn’t relevant at this particular beach as there are no sharks (relational component), (2) that even though there might be sharks they are a species that are harmless (motivational component), or (3) that they will be safe because they are a good swimmer and they know what to do to signal the life guard should they need help (assessment of coping abilities). These are only three examples of countless appraisals that could be used to in working with such phobias.

In summary, Lazarus’ (1991a, 1991b) appraisal theory places a strong emphasis on cognition and requires that thoughts precede emotion and physiological arousal (which occur together simultaneously). Critics of Lazarus’ appraisal theory argue that the model’s inherent cognitive bias fails to capture the dynamic and reciprocal nature of many emotions, and that classifying emotions according to categorical labels provides only a crude attempt at describing the intricacy of emotional experience – particularly complex emotions like love and desire (Ellsworth & Scherer, 2003; LeDoux, 1996; Scherer, 1984; Scherer, Schorr, & Johnstone, 2001). Some even argue that there are as many different emotional states as there are patterns of appraisals (Scherer, 1984). In addition to these problems, the appraisal theory model fails to adequately account for the role of situational and environmental cues, attention and response tendencies.

2.4 The Modal Model of Emotions

The modal model of emotions (Gross, 1998b; Gross & Thompson, 2007) suggests that while appraisal plays a key role in emotion generation, ultimately emotions arise within a complex person-situation interaction “that compels attention, has particular meaning to an individual, and gives rise to a coordinated yet flexible multisystem
response to the ongoing person-situation transaction” (Gross & Thompson, 2007 p.5).

Gross explains that this modal model underlies many intuitive understandings of emotions (Barrett, Mesquita, Ochsner & Gross, 2007), and incorporates elements from existing models and theories of emotion and emotion regulation. Figure 5 presents an abstracted situation-attentional-appraisal-response sequence.

Figure 6. The Modal Model of Emotion (adapted from Gross & Thompson, 2007)

In the first part of the model in Figure 6, we see that the appraisal process is influenced and preceded by a particular situation or environmental trigger. This may be an external situation, event or object, or an internal representation such as a thought or memory. In addition to this trigger, a person’s appraisal of the situation also requires some degree of attention to certain aspects of that situation. A small child might immediately start crying when a toy is taken from them, but stop suddenly when a parent excitedly starts pointing at and playing with something else.

In addition to incorporating the role of environmental triggers, attention and appraisal, the modal model also accounts for emotional response tendencies. Emotions often trigger changes in experiential, behavioural and physiological response systems.
These responses can also feed back into, and change the situation that triggered the emotion in the first place, affecting subsequent attention and appraisal processes. A feedback arrow running from ‘response’ all the way back to the ‘situation’ represents this element in the modal model. For example, the small child that lost its toy and was distressed only moments ago begins playing with a new toy. As their sobbing subsides, they receive encouragement, attention and positive reinforcement from their parent, which leads to further engrossment in the new activity. The modal model thus accounts environmental factors and attentional processes as well as for the recursive nature of emotion.

### 2.5 The Target Function Model

Another way of classifying and thinking about emotion and emotion regulation strategies is to consider the target and function of emotion regulation. Koole (2009) argues that most forms of emotion regulation target one of three different emotion-generating systems: 1) attention (e.g., selecting incoming information from sensory input), 2) knowledge (e.g., appraising information in a particular way) and 3) embodiment (e.g., the many physical ways emotions unfold – including posture, facial-expression and psycho-physiological responses). For example, mindfulness and meditation are strategies that target attention (e.g., bringing one’s attention to the sensation of breathing), while expressive writing is a strategy targeting the knowledge systems (e.g., with its focus on developing insight into one’s thoughts and emotions). In addition to identifying the target of emotion regulation, Koole (2009) argues that strategies can be further divided and broadly grouped into three categories according to the psychological functions they serve: 1) hedonic needs (e.g., seeking pleasure and avoiding pain), 2) specific goals (e.g., using
negative emotions to promote caution or to improve performance) or 3) person-oriented needs, motives and self-aspects (e.g., integrating difficult or unwanted emotional experiences). Together, the target by function classification yields nine cells by which emotion regulation strategies can be organized. Figure 7 displays examples of different kinds of emotion regulation strategies according to their target and function.

Figure 7. The Target by Function Classification of Emotion-Regulation Strategies (Adapted from Kool, 2009)

<table>
<thead>
<tr>
<th>TARGET</th>
<th>PSYCHOLOGICAL FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emotion generating system</strong></td>
<td><strong>Need-Oriented</strong></td>
</tr>
<tr>
<td><strong>Attention</strong></td>
<td>Thinking pleasurable or relaxing thoughts</td>
</tr>
<tr>
<td></td>
<td>Effortful distraction</td>
</tr>
<tr>
<td></td>
<td>Thought suppression</td>
</tr>
<tr>
<td></td>
<td>Meditation/Mindfulness</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td>Cognitive dissonance reduction</td>
</tr>
<tr>
<td></td>
<td>Motivated reasoning</td>
</tr>
<tr>
<td></td>
<td>Cognitive Reappraisal</td>
</tr>
<tr>
<td></td>
<td>Specification of emotional experience</td>
</tr>
<tr>
<td></td>
<td>Self-defense</td>
</tr>
<tr>
<td><strong>Body</strong></td>
<td>Stress-induced eating</td>
</tr>
<tr>
<td></td>
<td>Stress-induced affiliation</td>
</tr>
<tr>
<td></td>
<td>Sleeping</td>
</tr>
<tr>
<td></td>
<td>Expressive suppression</td>
</tr>
<tr>
<td></td>
<td>Response exaggeration</td>
</tr>
<tr>
<td></td>
<td>Venting</td>
</tr>
<tr>
<td></td>
<td>Controlled breathing</td>
</tr>
<tr>
<td></td>
<td>Progressive muscle relaxation</td>
</tr>
</tbody>
</table>
Together Koole’s (2009) classification of emotion regulation provides a useful framework for organizing a wide range of emotion regulation strategies. By examining different psychological functions of emotion regulation strategies (e.g., needs, goals and person-oriented motives), Koole’s (2009) model also distinguishes between several forms of attention, appraisal and response modulation strategies that would otherwise be grouped together in the modal model of emotion regulation. Despite these advantages, the Target Function Model does not address how and why emotions unfold as they do in response to specific emotional stimuli, nor questions regarding why some strategies may be more effective than others particularly with reference to the temporal unfolding and strength of certain emotional responses. To address these elements, I turn to a fourth model of emotion regulation – The Process Model of Emotion Regulation – that will serve as the primary theoretical model for this thesis.
3. THE PROCESS MODEL OF EMOTION REGULATION

3.1 Overview

Building on existing models, the process model of emotion regulation (Gross, 1998b) assumes that emotions unfold in a series of stages and each stage offers opportunities for regulating the unfolding emotion. These five stages (or emotion regulation families) include: situation selection, situation modification, attentional deployment, cognitive change and response modulation (see Figure 8). Each of these stages will be discussed in more detail below.

Figure 8.0 The ‘Process Model of Emotion Regulation’ (Gross, 1998b; 2014)

Like the modal model, because an emotional response or reaction can result in changes to the situation, there is also a feedback loop indicating the dynamic and recursive nature of emotion generation and regulation. In addition to distinguishing
between the five emotion regulation strategies, the process model also distinguishes between antecedent-focused and response-focused strategies. Antecedent-focused strategies refer to everything that takes place before the emotion occurs (situation selection, modification, attentional deployment and cognitive change), while response-focused strategies (response modulation) refer to strategies that are used to change, increase or decrease an emotion once it has occurred. Some researchers have also distinguished between external or situational strategies – strategies that seek to choose or change the environment in some way (e.g., situation selection and situation modification); and internal or cognitive strategies – strategies that use attention, or thought processes to change the meaning of a situation or to change its visible impact (attentional deployment, cognitive change, and in some cases response modulation; see Duckworth, Gendler & Gross, 2014).

While the process model organizes emotion regulation strategies according to a temporal sequencing of emotion, some critics have argued that this is problematic because the order in which emotional responses are generated is often highly variable (see Koole, 2009). For example, there is some evidence that posture and body movements directly activate emotional experience (Niedenthal, 2007; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005) and that some emotional stimuli (like music) can trigger emotions without any intervening cognitive appraisals (Thoma, Ryf, Mohiyeddini, Ehlert, & Nater, 2012). Nonetheless, the process model of emotion regulation is to date one of the most widely used frameworks for organizing emotion regulatory processes (Gross & Jazaieri, 2014; Webb, Miles, & Sheeran, 2012). It also provides a useful and flexible framework for examining the points at which different emotion regulation strategies have
their primary impact and reasons why some strategies are more or less effective than others. Each of these stages and their associated strategies are described in below.

3.2 Situation Selection

The first stage – situation selection – typically involves approaching or avoiding situations that might give rise to certain wanted or unwanted emotions. Some obvious examples might include: avoiding a family member one frequently get into arguments with, choosing to drive rather than take a flight if one has a fear of flying, seeking out a close friend for social support, or treating oneself to funny movie after a hard week. Situation selection works to help a person pre-emptively regulate specific emotions by approaching or avoiding environments that trigger them. Choosing situations in order to care for oneself and in order to avoid negative experiences can aid in successfully navigating one’s emotional life (Werner & Gross, 2009). However, habitual reliance on avoidance as a form of coping is associated with a range of indicators of poor long-term health and well-being (Suls & Fletcher, 1985; Penley et al., 2002; Aldao, Nolen-Hoeksema & Schweizer, 2010 for meta-analyses and reviews). Habitual avoidance can also contribute to phobias and anxiety (Hayes, Wilson, Gifford, Follette & Strosahl, 1996) as well as feelings of loneliness, inauthenticity, and disconnection (John & Gross, 2004). When avoidance leads to isolating behaviour, it can further predict lower levels of social and emotional support, fewer close relationships with others, and poorer overall satisfaction with life (Gross & John, 2003; John & Gross, 2004). For these reasons, approach-based situation selection strategies have long formed a core component of cognitive behavioural therapies and other psychological interventions such as behavioural activation for depression (Jacobson, Martell & Dimidjian, 2001; Martell, Addis &
Jacobson, 2001), prolonged exposure therapy for trauma (Joseph & Gray, 2008),
systematic desensitization for phobias and anxiety (Rachman, 1967), and exposure and
response prevention for obsessive compulsive disorder (see Abramowitz, Deacon &
Whiteside, 2011 for a review) – all of which use exposure to certain situations or objects
to facilitate longer-term changes in affect and behaviour.

In addition to using situation selection to regulate one’s emotions, people also
enlist this strategy to help others with emotion regulation. Examples of this process
include persuading a friend to come to a social event or join an activity that is likely to be
emotionally satisfying, and, in the context of child care, using routines and scheduled
naps to assist emotional coping in young children (Gross & Thompson, 2007). Whether it
is regulating one’s own emotions, or helping others with theirs, situation selection
requires an understanding of remote situations and the likely emotional responses that
might follow in a particular circumstance or environment. This is not always easy as there
is growing evidence that people frequently misestimate their emotional responses – both
in remembering past emotional experience (Kahneman, 2000) and in predicting their
responses and duration of their affective reactions to future scenarios (Gilbert, Pinel,
Wilson, Blumberg & Wheatley, 1998). Complicating things further, one must also
consider the short-term benefits of specific situation selection strategies and weigh them
again longer-term costs. For example, by habitually avoiding a difficult family member, a
small disagreement can turn into a longer more serious conflict.

3.3 Situation Modification

The second stage in the process model is situation modification. Situation
modification involves active efforts to directly modify an environment or situation so as
to alter its emotional impact (Gross, 1998b p.283). This might involve tidying the house before a parent or spouse returns home after being away, injecting some humor into a serious conversation, or explaining to a friend that you’d rather not talk about a painful break-up. Some other core examples of situation modification strategies include problem-focused coping (e.g., fixing a computer problem or rehearsing for a stressful job interview), seeking social support (e.g., asking for help with fixing a problem or having a friend help with a practice interview), and conflict resolution (e.g., taking steps to modify or diffuse a conflict, mediation, arbitration etc). Many of these situation modification strategies are adaptive – for example, problem-focused coping is associated with positive health outcomes (Penley et al., 2002), increased well-being and fewer psychological disorders (see Aldao et al, 2010 for a meta-analysis). Help-seeking is also widely regarded as adaptive in clinical and educational settings (Wills, 19987; Newman, 1994). And conflict resolution – while imperfect – has proved an effective strategy for emotion regulation in violent conflicts (see Ramsbotham, Woodhouse & Miall, 2011). However, not all situation modification strategies are adaptive. Gross (2015) explains that, in many anxiety disorders, individuals often engage in “safety behaviours,” such as standing apart from a social gathering (Werner & Gross, 2010 cited in Gross, 2015). Strategies like this can lead to short term relief, but they prevent longer-term benefits of more complete exposure to the feared stimuli. To date, little research currently exists examining the immediate and longer term consequences of situation modification as an emotion regulation strategy (Gross, 2015).

Gross (1998b) explains that one difficulty with the category of situation modification, is that it can be challenging identifying where situation selection ends and situation modification begins, as efforts to modify a situation can effectively bring a new
situation into being. This is even more complicated when one considers the role of emotional expression in situation modification – if, for example, in an argument with a friend, our friend suddenly looks remorseful and sad, this might change the situation and the entire course of an angry interaction: “we pause to express concern, backpedal, or offer support. In this sense, emotion expressions can be powerful extrinsic forms of emotion regulation, changing the nature of the situation” (Gross & Thompson, 2007 p.12).

In considering examples like this one, it is easy to see that emotion regulation is a dynamic and reciprocal process, and many efforts at regulation change the very situation which is being regulated (Sheppes, Suri & Gross, 2015). This point is addressed in more detail in Chapter 4. For now, it is important to note that both situation selection and situation modification are external or situational strategies because they are focused on regulating one’s emotions through changes in one’s external environment. These strategies are also typically regarded as pro-active emotion regulation strategies used to regulate emotions prior to or at early onset. However, merely anticipating an emotional experience can also lead to partial and unconscious activation of similar emotion systems. In this way, even anticipatory emotion regulation strategies may be preceded by an emotional response that arises in anticipation of the desirable or undesirable emotional outcome.

3.4 Attentional Deployment

Situation selection and situation modification are strategies used to approach, avoid or change an emotion-eliciting situation. However, there are also many strategies for regulating emotions that do not require changing one’s environment. The third stage of the process model – attentional deployment – refers to “how individuals direct their
attention within a given situation in order to influence their emotions” (Gross & Thompson, 2007 p.13). Strategies for directing attention can be grouped broadly into two categories: distraction and concentration.

Distraction includes directing attention away from oneself to non-emotional aspects of a situation (Nix, Watson, Pyszczynski, & Greenberg, 1995) or mentally “checking-out” by directing one’s attention away from a situation completely (Rothbart, Sheese, & Posner, 2007). This can include withdrawing one’s senses, for example, by covering one’s eyes or ears to prevent exposure to unwanted stimuli, or it can include changing one’s internal focus, for example, by invoking or recalling thoughts and memories that are inconsistent with an unpleasant emotional state (Boden & Baumeister, 1997). From a developmental perspective, distraction is one of the first strategies that infants and children use to regulate their emotions (Rothbart, Ziaie, & O'Boyle, 1992). Rothbart, Ziaie and O-Boyle (1992) explain that between 3 and 13.5 months of age, infants undergo rapid development in self-regulatory behaviours, particularly attention regulation strategies. When faced with aversive stimuli, for example, infants spontaneously redirect their visual attention toward inanimate aspects of the environment, and at 10 months, they are also significantly more likely to redirect their attention towards their mothers. Children may also use distraction to assist with delay of gratification (Mischel & Ebbesen, 1970; Mischel, Shoda, & Rodriguez, 1989). And, as children age, their attentional processes can be redirected and guided by others to assist with emotion management. For example, a parent might seek to subdue a child’s crying by excitedly pointing at something, or by offering them something to play with.
Concentration, by contrast, involves focusing on a situation or a particular object of attention that has the ability to absorb cognitive resources (Erber & Tesser, 1992). Whether it is focusing on working, gardening, rock-climbing or art, concentration in the form of a well-chosen task can lead to a pleasurable, self-sustaining state sometimes referred to ‘flow’ (Csikszentmihalyi, 1975; Csikszentmihalyi & LeFevre, 1989). Csikszentmihalyi (1990) explains that flow states are timeless experiences of complete absorption and, in these states, emotion is regulated and harnessed in the service of performing and learning. Another concentration strategy that appears to have many benefits for emotion regulation is ‘mindfulness’ – paying attention, on purpose in the present moment, non-judgmentally to one’s immediate experience (Kabat-Zinn, 1994). Mindfulness practices involve sustaining attention on present experience rather than becoming lost in self-referential judgments about the self and others.

Research indicates that both ‘flow’ states and mindfulness practices have positive consequences for performance and well-being (Carmody & Baer, 2008; Chiesa & Serretti, 2009; Clarke & Haworth, 2011; Shao & Skarlicki, 2009). However, not all concentration strategies have beneficial effects. When concentration involves directing attention to the emotional features of a situation, such as repeatedly focusing on feelings, their causes and consequences, this is known as rumination. When rumination is directed towards negative emotions, it can lead to longer and more severe depressive symptoms (Nolen-Hoeksema, Girgus, & Seligman, 1992; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

Like rumination, worrying is often uncontrollable and associated with negative affect, but rather than focusing on the emotional features of a situation, worrying typically involves directing attention towards possible future threats and negative events. As an
emotion regulation strategy, worrying can serve as a method for avoiding strong emotions (Borkovec, 1994), and can have a dampening effect on physiological arousal (Borkovec & Hu, 1990). However, ultimately, like rumination, worry is a poor form of emotion regulation and is associated with anxiety disorders (Borkovec, 1994), longer-lasting anxiety (Borkovec, Roemer, & Kinyon, 1995), and poor habituation to emotional stimuli (Butler & Gross, 2004).

3.5 Cognitive Change

If someone is unable to change or modify a situation and is forced to pay attention to what is happening, they may engage in a fourth strategy: cognitive change. Building on the work of appraisal theorists (Frijda, 1993; Lazarus, 1991a, 1991b; Smith & Lazarus, 1993), cognitive change – the fourth stage in the process model – refers to “changing how we appraise the situation we are in to alter its emotional significance, either by changing how we think about the situation or about our capacity to manage the demands it poses” (Gross & Thompson, 2007 p.14). Common examples of cognitive change strategies include classical psychological defenses such as denial, defensive pessimism, projection and intellectualization; downward social comparison by comparing one’s situation with those less fortunate (Taylor & Lobel, 1989); reinterpreting a situation in a more positive light or assuming the position of a detached observer (Ochsner & Gross, 2008).

One cognitive change strategy that has received particular attention is cognitive reappraisal (Gross, 2002; Gross & John, 2003; Gross & Thompson, 2007). This cognitive change strategy involves “changing a situation’s meaning in a way that alters its emotional impact” (Gross & Thompson, 2007 p.14). This might involve regulating one’s emotions prior to an emotion-eliciting or challenging situation (e.g., thinking about a job
interview as an opportunity to evaluate the company rather than focusing on being evaluated); regulating one’s emotions in the moment (e.g., viewing an interviewer’s blank face as a sign that they’ve had a long day of interviews rather than thinking about the possibility that they’re bored or unimpressed); or regulating emotions that might arise as a consequence of thinking about a situation that has already occurred (e.g., reflecting on the interview as a learning opportunity rather instead of regretting things that were said or done). In addition to assisting emotion regulation in these circumstances, habitual use of cognitive reappraisal, particularly during stressful life events, is associated with a positive bias in memory over time – an overestimation of positive emotion and an underestimation of negative emotions when recalling difficult life experiences (Levine, Schmidt, Kang, & Tinti, 2012).

From a developmental perspective, cognitive reappraisal requires greater introspective skills and emotional awareness than strategies focused on attending to, changing or avoiding emotion-arousing situations. For example, when children are asked how they would regulate negative feeling states, six-year-olds typically suggest situational and behavioural change strategies, while 10-year-olds acknowledge the usefulness of changing what they’re thinking about (Saarni, 1999; Stegge & Meerum Terwogt, 2007).

Although it is true that reappraisal can be used in ways that are beneficial or detrimental for emotional health and well-being, in general reappraisal is considered an effective emotion regulation strategy for decreasing negative, and increasing positive emotions in the present moment (Gross & Thompson, 2007 p.14). Habitual use of reappraisal as an emotion regulation strategy is also associated with higher levels of
positive and lower levels of negative affect and depressive symptoms, as well as improved interpersonal functioning, self-esteem, and satisfaction with life (Goldin et al, 2009; Gross & John, 2003).

3.6 Response Modulation

The last stage of the process model – response modulation – refers to “influencing physiological, experiential or behavioural responding as directly as possible” (Gross & Thompson, 2007 p.15). As seen in figure 2.2, response modulation occurs much later in the emotion-generative process, typically once an emotion and its response tendencies have been initiated. Even at this late stage, however, there are still many strategies available. Medication, for example, is commonly used to help manage symptoms of anxiety or depression even after these response tendencies have been initiated. Common medications include anxiolytics (used to reduce muscle tension) or beta-adrenergic blocking agents/‘beta blockers’ (used to assist with the physiological symptoms of stress or anxiety). Other common strategies used to either up-regulate or down-regulate emotional states include exercise (Thayer & Lane, 2000; Thayer et al., 1994) relaxation (Manzoni, Pagnini, Castelnuovo & Molinari, 2008 for a review) and biofeedback (Peira, Fredrikson & Pourtois, 2014; Schwartz, 1979), alcohol (e.g., Hull & Bond, 1986), drugs (e.g., Khantzian, 1985) and cigarette use (e.g., Brandon, 1994; Gilbert & Welser, 1989), and even food (e.g., Lingswiler, Crowther & Stephens, 1989). While many of these response modulation strategies have adaptive short-term benefits for managing emotions in daily life, reliance can become problematic (even dangerous for long-term health) especially when short-term strategies conflict with longer-term personal goals.
In addition to modulating the physiological and experiential aspects of emotion, one can also regulate behavioural responding and emotional expression. Examples include suppressing anger while in the midst of an interpersonal conflict, hiding the physical signs of anxiety and nervousness on a first-date, or repressing a desire to laugh at someone when doing so might be hurtful or inappropriate. Research on emotion expression indicates that suppressing emotions has mixed effects on emotional experience. When instructed to suppress the visual signs of emotions, participants often self-report decreased positive but not negative emotional experience (Gross, 1998a; Gross & Levenson, 1993). For example, suppressing signs of amusement while watching an amusing film clip (Davis, Senghas, & Ochsner, 2009; Gross & Levenson, 1997) or while reading cartoons (Strack, Martin, & Stepper, 1988) dampened the experience of amusement. However, when instructed to suppress signs of embarrassment in public (Harris, 2001), or negative emotional expression in response to a disgusting film or a sad movie clip (Gross, 1998a; Gross & Levenson, 1997), there were no changes in the experience of those emotions for participants.

Interestingly, regardless of self-reported experience, suppressing emotion expression while viewing emotion-eliciting slides and films or during conversations, typically increases in the body’s stress response measured via sympathetic nervous system activation and systolic blood pressure (Gross, 1998a; Gross & Levenson, 1993; Gross & Levenson, 1997; Harris, 2001). Other research indicates that suppression is associated with a number of additional clinical symptoms as well as cognitive and social costs (Aldo, Nolen-Hoeksema & Schweizer, 2010). For example, in a series of studies on memory, Richards and Gross (2000, 2006) found that expressive suppression (both when spontaneously occurring and when experimentally manipulated) predicted poorer memory
for material presented during the suppression period. Butler and colleagues (2003; 2004) also identified consequences of suppression for social interaction. In their laboratory studies, participants were divided into pairs and asked to discuss an upsetting topic. One member of each pair was randomly assigned to (a) suppress their emotions during the interaction, (b) respond naturally, or (c) use cognitive reappraisal to reduce emotional responding. Results indicated that suppression alone distracted participants from the conversation, reduced their responsiveness and caused increased stress (and heightened blood pressure) in their conversation partners. Finally, research on individual differences in the habitual use of suppression compared to more adaptive strategies (like cognitive reappraisal) indicates that suppression poses significant costs for long-term individual functioning (Gross & John, 2003). In a series of studies, Gross and John (2003) found that habitual suppressors reported that they typically dealt with difficult situations by masking their inner feelings and by “clamping down on their outward displays of emotion” (2003 p.360). Habitual suppressors reported that they had less clarity about what they were experiencing, were less able to change their moods and were more likely to judge themselves and ruminate over negative events (Gross & John, 2003). Overall, habitual suppressers also reported greater negative and fewer positive emotional experiences in daily life, poorer interpersonal functioning, lower self-esteem and lower satisfaction with life. Finally, habitual suppressors more frequently reported avoiding close relationships and were reluctant to share their emotions with others scoring lowest in the domain of positive relationships. Taken together these findings indicate a number of maladaptive short-term and long-term consequences of using emotional suppression in daily life.
3.7 Which Strategy Should I Choose?

Not surprisingly, with growth in research on emotion regulation, researches have become increasingly interested in understanding which strategies are most effective. Three recent meta-analyses on this topic have attempted to categorize strategies based on their immediate effectiveness and on their consequences for longer-term psychological health. First, Augustine & Hemenover (2009) examined 34 studies on emotion regulation and compared the effectiveness of cognitive strategies (involving thought) and behavioural strategies (involving physical action). They found that behavioural strategies were more effective in repairing affect ($d_+ = 0.54$) than cognitive strategies ($d_+ = 0.33$). In comparing specific strategies, reappraisal ($d_+ = 0.65$), distraction ($d_+ = 0.46$) and suppression ($d_+ = 2.02$) all had large effects in hedonic shifts in affect. The findings for suppression, however, run counter to most research on the effects of suppression (Gross & Levenson, 1993; Richards & Gross, 2000) and should be interpreted with caution given that results were based on only one study.

In a second study, Aldo, Nolen-Hoeksema and Schweizer (2010) conducted a meta-analysis of 114 studies, examining the association between six different regulation strategies (acceptance, avoidance, problem solving, reappraisal, rumination and suppression) and different forms of psychopathology (anxiety, depression, disordered eating and substance-use disorder). They found that rumination ($d_+ = 1.12$), avoidance ($d_+ = 0.82$) and suppression ($d_+ = 0.72$) were all positive predictors of psychopathology. On the other hand, psychopathology was negatively associated with the use of acceptance ($d_+ = -0.39$), problem solving ($d_+ = -0.65$) and cognitive reappraisal ($d_+ = -0.28$).
Finally, Webb, Miles & Sheeran (2012) conducted a meta-analysis of 306 experimental studies on emotion regulation. Their findings indicated much more modest effects for different regulation strategies. Overall findings revealed no effect for attentional deployment ($d_+ = 0.00$), a small effect for response modulation ($d_+ = 0.16$), and a small-to-medium effect for cognitive change ($d_+ = 0.36$). Importantly, the authors identified adaptive and maladaptive strategies within each of these categories. For example, for attentional deployment strategies, distraction proved effective at regulating emotions ($d_+ = 0.27$). Concentrating on feelings, their causes and consequences (rumination) proved to have a negative effect on behavioural, physiological and self-report measures ($d_+ = -0.26$). For cognitive change strategies, reappraising the emotional response ($d_+ = 0.23$) had a smaller effect than reappraising the emotional stimulus ($d_+ = 0.36$) or using perspective taking ($d_+ = 0.45$). Using a combination of reappraisal strategies was also better than any one specific strategy and had a large effect on emotional outcomes ($d_+ = 0.89$). Finally, for response modulation strategies, suppressing the expression of emotions had a small-to-medium effect on outcomes ($d_+ = 0.32$), but suppressing thoughts ($d_+ = -0.04$) or the experience ($d_+ = -0.12$) of emotions did not have a significant impact on outcomes. Expressive suppression also had a small negative effect on physiological indicators ($d_+ = -0.22$). The authors explain that their findings are consistent with prior research on the adaptive or maladaptive nature of various emotion regulation strategies, albeit some findings were more modest than meta-analyses based primarily on self-report measures (e.g., Augustine & Hemenover, 2009).

While there is growing research indicating that some regulation strategies are broadly more effective and adaptive than others, it is important to recognize that emotion regulation is high context specific. For example, while suppression is often regarded as a
maladaptive regulation strategy (Aldo et al., 2010; Gross & Levenson, 1993; Richards & Gross, 2000), the negative consequences of suppression do not appear to apply to individuals with bicultural European/Asian values, where emotional restraint is culturally normative and valued over emotional expression (Butler, Lee & Gross, 2007; Soto, Perez, Kim, Lee & Minnick, 2011). Similarly, strategies widely regarded as adaptive – like cognitive reappraisal – can be maladaptive if they lead to increased or dangerous risk taking (Heilman, Crisan, Houser, Miclea & Mu, 2010; Panno, Lauriola & Figner, 2013) or when applied to stressors that are controllable and require active action and intervention (Troy, Shallcross & Mauss, 2013).

This chapter reviewed the five stages of the process model of emotion regulation – situation selection, modification, attentional deployment, cognitive change and response modulation – and some of the research on the consequences of these different strategies for emotion regulation and psychological health. The next chapter examines the question: “why is emotion regulation so difficult?” It begins by exploring a number of factors that influence what, how, and why people regulate their emotions the way they do.
4. WHY IS EMOTION REGULATION SO DIFFICULT?

4.1 Overview

Despite most people regarding happiness a very important personal goal (Diener, Suh, Smith & Shao, 1995), for many it remains elusive. In the United States, only one third of people describe themselves as “very happy” (Yang, 2008). In Australia, in any given year, approximately 3 million adults live with depression or anxiety (Australian Bureau of Statistics, 2008), and approximately 45 per cent will experience a mental health condition in their lifetime (Australian Bureau of Statistics, 2008). Could these difficulties be due to problems with emotion regulation?

People differ considerably in how they choose to regulate their emotions. In the past few decades, research on emotion regulation processes has demonstrated that different emotion regulation strategies have wide ranging consequences for psychological health (Gross, 2015; Mennin & Fresco, 2015). Some strategies, like cognitive reappraisal and acceptance, are generally considered useful and adaptive, while others, like suppression, rumination and avoidance, are associated with a range of negative health and well-being outcomes (Aldo & Nolen-Hoeksema, 2012; Webb et al., 2012, see chapter 3 for a review). In fact, Emotion dysregulation is a core feature of many, if not most, Axis I and Axis II psychology disorders (American Psychiatric Association, 2013), and training in emotion regulation strategies like cognitive reappraisal is a key component of many forms of treatment (Werner & Gross, 2009). Why then, if there are so many adaptive strategies for regulating emotions, do so many people struggle to regulate their own?
What constitutes adaptive emotion regulation? And, why do people often use maladaptive strategies, or certain strategies in maladaptive ways?

It is becoming increasingly clear that emotion regulation is a complex phenomenon – decidedly more so than it might appear from the process model diagram in Chapter 3 (see Figure 8.0). There is growing acknowledgment that emotion regulation is a dynamic, multifaceted, multi-process, reciprocal phenomenon with regulatory stages that proceed and follow the implementation of specific regulatory strategies (see Batja & Frijda, 2011; Bonnanno & Burton, 2013; Gross, 2015; Webb et al., 2012; Sheppes, Suri & Gross, 2015). To capture some of this complexity and to begin addressing the questions outlined above Gross and colleagues (Gross, 2015; Sheppes, Suri & Gross, 2015) recently developed the Extended Process Model of Emotion Regulation.

4.2 The Extended Process Model of Emotion Regulation

The extended process model of emotion regulation holds that emotions – like other kinds of affect – involve valuation (judgements about the personal “goodness” or “badness” of situations, events, objects and experiences). According to this model, when an internal or external aspect of the world (W) is encountered and perceived (P), a positive, negative or neutral valence (V) is attached to it, which then leads to a specific response or action (A) (see Figure 9(a) below). In the case of most emotion-eliciting events, an emotional response and reactions represents the ‘action component’ or ‘reaction’ to an emotion generating value system that perceives and judges something as positive or negative. However, emotional reactions can also be an internal aspect of the world (W), also becoming the focus of perception (P) and valuation (V). Within this second-level regulatory value system, specific emotion regulation strategies are then
implemented to regulate these emotional reactions (A). For example, imagine John looks at the clock on his desk (W) to discover that it is several hours later than he realized (P), something which is “not good” (V) for his encroaching deadline. This gives rise to a flustered rush of panic (A) as the emotional response. John feels his heart and mind racing (W) and notices his mounting anxiety (P). He realizes it isn’t helpful (V) and tells himself he needs to ‘keep his cool’ to get this work done. So, he takes a couple deep breaths (A) to regain his composure again before returning to his work. This example highlights how a second level ‘regulatory value system’ (John ‘keeping his cool’) can intervene to compete with and in some cases, override the first level ‘emotion generation value system’ (John panicking about his deadline).

*Figure 9.0 The Extended Process Model of Emotion Regulation & The Valuation Process*

Note: Figure 9(a) A situation, event or object in the world (W) gives rise to a perception (P) which is positively or negatively valued (V) leading to a specific action, reaction or response e.g., an emotion regulation strategy (A). Figure 9(b) This process happens over time as seen with the recursive cycles 1, 2, 3 and 4. Adapted from Sheppes, Suri & Gross, (2015).
In Gross’ words:

“According to this model, emotions are instantiated via valuation systems. Emotion regulation occurs when one valuation system (which I refer to as a second-level valuation system) takes another valuation system (one that is generating emotion, which I refer to as a first-level valuation system) as a target and evaluates it either negatively or positively, activating action impulses that are intended to modify the activity in the first-level valuation system” (Gross, 2015, p. 11)

Within the emotion regulatory value system, there are three stages, which determine: 1) whether or not emotion regulation takes places (Identification Stage); 2) what strategy is used to regulate emotions (Selection Stage) and 3) how a strategy is implemented (Implementation Stage). Because each stage represents a decision point in the regulation process, each stage also represents a point of potential failure in emotion regulation (Gross, 2015). In the following sections, each of these stages are reviewed along with potential difficulties in regulation and their consequences of psychological health.

4.3 Identification (Deciding to Regulate)

According to the extended process model, the first stage of emotion regulation is identifying the need to regulate. Successfully navigating the identification stage requires: 1) basic emotional awareness, 2) belief in the utility of emotion regulation, and 3) appropriate goals or motivation to engage in emotion regulation. This section examines each of these factors in-turn. Basic emotional awareness (Coffey et al. 2003, Gohm 2003, Salovey & Mayer 1990), includes interceptive ability to sense bodily changes (Füstös et al. 2013), and the capacity to differentiate between different emotions with sufficient clarity (Barrett, Gross, Conner & Benvenuto, 2001; Farb, Anderson, Irving & Segal, 2014;
Kashdan, Barrett & McKnight, 2015; Gratz & Roemer, 2004). Awareness of emotions is essential for regulation because it is difficult to regulate an emotional reaction if one is not aware it is happening! Emotional reactions can also be more difficult and require more effort to regulate as they increase in intensity over time (Sheppes & Gross, 2011). For this reason, acute sensitivity to, and awareness of, emotional reactions at early stages of their unfolding makes it possible to identify the need to regulate early and to intervene more successfully.

Second, deciding to regulate requires that one believes emotion regulation is effective and possible (Mauss & Tamir, 2014). This includes general beliefs in the utility of emotion regulation and the belief that one has sufficient ability or skill (e.g., self-efficacy) to make emotion regulation a worthwhile pursuit (Gutentag, Halperin, Porat, Bigman & Tamir, 2016; Golden et al., 2009). This also makes logical sense because people are unlikely to attempt emotion regulation if they do not believe that they are capable of controlling their emotions (Webb et al., 2012) – this is a key point of interest for the current thesis and a point that will be addressed in more detail in Chapter 6.

Third, in addition to emotional awareness and beliefs about emotions, the decision to regulate is also determined by an individual’s unique values, goals, and the perceived utility of certain emotional responses (Tamir, Bigman, Rhodes, Salerno & Schreier, 2015). Research for example, indicates that although people typically value positive emotions (e.g., happiness and calmness etc.), they will regulate their emotions in the direction of negative states (e.g., anger or worry), if they believe these states serve specific situational and contextual goals. For example, research indicates that individuals will down-regulate their anger if they hold collaborative goals, but up regulate their anger if given a task that
requires confronting others (e.g., in computer games or in social interactions, Tamir & Ford, 2012a; 2012b). In a related set of five studies, Tamir et al. (2015) motivated participants to engage in emotion regulation to increase unpleasant emotions (e.g., anxiety and anger) by making them believe these emotions were useful. They explain that although people may not typically want to feel anger and anxiety, or succeed in changing their emotions in the direction they desire, shaping what people want to feel can set the course for subsequent emotion regulation.

Further research also indicates that the values and goals individuals have regarding the emotions they want to feel can be influenced by the cultural and social norms within the environment in which they live (Caprara et al., 2008; Tsai, Knutson & Fung, 2006). For example, research indicates that people from Eastern cultural traditions often place a higher value on controlling their emotions than those in Western cultures (Mauss, Butler, Roberts, & Chu, 2010). In one study, Tsai, Knutson and Fung (2006) demonstrated that even the desirability of certain emotional states differs across cultures. They found that students from individualistic countries (like the United States) were significantly more likely to value high-arousal emotional states (e.g., excitement and enthusiasm). Students from collectivist countries (like China) by contrast, were more likely to value low arousal positive states (e.g., calmness and peacefulness). In a follow-up study, Tsai and colleagues (Tsai, Miao, Seppala, Fuing and Yeung, 2007) demonstrated that differences in ideal affect were also connected to culturally specific interpersonal goals (e.g., to assert personal needs or to suppress personal needs in order to meet the needs of others). Tsai et al., (2007) argue that cultural differences in ideal affect begin to explain a range of well-documented but poorly understood cross-cultural
differences in mood-producing behaviours (e.g., recreational and leisure activities, music preferences, as well as drug use and abuse etc.).

Difficulties at the initial identification stage may lead to a number of potential problems with emotion regulation. Potential points of failure include problems related to emotional awareness. For example, one may have difficulty identifying the need to regulate due to an extreme lack of emotional awareness. This is often the case in alexithymia (van der Velde et al., 2015) and binge eating disorders with estimates suggesting that over 50 per cent of people with eating disorders suffer from alexithymia (Corcos et al., 2000). Conversely, one may struggle with over-identifying the need to regulate due to affect misattribution and a hyper-vigilant degree of emotional awareness, as in panic attack disorder (Bar-Haim et al. 2007; Sheppes, Suri & Gross, 2015) and hypochondriasis (Schreiber et al., 2014). Problems are also related to beliefs about emotion regulation. For example, one may decide not to engage in emotion regulation (when it would be helpful) because one believes that emotions cannot be controlled, or because one possesses a low degree of regulatory self-efficacy, as in case of depression, learned helplessness and dependent personality disorders (Abramson, Seligman & Teasdale, 1978). Finally, identification stage problems may be related to motivation, values and goals. For example, one may not be sufficiently motivated to engage in active emotion regulation because one has other simultaneous goals that conflict with one’s desire to change one’s emotions. This might be the case if an individual identifies with a particular psychological disorder (Cruwys & Gunaseelan, 2016), or if one believes in the utility or certain negative emotions like worry and anger (Tsai et al., 2007). Other research indicates that self-esteem can also interfere with the motivation to engage in emotion regulation because people with low self-esteem are often less motivated to repair
negative moods (Heimpel, Wood, Marshall, & Brown, 2002), and may even feel undeserving of positive emotional experiences (Wood, Heimpel, Manwell, & Whittington, 2009).

**4.4 Selection (Choosing a Regulation Strategy)**

The second stage of the extended process model requires choosing an appropriate emotion regulation strategy. Successfully navigating the *selection* stage requires selecting effective and adaptive strategies, which are flexible, suited to the specific context, and consistent with an individual’s short and long-term goals (Bonanno & Burton, 2013; Wermer & Gross, 2009). These strategies can be broadly divided into the five emotion regulation categories presented in the process model – each category containing a range of strategies with divergent consequences for emotion regulation, interpersonal functioning, and psychological health (see Chapter 4 for a review). Given that some emotion regulation strategies have clearly more adaptive profiles than others, what then influences the strategies people *choose*? To date there is limited research addressing this question, but some key factors appear to include: contextual variables such as the type and strength of the emotional impulse (Raio, Orederu, Palazzolo, Shurick, & Phelps, 2013; Sheppes & Gross, 2011), available cognitive (Urry & Gross, 2010) and physiological resources (Baumeister & Vohs, 2007; Beedie & Lane, 2012), and an individual’s personal values, beliefs and goals (Bandura, 1977; 1997; 2001 Ozer & Bandura, 1990). This section examines these variables in-turn.

The first factor that may influence strategy selection is the type and intensity of an emotional response. Research indicates that people regulate their emotions differently if they are exposed to something mildly upsetting (e.g., conversing with a irritable doctor in
a hospital) compared to something extremely upsetting (e.g., seeing a gruesomely injured patient being wheeled into the emergency room). Sheppes, Scheibe, Suri and Gross (2011) argue that early stage emotion regulation strategies (like distraction – an attentional deployment strategy) are capable of blocking emotion-related processing quickly before an emotion gathers force and is represented in working memory (see also Sheppes & Meiran, 2007; 2008). Later-stage cognitive strategies by contrast (like reappraisal – a cognitive regulation strategy) allow emotion-related processing, evaluation, and remembering – which have adaptive benefits for long-term goals and adaptation (Wilson & Gilbert, 2008 for a review), but also require greater cognitive effort and increased exposure to the emotional stimuli.

Across a series of studies Sheppes and colleagues demonstrated that when given a choice between different emotion regulation strategies, people’s strategy preferences vary depending on the intensity of the emotion being regulated (Sheppes, Scheibe, Suri, & Gross, 2011; Sheppes et al., 2014). In their research, participants were trained in using distraction and cognitive reappraisal to regulate their emotions and were asked to choose (and indicate with a button press) the strategy they believed would be most effective in the present moment. The authors found that across multiple experimental studies, using different stimuli (e.g., viewing distressing images and receiving electric shocks), people showed a preference for cognitive reappraisal in low-intensity negative situations (e.g., a mild electric shock or viewing a woman looking sad nursing her head in her hands), and a preference for distraction in high-intensity negative situations (e.g., a strong electric shock or viewing a female war victim with blood on her face) (Sheppes, Scheibe, Suri, & Gross, 2011; Sheppes et al., 2014). These findings held even when participants were offered a monetary reinforcement to engage in a counter preference regulatory strategy (Sheppes et
al., 2014). They were also replicated in two studies using electroencephalogram (EEG) and event related potentials (ERPs) indicating that distraction and reappraisal intervene at separate stages during emotion generation and have distinct consequences depending on the type and intensity of the emotional response (Blechert, Sheppes, Di Tella, Williams, & Gross, 2012; Thiruchselvam, Blechert, Sheppes, Rydstrom, & Gross, 2011).

A second factor that appears to influence emotion regulation choice is an individual’s available internal and external resources (Baumeister & Vohs, 2007; Beedie & Lane, 2012; Urry & Gross, 2010). In some cases, *situation selection or modification* strategies may not be available (e.g., when one needs to go to work despite *really* disliking one’s job). In these cases, one may be forced to find alternative ways to regulate one’s emotions (e.g., mentally checking out or daydreaming about a holiday (*attention regulation*) or comparing one’s work situation to someone less fortunate (*cognitive change*)). In other settings, *situational strategies* like avoidance (e.g., of cleaning the toilet) may be easier and require less cognitive effort than using internal *attentional* or *cognitive change* strategies (e.g., cleaning the toilet while distracting oneself (*attention regulation*); or trying to think about the situation in a way that makes it feel less unpleasant (*cognitive change*). The selection of specific strategies may also be influenced by effort required to use specific strategies and the availability of internal resources. For example, one might be less inclined to select reappraisal or perspective taking during a conflict with a spouse, if one is half-asleep or otherwise exhausted. Indeed, Sheppes and Meiran (2008) demonstrated that some strategies (like reappraisal) require more cognitive effort than others. In their experimental study, the authors instructed participants to reappraise or distract themselves part way through watching a sad film. They found that reappraisal consumed greater resources than distraction, as indicated by a relatively
poorer performance on a subsequent stroop test (Sheppes & Meiran, 2008). Research on ego depletion (Baumeister & Vohs, 2007; Baumeister, Bratslavsky, Muraven & Tice, 1998; Beedie & Lane, 2012) indicates that internal regulatory strategies also rely upon physical energy stores and when depleted this can make subsequent effortful regulation more difficult. In a series of studies, Baumeister and colleagues had participants engage in self-regulation (e.g., eating radishes instead of tempting chocolates) or an act of choice (e.g., choosing between a pro- or counter-attitudinal speech task). They then examined participants’ ability to regulate their emotions and make responsible decisions during a frustrating puzzle task. Results indicated that prior self-regulation, and even the act of “choosing,” impaired subsequent regulation, self-control, and decision-making ability (Baumeister et al., 1998). More recent research has found similar ego depletion effects and working memory impairments under conditions that lead people to believe they are physically fatigued (Clarkson et al., 2010), or when exposed to a surplus of consumer choices (Hofmann, Strack & Deutsch, 2008; Schmeichel, Vohs and Baumeister, 2003). Finally, in another study, dieters (who were already cognitively depleted from regulating their food choices) were required to suppress their emotional reactions while watching a film. After the doing so, they experienced more ego depletion than those who were not asked to suppress their emotions and ate significantly more ice cream in a subsequent taste-test (Vohs & Heatherton, 2000). This last study demonstrates that even prior emotion regulation may impact one’s ability to engage in subsequent regulatory efforts if the strategies are effortful and ego depleting. Evidence for ego depletion in meta-analytic studies however, is mixed with results suggesting moderate to large effect sizes ($d = .6$) in some studies (Hagger, Wood, Stiff & Chatzisarantis, 2010) and small ($d = .2$) or non-significant effect sizes in others (Carter & McCullough, 2014). Nonetheless, it appears
that different emotion regulation strategies require different degrees of effortful engagement (and this may also be particularly true when one is utilizing a new or unfamiliar strategy). In addition to identifying, selecting and implementing a cognitively complex strategy (like reappraisal), individuals may need to simultaneously override strong default preferences for more habitual (and in some cases, less adaptive) forms of emotion regulation (Gross & John, 2003).

A third factor that may influence the selection of emotion regulation strategies is an individual’s unique preferences and habits (Gross & John, 2003; Wood & Neal, 2007) as well as their beliefs, values and goals (Bandura, 1997; Bandura, Caprara et al., 2003). Imagine, for example, encountering a snake on a hike. If you were afraid of snakes, you might select an early phase emotion regulation strategy like avoidance (slowly backing away and turning around) or distraction (standing still and closing your eyes, thinking about something else until the snake disappears). However, your selected strategy might also depend on contextual factors and personal goals (maybe you are on a date and decide it is more important to suppress your fear of snakes so as not to appear cowardly!). Alternatively, if encountering snakes will likely be a frequent occurrence (you just moved to a location overrun with snakes, or started a job that involved coming into contact with them), avoidance and distraction might conflict with other active goals (like the freedom to go where you choose, or your ability to be effective in your job). For emotional stimuli like this, that are encountered repeatedly, it may be preferable to select a later stage regulation strategy like reappraisal (maybe you proceed carefully to walk around the snake while reassuring yourself that the species is harmless; or problem-solve the situation by picking up a stick to make noise and scare the snake away). Because reappraisal and problem solving allow for deeper cognitive processing, these strategies
could be preferentially selected in the service of gradual adaption and their potential to reduce fear over time (Wilson & Gilbert, 2008; Blechert et al., 2012).

Emotion regulation goals can also influence emotion regulation efforts in maladaptive ways. In one study, Millgram, Joormann, Huppert & Tamir (2015) found that clinically depressed participants chose to regulate their emotions in a direction that was more likely to maintain or increase their existing levels of sadness. This was true both with regards to strategies involving situation selection (choosing to view sad images and listen to sad music) and with regards to strategies involving cognitive reappraisal (choosing to increase their reactions to sad pictures despite training in cognitive reappraisal). These findings indicate that even when one is able to successfully identify and implement emotion regulation strategies, one’s goals can lead them astray.

In addition to these contextual factors, a person’s perceived self-efficacy for meeting situational demands and engaging various emotion regulation strategies will also affect the strategy they choose. If, for example, you have a severe phobia of snakes (and believe there is nothing you can do to manage this fear), you might resort to extreme situational avoidance of snakes and hiking all together – a strategy that also reinforces phobic tendencies by preventing exposure to feared stimuli (Bandura, 1977; 1997; Ozer & Bandura, 1990). Bandura (1997) explains that people typically avoid activities and situations they believe exceed their coping capabilities, but readily undertake activities and select environments they judge themselves capable of handling (Bandura, 1997; Ozer & Bandura, 1990). In this way, self-efficacy for using specific emotion regulation strategies will likely also influence which ones are selected.
Finally, research by Gross and John (2003) indicates that there are consistent individual differences in habitual preferences for certain emotion regulation strategies across situations (some people are just more likely to use reappraisal in situations like the one described above, while others are more likely to use suppression or avoidance). And, in some cases this is also associated with gender and demographic variables, with men being significantly more likely to suppress their emotions than women, and ethnic minorities in America being more likely to suppress their emotions more than European Americans (Gross & John, 2003).

There is clearly considerable variation in the kinds of emotion regulation strategies people choose to use on a daily basis, and any given strategy can be adaptive or maladaptive depending on the context (Aldo & Nolen-Hoeksema, 2012). For example, distracting oneself by ‘closing one’s eyes’ might prove to be an effective strategy for mitigating negative emotions during a gruesome horror film, but the same strategy would prove dangerously incompetent for a doctor conducting surgery. The many competing factors that influence strategy selection make choosing the ‘right’ strategy all the more difficult. Perhaps this is why many emotion regulation problems and clinical disorders are due to failures in strategy selection (Sheppes, Suri & Gross, 2015). While there are many ways to ‘select’ the wrong strategy, most often difficulties at the selection phase appear to be due to narrow and ‘inflexible’ strategy choice, maladaptive emotion-regulation goals and values, and problems related to beliefs about emotion regulation and regulatory self-efficacy.

Many selection stage problems are characterized by a reliance on narrow and ‘inflexible’ emotion regulation strategies (Aldao, Sheppes & Gross, 2015; Bonanno &
Burton, 2013; Kashdan & Rottenberg, 2010) – for example, a reliance on habitual regulation preferences like suppression, despite alternative strategies (like reappraisal) being more adaptive or better suited to the specific context (Gross & John, 2003). In some cases, inflexible strategy selection is the consequence of a person “seeing” only a few strategies to choose from, perhaps because they only have a few in their repertoire (due to overreliance on specific strategies), or because they are unable to accurately represent or recall other available strategies in the present moment (Gross, 2015). Suicidal ideation and non-suicidal self-injury are clear examples of maladaptive strategies that individuals may turn to if they believe there are no adequate alternative options for managing states of hopelessness, fear or depression. Other maladaptive “escape-based” emotion regulation responses like substance use and abuse, binge eating, and certain compulsive behaviours may also represent habit-based maladaptive methods for regulating emotions in the absence of other more adaptive options.

In addition to problems with flexibility, selection stage difficulties can also be characterised by maladaptive emotion-regulation goals. For example, during a manic state, someone with bipolar I disorder may find themselves selecting strategies that further up-regulate positive emotions rather than selecting strategies for down-regulating their euphoria, despite the longer-term consequences of doing so (Gruber, 2011; Meyer, Johnson, & Winters, 2001; Werner & Gross, 2009). Emotion regulation goals can also represent a point of failure when immediate or short-term benefits (e.g., relief in avoiding social gatherings for a person with social phobia) interfere with an individual’s longer-term goals (e.g., making friends and overcoming social fears). This is particularly common with reliance on cognitive and behavioural avoidance strategies as they provide
immediate relief typically at long-term expense (Elliot et al., 2012; Gross 1998; Gross &

Finally, individuals may lack sufficient regulatory self-efficacy or belief in their
ability to utilize specific emotion regulation strategies (Goldin et al., 2012; Tamir & Maus,
2011). Research indicates that low emotion regulation self-efficacy is a strong predictor
of maladaptive, phobic, and avoidance-based emotion regulation (Bandura, 1997; Ozer &
Bandura, 1990) as well as experiential avoidance – avoidance of unwanted inner
experiences including emotions, thoughts and memories (Bardeen, Fergus, & Orcutt,
2013; Gratz & Roemer, 2004). Selection stage difficulties can also be apparent in
conditions like post-traumatic-stress disorder where low emotion regulation self-efficacy
pre-disposes individuals towards maladaptive experiential avoidance (Andrews et al.,
2013; Hayes et al., 1996). In addition to predisposing one to avoidance-based strategies,
self-efficacy beliefs also predict reduced use of adaptive strategies like cognitive
reappraisal (Tamir et al., 2007). Tamir et al. (2007) for example, found that when people
held low emotion regulation self-efficacy (judging themselves poorly able to manage their
emotions in 10 emotion-eliciting scenarios), they were also less likely to use active
cognitive strategies like reappraisal. Tamir and Mauss (2011) explain that even if an
individual identifies the need to regulate their emotions, they may not select the most
appropriate strategy if they lack confidence in that strategy or in their ability to implement
it effectively – this point will be address in more detail in Chapters 6 and 7.

4.5 Implementation (Executing and Monitoring a Strategy)

The third stage of the extended process model involves implementing a strategy.
Successfully navigating the implementation stage requires being able to effectively

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initiate a regulatory strategy, use the strategy effectively and at the appropriate time, maintain regulation efforts, and know when it is necessary to stop using the strategy or to switch to an alternative. The effectiveness of the emotion regulation effort relies upon successful implementation, and points of failure at this stage make prior efforts (strategy identification and selection) fruitless. Gross (2015) explains that the implementation stage represents particularly fertile soil for difficulties with emotion regulation. These areas of difficulties can broadly be categorized as: 1) problems related to the type of emotion, the stimuli and its intensity; 2) individual difference in regulation skill; and 3) contextual factors or factors related to strategy use.

First, research indicates that some emotions and some kinds of stimuli are simply harder to regulate than others. Research by Sheppes et al. (Sheppes & Meiran, 2007; Sheppes & Gross, 2011; Sheppes et al., 2014) found that emotion regulation is more difficult at later stages of the emotion generation process – when emotions are intense and have gathered force. This makes intuitive sense, as most people are familiar with the difficulty involved in regulating powerful emotions (anger or anxiety) once they are in full swing. However, it also points to the importance of timing in strategy implementation and explains why some regulation efforts fail even when an individual identifies and selects an adaptive response. In recent meta-analysis of 306 experimental studies on emotion regulation, Webb et al. (2012) found that, in addition to emotional intensity, regulation is effected by emotion type: across emotion regulation strategies, people were more successful at regulating sadness (B = .29, p < .01) and positive emotions like amusement (B = .29, p < .01), than they were at regulating neutral or negative emotions like anxiety, anger and disgust. The authors also found that people were better able to regulate their emotions in response to seeing pictures and films, but were less effective at
implementing regulation strategies in response to failure feedback (Webb et al., 2012). The authors suggest that effectively executing an emotion regulation strategy may therefore depend on how frequently certain emotions are encountered, how often certain strategies are used, and may become all the more difficult when an emotional stimulus contains self-referential information (Webb et al., 2012).

Second, difficulties with the implementation phase can also arise as a product of individual differences in emotion regulation skills and abilities, or because of limited availability of specific resources. For example, when compared to healthy control subjects, individuals with bipolar disorder report being less successful implementing adaptive emotion regulation strategies like cognitive reappraisal (Gruber, Harvey & Gross, 2012). This is true even when people with bipolar disorder exert greater engagement in regulatory efforts and report more frequently using cognitive reappraisal in daily life (Gruber, Harvey & Gross, 2012). In community samples, Troy, Wilhelm, Shallcross and Mauss (2010) also found that self-reported use of cognitive reappraisal was not related to participants’ actual reappraisal ability – as measured in a multi-method laboratory procedure involving real-time behavioural challenges. In their research, they found that some people were more effective at using reappraisal than others, and effective reappraisers were also able to implement the strategy across a wide range of stressor types. Compared to those with lower levels of reappraisal ability (and similarly high levels of stress), people who were skilled in reappraisal experienced fewer depressive symptoms (Troy et al., 2010). Other research comparing ‘good’ and ‘bad’ emotion regulators found that most people are able to achieve positive and negative mood states. However, for people with ‘poor’ regulation ability, implementing regulation strategies depleted blood glucose levels and came at a cost to self-regulatory resources (Niven, Totterdell, Miles,
Webb and Sheeran, 2013). These findings are consistent with the reported effort and limited effectiveness of strategy implementation seen in patients with bipolar disorder (Gruber, Harvey & Gross, 2012). Niven et al. (2013) explain that ‘good regulators’ may develop more efficient and automatic methods of regulating emotions, where ‘poor regulators’ need to devote more conscious effort to implementing the same strategies. Ultimately, this is good news for individuals with poor emotion regulation ability as it suggests that with practice these behaviours may become more efficient over time (Ouellette & Wood, 1998).

Finally, difficulties with implementing a regulation strategy can arise due to a range of contextual factors. For example, one might fail at successfully implementing a regulation strategy if one is unable to sustain the necessary regulation efforts for a sufficient amount of time (in response to a child’s repeated nagging requests), or if one is unable to shield one’s regulation goals from other competing goals (like staying away from the left-over chocolate cake in the fridge!). On the other hand, difficulties can also arise if one persists longer than necessary with a strategy that is no longer effective (for example, when planning and thinking about a job interview becomes so ruminative and rehearsed it leads to anxiety and makes the social interaction awkward and unnatural). Finally, difficulties can arise in the implementation stage if there is a failure in strategy ‘switching’ (the ability to use an alternative strategy when one is no longer working), or if the strategy is not appropriately suited to the context (such as using distraction during a conversation, which leaves the other person feeling ignored). There is clearly a wide variety of factors that affect whether or not an emotion regulation strategy is implemented successfully. When implementation problems are persistent, regulatory failures can have a significant negative impact on long-term psychological health.
Many clinical problems can be characterized by failures at the implementation stage. For example, attention-deficit/hyperactivity disorder (ADHD) – which involves impaired ability to focus and sustain attention – is an example of a condition in which engaging and sustaining regulatory efforts may be difficult (if not significantly impaired) (Barkley, 1997; Sheppes, Suri & Gross, 2015). Rumination in depression (Aker, Hammer & Landro, 2014; Joorman et al. 2011), and worry in generalized anxiety disorder (Newman, Llera, Erickson, Przeworski & Catonquay, 2013) by contrast, are examples of an inability to disengage cognitive processes when they are no longer adaptive or effective. Research also indicates that individuals with generalized anxiety disorder often believe that worry is uncontrollable (Wells, 2005) or that it is productive, beneficial or indicative of good character (Dugas & Koerner, 2005) – beliefs that may lead to individuals implementing and persisting with this strategy far beyond the point where it ceases to be beneficial. Other clinical disorders like substance use have been linked with limited cognitive resources for self-control which, when depleted, lead to poorer regulation of alcohol intake (Muraven, Collins, Shiffman & Paty, 2005). Depression is also associated with cognitive impairments including an impaired ability to use certain strategies (like cognitive reappraisal) or a tendency to give up too early due to a perceived lack of self-efficacy and control (Joormann et al., 2007). In research by Joormann and colleagues (Joormann & Siemer, 2004; Joormann et al., 2007), clinically depressed individuals displayed impairments in working memory and the ability to recall happy memories to repair depressed mood states. This impairment even persisted after clinical recovery (Joormann & Siemer, 2004; Joormann et al., 2007). Another example of cognitive impairments that affect strategy implementation is the wide variety of attentional biases present in many anxiety disorders (social anxiety, generalized anxiety,
phobias and post-traumatic stress disorders; see Barry, Vervliet & Hermans, 2015 for a review). Still other clinical conditions, like borderline personality disorder, are characterized by impaired ability to implement adaptive emotion regulation strategies and a reliance on maladaptive regulation strategies instead (see Carpenter & Trull, 2013 for a review). Finally, impairments in the ability to switch to an alternative regulation strategy are also apparent in several forms of psychopathology including anxiety and depression (Kato, 2012).

Emotion regulation is difficult. It is clear that there is no shortage of reasons why this is the case. To regulate emotions effectively one needs to be able to identify, select and implement the right strategy, for the right context, in the right way, at the right time. This requires having accurate emotional awareness, clear and appropriate values and goals, the ability to select effective and adaptive strategies which are flexible, suited to the context and consistent with one’s goals, and it requires the necessary skills, timing, and resources to implement the strategy effectively. In the above review one variable that emerged repeatedly, playing a role in all three stages of emotion regulation (identification, selection and implementation), was an individual’s belief in the utility of emotion regulation and in their beliefs about their personal ability to regulate their emotions effectively. These beliefs have, to date, received limited attention in research on emotions regulation and serve as a point of focus for the current thesis. Chapter 6 examines how these beliefs might unfold and influence emotion regulation efforts at each stage of the regulation process. But, first it is necessary to examine research on beliefs and their impact on motivation, self-regulation and psychological health. This next chapter begins with a review of the literature on beliefs about the malleability of certain attributes otherwise, known as implicit theories.
5. IMPLICIT THEORIES

5.1 Implicit Theories of Across Domains

Research indicates that people hold implicit beliefs about the fixed or malleable nature of a wide range of abilities and traits including: intelligence (Blackwell, Trzesniewski, & Dweck, 2007; Robins & Pals, 2002), personality (Erdley, Cain, Loomis, Dumas-Hines, & Dweck, 1997), athletic ability (Ommundsen, 2001), chronic pain (Higgins, Bailey, LaChapelle, Harman, & Hadjistavropoulos, 2014); relationships (Knee, Nanayakkara, Vietor, Neighbors, & Patrick, 2001), and even one’s morality or the nature of the world in general (Chiu, Dweck, Tong, & Fu, 1997; Chiu, Hong, & Dweck, 1997). Compared to incremental theorists (who believe in the potential for change), people holding entity theories typically believe in the fixed, unchanging nature of these attributes and traits.

There is a great deal of theoretical and empirical support for the impact of implicit theories on self-regulation, motivation, social, and emotional functioning (Blackwell et al., 2007; Dweck, 1999; Robins & Pals, 2002). When students hold an entity theory of intelligence for example, believing intelligence to be fixed, they frequently become more concerned with demonstrating their ‘fixed’ level of ability. These students are quicker to make low-ability, helpless attributions when faced with failure (Hong, Chiu, Dweck, Lin, & Wan, 1999), and are more likely to shun opportunities for learning (Hong et al., 1999). This response to setbacks makes them particularly vulnerable to negative feedback and criticism, prone to disengagement, and at greater risk of declining academic performance.
over time (Blackwell et al., 2007; Hong et al., 1999; Mangels, 2006; Robins & Pals, 2002).

Entity theorists also often make global positive and negative trait judgments about people based on their actions and are also more likely to blame or condemn these personal qualities when they or others encounter setbacks (Chiu, Hong, et al., 1997; Gervey, Chiu, Hong, & Dweck, 1999). Because entity theorists believe their weaknesses cannot easily be improved, they are more likely to view their performance as providing definitive and diagnostic information about their abilities. Poor performance is thus interpreted as a reflection of a permanent lack of intelligence or skill. These global, stable attributions for setbacks are important mediators of students’ subsequent reactions and are consistently associated with helpless patterns of behaviour and disengagement (Diener & Dweck, 1980; Dweck, 1975), and promote maladaptive self-regulation strategies including self-handicapping behaviour, helplessness and defensive pessimism (Hong et al., 1999; Ommundsen, Haugen, & Lund, 2005; Rhodewalt, 2006). It is not surprising then, that entity theorists (compared to incremental theorists) display poorer overall coping strategies under stress (Doron, Stephan, Boiché, & Le Scanff, 2009), exhibit reduced self-esteem (Rhodewalt, 2006) and are susceptible to greater negative affect over time (Tamir, John, Srivastava, & Gross, 2007).

In contrast, the belief that abilities are malleable (an incremental theory) typically orients people towards ‘growing’ their abilities. These people gravitate towards challenges and are more likely to attribute setbacks to their own efforts or strategies (Hong et al., 1999). Because they believe abilities are things which can be cultivated, incremental theorists are also less defensive about their shortcomings and show greater
engagement, persistence, and resilience in the face of setbacks with a focus on learning from their mistakes (Hong et al., 1999; Mangels, 2006). In this way, implicit theories set up complex ‘meaning systems’ associated with goals, attributions and behaviour that collectively impact motivation, self-regulation, and emotional functioning. Implicit theories are not always consciously held (Dweck, 1999), however, they are measured using self-report scales and are, therefore, distinct from measures designed to assess implicit or automatic associations (e.g., as with the implicit-association-test or IAT; Greenwald, McGhee, & Schwartz, 1998). Decades of research indicate that these beliefs have important implications for self-regulation and achievement as well as social and emotional functioning. The following chapter reviews research on implicit theories, starting with the earliest work on implicit theories of intelligence.

5.2 Implicit Theories of Intelligence

Achievement and motivation and self-regulation have a long history of research in the field of psychology (Atkinson, 1957, 1978; Dweck & Wortman, 1982; McClelland, Atkinson, Clark & Lowell, 1953). Over the last four decades, much of this work has focused on achievement goals (Ames & Archer, 1988; Elliot & Dweck, 1988; Elliot & Church, 1997), attributions (Ames, 1984; Weiner & Kukla, 1970; Wilson & Linville, 1985) and their impact on motivation and performance. But the goals people set for themselves and the attributions they make for their performance may stem in important ways from the beliefs they hold about the nature of intelligence. According to work by Dweck and colleagues (Dweck & Leggett, 1988; See Dweck, 1999 for a review), students typically view intelligence in one of two ways: Some believe it to be more of a fixed unchanging ‘entity’, perhaps something genetically determined or inherited (entity
beliefs); while others regard it more as something that is malleable and subject to change (incremental beliefs).

One of the key ways that implicit theories of intelligence have been found to affect achievement and motivation is by orienting students towards different kinds of goals. Research has shown, for example, that when students believe their intelligence or academic ability is fixed, they become concerned with pursuing performance goals, which focus on obtaining approval and displaying one’s existing level of competence or avoiding a display of incompetence (Chen, & Pajares, 2010; Elliot & Dweck, 1988; Bempechat, London & Dweck, 1991; Blackwell et al, 2007; Cury, Elliot, Da Fonseca & Moller, 2006; Dweck & Legget, 1988; Robins & Pals, 2002). As a consequence, these students often select less challenging or somewhat familiar tasks and report a preference for getting a “good grade” over “being challenged” (Blackwell, 2002). By contrast when students hold an incremental theory, believing their intelligence is malleable, they become more concerned with pursuing learning or mastery goals, which focus on growing one’s abilities. As a consequence, these students often select tasks that will enable them to learn and improve even if it means being faced with short-term confusion and mistakes (Blackwell 2002; Hong et al., 1999). This differential goal preference is apparent even when controlling for students’ prior level of ability and has been demonstrated both in experimental studies and real-world settings (Blackwell et al., 2007; Robins & Pals, 2002).

In addition to influencing students’ goal orientations, implicit theories can affect students’ beliefs about effort and the way they make sense of their difficulties in school. For entity theorists, the belief that intelligence is fixed suggests that academic outcomes can provide definitive information about one’s abilities. Poor performance is thus
interpreted as a reflection of one’s permanent lack of intelligence or skill. These global, stable attributions for setbacks are important mediators of students’ subsequent reactions and are consistently associated with helpless patterns of behaviour and disengagement (Diener & Dweck, 1978; 1980; Dweck, 1975). Research looking at implicit theories and attributions has found that across studies, entity theorists more readily attribute poor performance to a lack of ability, that is, they are quick to make helpless attributions for their failures (Blackwell et al., 2007; Hong, Chiu, Dweck, Lin & Wan, 1999). Incremental theorists by contrast, are less perturbed by failures and setbacks as these events reflect on effort or strategy and provide valuable information about how to improve. For this reason, they are more likely to pursue remedial action aimed at improving future performance (Hong et al., 1999).

5.3 Implicit Theories – The Research Evidence

Given the relationship between implicit theories, achievement goals and attributions, it is not surprising that implicit theories hold important consequences for motivation and academic performance. In both correlational and experimental studies, an incremental theory of intelligence predicts higher performance on standardized tests (Curry, Da Fonseca, Zahn & Elliot, 2008; Cury, Elliot, Da Fonseca & Moller, 2006; Good, et al., 2003) as well as grade differences in middle school (Blackwell et al., 2007; Stipek & Gralinski, 1996), and college (Aronson et al., 2002). The causal relationship between implicit theories and achievement has also been demonstrated in interventions that teach an incremental theory to students. In one study, Blackwell et al. (2007) ran an intervention over 8 weeks that taught either an incremental theory or study skills to seventh grade students. While all students showed a downward trend in grades prior to the
intervention, this decline was reversed for students who had received the 8-week incremental theory workshop. Students in the experimental condition were also three times more likely to be cited by their teachers (blind to the experimental and control conditions) as showing positive changes in classroom motivation. The impact of implicit theory interventions has also been documented in studies specifically targeting the negative impact of stereotype threat – underperformance among individuals who belong to negatively stereotyped groups (Aronson et al., 2002; Good, et al., 2003). In these studies, an incremental theory message was reinforced through pen pal letter-writing tasks (Aronson et al., 2002) and/or in discussions with college-aged mentors (Good et al, 2003). In both contexts, students who were exposed to the incremental theory message earned significantly higher achievement at follow-up as seen in their end of term GPAs or overall performance on statewide-standardized tests.

In addition to affecting students’ goals, attributions and academic achievement, the beliefs students’ hold about the mutability of intelligence may also lead to self-protective behaviour and student disengagement. When students believe their intelligence is fixed and feel threatened by the prospect of poor performance, they may seek to deflect the causes of failure away from their ‘fixed’ level of ability onto a premeditated excuse should failure occur. In academic contexts, these ‘self-handicapping’ strategies can include the adoption of any impediment or obstacle to successful performance (Jones & Berglas, 1978). These include the strategic reduction of effort, procrastination, feigning sickness, or the choice of other performance debilitating circumstances. Not surprisingly, in an attempt to distance themselves from failure, students often bring about the failure that they are trying to avoid. Ironically, this can confirm doubts about ability and further perpetuate defensive behaviour (Nurmi, Aunola, Salmela-Aro, & Lindroos, 2003).
Through a cascading effect, entity beliefs about intelligence may then ultimately lead to more serious problems such as truancy and disengagement from school altogether.

While there is limited research in this area, there is some evidence linking an entity theory with self-handicapping among college students. Early work by Rhodewalt (1994) found that high self-handicappers are generally more likely to hold entity beliefs about their abilities in academic, athletic and social domains. Entity beliefs about intelligence have also been linked with procrastination (Howell & Buro, 2009); reduced practice prior to tests (Cury, Da Fonseca, Zahn & Elliot, 2008); poorer coping strategies under stress (Doron, Yannick, Boiche & Le Scanff, 2009); and disengagement from math as a career path (Priess-Groben & Shibley Hyde, 2016) particularly for women (Burkley, Parker, Stermer & Burkley, 2010). These findings suggest implicit theories may also be a key factor in explaining poor academic self-regulation, self-handicapping and student disengagement.

5.4 Implicit Theories of Emotions

Building on a large body of work on implicit theories, researchers have recently begun examining implicit beliefs about the fixed or malleable nature of emotions (Tamir, John, Srivastava & Gross, 2007). People holding entity beliefs about emotions more readily agree that, “people can’t really change the emotions they have.” People holding incremental beliefs, on the other hand, view emotions as malleable and more readily believe that “everyone can learn to control their emotions.”

In the first reported study on implicit theories of emotions, Tamir et al. (2007) found that these beliefs have important consequences for students during the transition to
college. In a longitudinal study with 437 Stanford undergraduate students, Tamir et al. (2007) assessed implicit theories of emotions, emotional and social adjustment prior to, and throughout, their first year of study at Stanford University. Emotion regulation was assessed by asking students to read and rate how confident they were that they could control their emotions in 10 emotion-eliciting scenarios relevant to university life. The authors also assessed habitual use of certain emotion regulation strategies – cognitive reappraisal and suppression – as well as emotional intensity, positive and negative affect, well-being, social adjustment and depressive symptoms. Students were also asked to complete 10 weekly assessments throughout the term that reported on emotional experience and social support from friends and family. Finally, students rated their peers in terms of positive and negative affect, psychological well-being and depression and these ratings were available for 163 students.

Results revealed that like implicit theories of intelligence, people differed in their implicit beliefs about emotions. The two constructs were only moderately related ($r = .27$), indicating that people clearly hold different implicit theories in these two domains. By the end of the first term, students holding a stronger entity theory of emotions – compared to an incremental theory – reported experiencing fewer positive emotions and more negative emotions throughout the school term (this was also the case after controlling for implicit theories of intelligence). Entity beliefs about emotions were also associated with less perceived social support from friends in the first academic quarter, but were not associated with social supports from parents. In terms of emotion regulation, an entity theory of emotions was associated with poorer emotion regulation self-efficacy and reduced use of cognitive reappraisal in daily life but was not associated with emotional suppression.
At the end of the first year of university, the impact of entity beliefs about emotions was even more apparent. Using mixed linear models and data from the weekly reports, the authors found that entity beliefs about emotions predicted increased negative and decreased positive emotions over the course of 10 weeks. Tamir et al. (2007) also identified a significant time by implicit theories interaction on perceived support from friends: as time went by, students holding entity beliefs reported receiving gradually less and less social support from their peers, but the opposite was true for students holding an incremental theory who reported increasing support from peers over time. Implicit theories of emotion – prior to starting at Stanford – were also correlated with a range of emotional and social outcomes at the end of the first academic year: Initial entity beliefs were associated with decreased positive emotions and poorer social adjustment, as well as increased negative emotions, loneliness and depression. These findings remained when controlling for implicit theories of intelligence. And, in peer ratings, entity theorists were identified as displaying less positive emotions and more negative emotions, poorer adjustment, and increased loneliness and depression when compared to their incremental theory counterparts.

In addition to these findings, Tamir et al. (2007) also found some evidence for the indirect effect of implicit theories of emotion on emotional outcomes (positive and negative emotions, psychological well-being and depression) via emotion regulation self-efficacy. There was no indirect effect, however, for social outcomes (social adjustment and loneliness) and no indication that these outcomes were explained by the use or lack of use of particular emotion regulation strategies (e.g., cognitive reappraisal or suppression). Because the measure of emotion regulation self-efficacy in this study asked students about their general ability to “control their emotions” in various hypothetical emotion-
eliciting scenarios, it raises questions about the difference and overlap between these two constructs: *implicit theories of emotion* and *emotion regulation self-efficacy*. Implicit theories typically reflect broad beliefs about one’s capacity for change, and in this way, differ from self-efficacy beliefs, which assess “current operative capabilities” and “perceived competences” in the present moment, and in highly specific situations (Bandura, 2006). There is however, a significant degree of overlap between these two constructs, and research that indicates self-efficacy beliefs are also extremely important for motivation and self-regulation. In order to understand the differences and points of overlap between *implicit theories* and *self-efficacy*, it is important to examine the construct of self-efficacy in more detail.

### 5.5 Implicit Theories and Self-Efficacy

Self-efficacy beliefs refer to an individual’s belief about his or her own personal capacity to exert control over the events that matter (Bandura, 1997). People with high self-efficacy in a particular domain typically display more effortful, persistent, and resilient coping efforts (Bandura, 1997, 2001). People with low self-efficacy, on the other hand, have little incentive to undertake challenging tasks or persevere in the face of difficulties (Bandura, 1997, 2001). Like implicit theories, efficacy beliefs contribute to the quality of human functioning by influencing cognitive, affective, motivational and decisional processes that support individuals in achieving their goals. Research on self-efficacy also spans a wide range of social, emotional, psychological and performance domains including but not limited to, academic achievement (Bandura, 1997; Honicke & Broadbent, 2016); athletic performance (Moritz, Feltz, Fahrbach, & Mack, 2000); social skills (Moe & Zeiss, 1982); adolescent adjustment (Bandura, Caprara, Barbaranelli,
In the domain of emotions, people with high emotion regulation self-efficacy are typically confident in their ability to ameliorate negative emotional states once they have arisen (e.g., “keep from getting discouraged by strong criticism” or “avoid flying off the handle when you get angry”) (Caprara, Di Giunta, et al., 2008a; 2008b). By contrast, people with low emotion-regulation self-efficacy are not confident about their ability to regulate their negative emotions. Research indicates that when people expect to be unsuccessful at regulating their emotions, they experience more depressive symptoms (Catanzaro & Mearns, 1999), exhibit greater patterns of threat-based cardiovascular reactivity (Blascovich, 2008), and are more likely to appraise these physiological signals in a way that increases negative affect, vigilance for threat cues, and performance impairments (Jamieson, Mendes, & Nock, 2013). Capara et al. (2008b) found that across three countries low emotion-regulation self-efficacy was also associated with poorer adjustment (self-esteem, prosocial behavior and positive affect), as well as higher levels of maladjustment (negative affect, shyness, irritability, aggression, anxiety, and depression). Other research indicates that low emotion regulation self-efficacy predicts anxiety, worry and social avoidance (Tahmassian & Moghadam, 2011), sexual risk-taking behaviors (Valois, Zullig, Kammermann, & Kershner, 2013), as well as depression and delinquency concurrently and longitudinally at three and seven years follow-up studies (Caprara, Fida, et al., 2008b). Finally, Caprara, Di Giunta, Pastorelli and Eisenberg (2013) found that regulatory self-efficacy for specific emotions (e.g., anger, depression, fear,
shame and guilt) also predict outcomes for those specific emotional responses (e.g., low self-efficacy for managing anger predicts irritability, and low self-efficacy for managing guilt predicts need for reparation etc.).

In a recent study, Zelkowitz and Cole (2016) examined the convergent and discriminant validity of seven commonly used emotion regulation, self-efficacy and emotion reactivity measures in three independent samples. Confirmatory factor analysis failed to differentiate between the various instruments and subscales, however exploratory factor analysis revealed three core factors consisting of emotional control, emotional awareness/expression and cognitive strategies for emotion regulation. The authors explain that the first factor (explaining most of the variance across measures) tapped participants’ perceived lack of control over negative emotions, representing “the degree to which a person experiences… emotions so strongly that they are beyond one's ability to regulate” (Zelkowitz & Cole, 2016, p. 127). This research highlights the importance of people’s beliefs about their emotions. It indicates that these beliefs may be even stronger predictors of psychological health outcomes than emotional awareness, expression, and the use of cognitive strategies – processes, which have to date, received much greater attention in the emotion regulation literature.

A review of research on emotion regulation self-efficacy indicates that there are important differences between believing emotional change is possible (implicit theories) and believing personally in one’s ability to change or control one’s emotions (emotion regulation self-efficacy). Given that both these beliefs are important for psychological health, a measure that captures the general and personal nature of these constructs may have significant value in research on emotion regulation (this point will be addressed in
more detail in Chapter 7). For the purpose of the current thesis, the term ‘emotion beliefs’ is used to refer to both kinds of beliefs (general and personal beliefs about emotional control). Chapter 6 will consider why these beliefs are so important for emotion regulation by looking at a number of ways they may impact the identification, selection and implementation of emotion regulation strategies.
6. EMOTION BELIEFS AND EMOTION REGULATION

6.1 Overview

The prior chapters reviewed a significant body of research highlighting important links between emotion beliefs (implicit theories and self-efficacy) and psychological health. However, what is not yet clear is why these beliefs have such important affective and social correlates. Why is perceived control over emotions (or lack thereof) related to so many psychological health problems? One possibility is that emotion beliefs influence emotion regulation efforts – specifically the identification, selection and implementation of effective strategies, which in turn, determine how successful one is at regulating one’s emotions. The following chapter integrates research from these two theoretical perspectives – implicit theories and the process model of emotion regulation – to explain how these beliefs may serve to either help or hinder regulatory efforts.

6.2 Emotion Beliefs at the Identification Stage

According to the extended process model (see Chapter 4), the first stage of the emotion regulation process is identification: deciding to engage in emotion regulation. Not everyone “sees” opportunities for regulation, or believes that it is worthwhile, or for that matter, even possible. At the identification stage, beliefs about emotions may determine how ‘visible’ opportunities for emotion regulation are. Research for example, indicates that incremental theorists focus more on their ‘desired future’ than entity theorists who focus more on ‘current reality’ (Sevincer, Kluge & Oettingen, 2014). In research by Sevincer et al. (2014), entity theorists wrote and elaborated less on their
desired futures (e.g., finding an internship and gaining experience) and more on aspects that stood in the way of them realizing their goals (e.g., limited internship opportunities available, concerns about the interview process). Incremental theorists by contrast were significantly more likely to think about and elaborate on the hoped-for aspects of their desired futures. This was true across domains (academia and sport) and in correlational and experimental research (which manipulated participants’ beliefs about their abilities).

The authors suggest that entity theorists may engage in more ‘reality-focused’ self-regulatory thought where incremental theorists more readily focus on and see opportunities to learn and to expand on their abilities. In the context of emotion regulation, this difference in motivational focus may in-turn influence whether opportunities for regulation are visibly identified and realized.

At the identification stage, when an individual “sees” an opportunity to engage in regulation, beliefs about emotions may also influence whether or not they are motivated to make an attempt. For example, it is unlikely that one will even attempt emotion regulation if one does not believe one’s emotions are controllable, or if one does not believe one can change or control their own. A failure at this early regulation stage might lead to helpless patterns of responding like just “giving up” in the case of depression, or “giving in” to panic in the case of anxiety. A large body of research indicates that entity and incremental theorists do indeed respond very differently when they encounter frustrating challenges or negative feedback (see chapter 5). This research highlights the resilient and mastery-oriented coping strategies that are displayed by incremental theorists (Hong et al., 1999; Robins & Pals, 2002; Diener & Dweck, 1980), and the helplessness patterns of responding displayed by entity theorists (Blackwell et al., 2007; Diener & Dweck, 1980; Dweck, 1975; Hong, Chiu, Dweck, Lin & Wan, 1999; Robins & Pals,
2002), in some cases even self-sabotaging their own efforts (Cury, Da Fonseca, Zahn & Elliot, 2008; Howell & Buro, 2009; Rhodewalt, 1994; Dweck & Leggett 1988).

From a clinical perspective, research on implicit theories is consistent with studies indicating that perceived control plays a key role in anhedonia, learned helplessness (Abramson, Seligman & Teasdale, 1978; Dweck, 1965; Diener & Dweck, 1980), and anxiety (Hofmann, 2005); and is integrally related to neurobiological reward systems (McAulay, McGovern & Cohen, 2014). Other relevant research comes from treatment-focused studies indicating that the belief that change is possible is vital for predicting general treatment response (Arnkoff, Glass & Shapiro, 2002), with positive expectations for change in treatment predicting both rate of change (Price & Anderson, 2011) and treatment outcomes (Chambless, Tran & Glass, 1997) for patients with anxiety and depression (Westra, Arkowitz, & Dozois, 2009). Together this research suggests that entity beliefs about emotions could be associated with regulatory failures at the identification stage – contributing to helpless patterns of responding when emotionally distressed, and even undermining the motivation to seek and engage with treatment.

6.3 Emotion Beliefs at the Strategy Selection Stage

In addition to influencing the decision to engage in emotion regulation, entity beliefs about emotions may impact strategy selection in three key ways: 1) by restricting the range of adaptive strategy options available; 2) by guiding people towards avoidance-based regulation strategies; and 3) by inclining people toward a range of maladaptive strategies for managing negative emotions and emotion-eliciting situations. This section will examine these points in-turn.
6.3.1. Restricted Range of Emotion Regulation Strategies

One of the ways entity beliefs may influence strategy selection, is by expanding or restricting the range of available options for emotion regulation. Bonanno and Burton (2013) argue that a key feature of effective emotion regulation is the ability to select strategies that are appropriate to the shifting nature of contextual demands over time. Similarly, many selection stage problems arise due to a reliance on narrow and ‘inflexible’ emotion regulation strategies that are poorly suited to the specific context or are inconsistent with an individual’s short- and long-term goals (Aldao, Sheppes & Gross, 2015; Bonanno & Burton, 2013; Kashdan & Rottenberg, 2010). At the selection stage, the belief that one has little or no control over one’s emotions may lead one to misrepresent the range of emotion regulation strategies that are available. For example, this might manifest for entity theorists in an over-reliance on external strategies (like situation selection and situation modification). These strategies can be employed to change aspects of an emotion-eliciting situation or scenario, and make sense if one believes the emotional response is less susceptible to change. A reliance on external strategies, however, excludes many adaptive and active internal strategies for regulating emotions (like using attentional deployment and cognitive change), which work more directly with the thoughts, feelings and physical sensations that arise as part of the emotional response. Incremental theorists, on the other hand, may have a wider range of emotion regulation strategies at their disposal drawing upon external and internal strategies deepening on contextual demands. Kneeland et al (2016) for example, argue by promoting emotion regulation flexibility, incremental beliefs about emotions may help buffer individuals against psychopathology by helping them shift flexibly between the different emotion regulation strategies in their repertoire. Having a broad range of strategies available
certainly makes it more likely that one will select strategies that are, by and large, more effective (Webb, Miles & Sheeran, 2012), more appropriate to the type and intensity of an emotional reaction (Sheppes, Scheibe, Suri & Gross, 2011; Sheppes et al., 2014), as well as being better suited to one’s long-term goals (Millgram, Joormann, Huppert & Tamir, 2015), and to the availability internal and external resources (Beedie & Lane, 2012; Urry & Gross, 2010). To date, there is no research directly examining whether implicit beliefs influence regulation strategy range and flexibility. However, some research has pointed to this possibility as an explanation for the greater number of regulation strategies incremental theorists report using (Doron, Stephan, Boiche & Le Scanff, 2009; Schroder, Dawood, Yalch; Donnellan & Moser, 2015).

6.3.2. Approach vs. Avoidance Strategies

Most emotion regulation strategies can be broadly categorized into approach-based and avoidance-based strategies. Approach-based strategies involve an impulse to move towards a situation or stimuli (Harmon-Jones, Harmon-Jones & Price, 2013); while avoidance-based strategies involve avoidance of internal psychological events (Hayes et al, 1996) or of external factors (Werner & Gross, 2010). To date, a great deal of research has examined differences between approach and avoidance strategies and their impact on motivation, emotion regulation and psychological health (Elliot & McGregor, 1999; Elliot & Thrash, 2002; Johnson, Turner & Iwata, 2003; Roth & Cohen, 1986). Yet, while there is evidence for consistent individual differences in approach and avoidance regulation (Elliot & Thrash, 2002; Gabel, Reis & Elliot, 2000; Roth & Cohen, 1986), there has been less work examining how beliefs about emotion might shape these two very different regulatory responses.
At the selection stage, beliefs about emotions may lead people to preferentially select avoidance-based strategies if they believe they cannot change or control their emotions. For example, entity theorists may be more likely than incremental theorists to rely on strategies like *behavioural avoidance* (avoiding an action, person or thing) to prevent exposure to situations that could cause distress. They might also be more likely to engage in *cognitive avoidance* (denying, minimizing, or suppressing thoughts or feelings about an experience) in order to escape from unpleasant bodily sensations, thoughts, memories and emotions. Avoidance strategies like these may provide relief in the short-term, but they can also increase the frequency of unpleasant thoughts, feelings, and sensations (Gross, 1998; 2002; Wegner, 1987; 1994), as well as dampen positive emotions by interfering with one’s ability to be fully immersed in present experience (Gross & Levenson, 1997; Gross & John, 2003; Kashdan, Barrios, Forsyth & Steger, 2006). Chronic use of avoidance is also associated with a range of negative outcomes (Hayes et al., 1996) including feelings of loneliness, inauthenticity, and disconnection (John & Gross, 2004), lower levels of social and emotional support; fewer close relationships with others; and lower levels of life satisfaction and well-being (Gross & John, 2003; John & Gross, 2004). Even across cultures, avoidance goals are significant negative predictors of well-being outcomes (Elliot et al., 2012), and are strongly associated with anxiety and depression (Spielberg, Heller, Silton, Stewart & Miller, 2011). By contrast, people who believe their emotions can be controlled may be more likely to pursue strategies aimed at experiencing positive emotions, and may also be more open to experiencing and working with difficult emotions when they arise. If they believe even negative emotions can be changed or controlled, they may also be less threatened by, and less likely to avoid, potentially distressing emotional situations and stimuli.
To date there is one study that links entity beliefs about emotions with avoidance-based emotion regulation. Kappes and Schikowski (2013) invited 84 female university students to participate in a study about movie perception. The authors measured participants’ implicit theories about emotions and their feelings of discomfort during and after watching a distressing movie clip. They also assessed participants’ self-reported use of experiential avoidance (e.g., distracting themselves during the movie) and situational avoidance (e.g., their interest in watching the same clip again to learn about its ending). Results revealed that entity beliefs about emotions were correlated with increased negative affect after watching the clip ($r = .29$, $p < .01$) and increased cognitive avoidance ($r = .26$, $p < .05$). Finally, the authors report a marginal but non-significant effect for situational avoidance with entity theorists more readily avoiding the distressing clip, choosing instead to watch an uplifting animation rather than learn about the clip’s ending ($r = .21$, $p < .10$). These findings lend some support to the potential links between implicit theories of emotion and the selection of avoidance-based strategies. However, it is not clear from this correlational lab-based study whether implicit beliefs are playing a causal role in strategy selection and the extent to which they influence avoidance in daily life.

### 6.3.3. Adaptive vs. Maladaptive Strategies

A final way in which emotion beliefs may influence the selection of emotion regulation strategies is by inclining people towards more or less adaptive strategies. Chapter 5 reviewed research on different kinds of emotion regulation and findings from several meta-analyses describing the broadly adaptive or maladaptive profiles of certain regulatory strategies. From the perspective of beliefs about emotions, people holding entity beliefs may be forced to turn to maladaptive coping strategies particularly if they
have tendency towards avoidance-based forms of coping, and a restricted range of regulation strategies to choose from. Gross (2008) also predicted that incremental theorists might be more inclined to engage in early ‘antecedent-focused’ emotion regulation strategies like reappraisal which have the potential to influence the developmental course of an emotion before it has fully arisen. Entity theorists, on the other hand, may be more inclined to rely upon later-stage response-focused efforts (like suppression and rumination) to cope with the consequences of an emotional response once it has arisen. From this perspective, one might expect entity theorists to be more likely to turn towards ‘escape’ based coping methods and strategies focused more on symptom management (e.g., medication or substance use).

To date, there is growing research linking entity beliefs with fewer adaptive, and greater maladaptive emotion regulation strategies. In one study, Doron, Stephan, Boiche and Le Scanff (2009) examined how undergraduates’ implicit beliefs about ability were related to the selection of various coping strategies for managing exam-related stress. They found that entity beliefs predicted behavioural disengagement, and were negatively associated with active coping and acceptance. Incremental beliefs, on the other hand, predicted active coping, planning, emotional expression, and social support seeking – a wide range of adaptive strategies for navigating stressful life situations.

In a set of two studies, Howell, Passmore and Holder (2016) examined the associations between implicit beliefs about well-being (e.g., “You have a certain amount of well-being, and you can’t really do much to change it”) and a variety of well-being outcomes and adaptive regulation strategies. In their first correlational study, the authors found that compared to incremental theorists, people holding entity beliefs were
significantly less likely to view a range of adaptive situation selection and situation modification strategies as helpful for well-being. These included: exercise ($r = -.21, p < .01$); recreation ($r = -.24, p < .01$); maintaining good nutrition/diet ($r = -.23, p < .01$); involving oneself in nature ($r = -.23, p < .01$); community service ($r = -.23, p < .01$); maintaining relationships with others ($r = -.25, p < .01$) and involving oneself in religion/spirituality ($r = -.23, p < .01$). The only strategy that was not correlated with well-being beliefs was an attentional deployment strategy – “engaging in relaxation and stress management” ($r = -.13, p > .05$). Across strategy types, Howell et al. (2016) found that participants were also significantly less likely to engage in these strategies in the near future ($r = -.32, p < .01$). In a second experimental study ($n = 123$), Howell et al. (2016) manipulated implicit theories of well-being to examine the causal role of these beliefs. The authors randomly assigned participants to a condition with they read and summarized a short article describing evidence for the ‘fixedness’ (entity condition) or ‘malleability’ (incremental condition) of well-being. The article described the role of well-being interventions, motivational and attitudinal factors in well-being, and changes in well-being with age. Participants then rated their endorsement of, and openness to, the eight adaptive emotion regulation strategies assessed in Study 1. Results indicated a significant difference between conditions for three of the eight variables: exercise ($d = .45, p < .05$); recreation ($d = .54, p < .01$); and time spent in nature ($d = .51, p < .01$). Other strategy means trended in the same direction but were small, marginal, or non-significant. There was also a significant effect across strategy type for the perceived benefits of adaptive strategies ($d = .52, p < .01$), but only a marginal effect for actual intention to engage in adaptive strategies ($d = .38, p = .54$). These findings indicate that implicit theories may influence people’s selection of adaptive or maladaptive strategies by affecting their
beliefs about the kind of strategies that are useful for increasing well-being and psychological health. These findings also indicate that implicit beliefs about well-being can also be changed through psychoeducation – but it is not clear yet whether this translates into emotion regulation strategy selection.

Research explicitly on implicit beliefs about emotions has also linked entity beliefs with reduced self-reported use of adaptive emotion regulation strategies. Much of this work to date has focused on the use of cognitive reappraisal – a widely regarded adaptive emotion regulation strategy (see Chapter 4 and 5). Across several studies, participants holding entity beliefs about their emotions reported reduced frequency of using of cognitive reappraisal in daily life (Tamir et al., 2007; Schroder et al., 2015; Veilleux, Salomaa, Shaver, Zielinski & Pollert, 2015). These findings have also been replicated in experimental research. In a recent study by Kneeland, Nolen-Hoeksema, Dovidio and Gruber (2016a), the authors manipulated participants’ beliefs about their emotions using psychoeducation methods similar to those described above (Howell et al., 2016). Participants were randomly assigned, either to an incremental condition where they read an “emotion is malleable” passage (e.g., “Emotion is not set in stone: it can be changed…”) or to entity condition where they read an “emotion is fixed” passage (“Emotion is set in stone, meaning it cannot be changed…”). They were then given five minutes to summarize the argument as if they were describing it to a peer. After completing the manipulation, participants underwent an impromptu speech task designed to elicit anxiety and completed measures of anxiety and negative affect, as well as measures reporting on their spontaneous use of specific emotion regulation strategies. Results indicated a significant interaction between conditions on reappraisal use. Specifically, participants in the entity condition were significantly less likely to engage in
spontaneous use of cognitive reappraisal when compared to participants in the incremental condition. There were however, no significant differences between conditions in use of other regulation strategies including: expressive suppression, rumination, self-blame, positive refocusing, cognitive suppression and acceptance. The authors suggest that although there appears to be robust effects across studies for the impact of emotion beliefs on cognitive reappraisal, the association with other adaptive and maladaptive strategies remains unclear. Results from a second experimental study by the same authors Kneeland, Nolen-Hoeksema, Dovidio and Gruber (2016b), also yielded mixed results. In this study, participants (n = 169) completed the same experimental manipulation described above, but instead of undergoing a speech task, they completed a negative emotion induction, which involved recalling a personally upsetting memory for five minutes before typing out open-ended descriptions of the upsetting memory. Participants then completed measures of adaptive and maladaptive emotion regulation strategies using the Cognitive Emotion Regulation Questionnaire (CERQ), which included measures of: self-blame, acceptance, rumination, reappraisal, positive refocusing/distraction, and perspective taking. Results indicated that participants in the entity condition were significantly less likely to engage in perspective taking (an adaptive strategy), but they were also less likely to engage in self-blame (a maladaptive strategy) – findings which indicate that in some cases, entity beliefs might be associated with less internal criticism. Interestingly, there were no significant differences between conditions for other emotion regulation strategies (despite means trending in predicted directions). Together these findings indicating that the causal role of emotion beliefs in adaptive strategy selection remains somewhat unclear.
Examining more severe examples of maladaptive emotion regulation, Schroder et al. (2017) recently assessed existing links between entity beliefs about anxiety, stressful life events and the use of a range maladaptive coping strategies in everyday life including: drug use, alcohol use, and motivation to engage in non-suicidal self-injury. The authors also examined the association between implicit beliefs about emotion and clinical symptoms of PTSD and depression. Results indicated that incremental beliefs about anxiety were negatively correlated with all outcomes. Incremental beliefs also moderated the relationship between stressful life events and outcomes, predicting PTSD, depression, drug abuse and non-suicidal self-injury over and above the number of stressful events people had experienced across their lifespan. Alcohol use was the only variable that was not moderated by emotion beliefs because it was not significantly associated with stressful life events.

Finally, in addition to influencing the selection of aforementioned adaptive and maladaptive regulation strategies, implicit beliefs about emotions may influence help seeking behaviour and treatment preferences. In two studies with undergraduates (Study 1, n = 477; Study 2 n = 298) Schroder et al. (2015) examined links between implicit beliefs about emotions, psychological symptoms (anxiety, depression and perfectionism), emotion regulation strategies (reappraisal and suppression), and treatment preferences (no treatment, medication and individual therapy). Participants were asked, “If you struggle or if you were to struggle with mental health problems (e.g., anxiety, depression) and had a choice between individual therapy, medication, or no treatment to help you with your mental health problems, which would you choose?” Results indicated that across both studies, individuals who chose medication over personal therapy were more likely to hold entity beliefs about their emotions (Study 1, d = .26, p < .05; Study 2, d = .82). The
authors suggest that these findings are consistent with research on essentialist beliefs about mental illness – specifically that a perceived lack of control over mental health conditions is associated with a preference for medication and biological treatments (Dar-Nimrod & Heine 2011; Deacon 2013; Easter 2012; Kvaale et al. 2013; Phelan et al. 2006). Together a growing body of research on implicit beliefs indicates that a perceived lack of control over emotions may predispose individuals towards fewer adaptive strategies for managing emotions in day-to-day life.

6.4 Emotion Beliefs at the Implementation and Monitoring Stage

The final stage of the extended process model is the implementation stage. Even if an individual successfully identifies the need to regulate their emotions, is motivated to implement a strategy, and selects an adaptive regulation strategy, regulatory efforts may still fail if the strategy is not implemented effectively. Entity beliefs about emotions could be associated with difficulties in strategy implementation if they lead to: 1) reduced motivation, persistence and resilience with implementing selected strategies, and 2) deficiencies in regulatory skills and abilities. These potential points of failure are examined below:

6.4.1. Motivation, Persistence and Resilience

Becoming skilled at implementing emotion regulation strategies requires practice – practice with applying certain strategies in different settings and contexts, and practice trying out different regulatory strategies in response to the same emotion-eliciting situations. It also requires practice persisting with the same strategies until they prove effective. To take a real-life example, imagine struggling to regulate anxiety over the
results of a recent job interview. Successful regulation might involve repeat attempts at distraction – thinking about anything else each time the familiar fears and thoughts arise; it might involve practicing focused attention – mindfully bringing attention back to the breath, or to sensations in the body. Alternatively, one might try out a range of different kinds of reappraisals – reassuring oneself that “the wait is normal – the interview went well,” or that “there are other options if it doesn’t work out”. Because regulation strategies are rarely a silver bullet, most people will encounter setbacks and regulatory difficulties as they practice, explore and attempt to implement certain strategies. For entity theorists, however, initial setbacks could have more problematic consequences for strategy implementation. If they undermine motivation and persistence, this might result in “giving up” on a selected strategy too soon, or in “giving up” on certain adaptive emotion regulation strategies based on limited unsuccessful past attempts.

Research indicates that sometimes it is when individuals are experiencing psychopathology that they display reduced effort regulating emotions (Kneeland et al., 2016; Kring & Sloan, 2009; Millgram, Joormann, Huppert & Tamir, 2015). This is unfortunate as it may be when effective emotion regulation is needed most! It is not surprising, however, that emotion regulation difficulties serve to undermine the very motivation necessary for effective emotion regulation. People often exert reduced effort and even abandon activities they believe exceed their coping abilities (Bandura, 1997). A perceived lack of control over emotions may, therefore, make entity theorists particularly vulnerable to giving up when it comes to implementing adaptive emotion regulation strategies, especially if initial attempts at regulation are not successful. Because emotion regulation is a skill that requires practice, giving up on strategies too soon could also serve to further perpetuate deficiencies in regulatory skills and ability. To date, there is
limited research examining whether emotion beliefs influence regulatory efforts or persistence. However, there is research on implicit theories in other domains that indicate people holding entity beliefs are more likely to withdraw effort when they encounter failures and setbacks (Hong, Chiu, Dweck, Lin & Wan, 1999), and are more likely to attribute these failures to stable internal attributes (such as a lack of ability or skill) rather than contextual factors (like effort) that allow room for improvement (Hong et al., 1999).

In a series of studies on implicit theories of intelligence, Hong et al. (1999) examined how implicit beliefs influenced students’ responses to setbacks and negative feedback: In Study 1 (n = 97) students received false feedback that they had performed poorly on a test. Compared to incremental theorists, entity theorists were significantly more likely to attribute their poor results to their innate ability, where incremental theorists more readily attributed their results to lack of effort. In Study 2 (n = 168) the intention to take a remedial course in English was moderated by students’ beliefs about their intelligence. Participants with a high level of English ability, were generally less likely than those with a low English ability to sign up for the remedial English course. At low levels of English ability, however, participants were only interested in taking the remedial English course if they also held incremental beliefs about their intelligence. Finally, in Study 3 (n = 60), Hong et al. (1999) manipulated students’ beliefs about intelligence by having them read passages describing intelligence as malleable (incremental condition) or fixed (entity condition). Participants then completed a difficult intelligence test and received fictitious feedback that their performance was either “satisfactory” or “unsatisfactory” based on national standards. After receiving this feedback, they were given the choice between a difficult or an easy task, and a remedial tutorial exercise (that could help them improve on their performance) or an unrelated
activity. Results indicated that participants in the entity condition were significantly less likely than those in the incremental condition to select a difficult task after struggling with the intelligence test ($M_{\text{entity}} = 2.61$ vs. $M_{\text{incremental}} = 4.09$). There was also a significant implicit theory by feedback condition interaction on participants’ interest in the remedial course: most participants in the incremental condition chose to take the remedial course regardless of their level of performance feedback (73% for both groups). For participants in the entity condition, however, those that had received feedback that their performance was “unsatisfactory” were significantly less likely to take the remedial class (13%) than students who received “satisfactory” performance feedback (67%). These results indicate that for entity theorists, a perceived lack of ability can lead to “giving up,” undermining the very motivation needed to improve one’s abilities and skills. This suggests that in some cases, the people who need the most help are the least likely to seek it. In the context of emotion regulation, this may serve to perpetuate existing deficiencies in emotion regulation.

6.4.2 Regulatory Skills and Abilities

In addition to requiring practice and persistence, effective emotion regulation requires skill. Many forms of psychotherapy teach adaptive regulation strategies which can take weeks, months, or even years to master. Examples can be drawn from all stages of the process model including: situation selection and modification strategies like learning to approach feared stimuli (exposure therapy), utilize activity scheduling (behavioural activation) or engage in problem focused coping (stress management). They can include learning attentional deployment strategies like mindfulness mediation, deep breathing, and self-soothing or positive distraction. They can include training in cognitive
regulation strategies like reappraisal, decentering, and hypothesis testing; and they can include cultivating healthier response-focused strategies like exercise, sleep hygiene, social support and emotional expression. Few people are endowed with skills in all regulatory domains, but people who believe they can control their emotions may be more likely to practice the skills necessary for implementing effective regulation strategies. With a wider range of strategies at their disposal, incremental theorists may therefore have greater practice with, and flexibility using, emotion regulation strategies that are appropriate to the context, and consistent with their longer-term personal goals – hallmarks of adaptive emotion regulation (Werner & Gross, 2009). Because many adaptive emotion regulation strategies are learned (as in the examples above), they may also require that individuals are interested in, and receptive to, learning these techniques from colleagues or in coaching, counseling and psychotherapy. Limited research currently exists on emotion beliefs and regulatory skills and abilities. However, research on treatment preferences (see Schroder, 2014), indicates that entity theorists are typically less likely to seek psychological help for emotional difficulties. This may also lead to deficiencies in regulatory skills if it results in limited exposure to the individuals and situations that could assist with skill acquisition.

6.5 Emotion Beliefs and Self-Fulfilling Proficiencies

There is growing research indicating that emotions beliefs are linked to a range of important psychological health outcomes (Kneeland, Dovidio, Joormann & Clark, 2016; Tamir et al., 2007; Tamir & Mauss, 2011), but to date, it is not clear why they have such diverse social and emotional correlates. This chapter has presented theory and research evidence supporting one possible explanation: that emotion beliefs influence
psychological health by affecting the *identification, selection* and *implementation* of effective emotion regulation strategies. As presented in Figure 10 beliefs about emotions may be associated with regulatory problems at multiple stages. At the *identification stage*, entity theorists may less readily “see” opportunities for emotion regulation and may be less motivated to initiate a regulatory attempt. At the *strategy selection stage*, entity theorists may have a restricted range of strategies available – relying largely upon external and antecedent-focused strategies, as well as avoidance to prevent exposure to situations or circumstances that might cause distress. They may also engage in maladaptive and passive coping strategies in response to difficult emotions and symptoms once they have arisen. Finally, at the *implementation and monitoring stage*, entity beliefs may lead to reduced persistence and practice with adaptive regulatory strategies that, in-turn, perpetuate deficiencies in regulatory skills and abilities. And, at each stage of the regulatory process, it takes only one point of failure (represented by the arrow in Figure 10) to thwart an emotion regulation attempt. For entity theorists, failures at regulating emotions can then also serve to confirm a perceived lack of control over emotions – reinforcing this beliefs in self-perpetuating ways. Entity beliefs about emotions may in this way also become self-fulfilling prophecies: a perceived lack of control over emotions leads to emotion regulation difficulties, which then serve to reinforce the belief that one cannot control their emotions.

Incremental beliefs, on the other hand, may lead in many ways to regulatory success (see Figure 11). Perceived control over emotions may increase one’s ability to *identify* opportunities for emotion regulation as well as increasing motivation to engage in regulatory attempts. At the *selection stage*, incremental theorists may also have a wider range of regulatory options available, allowing for greater flexibility in applying strategies
that are best suited to the specific context. Perceived control over emotions may also promote approach-based strategies and active internal emotion regulation that enables individuals to work with difficult emotions when they arise even if the situation or circumstances cannot be changed. Finally, at the implementation stage, with a focus on growing one’s abilities, incremental theorists may be more inclined to practice and persist with regulatory strategies, enabling them to cultivate greater regulatory skills across domains. As with entity beliefs about emotions, these incremental beliefs can also be self-fulfilling: Perceived control over emotions promotes regulatory success, which may in-turn confirm one’s belief that they can control their emotions. This chapter has provided an overview of the ways that emotion beliefs may influence emotion regulation. The next chapter provides a review of concepts and research presented so far and an introduction to the empirical work presented in this thesis.
Figure 10. How Entity Beliefs About Emotions Can Be Self-Fulfilling Prophecies

- **IDENTIFICATION**
  - Inability to "see" opportunities for regulation + lack of motivation

- **SELECTION**
  - Restricted range of strategies + reliance on avoidance and maladaptive ER

- **IMPLEMENTATION/MONITORING**
  - Limited practice with adaptive ER strategies and deficiencies in ER Skills and abilities

- **EMOTION REGULATION FAILURE**

- **ENTITY BELIEFS ABOUT EMOTIONS**
Figure 11. How Incremental Beliefs About Emotions Can Be Self-Fulfilling Prophecies

INCREMENTAL BELIEFS ABOUT EMOTIONS

EMOTION REGULATION SUCCESS
Abilities to "see" opportunities for regulation + motivation

IMPLEMENTATION/ MONITORING
Practice and persistence with adaptive strategies leads to increased skills

SELECTION
Wider range of flexible, adaptive strategies, suited to context and goals
7. INTRODUCTION TO EMPIRICAL STUDIES

7.1 Chapter Summary

The previous chapters (Chapters 1 and 2) reviewed literature on emotion and emotion regulation and explored a variety of definitions and models that have been used to understand emotion regulation processes. Chapter 3 introduced the Process Model of Emotion Regulation – which serves as the guiding framework for the current thesis. It reviewed research on the model’s five categories of regulation strategies in their temporal sequence – situation selection, situation modification, attentional deployment, cognitive change and response modulation – and research on the effectiveness of these different strategies. Chapter 4 sought to address the question: why is emotion regulation so difficult? It introduced the Extended Process Model of Emotion Regulation, and explored variables that influence the identification, selection, and implementation of specific emotion regulation strategies. Chapter 4 also explored points of failure that can arise at each stage and links with psychopathology and psychological health. Chapter 5 introduced work on implicit theories as one variable that may influence adaptive emotion regulation. It presented theoretical and empirical work on implicit theories across domains and reviewed research on implicit theories of intelligence, before introducing recent work on implicit theories of emotion and emotion regulation self-efficacy. Finally, Chapter 6 integrated work on implicit theories and the process model of emotion regulation to explain how emotion beliefs may help or hinder regulatory efforts at the identification, selection and implementation/monitoring stages. The current chapter introduces the
chapter goals for the current thesis, as well as the broad theoretical assumptions and propositions that will serve as a guide for following empirical chapters.

7.2 Chapter Goals

Research on, and interest in, implicit beliefs about emotions has grown extensively over the last six years in which this thesis has been written. When this work began, there was only one published paper on implicit theories about emotions (Tamir et al., 2007) and the overarching goal of this thesis was to contribute to this nascent literature by examining links between implicit theories, emotion regulation, and psychological health. A more specific goal was to explore links between implicit beliefs about emotion and the selection of adaptive or maladaptive regulatory strategies, as well as the longer-term consequences these beliefs might have for psychological health via their influence on emotion regulation. To date, there are now more than 15 peer-reviewed published papers that have examined links between emotion beliefs and emotion regulation or clinical outcomes (including several publications that have arisen from the current thesis). This work has been included in the literature review despite not existing in the earliest phase of these empirical works. As a starting point for research in this area, the first three studies represent some of the earliest work in this field and focus on scale development. Studies 4 and 5 examine links between emotion beliefs and avoidance-based situation selection. Studies 6 and 7 examine links between emotion beliefs and mindfulness-based attention regulation. Studies 8, 9 and 10 examine links between emotion beliefs, anxiety and cognitive change strategies in clinical samples. And, Study 10, focuses on the role of emotion beliefs in clinical treatment. An overview of the specific goals for Chapter 8 – 11 (Studies 1 – 8) is provided below.
Goals of Chapter 8 (Studies 1 – 3): Scale Development

The first three studies of this thesis focus on scale development. Before undertaking additional research on implicit beliefs about emotions, it was necessary to ensure that an instrument for assessing emotion beliefs was finely tuned to, and capable of measuring, participants’ general beliefs about the potential for change (their implicit theories) as well as their personal beliefs about their unique capabilities (their self-efficacy beliefs – see Chapter 5 for a review of the overlap between these constructs). The goal of Studies 1 – 3 was to develop a revised “first-person” measure of the implicit theories scale and to replicate and evaluate its validity across domains (beliefs about intelligence and emotions) and in different contexts (in a sample of students from Australia and the United States). To better understand how people actually think about their emotions, Study 3 was designed to further evaluate the new measure through a qualitative content analysis of open-ended survey responses. These studies also served as a preliminary test of predicted associations between implicit theories, motivation and emotion-regulation as well as their associations with psychological-health outcomes.

Goals of Chapter 9 (Studies 4 and 5): Avoidance-Based Situation Selection

Chapter 9 focuses on emotion beliefs as a predictor of maladaptive avoidance-based Strategy Selection. Specifically, Studies 4 and 5 test the prediction that entity beliefs will promote greater use of avoidance-based emotion regulation strategies (see Chapter 6 for a review of research and predictions). The goal of Study 4 was to use cross-sectional correlational research to examine pre-existing associations between implicit beliefs about emotions and psychological health, as well as the role of maladaptive avoidance as a potential mediator of these relationships. The goal of Study 5 was to
manipulate participants’ beliefs about their emotions to test the causal role of emotion beliefs in the selection of avoidant-based emotion regulation strategies.

**Goals of Chapter 10 (Studies 6 and 7): Attention and Response Modulation**

Chapter 10 focuses on emotion beliefs as a predictor of attention-regulation strategy selection. Specifically, Study 6 tests the prediction that entity beliefs will be associated with greater use of maladaptive attention-regulation strategies (e.g., catastrophizing) and lesser use of adaptive attention-regulation strategies (e.g., acceptance, planning, and mindful awareness). Study 6 also examines links between emotion beliefs and response modulation strategies (e.g. alcohol use and medication). Study 7 examines the role of belief-change in a longitudinal attention-regulation focused clinical intervention (mindfulness based stress reduction). Both studies test the prediction that emotion beliefs mediate psychological health outcomes via their influence on attention regulation.

**Goals of Chapter 11 (Studies 8, 9 and 10): Cognitive Change**

Chapter 11 focuses on emotion beliefs as a predictor of reduced cognitive-regulation strategy selection. Specifically, Studies 6 and 7 test the prediction that compared to incremental beliefs, entity beliefs will be associated with less use of adaptive regulation strategies like cognitive reappraisal (see Chapter 6). Links between emotion beliefs, cognitive reappraisal, and psychological health are examined in an undergraduate sample of university students (Study 6), and in a clinical sample of patients with social anxiety disorder (Study 7). Study 7 was the first clinical study on implicit beliefs about emotions at the time of its publication. It provides an opportunity to examine how patients
in clinical samples differ from healthy control subjects in their beliefs about emotions and in their use of adaptive and maladaptive emotion regulation. Finally, Study 8 examined the role of beliefs about emotions as a potential mechanism of change in cognitive-focused psychotherapy. In a 12-week randomized clinical control trial, Study 8 examined whether changes in emotion beliefs would mediate post-treatment symptom reduction for patients diagnosed with social anxiety disorder. Study 8 also explored belief-change and symptom reduction at 6 and 12-month follow-up.

**Goal of Chapter 12: Clinical Case Study**

The empirical work presented in Studies 1 – 10 examines links between emotion beliefs, emotion regulation and psychological health in both clinical and non-clinical populations. However, the reliance on quantitative data and self-report measures runs the risk of oversimplifying how these beliefs actually operate in real-life settings (and how complicated it can be actually changing someone’s beliefs about their emotions). The goal of Chapter 11 was to take a closer look at the complexity and nuance of emotion beliefs and how they operate in the lives of others by employing a clinical case study analysis. It examines why these beliefs can feel protective for clients (even when they are harmful), and demonstrates why psychoeducation may not always be the most effective intervention.

**7.3 Broad Theoretical Assumptions and Propositions**

This section outlines several broad assumptions grounded in the theoretical and empirical work presented in Chapter 1 – 6. It also presents the broad theoretical hypotheses that serve to guide the following empirical chapters (Chapters 8 – 10). These assumptions and hypotheses are as follows:
A1: Effective emotion regulation involves *identifying, selecting, implementing* and *monitoring* adaptive and flexible emotion regulation strategies that are suited to a specific context, and consistent with an individual’s short and long-term goals.

A2: Points of failure at the identification, selection, implementation or monitoring stage of the regulation process can lead to failed attempts at emotion regulation and over-time negative psychological health outcomes.

A3: Regulation strategies can meaningfully be classified according to the Process Model of Emotion Regulation. These categories include situation selection, situation modification, attentional deployment, cognitive change and response modulation. Each category contains a range of different regulatory strategies.

A4: Regulation strategies are not inherently positive or negative but some strategies (e.g., cognitive reappraisal) have broadly more adaptive profiles than others (e.g., avoidance).

A5: A number of contextual and individual difference variables influence the effective *identification, selection, implementation* and *monitoring* of emotion regulation strategies.

From these initial assumptions about emotion regulation processes, three central propositions form the basis of future testable hypotheses in the current thesis. These propositions are based on theory and evidence presented in Chapter 6:
P1: Emotion beliefs influence emotion regulation processes – specifically the *identification, selection, implementation* and *monitoring* of regulatory strategies that in turn determine how successful one is at regulating their emotions.

P2: Emotion beliefs will be associated with psychological health and well-being outcomes via their influence on emotion regulation processes.

P3: Emotion beliefs will serve as a key mechanism of change in clinical treatments and interventions.
8. THE IMPLICIT ‘SELF-THEORY’ SCALES

8.1 Introduction to Study 1, 2 and 3

Chapters 1 – 7 provided an overview of the existing theory and research on emotion regulation and implicit theories, as well as the potential implications emotion beliefs might have for how people regulate their emotions in daily life. The present chapter introduces the first set of empirical studies in this thesis, which focus on the development of the implicit self-theory scales.

To date, there is a great deal of research on implicit theories across domains (see Chapter 5). Traditionally, implicit theory measures have assessed people’s beliefs about the fixed or changeable nature of a domain in general. For example, “to be honest, you can’t really change how intelligent you are” (implicit theories of intelligence); or “the truth is people have very little control over their emotions” (implicit theories of emotions). However, it is not clear if (and to what extent) general implicit theories differ from people’s personal beliefs about their own abilities. Believing that a domain is in principal ‘changeable’ does not necessarily mean people are confident in their own ability to change. People may, for example, hold different theories for themselves and others – endorsing entity or incremental beliefs more or less depending on whether they are that a...

1 This chapter has been published in two independent publications:


domain is in principal ‘changeable’ does not necessarily mean people are confident in
their own ability to change. People may, for example, hold different theories for
themselves and others – endorsing entity or incremental beliefs more or less depending on
whether they are Furthermore, people who endorse stronger entity beliefs for themselves
than others may be particularly vulnerable to helplessness and disengagement if this
reflects comparative and negative views about personal inadequacy.

Personal beliefs about one’s abilities and skills have traditionally been examined in
research on self-efficacy (see Bandura 1997 for a review), which refer to an individual’s
beliefs about his or her own personal capacity to exert control over the events that matter
(Bandura, 1997). As reviewed in Chapter 5.5, there is significant overlap between the
constructs of implicit theories and self-efficacy beliefs. However, self-efficacy measures
classically assess “current operative capabilities” and “perceived competences” that one
already possesses, in highly specific situations (e.g., “on a scale of 0 – 100, how confident
are you that you can complete the study required to do well in your next test”). Bandura
(2006) provides a detailed review of self-efficacy scales and measures. Because self-
efficacy scales are highly specific and focus on existing abilities, they do not assess
people’s beliefs in their potential to change or “grow” their abilities. This subtle point of
intersection is the focus of Studies 1 and 2, which sought to develop a revised Implicit
‘self-theories” scale – a scale that that taps aspects of implicit theories and self-efficacy
beliefs by measuring people’s beliefs about their personal ability to change and grow in
specific domains. Figure 12 (below) illustrates this point of intersection using a Venn
diagram which show the points of overlap between implicit theories and self-efficacy.
The enclosed region between the two constructs represents “self-theory beliefs” – an area
of overlap between constructs and the point of focus for this thesis. The primary aim of
Study 1 and 2 was to construct a revised self-report measure of the implicit theories scales that focused specifically on self-theory beliefs.

Figure 12. *Hypothesized Overlap Between Implicit theories and Self-efficacy*

![Diagram showing overlap between Implicit Theories, 'Self-Theory' Beliefs, and Self-Efficacy]

Study 1 begins by developing and examining the utility of a revised ‘Self-Theory’ scale in the domain of intelligence – based on the first and most widely used measure of implicit theories (Dweck, 1999). Study 2 then develops and evaluates the utility of a revised ‘self-theory’ version of the Implicit Theories of Emotion Scale (Tamir et al., 2007). This second instrument becomes the primary measure of interest for the current thesis. In both studies these measures were modified, re-phrasing items in the first person so that people were asked to respond to questions about their ability to change *their* intelligence and *their* emotions (rather than being asked about intelligence and emotions in general). These studies represent the first work on ‘self-theories.’ Since this work has
been published, there has been growing interest in this area with some researchers calling for the development of self-theory measures in other implicit theory domains (Howell, Passmore & Holder, 2016).

In the context of Studies 1 and 2, I predicted that people’s general implicit theories would differ significantly from their private views about their own abilities (their “self-theories”). Because personal and domain-specific beliefs also tend to be more powerful predictors of goals, attributions and academic performance (Bandura, 1997; 2006), I also expected that a self-theory measure would serve as an even better predictor of related outcomes including motivation, self-regulation and psychological health. Finally, Study 3 used qualitative methods to take a closer look at how entity and incremental theorists actually think about their emotions. It also offered an opportunity to examine potential difference in the kinds of emotion regulation strategies entity and incremental theorists spontaneously refer to when asked whether they believe they can change or control their emotions.
STUDY 1

8.2 Implicit Self-Theories of Intelligence

Research indicates that general implicit theories of intelligence are important predictors of achievement goals (Cury, Elliot, Da Fonseca & Moller, 2006; Dweck & Legget, 1988; Robins & Pals, 2002) as well as attributions for success and failure (Hong, Chiu, Dweck, Lin & Wan, 1999), truancy, disengagement and academic performance (Blackwell et al., 2007; Cury et al., 2008; Howell & Buro, 2009; Rhodewalt, 1994; Robins & Pals, 2002) – see Chapter 5 for a review. Based on this research, Study 1 focused on exploring whether people’s beliefs about intelligence in general differed from their beliefs about their own intelligence, and if so, what impact these ‘personal’ views have on goals, attributions, motivation, self-regulation and academic achievement. To do this, Study 1 presents a revised, first-person, self-report measure of implicit theories of intelligence scale that explicitly targets students’ private beliefs about their ability to change their own intelligence. The general Implicit Theories of Intelligence Questionnaire (Dweck, 1999) was modified by rephrasing items in the first person. Consistent with previous research (Blackwell, et al., 2007; Robins & Pals, 2002, see Dweck 1999 for a review), I predicted that across achievement and motivation measures:

H1: Entity beliefs about intelligence would be associated with poorer outcomes on measures of achievement, motivation and self-regulation, including: lower mastery goals; higher performance and avoidance goals; and higher attributions of helplessness; higher self-reported truancy, self-handicapping and student disengagement; and lower self-reported academic performance.
H2: Compared to students’ beliefs about intelligence in general (implicit theories), their beliefs about their own intelligence (self-theory scale) will explain greater outcome variance on all measures.

**Methods**

**Participants**

Participants consisted of 680 Australian students from five different high schools (years 10 – 12) in the Australian Capital Territory. Schools were selected to capture a spread of low, intermediate and high performing schools based on national performance indicators. (Australian Tertiary Admission Rankings ATAR)\(^2\) Of the total sample, 35 percent of students (N = 235) were from private schools and 65 percent (N = 445) were from public schools. Students ranged from 15 to 19 years of age (M = 16.6, SD = 1.01), 38 percent were male (N = 258) and 62 percent were female (N = 422).

**Measures**

**Implicit theories of intelligence (general scale).** Students’ theories of intelligence were measured using the eight-item Implicit Theories of Intelligence Scale (Dweck, 1999). The complete scale contains four incremental and four entity theory items and assesses general beliefs about the fixedness vs. malleability of intelligence (See Table 1 for scale items). The four incremental scale items were then reverse scored and all eight items were summed with higher scores indicating greater endorsement of entity beliefs about intelligence. Overall, research indicates the scale displays good internal consistency

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(α = .82 to .97) and test-retest reliabilities at two weeks (α = .80 to .82, Dweck, Chiu & Hong, 1995). The scale has also demonstrated good construct validity with scores predicting theoretically meaningful relationships with a range of variables (Dweck et al., 1995). The scale further appears unaffected by social desirability, intellectual ability, political beliefs or self-presentation concerns, indicating good discriminate validity against a range of potentially confounding variables (Dweck et al., 1995). In the current study, the general implicit theories of intelligence scale again demonstrated good internal reliability with a combined Chronbach’s alpha for the general entity and incremental subscales of .87.

**Implicit theories of intelligence (self-theory scale).** The self-theory version of the theories of intelligence scale was based on the original measure by Dweck and colleagues (Dweck, 1999). All eight-items were re-worded so that each statement reflected a first-person claim about the extent to which intelligence was fixed or malleable (see Table 1 for scale items). Efforts were made to ensure items stayed closely aligned to the originals. Incremental items on both measures were reversed scored and the average scores across the eight-items provided a measure of students’ entity beliefs about their own intelligence. Like the general, this scale showed good internal consistency, α = .90.
Table 1. Implicit Theories of Intelligence - Scale Items and Reliabilities (Study 1, n = 643)

<table>
<thead>
<tr>
<th>Implicit Theories of Intelligence (Original)</th>
<th>Implicit Theories of Intelligence (Self-Theory)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entity Beliefs Subscale (α = .87)</strong></td>
<td><strong>Entity Self Beliefs Subscale (α = .90)</strong></td>
</tr>
<tr>
<td>1. You have a certain amount of intelligence, and you can’t really do much to change it.</td>
<td>1. I don’t think I personally can do much to increase my intelligence</td>
</tr>
<tr>
<td>2. Your intelligence is something about you that you can’t change very much.</td>
<td>2. My intelligence is something about me that I personally can’t change very much.</td>
</tr>
<tr>
<td>3. To be honest, you can’t really change how intelligent you are.</td>
<td>3. To be honest, I don’t think I can really change how intelligent I am.</td>
</tr>
<tr>
<td>4. You can learn new things, but you can’t really change your basic intelligence.</td>
<td>4. I can learn new things, but I don’t have the ability to change my basic intelligence.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incremental Beliefs Subscale (α = .88)</th>
<th>Incremental Self Beliefs Subscale (α = .92)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No matter who you are, you can significantly change your intelligence level.</td>
<td>1. With enough time and effort I think I could significantly improve my intelligence level</td>
</tr>
<tr>
<td>2. You can always substantially change how intelligent you are.</td>
<td>2. I believe I can always substantially improve on my intelligence</td>
</tr>
<tr>
<td>3. No matter how much intelligence you have you can always change it quite a bit.</td>
<td>3. Regardless of my current intelligence level, I think I have the capacity to change it quite a bit.</td>
</tr>
<tr>
<td>4. You can change even your basic intelligence level considerably</td>
<td>4. I believe I have the ability to change my basic intelligence level considerably over time.</td>
</tr>
</tbody>
</table>
Achievement goals. To assess students’ goal orientations, subscales were drawn from Elliot and McGregor’s (2001) Revised Achievement Goal Questionnaire (AGQ). Each orientation consists of three items that assess different goal striving. Students were asked to indicate how much they agreed or disagreed with each of the following statements about what was important to them as a student in their class. For example: Performance Approach (e.g., “It is important to me to do better than other students”); Performance Avoidance (e.g., “I just want to avoid doing poorly in my classes”); and Mastery Approach (e.g., “I want to learn as much as possible in class”). Research indicates that the revised (Elliot & McGregor, 2001) scale is psychometrically sound, reliable and a replicable measure of achievement goal constructs (Church, Elliot & Gable, 2001; Donnellan, 2008; Fryer & Elliot, 2007; McGregor & Elliot, 2002). In the current sample, all three subscales displayed adequate reliability (Performance approach, $\alpha = .91$; Performance avoidance, $\alpha = .75$; Mastery, $\alpha = .83$).

Helplessness attributions. Attributions of helplessness were measured using the seven-item ‘Helplessness Beliefs’ sub-scale from the Strategy and Attribution Questionnaire (Nurmi, Salmela-Aro & Haavisto, 1995; SAQ). SAQ items are designed to assess helplessness beliefs in a school context (e.g., “I do not have the means to affect the way my studies go”). Overall, the scale has demonstrated good internal reliability and test-retest reliability at six months (Eronen, Nurmi & Salmela-Aro, 1998; Nurmi, Onatsu & Haavisto, 1995). Cronbach alpha for the current sample was .74.

Academic achievement. Because academic records could not be obtained, self-reported grades were measured with four items asking students to describe their general academic performance and their comparative standing relative to other students in their
class or year (e.g., “In the past 12 months the grades I mostly received were…”).

Responses were coded on a seven-point Likert scale and scores ranged from 1 (“D-average” or “among the worst in my class”) to 7 (“A-average” or “among the best in my class”). Mean scores across the four items provided an average index of students reported grades. Although self-report measures of this kind are subject to memory distortions or bias, research indicates that the extent of these biases is typically small (Cassady, 2001).

While a minority (2-3%) of students may over-report by a letter grade or more (Gramzow, Elliot, Asher, & McGregor, 2003; Maxey & Ormsby, 1971), in most cases this deviation is less than .1 on a four-point scale (Gramzow et al., 2003; Gramzow & Willard, 2006). Cronbach’s alpha for the current sample was .90.

**Self-handicapping.** Academic self-handicapping behaviour was measured using the six-item subscale from the Patterns of Adaptive Learning Survey (PALS; Midgley, et al., 1998). Each of the six items asks about an *a priori* defensive strategy used to excuse poor performance (e.g., “Some students fool around the night before a test. Then if they don’t do well, they can say that is the reason. How true is this of you?”). Responses ranged from 1 (not at all true of me) to 7 (very true of me). Unlike earlier measures of self-handicapping, the PALS items assess the use of intentional strategies and behaviours and are thereby distinguishable from post hoc excuses and attributions. Previous research indicates that the six-item scale shows good validity and internal consistency ($\alpha = .84$) and sound construct validity, relating in predictable ways to theoretically relevant variables (Midgley, Arunkumar & Urdan, 1996; Midgley et al., 1998; Midgley & Urdan, 2001). Participants’ responses were summed across the six items (scores ranging from 6 to 42), providing an overall index of students’ tendency to engage in self-handicapping strategies. Cronbach’s alpha in the current sample was .86.
Disengagement & truancy. Three items were used to measure disengagement and were adapted from the Motivation and Engagement Scale (MES-HS; Green, Martin & Marsh, 2007). These items included: “I often feel like giving up in school”; “I’ve pretty much given up being interested in school” and “I really couldn’t care less about school.” Based on psychometric testing with over 21,000 students in Australia, the MES-HS has been found to be a valid and reliable instrument with a sound factor structure and demonstrates factorial invariance across gender, subject and year level (Green et al., 2007; Martin, 2001; 2003). In addition to measuring students’ general disengagement from school, two items were included to assess self-reported truancy: “I sometimes wag school” and “I’ll skip class when I can get away with it”. These items were written in Australian vernacular specifically for use with high school students.

Procedure

All survey items were administered to students online under normal classroom conditions and took approximately 20-30 minutes to complete. Measures were presented in the following order: achievement goals, implicit theories of intelligence (general and self-theory scales), helplessness attributions, self-handicapping, disengagement, truancy, grades. Supervising teachers informed the students that participation was voluntary and anonymous, and that there were no right or wrong answers. They were also informed that the information would be kept confidential and that no one at home or school would see their results. Ethics approval for the project was obtained from appropriate governing bodies including the Australian National University Human Research Ethics Committee (HREC); the Department of Education and Training (DET) and the Catholic Education
Office (CEO), as well as principals and teachers at participating schools, and all students gave informed consent.

**Results**

Prior to analysis, all variables were examined through SPSS for missing values and distributional assumptions of multivariate analysis (Tabachnick & Fidell, 2007). Of the total 680 respondents, 37 surveys were left incomplete (missing data > 25 per cent) and were deleted reducing the total sample to 643. For the remaining cases, missing data was extremely rare (< .01 per cent) and where present were replaced with the mean for that variable – a conservative technique in such cases (Tabachnick & Fidell, 2007).

**Scale Reliability and Validity**

Full-scale scores for both the general Implicit Theories of Intelligence Questionnaire and the new self-theory measure, as noted, demonstrated good internal consistency ($\alpha = .87$ and $\alpha = .90$ respectively). Individual incremental and entity subscales also showed strong internal consistency (subscales ranging from $\alpha = .87$ to .92). Reliability ratings for sub-scales can be seen in Table 2.

To test the higher order structure of the revised scale, confirmatory factor analysis (CFA) was conducted on both the Original and Self-Theory Implicit Theories of Intelligence measures using AMOS 18.0 (Arbuckle & Worthke, 1999). Structural Equations Modelling (SEM) allows for a test of the hypothesised two-factor structure by evaluating item loadings on the Implicit and Incremental constructs. Estimation using maximum likelihood was used for all analyses (see Figure 13). For each of the scales, fit indices were compared for a one-factor congeneric model (Model 1) and the hypothesised
two-factor structure (Model 2). Variances for the latent factors were fixed at unity while entity and incremental items were allowed to load freely on the latent factor(s). In evaluating the fit of the measurement models, the likelihood ratio $\chi^2$ statistic and goodness of fit indices were examined. The $\chi^2$ test assesses the discrepancy between the sample and fitted covariance matrices and decreases as model fit improves. However, the $\chi^2$ test is considerably inflated with large samples (Stevens, 1996). For this reason, several commonly used goodness of fit measures were also considered in assessing model fit. These included: the goodness of fit (GFI), adjusted goodness-of-fit (AGFI) and the comparative fit index (CFI). For these measures values approaching 1.0 indicate better fit of the model to the data (Dickey, 1996). The root mean square error of approximation (RMSEA) was also consulted and indicates adequate fit with values less than .08 and very close fit with values less that .05 (Browne & Cudeck, 1993). Finally, the parsimonious goodness-of- fit index (PGFI) was used take into account model parsimony. In evaluating the PGFI, higher values are desirable since a better fit can always be achieved by adding more parameters (Dickey, 1996). These results are reported in Table 2.

The goodness of fit statistics indicated that model fit was slightly better for the self-theory scale. For both scales, the two-factor model (Model 2) fit the data very well and performed better than the one-factor model (Model 1). Although this is consistent with some existing research on the implicit theories of intelligence scale (Abd-El-Fattah & Greg, 2006), the instrument is most typically used in a single factor format by reverse scoring the incremental theory items (Molden & Dweck, 2006; see Dweck 1997 for a review). For this reason, the one factor model was used in the current study. All latent variables and factor loadings were significant and the goodness of fit measures indicated good overall fit to the data.
Figure 13. Study 1: Confirmatory Factor Analyses for General and Self-Theory Implicit Theory of Intelligence Scales (Study 1, n = 643)

* p < .001. Factor loadings are standardized coefficients. Error variances are presented as unstandardized scores.

* p < .001. Factor loadings are standardized coefficients. Error variances are presented as unstandardized scores.
Table 2: Goodness-of-Fit Indices – Implicit Theories of Intelligence (Study 1, n = 643)

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>$\chi^2$</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PGFI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Scale</strong></td>
<td></td>
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<td>1 – Factor Model</td>
<td>20</td>
<td>913.4**</td>
<td>.68</td>
<td>.42</td>
<td>.71</td>
<td>.26</td>
<td>.38</td>
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<tr>
<td>2 – Factor Model</td>
<td>19</td>
<td>158.4**</td>
<td>.94</td>
<td>.88</td>
<td>.95</td>
<td>.11</td>
<td>.49</td>
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<td><strong>Self-Theory Scale</strong></td>
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<td>1 – Factor Model</td>
<td>20</td>
<td>963.1**</td>
<td>.68</td>
<td>.32</td>
<td>.77</td>
<td>.27</td>
<td>.36</td>
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<tr>
<td>2 – Factor Model</td>
<td>19</td>
<td>95.4**</td>
<td>.96</td>
<td>.93</td>
<td>.98</td>
<td>.08</td>
<td>.50</td>
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</table>

Note. N = 643. **p<.00 for all $\chi^2$ values. GFI = Goodness-of-fit; AGFI = Adjusted Goodness of Fit; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; PGFI = Parsimony Goodness of Fit Index.

**Hypothesis 1: Links to Goal, Attributions, Self-Regulation & Achievement**

Means (M), standard deviations (SD), ranges, internal consistencies (α) and correlations for all variables are presented in Table 3. Both the general and self-theory of intelligence measures demonstrated significant correlations with the achievement and motivational variables, with the exception of performance approach goals, which were significantly correlated only with the self-theory scale. An entity theory of intelligence was negatively associated with achievement goals and this was true for mastery, performance approach, and avoidance goal subtypes. On both measures, students who believed intelligence was fixed also displayed higher attributions of helplessness; were more likely to self-handicap, skip class and disengage from school; and they reported poorer overall academic performance.
Hypothesis 2: General Beliefs vs. Personal Beliefs

To examine whether students’ beliefs about their own intelligence differed from their beliefs about intelligence in general, I first conducted a within-subjects t-test to compare students’ scores on the general and self-theory scales. Results revealed that students endorsed incremental beliefs more when asked about their personal ability to improve their intelligence ($M = 2.96$) than when asked about intelligence in general ($M = 3.14$), $t(642) = 6.96$, $p < .001$. This was a small effect by Cohen’s (1988) standards ($d = .17$). To explore whether the first person, self-theory measure explained greater variance in outcomes, I conducted a series of two-step hierarchical regressions analyses (see Table 4). Despite the high correlation between the general and self-theory measures ($r = .80$), there was no evidence of multicollinearity (all VIF’s < 2.84). For each of the dependent variables, the general theories of intelligence measure was entered first, followed by the self-theory measure in the second step. In a second set of analyses regression were repeated entering the scales in reverse order. The general scale failed to explain unique variance on any of the dependent variables when controlling for ‘self-theories.’
Table 3. *Implicit Theories of Intelligence – Descriptive Statistics, Reliabilities and Correlations (Study 1, n = 643).*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>1. Entity Theory of Intelligence (General)</td>
<td>3.14</td>
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<td>1.00 – 7.00</td>
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<td>1</td>
<td>-.80**</td>
<td>-.28**</td>
<td>-.03</td>
<td>-.11*</td>
<td>-.18**</td>
<td>-.38**</td>
<td>-.17**</td>
<td>-.14**</td>
<td>-.16**</td>
<td>-.09^</td>
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<td>2. Entity Theories of Intelligence (Self-Theory)</td>
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<td>1.08</td>
<td>1.00 – 7.00</td>
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<td>.35**</td>
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<td>-.12*</td>
<td>-.23**</td>
<td>-.45**</td>
<td>-.22**</td>
<td>-.20**</td>
<td>-.18**</td>
<td>-.13**</td>
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<tr>
<td>3. Difference (Self – General)</td>
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<td>5.38</td>
<td>-28.00 – 20.00</td>
<td>.94</td>
<td>1</td>
<td>-.14**</td>
<td>-.02</td>
<td>-.09^</td>
<td>.13**</td>
<td>.08^</td>
<td>.12**</td>
<td>.04</td>
<td>-.08^</td>
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<td>3.00 – 21.00</td>
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<td>.18**</td>
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<td>-.22**</td>
<td>-.13**</td>
<td>-.18**</td>
<td>-.17**</td>
<td>-.42**</td>
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<td>3.00 – 21.00</td>
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<td>.29**</td>
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<td>.07^</td>
<td>-.00</td>
<td>-.07</td>
<td>-.05</td>
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<td>3.00 – 21.00</td>
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<td>1</td>
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<td>-.21**</td>
<td>-.25**</td>
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<td>-.22**</td>
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<td>1</td>
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<td>-.39**</td>
<td>-.31**</td>
<td>-.30**</td>
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<td>8. Self-Handicapping</td>
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<td>6.00 – 42.00</td>
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<td>1</td>
<td>.44**</td>
<td>-.40**</td>
<td>-.31**</td>
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<td>9. Disengagement</td>
<td>9.70</td>
<td>4.34</td>
<td>3.00 – 21.00</td>
<td>.82</td>
<td>1</td>
<td>.50**</td>
<td>-.38**</td>
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<tr>
<td>10. Truancy</td>
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<td>2.00 – 14.00</td>
<td>.86</td>
<td>1</td>
<td>-.29**</td>
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<td>11. Grades</td>
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<td>4.88</td>
<td>4.00 – 28.00</td>
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</table>

*p<0.05 *p<0.01 **p < 0.
Table 4. *Hierarchical Regressions Predicting Achievement, Motivation and Self-Regulation from the Implicit Theories of Intelligence Scales (Study 1, n = 643).*

<table>
<thead>
<tr>
<th>Dependent Variable and Step</th>
<th>β At Step</th>
<th>Final β</th>
<th>R²</th>
<th>R² Change</th>
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<td>.17*</td>
<td>.00</td>
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<tr>
<td>2. Implicit Theories (Self)</td>
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<td>.02**</td>
<td>.02**</td>
<td></td>
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<tr>
<td><strong>Performance-Avoidance Goals</strong></td>
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<td></td>
</tr>
<tr>
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<td>.01**</td>
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<td>2. Implicit Theories (Self)</td>
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<td>.01**</td>
<td>.00</td>
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<td><strong>Mastery-Approach Goals</strong></td>
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<td>.05**</td>
<td>.02**</td>
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<td><strong>Helplessness Attributions</strong></td>
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<td>1. Implicit Theories (General)</td>
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<td>-.00</td>
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<td>.05**</td>
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<td><strong>Disengagement</strong></td>
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<td>.04**</td>
<td>.03**</td>
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<tr>
<td><strong>Truancy</strong></td>
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<td>.02**</td>
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<td>.03**</td>
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<tr>
<td>1. Implicit Theories (General)</td>
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<td>.06</td>
<td>.01*</td>
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</tr>
<tr>
<td>2. Implicit Theories (Self)</td>
<td>-.18**</td>
<td>.02**</td>
<td>.01**</td>
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</table>

**p < .001 * p < .05**

Beta is the standardised regression coefficient, and significance levels are based on two-tailed significance tests. Increments for variables entered at R²Change significance levels are based upon F tests for that step. Reversing this process on each measure – Self-theory scale entered in the first step and general theories in the second step – also demonstrated that the general scale did not explain unique variance when controlling for students’ implicit self-theories. Findings were also replicated using the 4-item entity belief sub-scales for both measures. All results reported above were significant and the general scale did not explain unique variance when controlling for students’ implicit self-theories.
Table 4 displays the standardized regression coefficients (β), R² and R² change for the full and restricted models in each analysis. Both scales accounted for a significant amount of variance in all analyses (with the exception of performance-approach goals, which were significant only for the revised scale). The belief that intelligence was fixed predicted lower achievement goals and self-reported grades, greater attributions of helplessness, and increased self-handicapping, truancy and disengagement. Importantly, and in line with predictions, of the two scales, the self-theory measure explained more outcome variance when both measures were used to predict the dependent variables. That is, the self-theory measure consistently predicted unique variance in outcomes above and beyond the general measure of theories of intelligence. This was true for all dependent variables except avoidance goals, for which there was no significant difference between the general and self-theory scales. While the additional variance explained was small (typically between 1 and 6 per cent), the self-theory scale was consistently superior when both measures were used to predict the dependent variables.

**Supplementary Analysis: When “My” Intelligence is More Fixed**

In addition to examining the predictive power of both scales, I expected the difference between the two scales (e.g., intelligence may be malleable in principal, but not for me) would also be associated with achievement and motivation outcomes. To examine this hypothesis, a difference score was computed by subtracting students’ scores on the general scale from their scores on the self-theory scale (see Table 3). Positive values indicate comparatively higher entity beliefs on the self-theory scale e.g., “My intelligence is more fixed than others”. Consistent with predictions, students who endorsed stronger entity beliefs for themselves than others held lower performance-approach and mastery-
approach goals; reported increased helplessness; self-handicapping and disengagement; as well as lower academic grades. The difference between the two scales however, was not associated with avoidance goals or truancy.

**Discussion**

The aim of Study 1 was to develop and validate a revised first-person measure of the Implicit Theories of Intelligence Scale, and to examine whether students’ implicit theories about intelligence in ‘general’ differ from their implicit self-theories (their beliefs about *their own intelligence*). I expected that a revised first-person, self-theory measure would explain greater variance in outcomes related to implicit theories of intelligence – achievement, motivation and self-regulation.

Results from the current study indicated that the revised Implicit Theories of Intelligence (Self-Theory) Scale was psychometrically sound, internally consistent and reliable, structurally valid and related in predictable ways with measures of achievement goals, attributions, self-regulation, motivation and achievement. Consistent with previous research (Dweck, 1999; Dweck, Chiu & Hong, 1995; Levy & Dweck, 1998; Rhodewalt, 1994), the more students endorsed an entity theory of their intelligence, the lower their mastery-approach goal striving. When asked about their academic performance, entity beliefs were predictive of lower self-reported grades and an increased likelihood of making helpless attributions about one’s studies. An entity theory of intelligence was also associated with increased self-handicapping, truancy, and a greater likelihood of giving up on school altogether. These findings are noteworthy particularly given the lack of research on implicit theories, self-handicapping, truancy and disengagement in high school settings. Traditional models explaining how implicit theories give rise to academic
outcomes have often concentrated on the role of achievement goals, causal attributions
and effort (Blackwell et al., 2007; Robins & Pals, 2002). However, results from the
current study indicate that – consistent with early work by Rodewalt (1994) – entity
beliefs are also associated with a greater likelihood of engaging in maladaptive self-
protective strategies that may ultimately serve to undermine academic performance.
While both the general and personal scales predicted goals, attributions and academic
outcomes, the new scale explained unique variance on these measures.

Examined side by side, students’ belief in their personal ability to improve their
intelligence also differed significantly from their general beliefs about intelligence as a
broader construct. On average, students reported significantly higher endorsement of
incremental items when appraising their own intelligence and higher endorsement of
entity items when considering intelligence more broadly. This finding is consistent with
research on self-presentational biases, positive illusions, and contrast effects (Fisher &
Katz, 2000; Gramzow, Elliot, Asher & McGregor, 2003; Story & Dunning, 2002; Taylor
& Armor, 1996). The belief that intelligence, or any ability for that matter, is ‘more
malleable’ for oneself than others may therefore be a strategy that works to boost self-
esteem, improving and protecting one’s self-concept. For a small portion of students
however, entity beliefs were endorsed more strongly on the self-theory scale indicating
that they believed their intelligence was more fixed than others’. As expected, these
students also reported fewer achievement goals, poorer academic grades and greater risk
of helplessness and disengagement from school. Across all outcome measures, the Self-
Theory scale was an even better predictor of achievement, motivation and self-regulation.
Implications

The current study was an important first step in the development of first-person “Self-Theory” measures of implicit theories. Implicit theories have been examined in a variety of contexts, including personality and morality (Dweck, 1999), emotion (Tamir, John, Srivastava & Gross, 2007), sport (Chen et al., 2008; Ommundsen, 2001), interpersonal and romantic relationships (Knee, Patrick & Lonsbary, 2003), stereotype threat (Aronson et al., 2002; Levy & Dweck, 1998), memory (Werth & Forster, 2002), fame (Maltby et al., 2008) and shyness (Beer, 2002). The development of self-theory measures may thus have potential in many areas where self-efficacy and ability attributions play a predominant role. Indeed, recently there have been calls for the development of self-theory scales in other implicit theory domains (Howell, Passmore & Holder, 2016).

Based on findings from Study 1, the aim of Study 2 was to develop and evaluate a self-theory scale for assessing implicit beliefs about emotions. Recognizing that there may be a discrepancy between students’ broader implicit theories and their personal beliefs about their abilities is also particularly important in the context of interventions and training. Research on implicit theories has repeatedly demonstrated that simple interventions can lead to long-lasting change (Aronson et al., 2002; Good et al., 2003; Blackwell et al., 2007). Entity and incremental beliefs have been induced experimentally through explicit messages, case studies and vignettes (Bergen 1992) and indirectly through feedback, praise or criticism (Kamins & Dweck, 1999; Muller & Dweck, 1998). Other interventions have taught an incremental theory through online programs (Brainology, 2010), workshops (Blackwell et al., 2007), videos, mentoring, and letter
writing tasks (Aronson et al., 2002; Good et al., 2003). In the domain of ‘intelligence’, these initiatives typically focus on providing students with scientific research on memory, brain plasticity and the brain’s potential for development and growth. While this message is powerful – particularly for ‘entity theorists’ who may have doubts about one’s potential for improvement – it is a message that may not reach all students. The results of Study 1 demonstrate that for many, knowing change is possible is not the same as believing personally in one’s ability to change. For underachieving students, particularly those struggling with self-regulation (vulnerable to self-handicapping and disengagement), the shift from general to personal belief in one’s ability to improve may not be a simple process. Yaeger & Walton (2011) argue that this kind of change takes place through gradual private successes and recursive processes that slowly shift achievement trajectories as students gain momentum over time: “when students achieve success beyond what they thought possible, their beliefs about their potential may change, leading them to invest themselves more in school, further improving performance and reinforcing their belief in the possibility of growth” (p. 286). Understanding how to help people internalize this message will be an important area for future research.

Limitations and Future Directions

While the current study makes important contributions to research on implicit theories, several limitations should be noted. First, despite examining a wide range of achievement and motivation outcomes, it is important to recognize that findings in the current study are based on participant self-reports. Self-report measures are used in much of the research on implicit theories (see Dweck, 1999 for a review) and self-reported handicapping and disengagement have been validated against actual behaviour (Deppe &
Harachkiewicz, 1996; Strube, 1986). Nonetheless, many students may engage in these strategies unconsciously or be disinclined to concede that they adopt them. For this reason, it is possible that higher-rates of self-handicapping, truancy and student disengagement exists among these student populations.

Second, it is important to note that the findings reported in the current study are also based on relatively small effect sizes. These results however, are consistent with much of the existing research in the field (Harris, Snyder, Higgins & Schrag, 1986; Haynes, Daniels, Stupnisky, Pery & Hladky, 2008; Howell & Buro, 2009; Martin & Brawley, 2002; Midgley & Urdan, 2001; Ommundsen, 2001), and likely reflect the multiplicity of factors that give rise to achievement and motivation outcomes in school. It is also important not to overlook the fact that small effect sizes can have a major impact on academic performance over time (Abelson, 1985; Blackwell et al., 2007; Dweck, 2008; Rosenthal & Rubin, 1982).

Third, while self-theories appear to offer a number of benefits of traditional implicit theory measures, the results of the current study can only be generalized to research on implicit theories of intelligence in high-school student samples. It remains to be seen whether self-theory scales offer unique benefits in other populations and in other implicit theory domains. Despite these limitations, results from the current study indicate that the beliefs students’ hold about intelligence is associated with a range of achievement and motivation outcomes, and importantly, it is the beliefs students’ hold about themselves and their ability to improve that is most predictive of their willingness to embrace opportunities for learning.
STUDY 2

8.3 Implicit Self-Theories of Emotion

Study 1 indicated that students’ implicit beliefs about their own intelligence differed significantly from their beliefs about intelligence in general. These self-beliefs also served as a greater predictor of achievement, motivation and self-regulation. The goal of Study 2 was to extend this work by developing and evaluating a revised Self-Theory measure of implicit theories of emotion (a scale developed by Tamir et al. 2007). Based on findings from Study 1, I was also interested in examining how people’s beliefs about the controllability of emotions in general might differ from their beliefs about the controllability of their own emotions. I made the following predictions:

H1: Entity beliefs about emotions will be negatively associated with well-being (reduced self-esteem and satisfaction with life), and positively associated with psychological distress (stress and depression).

H2: Compared to people’s beliefs about emotions in general (general scale), people’s beliefs about their own emotions (self-theory scale) will explain greater outcome variance on all measures.

Methods

Participants

Participants consisted of 216 undergraduate psychology students (67% female) from Stanford University. Students ranged from 17 to 29 years of age (M = 19.1, SD = 1.6). The sample consisted of 45% White Caucasian, 12% Chinese, 8% South/East Asian,
8% Hispanic, 8% African American, 6% Mixed, 5% Indian, 4% Mexican, and 3% Other. Students were invited to participate in exchange for course credit. All students were informed that participation was voluntary, and that there were no right or wrong answers. They were also informed that the information would be kept confidential.

**Measures**

**Implicit beliefs about emotions.** General beliefs about the malleability of emotions were assessed with the four-item Implicit Beliefs about Emotion Scale (Tamir et al., 2007). Two items measured *incremental beliefs* e.g., “If they want to, people can change the emotions that they have,” and two measured *entity beliefs* e.g., “The truth is, people have very little control over their emotions” (see Table 5 for scale items). Participants were asked to rate their agreement on a five-point Likert scale. Incremental theory items were then reverse-scored and averaged with higher scores reflecting an entity theory and lower scores an incremental theory of emotions. In past research with undergraduates, the scale showed good internal consistency ($\alpha = .75$, Tamir et al., 2007). In the present sample, internal consistency was .77.

Personal beliefs about the malleability of emotions were assessed using a variant of the original four-item measure (Tamir et al., 2007). All items were again modified to reflect a first-person claim about the extent to which one could personally change or control their emotions. Efforts were made to ensure items stayed closely aligned to the originals. In the present sample, internal consistency was .79. Both scales were treated as continuous variables. This approach is consistent with previous research (Plaks & Stecher, 2007; Robins & Pals, 2002; Tamir et al., 2007) and avoids loss of power associated with typologizing dimensional variables (Cohen, 1983). For ease of interpretation, I refer to
those with higher scores as holding entity beliefs and those with lower scores as holding incremental beliefs. Psychometric properties of these two implicit theories of emotion scales are presented in Table 5.

**Indicators of well-being.** Self-esteem and life satisfaction were assessed as general indicators of well-being:

*Self-esteem.* Self-esteem was measured using The Single-Item Self-Esteem Scale (SISE; Robins, Hendin & Trzensniewski, 2001). The SISE asks subjects to rate their agreement with the following item: “I have high self-esteem”. Responses are recorded on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Research with the SISE indicates that the scale is reliable and displays good criterion validity across a wide range of measures. For this reason, it has been presented as a practical alternative to the Rosenberg Self-Esteem Scale (RSES) in adult samples (Robins et al., 2001).

*Life satisfaction.* Life satisfaction was measured using the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS is a commonly used measure of life satisfaction (e.g., “In most ways my life is close to ideal”). Items are rated on a seven-point Likert scale with total scores ranging from five to 35. Research indicates the scale is internally consistent and displays good test-retest reliability (Pavot & Diener, 1993; Pavot, Diener, Colvin, & Sandvik, 1991). In the present sample, internal consistency was .89.
Table 5: Implicit theories of Emotions Scale Items and Reliabilities (Study 2, n = 216)

<table>
<thead>
<tr>
<th>Implicit Theories of Emotions (General, α = .77 )</th>
<th>Implicit Theories of Emotions (Self-Theory α = .79 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem: In the following questions we are interested in your thoughts about emotions. There are no right or wrong answers. We are just interested in your views. Using the scale below, please indicate the extent to which you agree or disagree with the following statements.</td>
<td>Stem: In the following questions we are interested in your thoughts about your personal ability to change the emotions you experience. There are no right or wrong answers. We are just interested in your views.</td>
</tr>
<tr>
<td>Scale Items:</td>
<td>Scale Items:</td>
</tr>
<tr>
<td>1. The truth is people have very little control over their emotions.</td>
<td>1. The truth is, I have very little control over my emotions.</td>
</tr>
<tr>
<td>2. No matter how hard they try, people can't really change the emotions they have.</td>
<td>2. No matter how hard I try, I can’t really change the emotions that I have</td>
</tr>
<tr>
<td>3. Everyone can learn to control their emotions.</td>
<td>3. I can learn to control my emotions.</td>
</tr>
<tr>
<td>4. If they want to, people can change the emotions that they have.</td>
<td>4. If I want to, I can change the emotions that I have.</td>
</tr>
</tbody>
</table>
Psychological distress. Measures of stress and depression served as indicators of psychological distress:

Stress. Stress was measured with the four-item Perceived Stress Scale (PSS-4; Cohen, Kamarck, & Mermelstein, 1983). The PSS-4 asks about the extent to which life situations are appraised as stressful over the past month (e.g., “I felt that difficulties were piling up so high that I could not overcome them”). Items are scored on a four-point Likert scale ranging from 1 (rarely or none of the time) to 4 (most or all of the time). Total scores range from four to 16. The PSS-4 has been shown to be a reliable and internally consistent measure of stress (Hewitt, Flett, & Mosher, 1992). In the present sample, internal consistency was .81.

Depression. Depressive symptoms were measured using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item self-report scale and is widely used as measure of depressive symptoms among adults (Radloff, 1977) and adolescents (Radloff, 1991) in the community. Participants are asked to rate the frequency of various thoughts and feelings over the last week (e.g., “I felt hopeful about the future” and “I had crying spells”). Responses are recorded on a four-point Likert scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time). Total scores range from 0 to 60 with scores of 15 and above indicative of mild to moderate depression. Research with the CES-D indicates that it is internally consistent and displays good construct validity and test-retest reliability (Radloff, 1977). In the present sample, internal consistency was .91.
Procedure

All survey items were administered to students online as part of a larger university-wide survey distributed to all incoming Psych 1 student at Stanford University. The entire survey packet took approximately one hour for students to complete and was available to students in the first two weeks of the academic quarter. Students were informed that the information would be kept confidential. Ethics approval for the project was obtained from appropriate governing bodies including the Stanford Human Subjects Research and Institutional Review Board (IRB).

Results

Preliminary Analyses

Prior to analysis, all variables were examined for missing values and distributional assumptions of multivariate analysis. Of the total sample, eight surveys were left blank or incomplete (missing data > 10%) and were excluded from the analysis. This reduced the total sample to 208. Across all variables, missing data were rare (< 1%), and were imputed with the overall mean for that variable – a conservative technique in such cases (Tabachnick & Fidell, 2007). As in previous work on implicit theories (Tamir et al., 2007), beliefs about emotion were not significantly related to gender or ethnicity and these variables are not discussed further. Means (M), standard deviations (SD), ranges, internal consistencies (α), and correlations for all variables are presented in Table 6.
Table 6. Implicit Theories of Emotion – Descriptive Statistics, Reliabilities and Correlations (Study 2, n = 216)

| Variable                        | M    | SD   | Range      | α  | 1       | 2       | 3       | 4     | 5     | 6     | 7     |
|---------------------------------|------|------|------------|----|---------|---------|---------|-------|-------|-------|-------|-------|
| 1. General Entity Beliefs       | 10.37| 2.76 | 4.00 – 20.00 | .77| 1       | .73**   | -.26**  | -26** | -.18* | .31** | .15^  |
| 2. Personal Entity Beliefs      | 9.66 | 2.82 | 4.00 – 20.00 | .79| 1       | -.34**  | -.37**  | -.24** | .38** | .27** |
| 3. Cognitive Reappraisal        | 30.44| 5.78 | 10.00 – 70.00 | .89| 1       | .34**   | .37**   | -.33** | -.38** |
| 4. Self-esteem                  | 3.60 | 1.01 | 1.00 – 5.00  |    | 1       | .53**   | -.51**  | -.43** |
| 5. Satisfaction with life       | 26.54| 6.09 | 5.00 – 35.00 | .89| 1       | -.57**  | -.48**  |       |
| 6. Stress                       | 7.09 | 2.49 | 4.00 – 16.00 | .81| 1       | .67**   |        |       |
| 7. Depression                   | 26.75| 8.00 | 0.00 – 60.00 | .91| 1       |         |         |       |

^p<0.05 *p<0.01 **p < 0.001
**Hypothesis 1: Links to Well-Being, and Psychological Distress**

Consistent with H1, both the general and personal scales demonstrated significant correlations with well-being, and psychological distress. Entity beliefs were associated with lower levels of self-esteem, and satisfaction with life, and higher levels of stress and depression.

**Hypothesis 2: General Beliefs vs. Personal Beliefs**

A within-subjects $t$-test between the general and personal scales was used to examine whether people’s general beliefs about emotions differed significantly from their appraisal of their own emotions. Consistent with H2, and findings in Study 1, people endorsed entity beliefs less on the personal measure ($M_{\text{Personal}} = 9.66, M_{\text{General}} = 10.37, t(208) = 4.98, p < .001, d = .26$), indicating greater perceived control over their own emotions.

To examine whether personal beliefs explained greater variance in emotion regulation, well-being, and psychological distress, when compared to general beliefs (H2), I conducted a series of two-step hierarchical regression analyses to examine the unique variance explained by the self-theory measure. Despite the high correlation between the general and self-theory scales ($r = .73$) there was no evidence of multicollinearity. For each dependent variable, the general scale was entered first, followed by the personal scale in the second step. Table 7 displays the standardized regression coefficients ($\beta$), $R^2$ and $R^2$ change for the full and restricted models in each analysis.

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3 In a second set of analyses we repeated the hierarchical regression in the reverse order entering the Self Theory scale in the first step and the General Theory scale in the second. The General scale failed to explain unique variance on any of the dependent variables when controlling for ‘Self-Theories’.
Both scales accounted for a significant portion of variance in all variables. The belief that emotions were fixed predicted increased psychological distress (stress and depression), and decreased well-being (lower self-esteem and satisfaction with life). The personal scale consistently explained unique variance on these measures over and above the general scale.

Table 7. Hierarchal Regressions – General and Self-Theory Scales (Study 2, n = 216)

The Personal vs. General Implicit Beliefs About Emotion Scales: Hierarchical Multiple Regressions Predicting Well-Being, and Psychological Distress

<table>
<thead>
<tr>
<th>Dependent Variable and Step</th>
<th>β</th>
<th></th>
<th></th>
<th>R²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Step</td>
<td>Final</td>
<td>Change</td>
<td></td>
</tr>
</tbody>
</table>

**Self Esteem**

1. General Entity Beliefs
   - .26**
   - .01
   - .06**

   Personal Entity Beliefs
   - .37**
   - .13**
   - .07**

**Life Satisfaction**

1. General Entity Beliefs
   - .18**
   - .01
   - .03**

   Personal Entity Beliefs
   - .24**
   - .05**
   - .02*

**Stress**

1. General Entity Beliefs
   - .31**
   - .07
   - .09**

   Personal Entity Beliefs
   - .33**
   - .14**
   - .05**

**Depression**

1. General Entity Beliefs
   - .15*
   - .10
   - .02*

   Personal Entity Beliefs
   - .34**
   - .07**
   - .06**

**p < .001 * p < .05 Beta is the standardized regression coefficient. Adjusted R² values and increments for R² Change significance levels are based upon F tests for**
Discussion

The primary aim of Study 2 was to build upon findings in Study 1 by developing and evaluating a revised “Self-Theory” measure of the implicit theories of emotion scale (an instrument that would serve as the primary measure of emotion beliefs in the current thesis). Study 2 focused on examining people’s beliefs about their personal ability to control their emotions as well as possible links to indicators of well-being, and psychological distress. Findings indicated that entity beliefs about emotions were indeed associated with decreased well-being (reduced self-esteem and satisfaction with life) and increased clinical symptoms of stress and depression. At the time this study was conducted, very little work had examined implicit beliefs about emotions and their implications for psychological health and illness. Study 2 thus contributed to a nascent literature on implicit theories and began to extend this work to the clinical domain.

Results from Study 1 indicated that people’s beliefs about their own intelligence (self-theories) were a better predictor of outcomes than their beliefs about intelligence in general (general implicit theories). Study 2 replicated these findings in the domain of beliefs about emotions. Specifically, people’s beliefs about their ability to control their own emotions predicted well-being and clinical symptoms over and above their beliefs about emotions in general. Results from Studies 1 and 2 indicate that Self-Theory scales may thus offer theoretical and practical advantages over general implicit theory scales across domains.

Recognizing that there may be discrepancies between people’s broader implicit beliefs about emotions and their beliefs about their own emotions is important in the context of clinical treatments and interventions. As with research on implicit beliefs about
intelligence (Study 1), the results of the current study demonstrate, knowing that change is possible for some is not the same as believing personally in one’s ability to change. The extent, then, to which incremental beliefs are personally internalized may determine how and for whom this message is most effective and may ultimately have important consequences for psychological health and well-being. In addition to extending research on implicit beliefs, these results may have important implications for work on emotion regulation and psychopathology. The current study examined emotion beliefs, well-being and psychological distress in a healthy undergraduate sample. However, the relationship between implicit beliefs, and psychological health indicates that these beliefs could also play an important role in the strategies people use to regulate their emotions in daily life.

**Limitations and Future Directions**

The current study replicated findings presented in Study 1 in a new domain – beliefs about emotions and marked an important first step towards understanding the role of implicit beliefs in psychological health and well-being. Despite this, several limitations should be noted. First, data collected in the current study are again based on student samples and participant self-reports. As with much of the research on implicit beliefs in other domains, this limits generalizability beyond ‘healthy’ student samples. Given that implicit beliefs about emotions may have important clinical implications, research with clinical populations is needed to better understand the role these beliefs play in psychological illness.

A second limitation relates to measurement. In the current study, I included only a relatively small set of clinical and well-being indicators. A reliance on quantitative survey research data also limits understanding of how individuals actually think about their
emotions and their reasoning behind their views (this is a limitation I sought to address in Study 3). Finally, while the current studies identified links between implicit beliefs about emotions and psychological health, we do not yet know why these beliefs have these psychological correlates. One possibility, presented in Chapter 6 and 7, is that implicit theories of emotion influence emotion regulation efforts in day-to-day life. Emotion dysregulation is a core feature of most Axis I and Axis II psychological disorders (American Psychiatric Association, 2000) and training in emotion regulation strategies is a key component of many forms of psychotherapy (Werner & Gross, 2009). However, the strategies patients ultimately use to regulate their emotions – and whether they even make such attempts at all – may be linked to the implicit beliefs they hold about their ability to control the emotions they experience. People holding entity beliefs about emotions might, for example, be more likely than people holding incremental beliefs to rely on external regulation strategies (e.g., avoidance, medication, drug use, tobacco, alcohol or caffeine).

The process model of emotion regulation (Gross & Thompson, 2007) points to a wide range emotion regulation strategies available to people at different stages in the emotion generation process. Given that many features of psychopathology involve poorly implemented, inflexible or context-insensitive strategies (Werner & Gross, 2009), links between implicit theories of emotion and emotion regulation may explain the effects these beliefs have on psychological health and well-being. Results from Study 2 indicate that the implicit beliefs people hold – particularly about their emotions – may have important implications for emotion regulation. In an attempt to better understand what individuals actually believe about their emotions, and the associations this may have with emotion regulation, Study 3 examines qualitative data and differences in the kind of emotion regulation strategies people spontaneously refer to in day-to-day life.
STUDY 3

8.4 Understanding Implicit Theories (A Qualitative Study)

Study 1 and Study 2 used quantitative research methods to demonstrate that people’s implicit beliefs about their own intelligence and emotions differ significantly from their beliefs about intelligence and emotions in general. These self-beliefs also served as a greater predictor of achievement, emotion regulation and psychological health than general beliefs and were associated with these outcomes in significant and meaningful ways. While these findings point to important differences in the way people think about their emotions, much of the meaning and context of participants’ responses is lost without also examining the explanations for, and thinking behind, their views. For this reason, the primary aim for Study 3 was to use qualitative methods to take a closer look at how entity and incremental theorists actually think about their emotions. It also offered an opportunity to examine potential difference in the kinds of emotion regulation strategies entity and incremental theorists spontaneously refer to when asked if they can change or control their emotions.

Mixed methods research — employing both quantitative and qualitative methods — is increasingly regarded a pragmatic way of expanding the scope or breadth of research while also offsetting the weaknesses of each approach (Rossman & Wilson 1991). Some even regard it as essential for interpreting and strengthening the validity of significant quantitative findings (Greene, Caracelli, & Graham 1989), and even as a “gold standard” for research in social and psychological sciences (Oneueguzie & Leech, 2004). In this vein, Study 3 was designed as a qualitative exploration and investigation into the following research questions:
Q1: What do incremental and entity theorists actually think about their ability to change and control their emotions? What kind of reasons do they give to justify their views?

Q2: Do participants’ scores on the four-item personal implicit theories of emotion scale (ITES) correspond with what they actually say when asked about their ability to change or control their emotions? And,

Q3: Do incremental and entity theorists (as categorized by the ITES), differ in the kinds of emotion regulation strategies they make reference to when asked about their ability to change or control their emotions?

Based on the theoretical hypotheses presented in chapter 6 and 7, I predicted:

H1: Entity theorists, compared to incremental theorists, will display a restricted range of emotion regulation strategies (spontaneously making reference to fewer strategies) in their open-ended responses.

H2: Entity theorists, compared to incremental theorists, will refer to proportionally fewer *internal strategies* (e.g., cognitive change and attentional deployment) and a proportionally greater number of *external* and *antecedent-focused* strategies (e.g., avoidance, problem solving, response modulation etc.) for regulating their emotions. Incremental theorists on the other hand, will refer to a proportionally greater number of internal emotion regulation.
Methods

Participants

Participants consisted of 158 individuals (57% female) recruited from Amazon Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011). Each participant was offered 50 cents in exchange for completing the short online survey. Participants ranged from 18 to 63 years of age (M = 33.76, SD = 12.09). The sample consisted of 47% White Caucasian, 27% Asian, 4% Hispanic, 4% African American, 2% European; 1% Australian/New Zealander; 1% Native American/Alaskan; 1% Other and 13% of subjects chose not to indicate their ethnicity. Participants also varied in educational backgrounds: 11% indicated their highest level of education consisted of high school or equivalent; 3% indicated they had attained vocational/technical training; 30% reported having some university education; 36% reported completing university; 16% completed a master’s program; 3% had completed a doctoral degree/PhD; and, 1% completed a professional degree (MD/JD).

Measures

Implicit theories of emotion were assessed using the four-item Personal Implicit Theories of Emotion Scale described in Study 2. Please refer to Study 2 (Table 5) for scale items, and information on anchor points and scoring. For the purpose of examining categorical differences in open-ended responses, participants were classified either as incremental theorists, entity theorists, or as ‘neutral’/‘undecided’ according to their scores on the four-item ITES. According similar methods for categorizing implicit theory responses (Hong, Chiu, Dweck, Lin & Wan, 1999), Incremental theorists were
categorized as participants with scores of 10 and below (average disagreement with the five-point, Agree – Disagree items); entity theorists were categorized as those with scores of 14 and above (average agreement with the ITES items); and participants were classified as “neutral” or “undecided” with scores ranging from 11 - 13 (average endorsement of the scale midpoint – “neither agree nor disagree”). Participants were asked the following question: “Do you think emotions are things you can change or control? Please briefly explain why or why not in the space below”.

Content Coding

Open-ended responses were independently coded by three coders (the primary researcher and two additional coders who were naïve to the research hypotheses). Responses were coded for: 1) Implicit beliefs about emotions (1 = incremental beliefs; 2 = unsure or neutral; 3 = entity beliefs) and, 2) Reference to emotion regulation strategies (0 = no strategies mentioned; 1 = external strategies; 2 = internal strategies). Coders were given the following instructions about coding “People hold different beliefs about their emotions. Some people think emotions are things that can’t really be changed or controlled (entity beliefs), other people believe that we can control or change them (incremental beliefs). For each of the responses below, you are being asked to indicate what you think this person believes about their emotions.” To code for external emotion regulation strategies, coders were provided with the following instructions: “Some people believe they can control their emotions by using external strategies like changing aspects of a situation, environment, or circumstance. This might mean avoiding certain people, places or things that trigger negative feelings. Or, it might mean seeking out certain people, places or things that produce more positive feelings. If the response refers to
changing the situation in some way, please tick this box.” To code for internal emotion regulation strategies, coders were given the following instructions: “Some people believe they can control their emotions by using internal strategies like redirecting their attention, distracting themselves or otherwise changing their beliefs or thoughts about a situation. This might mean changing their thinking away from negative aspects of a situation. Or, it might mean thinking about positive images or things. If the response refers to internal strategies in some way, please tick this box”. Finally, coders were instructed, “some responses make no mention of how one can control their emotions. If there are no external or internal strategies mentioned in the response, please tick this box”

Results

Preliminary Analyses

Of the 158 initial responses, 11 were either duplicate surveys (by the same participant) or left mostly blank or incomplete (missing data > 25%); eight respondents failed to answer the primary open-ended about whether emotions could be controlled; and another 15 responses were either unclear or illegible (e.g., “Yes, because emotions should be let get better upon you”). These responses were excluded from the analysis reducing the total sample to 124. To establish inter-coder reliability, two additional coders independently coded a selection of 20 responses randomly selected from each coding category. A correct answer was recorded when coders ticked the same boxes as the researcher and left the same boxes unchecked. The researcher and additional coders were blind to participants’ scores on the four-item ITES measure. All three coders were in agreement with how to categorize 80 percent of the responses on participants’ beliefs about their emotions and 85 percent of responses for the presence or absence of internal
and external emotion regulation strategies. Inter-coder reliability ratings were calculated using Cohen’s Kappa – which provides a measure of agreement between raters while also taking into account chance levels of agreement. Cohen’s Kappa is regarded as robust albeit conservative measure of reliability between coders (McHugh, 2012; Viera & Garrett, 2005). A kappa of 1 indicates perfect agreement, whereas a kappa of 0 indicates agreement equivalent to chance. Independent coding of responses for implicit beliefs about emotions yielded good reliability ratings with the primary researcher (Rater 1, $k = .67, p < .001$; Rater 2, $k = .75, p < .001$) indicating ‘substantial agreement’ between raters according to Cohen’s Standards (Viera & Garrett, 2005). There was even stronger reliability between raters in coding responses for reference to emotion regulation strategies (Rater 1, $k = .82, p < .001$; Rater 2, $k = .83, p < .001$) – ‘almost perfect agreement’ between raters according to Cohen’s Standards (Viera & Garrett, 2005). These findings indicated good overall inter-coder reliability across raters and coding categories.

**Implicit Theories of Emotion**

According to the ITES, on average more people endorsed incremental beliefs about their emotions ($n = 67$). Forty-two participants were classified as ‘undecided’ and only 15 respondents indicated average agreement with entity beliefs about their emotions. The ITES coding was also reliably correlated with participants’ blindly coded open-ended answers about their ability to change or control their emotions ($r = .84, k = .78, R = .87, p < .001$). Samples of open-ended responses by participants according to their ITES scores can be seen in Table 8. Samples of responses containing reference to internal and external emotion regulation strategies can also be see in Table 9.
Table 8. Examples of Open-Ended Responses to the Question: “Do you think emotions are things you can change or control?"  
Responses are organized by participants’ scores on the 4-item Implicit Theories of Emotion Measure.

<table>
<thead>
<tr>
<th>Incremental Beliefs (n = 67)</th>
<th>Neutral or Undecided (n = 42)</th>
<th>Entity Beliefs (n = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Theory Scores: 4 - 10</td>
<td>Implicit Theory Scores: 11 – 13</td>
<td>Implicit Theory Scores: 14 - 20</td>
</tr>
</tbody>
</table>

“Of course you can -- you can change your point of view, you can do lots of things”  
“I am not sure. I would like to think that they are, I just don’t have any evidence that it is true”  
“Emotions are who you are - they cannot be changed. Emotions are just a part of what makes you up like your genes”

“Yes. People can control their emotion with practice and professional help. For example, people who go to anger management classes so that they can control their outbursts”  
“I think I might be able to control my emotions in certain situations but to change them overall would be difficult. To me an emotion is a natural reaction you have to a situation”  
“I’ve tried to control my emotions, but I can't. If I'm mad, people can always tell. I cry at a drop of a hat, even when it isn't appropriate”

“Yes. Everyone has shifts in mood, and to some extent, that's normal. However, I know personally that I can turn them around instead of falling apart”  
“I'm a clinical psychologist and know that people's emotions can be changed. However, I have also struggled with MDD my entire life and I have difficulty believing that my own emotions are changeable”  
“I think emotions are a result of your upbringing and are pretty set by the time adulthood arrives. There may be some emotions one can control, but mostly they remain the same throughout one's life”

“It’s not easy when you experience strong emotions, but we have the capacity to choose to change our emotions. We have free will, we are not slaves to our feelings”  
“I think some people have more control over their emotions than others, but everybody learns to keep their emotions in check to some extent. Imagine the tantrums you'd witness daily, and the public weeping if they didn't!”  
“I don't think emotions are things we can control or change. We might try to suppress them sometimes, but I think they are an integral part of who we are”

“Definitely! A person doesn't have to be mood driven. Anyone who wants to learn to control their emotional responses to life situations can do it.”  
“I believe that you can control your emotions to some extent, but in the face of traumatizing events, I believe it isn't possible to control them”  
“No, I can't change or control them. If it was possible, then all people in this world would look happy all the time”

“Yes, you can change how you react to your life experiences”  
“Some people can I believe. But, not all. I try to learn from things that were overly emotional by preparing myself for the next time the same thing happens”  
“No because they are natural you cant help how you feel about a situation”
Table 9. *Examples of Responses Referring to Internal and External Strategies for Regulating Emotions*

<table>
<thead>
<tr>
<th><strong>External Strategies</strong> (E.g., situational avoidance, social support, problem solving, medication etc.)</th>
<th><strong>Internal Strategies</strong> (E.g., reappraisal, distraction, relaxation etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“You can control some emotions by withdrawing yourself from the situation that caused the emotions”</td>
<td>“Yes it's possible to control my emotions through meditation and breathing exercises”</td>
</tr>
<tr>
<td>“I think you can. You can always put yourself in a better situation. For example, if you are feeling lonely - call a friend. Company is sure to cheer you up”</td>
<td>“It takes time and practice, but I believe people can change their beliefs about how they perceive certain things and eventually be able to change the emotions attached to those beliefs”</td>
</tr>
<tr>
<td>“Yes, if you're feeling bad you can take actions to remedy what's making you feel bad”</td>
<td>“Emotions can be changed by thinking about things differently and making choices that are opposite to bad thinking.”</td>
</tr>
<tr>
<td>“Yes it’s possible to control my emotions. Physical exercise helps greatly in the process of controlling my mood despite heavy depression.”</td>
<td>“I think you can make an effort to control your emotions through things like meditation and relaxation. You can put yourself into a better state to not over-react”</td>
</tr>
<tr>
<td>“Yes, because if you subject yourself to negative things... you are going to experience negative emotions. However, if you start to subject yourself to positive things... you will start to experience positive emotions instead!”</td>
<td>“I think we can change our emotions with cognitive therapy. We can change our perspective on things by reframing the extent of how negative it is: &quot;It was a bad day&quot; versus &quot;it was the worst day of my life&quot; - it's what we say to ourselves”</td>
</tr>
<tr>
<td>“The more you stay around someone the more emotions you develop for them and the more you stay away from them the less emotions you have for them”</td>
<td>“Emotions are things that you can change and control. All is inside you and your mind, and you have the power to change it. Focusing on something positive may help”</td>
</tr>
<tr>
<td>“Yes. People can do things to control their emotions. For example, people can listen to music to change their mood”</td>
<td>“I do think emotions can be changed… There are techniques to calm down, ways to talk yourself into seeing things differently. Counselling and psychotherapy can also help change how you think and react”</td>
</tr>
<tr>
<td>“Since emotions are the result of chemicals flooding our brains, if we can change the chemicals, we can change the emotions, via medication mostly”</td>
<td></td>
</tr>
</tbody>
</table>
Reference to Internal and External Emotion Regulation Strategies

Of the 124 open-ended responses, 80 contained reference to either internal or external strategies for regulating emotions. Twenty-six responses cited external strategies for regulating emotions (e.g., situation selection, seeking social support, problem solving, exercise etc.); and 54 responses cited internal strategies (e.g., meditation, relaxation, reappraisal, cognitive therapy techniques etc.). Consistent with H1, entity theorists, compared to incremental theorists, appeared to display a restricted range of emotion regulation strategies in their open-ended responses. As seen in Figure 14, people holding incremental beliefs about their emotions were more likely than people holding entity beliefs to make reference to some form of either internal or external emotion regulation in their answers. In fact, in the current sample over 80 per cent of incremental theorists self-generated strategies for regulating their emotions. Consistent with H2, incremental theorists also referred more frequently than entity theorists to internal strategies (particularly strategies involving cognitive change) over external ones (see Figure 14). People holding entity beliefs about their emotions, on the other hand, were generally less likely than incremental theorists to make reference to any strategies in their open-ended responses. Over 65 per cent of entity theorists, made no reference to any kind of emotion regulation. When entity theorists did refer to emotion regulation strategies, they more often referred to external strategies for regulating emotions over internal ones. In fact, in the current sample, only five entity theorists referred to external strategies and no entity theorists made reference to internal strategies for regulating their emotions.
Discussions

Quantitative research methods offer notable strengths in psychological research including: precision, objectivity, replicability, and the possibility of making generalizable causal inferences regarding the relationships between variables. These methods however, can also be criticized for being overly reductionist, artificial, and poorly suited to understanding the more complex meaning and context of phenomena. The primary aim of Study 3, was to explore how incremental and entity theorists actually think about their ability to change and control their emotions, and the deeper meaning and context behind
their views. Participants were asked the open-ended question: “Do you think emotions are things you can change or control. Please briefly explain why or why not in the space below”. In their responses, incremental theorists more frequently than entity theorists cited ‘their personal experience,’ ‘agency,’ ‘free will’ and one’s ability ‘learn and change’ as explanations for their perceived control over their emotions. Entity theorists on the other hand, were more likely than incremental theorists to describe emotions as “natural,” part of “who you are” and the results of “upbringing” and “genes”. Results from blind content coding indicated that the ITES scale also corresponded with participants’ open-ended answers indicating that the four-item scale is a good measure of people’s beliefs about their emotions.

In addition to examining the meaning of participants’ beliefs about their emotions, qualitative analyses of responses revealed that incremental and entity theorists also differed in the kinds of emotion regulation strategies they spontaneously made reference to. Consistent with predictions, incremental theorists referred more frequently than entity theorists to ‘internal’ attention regulation and cognitive change strategies such as “meditation,” “relaxation,” “breathing exercises,” and “changing ones thinking.” Entity theorists, on the other hand, were less likely than incremental theorists to make reference to any emotion regulation strategies. When they did, they were more likely to refer to external strategies like “problem solving,” “avoidance” and “withdrawal” from situations that caused negative emotions.

Advocates of mixed-methods research argue that the when used to augment structured responses, qualitative methods can provide key insights into complex and unexpected relationships: “When we illuminate that complexity through multiple lenses,
we see more facets than when we only use one” (Rossman & Wilson, 1991, p.16). These comments bear some truth in the current study: In addition to helping validate the ITES as an accurate measure of peoples’ beliefs about their emotions, Study 3 provides some contextual data for understanding how and why people hold such varied beliefs on this topic. An examination of the kinds of emotion regulation strategies entity and incremental theorists make reference to, also point to the possibility that implicit theories influence emotion regulation choice in meaningful and important ways. In particular, it may be that implicit beliefs about emotions do, indeed, predispose entity theorists towards less adaptive, external and avoidance-based situation selection strategies and incremental theorists to more adaptive strategies like cognitive change. The first of these hypotheses is explored in the next chapter.

8.5 Chapter Summary

Studies 1 – 3 examined the implicit “self-theory” scales and their utility in research on self-regulation, emotional health and well-being. In Study 1 the Personal Implicit Theories of Intelligence Scale was developed and validated in a sample of 643 Australian high school students. Findings indicated that personal beliefs (incorporating both implicit theories and self-efficacy) were a more powerful predictor of outcomes than general implicit theories. In this first study, the belief that intelligence was 'fixed' – and outside of one’s control – was predictive of fewer achievement goals, greater helplessness attributions and poorer self-reported academic grades. Fixed 'entity' beliefs were also predictive of increased self-handicapping, truancy and disengagement from school. Consistent with predictions, the new self-theory scale uniquely explained greater variance on all these measures over and above the General Implicit Theories of Intelligence Theory
Scale. In Study 2 the Personal Implicit Theories of Emotion Scale was developed and validated in a sample of 216 American university students. In this study, a perceived lack of control over emotions predicted increased stress and depression as well as reduced self-esteem and satisfaction with life. Like the Personal Implicit Theories of Intelligence Scale, the revised Personal Implicit Theories of Emotion Scale also explained unique variance over and above the General Scale on all dependent variables. Finally, in a qualitative study (Study 3), open-ended responses helped contextualize the different ways entity and incremental theorists actually think about their emotions. Blind content analysis helped further validate the ITES and revealed that people holding entity beliefs about their emotions were less likely than people holding incremental beliefs to report using emotion regulation strategies in their open-ended responses. When they did, they were more likely than incremental theorists to refer to external strategies (like avoidance). Incremental theorists on the other hand, more frequently referred to emotion regulation strategies in their open-ended answers and more readily referred to internal strategies (like cognitive change). These qualitative findings point to differences in the kinds of strategies entity and incremental theorists spontaneously refer to for regulating their emotions lending some preliminary support to hypothesized links between Implicit Theories of Emotion and different forms of emotion regulation. The rest of this thesis focuses on the potential implications people’s implicit beliefs about emotions have for how they regulate their emotions in daily life. Using the revised personal implicit theories of emotion scale, Chapter 9 and 10 examine links between implicit theories of emotion and the selection of different emotion regulation strategies. Chapter 9 begins by testing associations between entity beliefs about emotions and the use of cognitive and behavioural avoidance strategies in daily life.
9. EMOTION BELIEFS AND AVOIDANCE

9.1 Introduction to Studies 4 & 5

Chapter 8 demonstrated that people’s beliefs about intelligence and emotions have important associations with motivation, self-regulation and psychological health. Studies 1 and 2 also showed that people’s beliefs about *their* personal intelligence and emotions are a stronger predictor of outcomes than their beliefs about intelligence and emotions in general. In the context of emotion beliefs, people who believe they cannot control their emotions were more likely to report reduced self-esteem and reduced satisfaction with life, as well as increased stress and depression. An important question that remains, however, is why these beliefs have such important social and affective correlates. One possibility is that beliefs about emotions influence the identification, selection and implementation of emotion regulation strategies that, in turn, determine how successful one is at managing their emotions (see Chapter 6 for a theoretical review). Study 3 (a qualitative research study) provided some preliminary support for this hypothesis. Compared to incremental theorists, entity theorists referred to fewer strategies for regulating their emotions in daily life and were more likely to cite external strategies (like avoidance) over internal strategies (like cognitive change). The current chapter empirically tests these relationships, focusing on emotion beliefs and avoidance. Study 4 examines links between emotion beliefs and avoidance in daily life, and Study 5 experimentally tests these causal relationships by manipulating people’s beliefs about their emotions.

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STUDY 4

9.2 Implicit Theories of Emotion & Avoidance

Study 4 examines links between implicit beliefs about emotion and avoidance-based situation selection strategies in a diverse cross-sectional study. It also examines whether emotion beliefs influence well-being and clinical symptoms via avoidance-based emotion regulation strategies. Study 4 aimed to test the following predictions:

H1: Entity beliefs about emotions will be positively associated with avoidance-based situation selection strategies (e.g., cognitive and behavioural avoidance). It will also be negatively associated with well-being (loneliness and satisfaction with life), and positively associated with clinical symptoms (stress, anxiety and depression).

H2: The relationship between implicit beliefs and well-being/clinical symptoms will be explained by avoidance-based emotion regulation.

Methods

Participants

Participants were 112 individuals (67 female) recruited from Amazon Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011). Participants were offered 70 cents in exchange for completing a short online survey and participation was restricted to Amazon Turk workers with a HIT approval rate > 95% and minimum of 500 approved HITS. These basic requirements help ensure a higher quality of survey responders (Buhrmester et al., 2011). A statistical power analysis was performed for sample size estimation using the software package GPower (Erdfelder, Faul, & Buchner, 2016). Based on data from
similar research on implicit theories of emotion (Study 2, De Castella et al., 2013),
correlation coefficients ranged from .24 to .38 - a small to medium effect by Cohen's
(1988) standards. With a two-tailed test, an alpha = .05 and power = 0.8, the projected
sample size needed to detect effects of this size (i.e. larger than \( r = .20 \)) is approximately
\( N = 110 \). Based on this analysis, data collection continued until I obtained a valid sample
> 110. From 150 responses collected in total, ten were either duplicate surveys (by the
same participant) or left mostly blank or incomplete (missing data > 10%) and were
excluded from the analysis. To identify participants who may not have been carefully
reading all the survey items, three questions were embedded randomly in different
sections of the survey that instructed participants to select a specific response (e.g.,
“please select “strongly disagree”). Twenty-eight participants incorrectly answered these
screening questions and were removed from the analysis, reducing the final sample to 112.

Participants in the final sample ranged from 18 to 66 years of age (\( M = 35.27, SD
= 12.37 \)). The sample consisted of 58% White Caucasian, 20% Asian, 4.5% Hispanic,
1.2% African American, 0.9% European; 15.4% of subjects chose not to indicate their
ethnicity. Participants varied in educational backgrounds: 10.5% indicated their highest
level of education consisted of high school or equivalent; 3.2% indicated they had
attained vocational/technical training; 30.5% reported having some university education;
37.9% reported completing university; 14.7% completed a masters program; 2.1% had
completed a doctoral degree/PhD; and, 1.1% completed a professional degree (MD/JD).

Measures

**Implicit theories of emotion.** Implicit theories of emotion were assessed using
the four-item General and Personal Implicit Theories of Emotion Scales – see Table 5 for
scale items (De Castella et al., 2013). Internal consistency in the current sample was adequate (general beliefs $\alpha = .60$, personal beliefs $\alpha = .73$). Descriptive statistics for all measures can be found in Table 10.

**Avoidance.** Avoidance was measured using the Cognitive-Behavioural Avoidance Scale (CBAS, Ottenbreit & Dobson, 2004). The CBAS contains 31 items that measure avoidance strategies along cognitive, behavioural, social, and non-social dimensions. These include: Cognitive Social Avoidance (e.g., “I try not to think about problems in my personal relationships”); Behavioural Social Avoidance (e.g., “I tend to make up excuses to get out of social activities”); Cognitive Nonsocial Avoidance (e.g., “I avoid making decisions about my future”); and Behavioural Nonsocial Avoidance (e.g., “I quit activities that challenge me too much”). Participants are asked to rate the items on a five-point Likert-type scale (1 = Not at all true for me, to 5 = Extremely true for me). Given the study goals, and interest in assessing common cognitive and behavioral avoidance-based emotion regulation strategies, I utilized the total avoidance scale and the separate cognitive and behavioural subscales, collapsing across the social and nonsocial items. Previous research using only the cognitive and behavioural scales provides support for this two-factor model (Blalock, 2000), and indicates that these scale dimensions are valid and reliable, displaying good internal consistency (Cognitive Avoidance $\alpha = .90$; Behavioural Avoidance $\alpha = .93$), and test-retest reliability at one week (Cognitive Avoidance $\alpha = .87$; Behavioural Avoidance $\alpha = .91$) (see Carvalho & Hopko, 2011). For each scale, items were averaged to yield a mean avoidance score, with higher scores indicating a greater degree of avoidance (Carvalho & Hopko, 2011). Cronbach alpha for the current study was .85 for cognitive avoidance and .90 for behavioural avoidance. The mean total avoidance score (the average across all items) was used for ease of reporting,
when examining avoidance as a potential mediating variable utilized. Descriptive statistics for the CBAS subscales and total CBAS scale can be found in Table 10. Cronbach’s alpha for the total CBAS scale was .93.

**Psychological health.** Psychological health was assessed using measures of well-being (loneliness and life satisfaction) as well as measures of clinical symptoms (depression, anxiety, and stress). For well-being, loneliness was measured using the 8-item revised version of the UCLA Loneliness Scale (ULS-8, Hays & DiMatteo, 1987). The original UCLA Loneliness Scale (ULS-20) and the four-item short form (ULS-4) are widely used in personality research (Russell, 1996; Russell, Peplau, & Cutrona, 1980), but the newer ULS-8 is considered a reliable and valid alternative to the 20-item measure, and a better substitute for the ULS-20 than is the ULS-4 (Hays & DiMatteo, 1987). Research indicates that the ULS-8 is reliable (α = .84) and displays good concurrent and discriminant validity with related constructs (Hays & DiMatteo, 1987; Wua & Yao, 2008). Life satisfaction was measured using the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS is a commonly used measure of life satisfaction (e.g., “In most ways my life is close to ideal”). Items are rated on a seven-point Likert scale with total scores ranging from 5 to 35. Internal consistency in the current sample was good for both scales (ULS-8, α = .86; SWLS α = .90).

**Clinical symptoms.** Clinical symptoms were measured using the 21-item Depression, Anxiety, and Stress Scales (DASS-21; Henry & Crawford, 2005; Lovibond & Lovibond, 1995). The DASS-21 contains three subscales (each with seven items) that assess symptoms of stress (e.g., “I found it hard to wind down”), anxiety (e.g., “I felt scared without any good reason”), and depression (e.g., “I felt that life wasn’t
worthwhile”) within the past week. Research with the DASS indicates that the scale is reliable and valid for use in both clinical (Brown, Chorpita, Korotitsch, & Barlow, 1997) and nonclinical samples (Henry & Crawford, 2005; Page, Hooke, & Morrison, 2007) and the combined 21 total score is a sensitive tool for screening for stress, anxiety and depression (Tran, Tran, & Fisher, 2013). In the current sample, internal consistency for the DASS scales was good (Stress $\alpha = .90$; Anxiety $\alpha = .92$; Depression $\alpha = .94$; Total DASS $\alpha = .96$). Principal components analysis of all psychological health items revealed that the depression, anxiety and stress (DASS) scales formed a single factor (Eigenvalues $= 14.40$, factor loadings $> .61$) accounting for 42.4% of the overall variance. This was followed by two separate factors for satisfaction with life (SWLS, Eigenvalues $= 4.48$, factor loadings $> .64$) and loneliness (ULS, Eigenvalues $= 1.67$, factor loadings $> .40$). For this reason, to examine the indirect effect of avoidance on these measures, I retained the separate ULS and SWLS scales and used the summed DASS-21 scale as the global indicator of clinical symptoms.

**Procedure**

Participants were invited to complete surveys online through Amazon Turk. They were also informed that participation was voluntary, confidential, that they could withdraw at any time, and that there were no right or wrong answers. Participants first completed measures of implicit theories, followed by the dependent variables: measures of cognitive and behavioural avoidance, psychological health, and clinical symptoms. The presentation order for scales and items were randomized. Ethics approval for this project was obtained from the Australian National University Human Research Ethics Committee (HREC).
Results

Preliminary Analyses

Across all variables, missing data were rare due to form validation settings (< 1%), and were imputed with the overall mean for that variable — a conservative technique in such cases (Tabachnick & Fidell, 2007). As in previous work on implicit theories (Tamir et al., 2007), theories of emotion were not significantly related to gender or ethnicity and these variables are not discussed further. Means (M), standard deviations (SD), ranges, internal consistencies (α) and correlations for all variables are presented in Table 10.

As part of the preliminary analyses, I again examined which of the two emotion belief scales would be most meaningfully related to our dependent variables. I expected, as with previous research on implicit theories (Study 1 and 2, De Castella & Byrne, 2015; De Castella et al., 2013), that people’s personal beliefs about their emotions would be a better predictor of avoidance-based emotion regulation and psychological health than general implicit theories. To explore the predictive validity of each measure, I conducted a series of two-step hierarchical regression analyses examining the unique variance explained by the implicit theory and self-efficacy emotion beliefs measures. For each of the dependent variables, implicit theories of emotion were entered in the first step, followed by emotion regulation self-efficacy in the second step. Age, gender and education were not significant predictors and were therefore excluded from the analysis as covariates. Table 11 displays the unstandardized (B) and standardized regression coefficients (β), as well as $R^2$ and $R^2_{change}$ for the full and restricted models in each analysis.
Table 10: Emotion Beliefs and Avoidance – Descriptive Statistics and Pearson Product-Moment Correlations (Study 4, N = 112)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>( \alpha )</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emotion Beliefs &amp; Avoidance Strategies</strong></td>
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</tr>
<tr>
<td>1. Fixed Emotion Beliefs Personal (ITES-P)</td>
<td>10.47</td>
<td>2.53</td>
<td>4.00 – 17.00</td>
<td>.60</td>
<td>.75**</td>
<td>.29**</td>
<td>.28*</td>
<td>.30**</td>
<td>.34**</td>
<td>-.19^</td>
<td>.28*</td>
<td>.30*</td>
<td>.34**</td>
<td></td>
</tr>
<tr>
<td>2. Fixed Emotion Beliefs General (ITES-G)</td>
<td>10.55</td>
<td>3.02</td>
<td>4.00 – 20.00</td>
<td>.73</td>
<td>1</td>
<td>.37**</td>
<td>.39**</td>
<td>.41**</td>
<td>.40**</td>
<td>-.24^</td>
<td>.31**</td>
<td>.34**</td>
<td>.37**</td>
<td></td>
</tr>
<tr>
<td>3. Cognitive Avoidance (CBAS-C)</td>
<td>2.37</td>
<td>0.86</td>
<td>1.00 – 4.88</td>
<td>.85</td>
<td>1</td>
<td>.79**</td>
<td>-.21**</td>
<td>.62**</td>
<td>-.27**</td>
<td>.55**</td>
<td>.59**</td>
<td>.63**</td>
<td></td>
<td></td>
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<tr>
<td>4. Behavioral Avoidance (CBAS-B)</td>
<td>2.52</td>
<td>0.91</td>
<td>1.00 – 5.00</td>
<td>.90</td>
<td>1</td>
<td>.94**</td>
<td>.64**</td>
<td>.32**</td>
<td>.50**</td>
<td>.56**</td>
<td>.58**</td>
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<tr>
<td>5. Total Avoidance (CBAS-T)</td>
<td>2.44</td>
<td>0.84</td>
<td>1.00 – 4.75</td>
<td>.93</td>
<td>1</td>
<td>.67**</td>
<td>-.31**</td>
<td>.55**</td>
<td>.61**</td>
<td>.63**</td>
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<tr>
<td><strong>Psychological Health</strong></td>
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<tr>
<td>6. Loneliness (ULS-8)</td>
<td>15.19</td>
<td>4.52</td>
<td>7.00 – 27.00</td>
<td>.86</td>
<td>1</td>
<td>-.53**</td>
<td>.46**</td>
<td>.53**</td>
<td>.66**</td>
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<td></td>
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<tr>
<td>7. Life Satisfaction (SWLS)</td>
<td>21.77</td>
<td>6.96</td>
<td>5.00 – 35.00</td>
<td>.90</td>
<td>1</td>
<td>-.11</td>
<td>-.09</td>
<td>-.41**</td>
<td></td>
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<tr>
<td>8. Stress (DASS-S)</td>
<td>13.41</td>
<td>5.08</td>
<td>7.00 – 28.00</td>
<td>.90</td>
<td>1</td>
<td>.80**</td>
<td>.76**</td>
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<tr>
<td>9. Anxiety (DASS-A)</td>
<td>11.46</td>
<td>5.08</td>
<td>7.00 – 28.00</td>
<td>.92</td>
<td>1</td>
<td>.75**</td>
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<tr>
<td>10. Depression (DASS-D)</td>
<td>12.75</td>
<td>5.67</td>
<td>7.00 – 28.00</td>
<td>.94</td>
<td>1</td>
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</table>

Note: ITES = Personal Implicit Theories of Emotion Scale; CBAS = Cognitive-Behavioural Avoidance Scale; ULS-8 = UCLA Loneliness Scale; SWLS = Satisfaction with Life Scale; DASS = Depression, Anxiety and Stress Scale. * p < .05, ** p < .01, *** p < .001
Table 11. Hierarchical Regression Predicting Avoidance, Well-being and Clinical Symptoms, Controlling for Alternative Measures of Implicit Theories (Study 4, N = 112)

<table>
<thead>
<tr>
<th>Dependent Variable and Step (^5)</th>
<th>B (SE)</th>
<th>(\beta)</th>
<th>(R^2)</th>
<th>(R^2) Total</th>
<th>(R^2) Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive Avoidance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (General)</td>
<td>.78 (.25)</td>
<td>.29''</td>
<td>.08''</td>
<td>.04 (.36)</td>
<td>.02</td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (Personal)</td>
<td>.82 (.30)</td>
<td>.36</td>
<td>.14''</td>
<td>.06''</td>
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</tr>
<tr>
<td><strong>Behavioral Avoidance</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (General)</td>
<td>1.0 (.33)</td>
<td>.28''</td>
<td>.07''</td>
<td>-.14 (.48)</td>
<td>-.04</td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (Personal)</td>
<td>1.30 (.40)</td>
<td>.43''</td>
<td>.16''</td>
<td>.08''</td>
<td></td>
</tr>
<tr>
<td><strong>Loneliness (ULS)</strong></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Fixed Emotion Beliefs (General)</td>
<td>.60 (.16)</td>
<td>.34''</td>
<td>.11''</td>
<td>.14 (.24)</td>
<td>.08</td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (Personal)</td>
<td>.51 (.20)</td>
<td>.34''</td>
<td>.17''</td>
<td>.05''</td>
<td></td>
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<tr>
<td><strong>Life Satisfaction (SWLS)</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (General)</td>
<td>-.52 (.26)</td>
<td>-.19^</td>
<td>.04^</td>
<td>-.07 (.39)</td>
<td>-.03</td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (Personal)</td>
<td>-.50 (.32)</td>
<td>-.22</td>
<td>.06^</td>
<td>.02</td>
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<tr>
<td><strong>Clinical Symptoms (DASS)</strong></td>
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<td></td>
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</tr>
<tr>
<td>Fixed Emotion Beliefs (General)</td>
<td>1.9 (.52)</td>
<td>.33''</td>
<td>.11''</td>
<td>.71 (.77)</td>
<td>.12</td>
</tr>
<tr>
<td>Fixed Emotion Beliefs (Personal)</td>
<td>1.3 (.65)</td>
<td>.28^</td>
<td>.15^</td>
<td>.04^</td>
<td></td>
</tr>
</tbody>
</table>

\(^5\) For all variables analyses were repeated using only the emotion regulation self-efficacy measure to examine whether efficacy beliefs predicted outcomes independently (without including the implicit theories control measure). Regulatory self-efficacy beliefs explained significant variance on all variables: Cognitive Avoidance \(R^2 = .14, p < .001\); Behavioral Avoidance \(R^2 = .16, p < .001\); Loneliness \(R^2 = .16, p < .001\); Life Satisfaction \(R^2 = .06, p < .01\); Clinical Symptoms (DASS) \(R^2 = .14, p < .001\).

\(^p < .05, *p < .01, **p < .001\). Results from hierarchical regression analyses reported above. Significance levels are based on two-tailed significance tests. Increments for variables entered at \(R^2\) Change significance levels are based upon F tests for that step.
Beliefs About Emotion, Psychological Health, and Avoidance

Consistent with H1, a lack of perceived control over emotions (personal entity beliefs) was associated with higher levels of cognitive avoidance \((r = .37, p < .001)\); behavioral avoidance \((r = .39, p < .001)\) as well as lower levels of psychological health – increased loneliness \((r = .40, p < .001)\) and reduced satisfaction with life \((r = -.24, p < .05)\) as well as higher levels of stress \((r = .31, p < .001)\), anxiety \((r = .34, p < .001)\), and depression \((r = .37, p < .001)\) (see Table 10).

The Mediating Role of Avoidance

To test whether avoidance strategies mediated the associations between implicit theories and psychological health (H2), I conducted three separate analyses, examining the mediating effect of implicit theories (the predictor) via total avoidance strategies (the intermediary) on measures of psychological health (the dependent variables). For ease of reporting and because of the high correlation between the cognitive and behavioral avoidance subscales \(r = .86\), I used the total avoidance scores (CBAS-T) in all analyses of indirect effects. The CBAS Total score is often used as an indicator of general avoidance and is correlated with a range of convergent measures of avoidance and depressive symptoms (Ottenbreit & Dobson, 2004; Ottenbreit, Dobson & Quigley, 2014). In the first and second analyses, I examined the indirect effect of avoidance on measures of loneliness and satisfaction with life. In the third analyses, I examined the indirect effect of avoidance on clinical symptoms (stress, anxiety and depression)\(^6\). This indirect effect is

---

\(^6\) In each of the three analyses (loneliness; satisfaction with life; and clinical symptoms) we used the summed total avoidance scale as the mediating variable and the summed total score for the DASS scales as the global indicator of clinical symptoms. We also conducted supplementary analyses with multiple mediators to examine the independent contribution of the behavioral and cognitive avoidance subscales. Cognitive and behavioral avoidance were both significant intervening variables in all models.
quantified as the product of the coefficients, $a$ and $b$ (see Figure 1 and 2). The direct
effect, $c'$, was also estimated but is not relevant when testing mediation or indirect effects
(Hayes, 2009). This indirect effect was tested for significance using the most recent
version of the Preacher and Hayes (2008; Rucker, Preacher, Tormala, & Petty, 2011)
SPSS PROCESS macros for indirect effects, which includes a bootstrap of 10,000
samples generating an empirically derived sampling distribution and confidence intervals
to test for significance of the indirect effect. Unlike other traditional tests of mediation,
such as the Sobel test (1982, 1986) and those presented by Baron and Kenny (1986), the
bootstrap method does not assume standard errors are normally distributed and it does not
compromise statistical power with multiple tests. It is also the preferred approach for
small-to-medium samples (Preacher & Hayes, 2008). To evaluate the size of the indirect
effects, Preacher and Kelly (2011) suggest the use of Kappa Squared ($\kappa^2$) – a ratio of the
indirect effect to the maximum possible effect permitted by the design and data. Kappa
Squared ($\kappa^2$) may vary between 0 (no indirect effect) to 1 (maximum possible indirect
effect) and, they suggest interpreting it like R-squared with 0.01, 0.09 and 0.25
representing small, medium, and large effects respectively.

Results indicated that the indirect effect of emotion regulation self-efficacy via
avoidance strategies was significant for both measures of well-being, with 95%
confidence intervals excluding zero: loneliness ($ab = .37$, 95% $CI = [.19, .59]$, $\kappa^2 = .26$);
satisfaction with life ($ab = -.24$, 95% $CI = [-.51, -.05]$, $\kappa^2 = .10$) (see Figure 14a). The
indirect effect of emotion regulation self-efficacy via avoidance strategies was also

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7 The Baron and Kenny (1986) causal steps approach to mediation requires that the effects of X on Y (path
c), X on M (path a), and M on Y (path b) are significant, as well as that the effect of X on Y controlling for
M (path $c'$) is smaller than c by a non-trivial amount. However, mediation effects may still be observed in
the absence of a significant total effect (path c) and/or a direct effect (path $c'$).
significant for clinical symptoms \((ab = 1.3, 95\% \text{ CI} = [.76, 1.98], \kappa^2 = .28)\) (see Figure 14b). These were large effects for loneliness and clinical symptoms and a medium effect for satisfaction with life according to standards for Kappa squared (Preacher & Kelly, 2011).

**Secondary Analyses**

In addition to testing the proposed causal model, I tested three alternative models of indirect effects: (1) Reverse causation: loneliness, satisfaction with life, and clinical symptoms predicting entity beliefs via avoidance (mediating variable), (2) Avoidance predicting loneliness, satisfaction with life, and clinical symptoms via entity beliefs (mediating variable), and (3) Entity beliefs predicting avoidance via loneliness, satisfaction with life, and clinical symptoms (mediating variables).

Model 1 was not significant for loneliness \((ab = .11, 95\% \text{ CI} = [-.01, .24], \kappa^2 = .13)\) or clinical symptoms \((ab = .04, 95\% \text{ CI} = [-.00, .08], \kappa^2 = .15)\), but was significant for satisfaction with life \((ab = -.05, 95\% \text{ CI} = [-.10, -.01], \kappa^2 = .11)\). Model 2 was not significant for loneliness \((ab = .01, 95\% \text{ CI} = [-.00, .03], \kappa^2 = .08)\), satisfaction with life \((ab = -.01, 95\% \text{ CI} = [-.02, .00], \kappa^2 = .08)\) or clinical symptoms \((ab = -.00, 95\% \text{ CI} = [-.00, .01], \kappa^2 = .09)\). Model 3 however, was significant for all three potential mediators: loneliness \((ab = .07, 95\% \text{ CI} = [.03, .10], \kappa^2 = .25)\); satisfaction with life \((ab = .14, 95\% \text{ CI} = [.00, .04], \kappa^2 = .05)\) and clinical symptoms \((ab = .06, 95\% \text{ CI} = [.03, .11], \kappa^2 = .22)\).
Figure 15. Emotion Beliefs and the Mediating Role of Avoidance (Study 4, n = 112).

Figure 14a. The indirect of Entity beliefs about emotions on loneliness and life satisfaction via avoidance. Values are standardized coefficients. When controlling for cognitive and behavioural avoidance, the regression coefficient for the effect of implicit theories (in parentheses) decreases to non-significance for satisfaction with life but remains significant for loneliness. ^p < .05, *p < .01, **p < .001

Figure 14b. The indirect of Entity beliefs about emotions on clinical symptoms via avoidance. Values are standardized coefficients. When controlling for cognitive and behavioural avoidance, the regression coefficient for the effect of implicit theories (in parentheses) decreases to non-significance for clinical symptoms (stress, anxiety and depression). ^p < .05, *p < .01, **p < .001
Discussion

The primary aim of Study 4 was to examine links among implicit theories of emotion, avoidance-based emotion regulation, and psychological health. Consistent with predictions, entity beliefs about emotions were associated with increased use of self-reported cognitive and behavioural avoidance in daily life. The more strongly people believed they could not control their emotions, the more they also reported difficulties with psychological health – increased loneliness and decreased satisfaction with life, as well as increased stress, anxiety and depression (findings that are consistent with results from Study 2). Consistent with predictions, Study 4 found evidence for the mediating role of avoidance with avoidance strategies indirectly explaining associations between implicit theories of emotion and psychological health. Secondary analyses, however, also found evidence for the mediating role of emotion beliefs on avoidance via clinical symptoms and well-being. These findings point to the possibility of a cyclical relationship between avoidance and psychological health. Emotion beliefs appear to predict avoidance, well-being and clinical symptoms, but the relationships between avoidance and clinical symptoms remain unclear. It may be that entity beliefs predispose people towards avoidance-based emotion regulation strategies, which are in turn, associated with increased risk of clinical symptoms and poorer overall satisfaction with life. However, it is also possible that entity beliefs predispose people towards poorer psychological health which, in-turn, promote increased avoidance-strategies in daily life. The inability to clarify causal relationships between variables is a limitation of correlational studies like this one. To help clarify these causal links, Study 5 was designed as an experimental test of the causal role of emotion beliefs in cognitive and behavioral avoidance.
STUDY 5

9.3 Manipulating Implicit Theories of Emotion

Study 4 indicated that people’s beliefs about emotions are associated with avoidance-based strategies, which are in-turn associated with psychological health and well-being. Nonetheless, as with much of the research on implicit theories of emotion (De Castella et al., 2014; Kappes & Schikowski, 2013; Schroder, Dawood, Yalch, Donnellan, & Moser, 2015; Tamir et al., 2007), the correlational nature of this research cannot speak to the causal relationships between implicit theories and outcomes. For example, although it is possible that implicit theories predispose people towards specific emotion regulation strategies, it is also possible that clinical symptoms perpetuate maladaptive emotion regulation strategies. Similarly, when people habitually use adaptive emotion regulation strategies, and experience greater success regulating their emotions, they may also come to hold a more incremental theory (see Chapter 6 and Figures 10 and 11 – emotion beliefs as self-fulfilling prophecies). In the current chapter I ask, “do people’s beliefs about their emotions actually affect their emotion regulation efforts and in turn their psychological health?”

To date, only three studies (Bigman, Mauss, Gross, & Tamir, 2015; Kneeland, Nolen-Hoeksema, et al., 2016a; 2016b) have sought to experimentally manipulate people’s beliefs about emotional control. In one experimental study, Bigman and colleagues (2015) used a placebo drug to temporarily manipulate participants’ beliefs about their emotion regulation self-efficacy. Participants were told either that the drug’s side effects enhanced emotion regulation success (expected success condition), or that there were no additional side effects (control condition). They were then instructed to
regulate their emotions while viewing a negative film clip, and to rate their emotional experience as well as their emotion regulation efforts. Results indicated that participants, who were led to expect emotion regulation to be more successful, were subsequently more successful in regulating their emotional reactions compared to the control condition. Other experiential research, however, has produced mixed results.

In a recent study, Kneeland et al. (2016a) temporarily manipulated people’s general implicit beliefs about emotions by having participants read and summarise a passage of text and fictitious data describing emotions as either ‘fixed’ or ‘malleable’. Participants then completed a negative mood induction by recalling and describing an upsetting personal memory before completing a state measure of emotion regulation (CERQ, Garnefski, Kraaij, & Spinhoven, 2001). After the negative mood induction, people in the ‘emotions are fixed’ condition (compared to the ‘emotions are malleable condition’) were less inclined to use perspective taking when considering their upsetting memory, but actually reported significantly reduced self-blame and greater acceptance regarding the upsetting event. There were also no significant differences between groups on other emotion regulation strategies (e.g. rumination, positive refocusing, reappraisal or suppression).

In a third experimental study by the same authors, Kneeland et al. (2016b) examined how beliefs about emotions influenced spontaneous regulation of social anxiety. After completing the experimental manipulation of emotion beliefs, participants were given an anxiety-inducing impromptu speech task. Participants in the emotions-are-malleable condition reported spontaneously engaging in more cognitive reappraisal during the speech task, but reappraisal was not associated with reductions in negative affect. Findings from these three experimental studies indicate that it is indeed possible to
manipulate people’s beliefs about emotions. Emotion beliefs also appear to influence the selection of emotion regulation strategies, like reappraisal. However, the consequences these beliefs have for emotion regulation efforts remains unclear. Furthermore, no research to date has explicitly examined the links between perceived control over emotions and avoidance-based emotion regulation or its associations with psychological health.

The primary aim of Study 5 was to clarify the causal role of emotion beliefs by leading people to make stable internal attributions about emotional control (e.g. by manipulating people’s personal beliefs about their emotions) and then by assessing the impact of these beliefs. To do this, I provided fictitious feedback to people about the degree to which they could personally change or control their emotions. Historically, entity and incremental beliefs have been induced experimentally through explicit messages, case studies, and vignettes (Bergen, 1991), and indirectly through feedback, praise or criticism (Kamins & Dweck, 1999; Mueller & Dweck, 1998). Other interventions have taught an incremental theory using scientific research through online programs (Brainology, 2010), workshops (Blackwell et al., 2007), and videos, mentoring, and letter writing tasks (Aronson, Fried, & Good, 2002; Good, Aronson, & Inzlicht, 2003). These interventions typically focus on teaching people about brain plasticity and the potential change and growth; however, it is a message that may not reach all who hear it. Results from Studies 1, 2 and 4 (De Castella & Byrne, 2015; De Castella et al., 2013; De Castella et al., 2014) indicate that knowing that emotional control is possible is not the same as believing personally in one’s ability to change. For this reason, I sought to influence participants’ beliefs about how much they personally could change or control their own emotions, rather than focusing on their beliefs about emotions in general. I did
this by drawing on self-perception theory (Bem, 1972), which postulates that “individuals come to ‘know’ their own attitudes, emotions, and other internal states partially by inferring them from observations of their own overt behavior” (Bem, 1972, p. 2). Our manipulation, presented in the form of an online survey, was therefore devised to provide fictitious feedback to participants about their ability to control their emotions relative to others.

In addition to this experimental manipulation, in Study 5 I included two new measures of avoidance. In addition to assessing cognitive and behavioural avoidance, I was curious about whether these findings might also extend to help-seeking avoidance: differences in people’s openness to, or avoidance of, psychotherapy. Research indicates that only a small number of people who are suffering from psychological difficulties actually seek psychotherapy, and treatment-avoiders often experience the highest levels of treatment anxieties (Kushner & Sher, 1989) as well as stigma concerns and fear of psychological distress (Deane & Chamberlain, 1994). Like behavioural avoidance, help-seeking avoidance is an anticipatory avoidance-based emotion regulation strategy that can prove harmful for long-term psychological health to the extent that it prevents people from seeking mental health services.

While there are many reasons why people might avoid seeking help – e.g., they may wish to avoid discussing distressing or personal information (Vogel & Wester, 2003) or experiencing painful feelings (Komiya, Good & Sherrod, 2000) – the most commonly cited reason for help-seeking avoidance is the stigma associated with seeking treatment (Corrigan, 2004; Corrigan & Penn, 1999, for a review). In Study 5, I was particularly interested in this third kind of help-seeking avoidance – avoidance and denial of mental health concerns in an effort to protect one’s image, self-esteem, and self-worth (Corrigan,
Entity beliefs and low self-efficacy beliefs often predict self-handicapping and other avoidance-based self-protective strategies in the event of setbacks and failures (see Study 1, De Castella & Byrne, 2015). I predicted that these findings would also extend to the realm of emotion regulation, with individuals being particularly prone to this kind of stigma-based help-seeking avoidance when they believed emotions were things that could not be controlled.

To date, there has been limited research on implicit theories and help seeking, but entity beliefs are linked with a preference for medication over individual therapy as a hypothetical treatment (Schroder et al., 2015). In addition to these measures, and in an effort to go beyond self-report, I also assessed experiential avoidance behavior – specifically, *avoidance of upsetting emotional stimuli*. I asked participants to indicate their willingness to complete four additional fictitious research studies at the end of the experiment and provided options that were either neutral or potentially distressing. I predicted:

**H1:** Participants in the entity (versus incremental) condition will be more likely to endorse cognitive and behavioural avoidance intentions in daily life, as well as avoidance of psychological help, and

**H2:** Participants in the entity (versus incremental) condition will display greater avoidance of potentially distressing stimuli seen in their reduced willingness to participate in potentially distressing research studies.
**Methods**

**Participants**

Participants were 101 people (63 female) recruited through Amazon Mechanical Turk. Participants were again offered 70 cents in exchange for completing a short online survey. To further improve the quality of responses, participation was restricted to Amazon Turk workers with “Masters Qualifications” – an even more stringent requirement for experience with and quality of work on Amazon Turk (Buhrmester et al., 2011). Study 5 data was collected more than 12 months after Study 4. I anticipated this would help reduce the likelihood of interference and overlap between participants across studies. Once again statistical power analyses were performed for sample size estimation using the software package, GPower (Erdfelder et al., 2016). Based on data from similar experimental research on emotion regulation self-efficacy (Bigman et al., 2015) and on implicit theories (Blackwell et al., 2007; Yeager, Miu, Powers, & Dweck, 2013) I expected between conditions effect sizes ranging from $d = .6 - 1.0$ (a medium to large effect by Cohen's (1988) standards). With a two-tailed test, an alpha = .05 and power = 0.8, the projected sample size needed to detect effects of this size (e.g. $> .57$), is approximately $N = 100$. Based on this analysis, data collection continued until I obtained a valid sample $> 100$.

Participants ranged from 21 to 66 years of age ($M = 36.43$, $SD = 11.13$) and consisted of 77.2% White, 12.9% Asian, 7.9% Hispanic, 5% African American, 1% Pacific Islander; 2% Native American/Alaskan; 2% other; and 8% indicated mixed ethnicities. Participants varied in educational backgrounds: 12.9% indicated their highest level of education consisted of high school or equivalent; 9.9% indicated they had
attained vocational/technical training; 30.7% reported having some university education; 35.6% reported completing university; 8.9% completed a Masters program; and, 2% completed a professional degree (Ph.D/MD/JD). In total 157 initial responses were collected, 12 of these were duplicate surveys or left mostly incomplete (missing data > 10%) and were excluded from the analysis. Missing data were rare due to form validation settings (< 1%), and were imputed with the overall mean for that variable. I again embedded items to screen out participants who were not reading the survey questions. Fifteen participants incorrectly answered these questions. Because the experimental manipulation required English language proficiency, I also excluded an additional six participants who indicated that English was not their first or primary spoken language. Finally, three items were embedded at the end of the survey as a manipulation check assessing participants’ comprehension of the ‘emotional control survey’ (i.e. “the emotional control survey was a measure of my ability to change my emotions”). Twenty-three participants failed one or more of the manipulation checks, and were removed from the analyses, reducing the final sample to 101 (63 female). There was no significant difference between conditions in screening items, attrition rates or demographic variables.

Measures

**Implicit theories of emotion.** Implicit theories of emotion were again assessed using the 4-item implicit theory scales provided in Study 2 (see Table 5 for scale items). Cronbach’s alpha for this scale in the current sample was .85. Descriptive statistics, scale

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8 I also included measures of general implicit theories of emotion (Tamir et al., 2007), and general implicit theories of personality (Dweck, 1999), as well as a revised personal measure of implicit theories of personality. An analysis of the specificity of measures indicated that consistent with Study 1 and 2, people’s theories about their own emotions uniquely predicted all dependent variables over and above general implicit theories about emotions. Personal emotion beliefs also predicted all outcomes over and above general and personal implicit theories of personality.
means, reliabilities and correlations for Study 5 measures can be found in Tables 11 and 12. For all dependent variables, the presentation order of scale items was randomized.

**Avoidance.** To examine whether the manipulation of implicit theories led to changes in *avoidance intentions*, I developed a revised version of the cognitive and behavioural avoidance scale (CBAS, Ottenbreit & Dobson, 2004), that assessed the *intention* to use avoidance strategies. Instead of asking participants to “indicate how true, in general, each statement is for you…” I asked participants to think about their behaviour “OVER THE NEXT MONTH” and indicate “how true you think each statement will be for you” (cf., Cruwys, Platow, Rieger, & Byrne, 2013). Each of the 31 scale items were revised to reflect behavioural intentions. For example, items like “rather than try new activities, I tend to stick with the things I know” now read, “rather than try new activities, I will stick with the things I know.” Items like “I try not to think about problems in my personal relationships” now read, “I’ll try not to think about problems in my personal relationships.” Subscale scores were again calculated separately for cognitive and behavioural avoidance, using a five-point Likert scale (1 = Not at all true for me, to 5 = Extremely true for me). Scores were averaged separately for cognitive and behavioural avoidance, with higher scores indicating a greater degree of avoidance. Internal reliabilities for the current study were $\alpha = .95$ for Cognitive Avoidance Intentions and $\alpha = .94$ for Behavioural Avoidance Intentions.

**Help-Seeking Avoidance.** To examine *avoidance of psychological help*, I used the Self-Stigma of Seeking Help Scale (SSOSH, Vogel, Wade, & Haake, 2006). Research indicates that, along with age, gender, and distress, stigma concerns are among the strongest predictors of help-seeking behaviour (Deane & Chamberlain, 1994). The
SSOSH is a 10-item scale that measures an individual’s likelihood of seeking help from a psychologist or mental health professional and the individual’s perceptions of help seeking as potentially stigmatizing (e.g., “I would feel inadequate if I went to a therapist for psychological help”). Participants were asked to rate each item on a seven-point Likert scale (1 = Strongly Disagree, to 7 = Strongly Agree). The internal reliability of this scale in the current study was $\alpha = .93$.

**Avoidance of Distressing Stimuli.** In addition to the self-report measures described above, I developed a *behavioural measure to assess avoidance of potentially distressing emotional stimuli*. After completing the self-report portion of the survey, participants were given an opportunity to specify their interest in participating in a series of additional studies on emotion regulation: “Before we finish, we're interested in whether you would like to participate in some additional research studies. Please indicate how interested you are in doing the studies below and include your email, and we will send you a link to these surveys when they become available.” Two of the studies presented where emotionally nonthreatening. For example, “this survey examines links between emotion regulation and perception. It assesses your ability to regulate your emotions while looking at a series of optical illusions. This survey will take approximately 15-20 min to complete.” The other two studies were potentially distressing. For example, “the purpose of this survey is to examine emotional responses to the consequences of homelessness and drug addiction. It involves assessing your ability to regulate your emotions while looking at a series of images and videos documenting drug addiction and homelessness. This survey will take approximately 15-20min to complete. Warning: some of the images and videos in this study may be distressing.” After reading each study description, participants were asked: “Are you interested in doing this survey?”
Responses were rated on a four-point Likert scale ranging from 1 (Definitely not) to 4 (Definitely yes). Item scores were then averaged to provide one measure of intent to participate in the combined neutral studies ($\alpha = .92$), and one measure of intent to participate in the combined distressing studies ($\alpha = .96$). Presentation order for the fictitious potential future studies was also randomized.

**Control Measures.** Finally, I included several control measures at the end of the online survey. Because the manipulation was providing positive feedback to people in the incremental condition and negative feedback to people in the entity condition, I also believed it may be important to control for mood – a potential confound in the experimental manipulation of implicit theories. To do so, I included the 10-item state version of the International Positive and Negative Affect Schedule Short Form (I-PANAS-SF, Thompson, 2007). This brief scale is composed of two five-item scales assessing “Positive Affect” (e.g., alert, inspired, determined, attentive, active) and “Negative Affect” (e.g., upset, hostile, ashamed, nervous, afraid). Participants were instructed to indicate to what extent they felt this way “RIGHT NOW that is, at the present moment.” Each item was rated on a five-point Likert scale ranging from 1 (Very slightly or not at all) to 5 (extremely). Research with the I-PANAS-SF in qualitative and large cross-cultural studies indicates consistent independence between the two affect subscales; that the scale is reliable ($\alpha$ ranging from $=.72 - .80$); and displays good convergent, criterion and cross-cultural validity across a range of validation studies (Thompson, 2007). Reliabilities for the current study were $\alpha = .75$ for negative affect and $\alpha = .85$ for positive affect.
Procedure

Eligible participants were invited to participate in a 15-20 minute research study about "people's moods and emotions, and the way in which people deal with difficult emotions in daily life." Participants were told, “this is a multiple-choice survey where you may learn about how effective you are at controlling your emotions - it involves completing a series of multiple choice questions and providing some short answers.” Upon reading the informed consent guidelines, participants were randomly assigned to either an "entity" (n = 51) or "incremental" (n = 50) condition.

Experimental Manipulation. The manipulation took place in three parts. First, after beginning the study, all participants were told that they were completing an "Emotional Control Survey" designed to assess "how much control you have over your emotions." Participants were instructed to be "as honest as possible when completing these questions" and told, "there are no right or wrong answers." The emotional control survey consisted of 10 items, and participants were asked to indicate "whether the following statements are mostly true or mostly false for you." To manipulate participants’ beliefs, items were biased to promote acquiesce with either an entity or incremental view of emotions (adapted from procedures used by Jetten, Spears, & Manstead, 1998). For example, in the entity condition, items were worded to encourage endorsement of entity beliefs (e.g., "sometimes I can't control my emotions" and "I sometimes find myself in a 'bad mood' at work/school"). In the incremental condition, items were worded to encourage endorsement of incremental beliefs (e.g., "most of the time, I'm pretty good at controlling my emotions" and "I rarely have emotional outbursts at work/school"). I expected that participants’ beliefs about their ability to control their emotions would be
partially inferred from observing their own responses to these multiple-choice questions (Bem, 1972) and would substantiate the fictitious feedback provided at the end of the manipulation.

Second, I manipulated ease of retrieval in a recall task (Schwarz et al., 1991; Song & Schwarz, 2008). Ease of retrieval and task difficulty manipulations have frequently been used to manipulate self-efficacy beliefs (Sanna, 1992; Schwarz et al., 1991), with easy tasks often leading participants to believe they have greater control and/or abilities. To manipulate ease of retrieval, participants were asked to provide "personal examples from the past six months where you feel that you successfully managed, changed, or controlled your emotions." They were asked to "do your best to provide one example in each of the spaces below" and were told, "when you've completed all the examples (or as many as you can), click the arrows below to move on to the next set of questions." In pilot testing (n = 23), the average number of spontaneously generated examples per participant was 4.43 and only one participant was able to provide 10 examples. Based on this information, I assumed it would be relatively easy for participants to recall up to four examples of successful emotion regulation over the last six months, but that providing more than 10 examples would be difficult. For the second segment of the manipulation, I manipulated task difficulty by providing only four spaces for examples of successful emotion regulation in the incremental condition (an easy task) and a total of 14 spaces for examples in the entity condition (a difficult task). I anticipated that participants would interpret this difficulty with recall as evidence of their difficulty controlling their emotions.
Third, after completing the Emotional Control Survey and providing personal examples of emotional control from their own lives, participants were then provided with fictitious performance feedback on their ability to control their emotions. Fictitious feedback manipulations have long been used to manipulate people’s beliefs about their skills and abilities (Valins, 1966) and relative identification with social groups (Platow, Huo, Lim, Tapper, & Tyler, 2015). In the current study, I provided the following feedback in the Incremental Condition: “You appear to have a substantial degree of control over your emotions. You have scored in the top 15% of people in our research on emotion regulation.” In the Entity Condition, participants were told, “You may have substantial difficulty controlling your emotions. You have scored in the bottom 15% of people in our research on emotion regulation.” Participants were also provided with an image of a bell curve, which visualized their relative ability to control their emotions (cf., Platow & Knippenberg, 2001).

After completing the experimental manipulation, participants completed measures of implicit theories to examine the effects of the manipulation. They then completed three measures of avoidance (the outcome variables): self-report measures of avoidance intentions; help seeking avoidance; and a behavioural measure of avoidance of distressing emotional stimuli (see measures section above). Finally, after completing the survey, participants were debriefed and informed about the experimental nature of the study. They were also provided with information and research about implicit theories and emotion regulation and invited to contact the researcher for copies of the research articles or to learn more about the topic.
Results

Preliminary Analyses

Prior to analysis, all variables were examined for missing values, which were rare due to form validation measures (< 1%), and were imputed with the overall mean for that variable. Correlations for all variables in each condition can be seen in Table 12. Means (M), standard deviations (SD), ranges, and between-subjects t-tests for all variables are presented in Table 13.

I first tested whether there were differences between conditions on measures of age, gender, education or ethnicity. There were none; and there were no associations between these variables and participants’ implicit theories. These variables are not discussed further. Next, I examined whether the manipulation caused differences in positive or negative affect (a potential confounding variable). Results indicated no significant difference between conditions in positive affect or in negative affect, ruling out mood changes between conditions as an alternative explanation of findings. Finally, I examined whether the manipulation led to differences in participants’ implicit theories about their emotions. Results indicated a significant difference between conditions on participants’ implicit theories, indicating the manipulation had the intended effect on participants’ beliefs about their emotions

\[ t(99) = 1.95, \ p = .55, \ R^2 = .04, \ CI [-.04, 3.88] \]

These data confirmed that the effects of manipulation were focused on implicit theories of emotion and not their implicit theories of personality (\(M_{\text{entity}} = 12.10, SD = 5.10\); \(M_{\text{incremental}} = 10.18, SD = 4.81\), \(n(99) = 1.95, p = .55, R^2 = .04, CI [-.04, 3.88] \). These data confirmed that the effects of manipulation were focused on implicit theories of emotion and did not generalize to other domains of implicit theories such as implicit theories of personality.

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\[9\] The experimental manipulation also uniquely led to changes in participants’ implicit theories of emotion and not their implicit theories of personality (\(M_{\text{entity}} = 12.10, SD = 5.10\); \(M_{\text{incremental}} = 10.18, SD = 4.81\), \(n(99) = 1.95, p = .55, R^2 = .04, CI [-.04, 3.88] \). These data confirmed that the effects of manipulation were focused on implicit theories of emotion and did not generalize to other domains of implicit theories such as implicit theories of personality.
Table 12: *Entity and Incremental Conditions – Correlations (Study 5, N = 101)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>α</td>
</tr>
<tr>
<td>Emotion Beliefs &amp; Avoidance</td>
<td></td>
</tr>
<tr>
<td>1. Entity Beliefs (Self-Theory)</td>
<td>.85</td>
</tr>
<tr>
<td>2. Cognitive Avoidance (CBAS)</td>
<td>.95</td>
</tr>
<tr>
<td>3. Behavioural Avoidance (CBAS)</td>
<td>.94</td>
</tr>
<tr>
<td>4. Total Avoidance (CBAS)</td>
<td>.97</td>
</tr>
<tr>
<td>5. Help Seeking Avoidance</td>
<td>.93</td>
</tr>
<tr>
<td>Control Measures</td>
<td></td>
</tr>
<tr>
<td>6. Negative Affect (I-PANAS-SF)</td>
<td>.75</td>
</tr>
<tr>
<td>7. Positive Affect (I-PANAS-SF)</td>
<td>.85</td>
</tr>
</tbody>
</table>

Note: Correlation coefficients for the entity condition are presented above the diagonal and correlations for the incremental condition are presented below the diagonal; CBAS = Cognitive-Behavioural Avoidance Scale; Help Seeking Avoidance = Self-Stigma of Seeking Help Scale (SSOSH). I-PANAS-SF = International Positive and Negative Affect Schedule Short Form. * p < .05, ** p < .01, *** p < .001

**Effects of the experimental manipulation on emotion beliefs**

To examine whether the manipulation led to significant differences in participants’ beliefs about emotions I conducted an analysis of variance (ANOVA), examining the effect of the manipulation on the different belief measures: implicit theories of emotion and emotion regulation self-efficacy. Results indicated a significant difference between conditions on participants’ beliefs about emotions. This was true both for their general implicit theories about emotions ($M_{entity} = 13.49$, $SD = 4.98$; $M_{incremental} = 9.72$, $SD = 3.94$), $F(99) = 17.7 \ p < .001$, $\eta^2_p = .15$) and for their personal implicit theories ($M_{entity} = 12.76$, $SD = 4.9$; $M_{incremental} = 9.14$, $SD = 4.81$), $F(99) = 11.59 \ p < .001$, $\eta^2_p = .14$). Higher scores denote a greater perceived lack of control over emotions. These data indicate that the manipulation did lead to significant differences between conditions in participants’ beliefs about emotions.
Table 13. *Experimental Effects on Avoidance and Other Outcomes by Condition (Study 5, N = 101)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Entity Condition (n = 51)</th>
<th>Incremental Condition (n= 50)</th>
<th>Range</th>
<th>$F$ (99)</th>
<th>$p$</th>
<th>95% CI</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>Range</td>
<td></td>
<td></td>
<td>LL</td>
<td>UL</td>
</tr>
<tr>
<td>Implicit Theories &amp; Avoidance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cognitive Avoidance Intentions (CBAS-C)</td>
<td>2.14 (0.86)</td>
<td>1.65 (0.77)</td>
<td>1 – 5</td>
<td>9.06</td>
<td>.003</td>
<td>[.17, .81]</td>
<td>.60</td>
</tr>
<tr>
<td>3. Behavioural Avoidance Intentions (CBAS-B)</td>
<td>2.62 (0.94)</td>
<td>1.99 (0.83)</td>
<td>1 – 5</td>
<td>12.76</td>
<td>&lt;.001</td>
<td>[.28, .99]</td>
<td>.71</td>
</tr>
<tr>
<td>4. Total Avoidance Intentions (CBAS-T)</td>
<td>2.38 (0.87)</td>
<td>1.82 (0.77)</td>
<td>1 – 5</td>
<td>11.71</td>
<td>&lt;.001</td>
<td>[.24, .89]</td>
<td>.68</td>
</tr>
<tr>
<td>5. Avoidance of Psychological Help (SSOSH)</td>
<td>3.31 (1.2)</td>
<td>2.81 (1.24)</td>
<td>1 – 5</td>
<td>4.26</td>
<td>.04</td>
<td>[.19, .96]</td>
<td>.41</td>
</tr>
<tr>
<td>6. Distressing Studies</td>
<td>2.09 (1.6)</td>
<td>2.34 (1.12)</td>
<td>1 – 4</td>
<td>6.53</td>
<td>.01</td>
<td>[.13, 1.01]</td>
<td>.51</td>
</tr>
<tr>
<td>7. Avoidance of Neutral Studies</td>
<td>2.38 (1.1)</td>
<td>2.04 (1.02)</td>
<td>1 – 4</td>
<td>2.57</td>
<td>.11</td>
<td>[-.08, .77]</td>
<td>.32</td>
</tr>
<tr>
<td>Control Measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Entity Beliefs about Emotions (General)</td>
<td>13.49 (4.99)</td>
<td>9.72 (3.94)</td>
<td>4 – 28</td>
<td>17.70</td>
<td>&lt;.001</td>
<td>[1.99, 5.55]</td>
<td>.84</td>
</tr>
<tr>
<td>9. Negative Affect (I-PANAS-SF)</td>
<td>6.53 (2.34)</td>
<td>5.82 (1.70)</td>
<td>5 – 25</td>
<td>1.74</td>
<td>.09</td>
<td>[-.10, 1.52]</td>
<td>.34</td>
</tr>
<tr>
<td>10. Positive Affect (I-PANAS-SF)</td>
<td>14.39 (5.15)</td>
<td>15.60 (5.02)</td>
<td>5 – 25</td>
<td>-1.19</td>
<td>.24</td>
<td>[-3.21, 0.80]</td>
<td>-.24</td>
</tr>
</tbody>
</table>

Note: Means (and SD’s) for each condition. F-tests, p-values, confidence intervals for the difference between conditions and measures of effect size (Cohen’s $d$).
Emotion beliefs and avoidance intentions

To test whether our manipulation led to increased avoidance intentions, I conducted an analysis of variance (ANOVA) to examine the effect of the manipulation on all our avoidance measures (see Table 4). As predicted, the manipulation led to significant differences in cognitive and behavioral avoidance, with participants in the entity condition reporting greater total avoidance intentions ($M_{\text{Entity}} = 2.38, SD = 0.87; M_{\text{Incremental}} = 1.82, SD = 0.77), F(99) = 11.71 p < .001, d = .68). Results also indicated that participants in the entity condition, compared with the incremental condition, reported significantly greater likelihood of avoiding psychological help ($M_{\text{Entity}} = 3.31, SD = 1.2; M_{\text{Incremental}} = 2.81, SD = 1.24), F(99) = 4.26 p < .05, d = .41). See Figure 16.

Emotion beliefs and avoidance of potentially distressing emotional stimuli

To test whether the implicit theory manipulation actually led to changes in behavioural avoidance of distressing emotional stimuli, I conducted a 2 (condition: entity vs. incremental) X 2 (study type: distressing vs. neutral) mixed ANOVA with condition as the between-subjects factor and study type interest as the within-subject variable. As predicted (H2), the analysis yielded a significant main effect for condition, $F(1, 99) = 5.10, p = .026$, indicating that people in the entity condition were significantly more likely to avoid both kinds of fictitious emotion regulation studies than participants in the incremental condition ($M_{\text{Entity}} = 2.65, SD = 1.1, M_{\text{Incremental}} = 2.2, SD = 1.1$). There was also a significant within-subject main effect for study type, $F(1, 99) = 24.85, p < .001$. Across conditions, participants were significantly more likely to avoid the potentially distressing research studies than the neutral ones ($M_{\text{Distressing}} = 2.62, SD = 1.1, M_{\text{Neutral}} = 2.2, SD = 1.1$).
Figure 16. The effect of the manipulation on self-reported avoidance intentions. Compared to participants in the incremental condition, participants in the entity condition reported increased intentions to engage in avoidance-based emotion regulation strategies over the next month and reported being more likely to avoid seeking psychological help. *p < .05, **p < .01, ***p < .001
There was no significant interaction between conditions and study type, $F(1, 99) = 1.90, p = .17$. Examining the conditions separately using between-subjects $t$-tests, results indicated there were no significant differences between conditions in participants’ interest in the neutral studies (see Table 13). However, people in the entity condition did report significantly less interest in participating in the potentially distressing studies. These findings indicate that when people believe they cannot change or control their emotions, they are more likely to avoid not only stimuli that could be distressing, but any stimuli that requires them to regulate their emotions.

**Discussion**

Study 5 showed that it was possible to change people’s personal implicit theories about their emotions by leading them to infer that they either struggled with (entity condition) or had control over (incremental condition) their emotions. Compared to the incremental condition, participants in the entity condition reported greater intentions to use cognitive and behavioural avoidance strategies to regulate their emotions over the next month, and they also reported greater likelihood of avoiding psychological help. Furthermore, when presented with opportunities to participate in a series of additional fictitious studies, people in the entity condition reported being significantly more likely to avoid emotion regulation studies.

**Chapter Summary: Studies 4 & 5**

The primary aim of studies 4 and 5 was to examine links between implicit beliefs about emotion and avoidance-based emotion regulation. In a cross-sectional study (Study 4), people who believed they could not control their emotions were more likely to report
using cognitive and behavioural avoidance strategies in daily life. These avoidance strategies, in turn, mediated the associations between implicit theories and psychological health. Study 5 (an experimental study) assessed the causal relationship between implicit theories and avoidance by manipulating people’s beliefs about their emotions. Compared to people in the incremental condition, when people were led to believe that they had difficulty controlling their emotions (entity condition), they endorsed significantly greater intentions to use cognitive and behavioural avoidance over the next month. They also reported greater intentions to avoid psychological help for emotional difficulties, and were more likely to avoid opportunities to participate in additional emotion regulation research. These findings shed light on the relationship between implicit theories and emotion regulation. They indicate that people’s implicit theories about their emotions influence how they seek to regulate their emotions in daily life. When emotions are believed to be uncontrollable, these beliefs appear to incline people towards maladaptive avoidance strategies, reduced likelihood of seeking psychological help, and avoidance of potentially distressing emotional stimuli.

**Implications for Research on Emotion Beliefs**

These findings provide novel evidence for the causal role of implicit theories in influencing a range of different avoidance strategies. To date, only three studies have successfully manipulated people’s beliefs about emotional control and demonstrated the impact of these beliefs on emotion regulation and experience (Bigman et al., 2015; Kneeland, Dovidio, Joormann, & Clark, 2016a; 2016b). Although research has demonstrated links between control beliefs and avoidance in educational settings (Blackwell et al., 2007; De Castella & Byrne, 2015; Robins & Pals, 2002), the current
study represents an important step in extending this work to the field of emotion regulation. Importantly, by examining the role of avoidance-strategies, these findings begin to clarify existing relationships between implicit theories and psychological health outcomes (see Studies 2 – 4). They also suggest that avoidance based emotion regulation strategies may be one potential mechanism, which explains how, and why, beliefs about emotion are associated with psychological health and well-being.

Results from the current study indicate that when people believe they cannot control their emotions they are more likely to engage in avoidance-based emotion regulation. As an antecedent-focused, situation selection strategy, avoidance enables people to intervene prior to an emotion-eliciting situation to influence the developmental course of an emotion before it has fully arisen (Gross & Thompson, 2007). As reviewed in Chapter 6.3, avoidance strategies may become the strategy of choice for individuals who perceive themselves incapable of regulating their emotions. This may be the case because these people feel helpless in managing their emotions; because they perceive limited alternative strategies available to them; or because they lack self-efficacy for implementing other emotion regulation strategies. Furthermore, emotion-eliciting situations may also be particularly frightening or worrisome for individuals who believe they cannot control their emotions which may be yet another reason for utilizing avoidance. By examining the role of avoidance-based emotion regulation strategies, results from Study 5 begin to clarify existing relationships between perceived control over emotions and psychological health outcomes (Studies 2, 3 and 4; De Castella & Byrne, 2015; Romero, Master, Paunesku, Dweck, & Gross, 2014; Schleider, 2015; Tamir et al., 2007), by pointing to one potential mechanism (avoidance), which may explain how and why beliefs about emotion have such important social and psychological correlates.
Implications for Emotion Regulation and Psychological Health

Beyond the implications these findings have for research on implicit theories, results from the current study have important implications for research on psychological health. Although avoidance can, at times, be used skilfully as an emotion regulation strategy, reliance on avoidance is widely regarded as a maladaptive form of emotion regulation, and one that is associated with procrastination, self-handicapping, and poor performance (Aspinwall & Taylor, 1992; De Castella & Byrne, 2015; Zuckerman, Kieffer, & Knee, 1998), as well as greater feelings loneliness, inauthenticity, and disconnection (John & Gross, 2004), and lower overall well-being and satisfaction with life (Gross & John, 2003; John & Gross, 2004). Avoidance-strategies also predict daily levels of anxiety and increased risk of depression in non-clinical (Dickson, Ciesla, & Reilly, 2012; Moulds, Kandris, Starr, & Wong, 2007; Ottenbreit & Dobson, 2004) and in clinical samples (Kuyken & Brewin, 1994; Ottenbreit, Dobson, & Quigley, 2014). Given the many negative consequences of avoidance strategies, it is puzzling why people so often rely on these strategies for regulating their emotions in daily life. Findings from these studies help clarify the role of implicit beliefs as antecedents to this kind of emotion regulation. They indicate that when people believe they have limited control over their emotions, they are more likely to turn to avoidance-based strategies to regulate them.

These findings also have important practical implications for psychological treatments and interventions. Research on implicit theories has repeatedly demonstrated that simple interventions can have long-lasting effects (Aronson et al., 2002; Blackwell et al., 2007; Good et al., 2003). The current study succeeded in temporarily manipulating people’s implicit theories about their emotions. This indicates that it may be possible –
through carefully crafted interventions – to bring about meaningful change in people’s beliefs about their emotions. Developing interventions aimed at longer-term belief-change promises to be fruitful area for future research and may have important implications for psychotherapy and clinical treatment. In addition to focusing on the role of avoidance, the process model of emotion regulation (Gross, 1998b) identifies a wide range of emotion regulation strategies available to people at different stages in the emotion generation process. The current chapter has considered cognitive and behavioural avoidance as one set of situation selection focused strategies. However, it is also important to examine the relationships between implicit beliefs about emotions and other adaptive and maladaptive forms of emotion regulation such as strategies involving attentional deployment and cognitive change (a focus of the next chapters – Chapter 10 and 11).

In addition to influencing the use of cognitive and behavioural avoidance, results from the current studies indicate that implicit theories may also play an important role in promoting help seeking behaviour. In Study 5, participants who were led to believe they could not control their emotions were significantly more likely to report intentions to avoid psychological help. Research indicates that stigma, anxiety and treatment fearfulness are significant predictors of treatment avoidance (Kushner & Sher, 1989; Deane & Chamberlain, 1994). Psychotherapy can be anxiety provoking for many, and this may be particularly true for people who believe they cannot control their emotions. If patients more readily hold fixed entity beliefs about their emotions — believing them to be stable qualities or personality traits rather than a treatable psychiatric problem — this may help explain why many sufferers fail to seek treatment (Grant et al., 2005). To the extent that treatment ambivalence is associated with patients’ entity theories of their emotions, or a desire to avoid exposure to their own emotions, strategies for explicitly
targeting these beliefs may help motivate people to seek treatment and to see it through to completion.

**Planning Next Studies**

Despite making a number of important contributions to research on implicit theories and emotion regulation, several limitations should be noted. First, the current studies explored implicit theories in diverse community samples through Amazon Mechanical Turk (MTurk). These samples have been found to be at least equal in quality and superior in representation and diversity to traditional student samples (Buhrmester, Kwang, & Gosling, 2011). MTurk is also increasingly used clinical research and has been used to recruit clinical populations (Shapiro, Chandler, & Mueller, 2013). Nonetheless, the MTurk’s user populations assume participants must have regular computer and Internet access, and an understanding of the MTurk platform to qualify for studies. For this reason, it is important to acknowledge that certain populations (e.g., low income, older adults) may be underrepresented among MTurk users. MTurk, being an online study platform, also suffers from higher attrition rates than may be present in more controlled experimental samples (Buhrmester et al., 2011). This may also be a limitation of Studies 4 and 5. A total of 23 participants failed the manipulation check in Study 5 indicating the possibility of non-random attrition. There were, however, no significant differences between participants who passed, and participants who failed, the manipulation check on demographic variables (age, gender and ethnicity) or on any of the dependent variables. Nonetheless, future research with community and clinical samples and more controlled experimental studies would help control for attrition and broaden the generalizability of the identified links between emotion beliefs, emotion regulation and psychological health.
Second, in the current studies I focused on examining links between implicit theories and avoidance in non-clinical samples. This is an important first step in understanding links between implicit theories and emotion regulation. However, given the potential implications this research has for mental health (Ottenbreit & Dobson, 2004; Hayes et al., 1996), it will be important to examine links between implicit theories and symptoms in clinical samples. Findings from the current research suggest that cognitive, behavioral and help-seeking avoidance may be potent mediating variables in explaining links between emotion beliefs and clinical symptoms. To date, it is not clear to what extent entity beliefs arise with repeated difficulty regulating emotions, and to what extent they become self-fulfilling prophecies leading to maladaptive emotion regulation and clinical symptoms for patients. Further research is still needed to clarify the reciprocal relationship between emotion beliefs and emotion regulation. Study 5 demonstrated that it is possible to change people’s beliefs about their emotions. Examining how implicit theories might be changed in clinical populations is an important topic of future research and may have implications for clinical treatment (something I explore in Chapter 11).

Third, in the present research, when people were led to believe they could not control their emotions, they also reported being more likely to avoid psychological help. Help-seeking avoidance is a significant problem in many clinical populations with individuals often struggling for prolonged periods (often up to 9 years) before finding appropriate specialist care (Wagner, Silove, Marnane, & Rouen, 2006). If patients hold fixed entity beliefs about their emotions – believing them to be stable qualities or personality traits rather than a treatable psychiatric disorder – this may help explain why many sufferers fail to seek treatment (Grant et al., 2005). Targeted interventions aimed at
addressing these beliefs may therefore have potential not just in treatment, but also for promoting help-seeking behavior in the first place.

A fourth limitation relates to measurement. Much of the current research on implicit theories has relied on self-report measures (see Dweck, 1999 for a review). A strength of the current study was the ability to replicate the findings for the association between implicit theories and avoidance across studies and measures. In addition to using the self-report cognitive and behavioural avoidance scales and measures of help-seeking, the manipulation also influenced actual avoidance behaviour. In Study 5, participants in the entity condition displayed significantly greater actual avoidance of fictitious emotion regulation studies. These findings begin to move beyond self-reports by examining avoidance behaviour. Larger longitudinal research studies would also offer benefits for clarifying the causal relationships between mediating variables; how emotion regulation patterns change over time; and the impact this might have on emotion regulation, clinical treatments and psychological health (this is something I explore in the next chapter).

Despite these limitations, the current studies make several important contributions to research on implicit theories and emotion regulation. Consistent with findings from Study 2 and existing research on implicit theories of emotion (Kappes & Schikowski, 2013; Schroder et al., 2015; Veilleux, Salomaa, Shaver, Zielinski, & Pollert, 2015), the current chapter identified avoidance strategies as a potential mediating variable between implicit theories and psychological health (Study 4). Study 5 (an experimental study), further demonstrated a causal link between implicit theories and avoidance, indicating that the beliefs people hold about their ability to change or control their emotions do indeed have important consequences for emotion regulation, avoidance and help-seeking behaviour.
10. EMOTION BELIEFS, ATTENTIONAL DEPLOYMENT AND RESPONSE MODULATION

10.1 Introduction to Studies 6 and 7

Chapter 9 demonstrated that people’s beliefs about their emotions have important implications for avoidance-based emotion regulation. In Study 4 (a cross-sectional study), fixed entity beliefs about emotions were associated with increased use of cognitive and behavioral avoidance in daily life. In study 5 (an experimental study), when people were led to believe they had difficulty controlling their emotions (entity condition), they were significantly more likely to report intentions to use avoidance strategies over the next month. They also reported greater intentions to avoid psychological help for emotional difficulties and were more likely to avoid subsequent emotion regulation studies. These findings start to explain why people’s beliefs about their emotions have such important associations with motivation, well-being and psychological health (Studies 1 – 3).

However, avoidance strategies only represent one category of emotion regulation. Could emotion beliefs also influence the selection and implementation of other emotion regulation strategies that have more or less adaptive consequences for psychological health? The current chapter focuses on this question in relation to attention-focused and response-focused emotion regulation. Study 6 examines links between emotion beliefs, attention regulation and response modulation in a cross-sectional sample. Study 7 extends this work in a longitudinal intervention study.

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10 This chapter is currently in prep for submission: De Castella, K., Platow, M., & Gross, J. (2017). Emotion beliefs as mediators of change in Mindfulness Based Stress Reduction (MBSR). Behavior Research and Therapy.
10.2 Emotion Beliefs, Attention Regulation and Response Modulation

Attention regulation broadly refers to “how individuals direct their attention within a given situation in order to influence their emotions” (Gross & Thompson, 2007 p.13). Common examples include distraction, concentration, mindfulness, rumination and catastrophizing (see Chapter 3 and 4 for a review). As with most forms of emotion regulation, attention regulation strategies can be used in adaptive and maladaptive ways. Rumination and catastrophizing are generally regarded as maladaptive attention regulation strategies because they most often involve intrusive and uncontrollable negative thinking (Beck, Rush, Shaw, & Emery, 1979), and are associated with various forms of psychopathology (Borkovec, 1994; Borkovec, Roemer, & Kinyon, 1995) and physical disability (Severeijins, Vlaeyen, van den Hout, & Weber, 2001). Mindfulness, on the other hand, is a widely regarded as adaptive attention regulation strategy (Lutz, Slagter, Dunne & Davidson, 2008). It involves a state of being attentive to, and aware of, what is taking place in the present moment, in an accepting and nonjudgmental way (Kabat-Zinn, 1990). Mindfulness has also been described as “lucid awareness” (Bodhi, 2013), “clear comprehension,” and “the meta-attentive ability to monitor one’s mental states” (Dreyfus, 2013). As a meditation technique, mindfulness has been practiced for thousands of years in Eastern religions as a method for cultivating insight, equanimity and spiritual growth (Kabat-Zinn, 2011). More recently, researchers also become interested in mindfulness because of its beneficial impact on psychological distress (Khoury, Shama, Rush & Fournier, 2015) and a wide variety of chronic medical conditions (Bohlmeijer, Prenger, Taal & Cuijpers, 2010).
When individuals are unable to successfully regulate their emotions with early-stage strategies like attention regulation, they may turn to later-stage strategies like response modulation to manage symptoms of emotional distress once they have arisen (see Chapter 3 for a review of early and later-stage emotion regulation strategies in the Process Model). Response modulation refers to strategies aimed at “influencing physiological, experiential or behavioural responding as directly as possible” (Gross & Thompson, 2007 p.15). Common examples include: suppression, prescription medication, illicit drug use, alcohol, nicotine and caffeine. While response modulation strategies are widely used, and can have short-term benefits for managing emotions in daily life, reliance on these strategies can lead to dependence and become problematic, even harmful, for long-term physical and psychological health (Compton & Volkow, 2006; Kelly & Bardo, 2016).

Despite the maladaptive impact of strategies like rumination, catastrophizing and response modulation, and the adaptive impact of attention regulation strategies like mindfulness, not everyone makes use of adaptive strategies in day-to-day life. Why is this? One possibility is that people’s beliefs about their emotions predispose them towards specific attention regulation and response modulation strategies that have more or less adaptive profiles. As reviewed in Chapter 6, when people believe they cannot control their emotions, they may be less inclined to identify, select and implement intentional and internal attention and cognitive regulation strategies (e.g., mindfulness). With a restricted range of strategies at their disposal, people holding entity beliefs about their emotions may in turn be more likely to engage in rumination and catastrophizing about their perceived lack of control over their emotional distress, possibly also inclining them towards external response modulation strategies to manage their symptoms.
Preliminary findings from Study 3 indicate that when individuals believe they cannot control their emotions, they are spontaneously more likely to make reference to using external regulation strategies (like response modulation) over internal strategies (like attention regulation). As reviewed in Chapter 6, there is also some research linking emotion beliefs with response modulation strategies like alcohol and drug abuse (Schroder et al., 2017), and increased preference for medication over psychotherapy for mental health problems (Schroder et al., 2015). These findings are consistent with research on essentialist beliefs about mental illness, specifically, that a perceived lack of control over mental health conditions is positively associated with a desire for medication and biological treatments (Dar-Nimrod & Heine 2011; Deacon 2013; Kvaale et al. 2013; Phelan et al. 2006).

In addition to these direct links between emotion beliefs and response modulation, it is also possible that emotion beliefs influence response modulation via their impact on attention regulation. There is growing research linking mindfulness-based attention regulation with reduced reliance on medications and substance use (common response modulation strategies). Mindfulness training, for example, significantly reduces reliance on nicotine (Brewer et al., 2011; 2014), alcohol and drug use (Bowen, Chawla & Marlatt, 2010; Tang, Tang & Posner, 2016) as well as medication for insomnia (Gross et al., 2011) and pain management (Kabat-Zinn, 1985). In one study with patients suffering from chronic pain, mindfulness training led to a reduction in use of analgesics for 44 percent of patients, and 28 percent of patients discounted use of analgesics altogether (Kabat-Zinn, 1985). Based on these findings (and the theory and research presented in Chapter 6), the current study aimed to test the following predictions:
H1: Entity beliefs about emotions will be negatively associated with adaptive attention regulation (e.g., mindfulness) and positively associated with maladaptive attention regulation strategies (e.g., rumination, catastrophizing) in daily life.

H2: Entity beliefs about emotions will be positively associated with the use of response modulation strategies (e.g. use of alcohol, caffeine, cigarettes and medication) as a means of regulation emotions. And,

H3: The relationship between entity beliefs about emotions and response modulation (e.g. alcohol, caffeine, cigarettes and medication) will be explained via mindfulness-based attention regulation.

Methods

Participants

Participants consisted of 94 individuals (55 female) recruited from Amazon Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011). Each participant was offered 50 cents in exchange for completing the short online survey. Of 100 initial responses, six were either duplicate surveys (by the same participant) or left mostly blank or incomplete (missing data > 10%) and were excluded from the analysis, reducing the sample to 94. Participants in the final sample ranged from 18 to 68 years of age (M = 35.81, SD = 12.4). The sample consisted of 49% White Caucasian, 30% Asian, 2% Hispanic, 2% African American, 1% European; 16% of subjects chose not to indicate their ethnicity. Participants varied in educational backgrounds: 12% indicated their highest level of education consisted of high school or equivalent; 3% indicated they had attained vocational/technical training; 31% reported having some university education; 35%
reported completing university; 15% completed a Masters program; 3% had completed a doctoral degree/PhD; and, 1% completed a professional degree (MD/JD).

**Measures**

**Emotion beliefs.** As with previous studies, implicit theories of emotion were assessed using the 4-item Personal Implicit Theories of Emotion Scale – see Table 5 (De Castella et al., 2013). Internal consistency in the current sample was adequate (α = .68).

**Maladaptive attention regulation.** Maladaptive attention regulation strategies were measured using two subscales (rumination and catastrophizing) from the short version of the cognitive emotion regulation questionnaire (CERQ-short). Each subscale contained two items. For the rumination scale these included: “I often think about how I feel about what I have experienced” and “I am preoccupied with what I think and feel about what I have experienced”. For the catastrophizing scale items included: “I keep thinking about how terrible it is what I have experienced” and “I continually think about how horrible the situation has been”. Research with the CERQ-short indicates that the scales are valid and reliable replicating the relationship between the longer CERQ and related measures of psychological health (Garnefski & Kraaij, 2006). Internal consistency for the current sample was adequate (Rumination α = .60; Catastrophizing α = .70).

**Adaptive attention regulation (mindfulness).** Adaptive attention regulation was measured using the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al. 2006) The FFMQ is the most widely used measure of mindfulness-based attention regulation. It is a 39-item self-report scale that was created through factor analysis using five pre-existing mindfulness questionnaires. The FFMQ contains five factors which appear to represent
different elements of mindfulness as it is currently conceptualized. These elements include: 1) Observing (e.g., “I notice how foods and drinks affect my thoughts, bodily sensations, and emotions”), 2) Describing (e.g. “Even when I’m feeling terribly upset, I can find a way to put it into words”), Acting with Awareness (e.g. “I am easily distracted (Reverse scored)), Non-judging of Inner Experiences (“I criticize myself for having irrational or inappropriate emotions”), and Non-reactivity to Inner Experiences (“I watch my feelings without getting lost in them”). Research with the FFMQ indicates that it is internally consistent and reliable (Baer et al., 2006; 2008). The scale also displays good construct validity with mindfulness facets differentially correlated in expected ways with related constructs and psychological symptoms (Baer et al., 2006; 2008; Van Dam, Earleywine & Danoff-Burg, 2009; Williams, Dalgeish, Karl & Kuyken, 2014). Internal consistency for the current sample was good with coefficients for the five facets ranging from .78 to .93

**Response Modulation.** Response Modulation was measured with 20 items that asked participants about their use of specific substances to regulate their emotions (alcohol, caffeine, cigarettes, and medication). These items were developed for the purposes of the current study. Items included “I drink alcohol to help me forget my worries” and “I drink alcohol to cheer up when I’m in a bad mood.” Complete scale items can be seen in Table 14. Internal consistency for the current sample was good with coefficients for each of the response modulation subscales ranging from .91 to .95 (see Table 15).
Table 14. *Response Modulation Scales (Study 6, n = 94)*

**STEM:** “Below are a number of reasons people often consume alcohol, caffeine, nicotine, and other medications. Using the scale below, please indicate to what extent the following statements are true of you”.

**Anchor:**
1 = “Not at all like me” 2 = “Not like me” 3 = “Not much like me” 4 = “Neutral” 5 = “Somewhat like me” 6 = “Like me” 7 = “Just Like Me”

<table>
<thead>
<tr>
<th>ALCOHOL USE</th>
<th>CAFFEINE USE</th>
<th>MEDICATION USE</th>
<th>NICOTINE USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I drink alcohol to help me forget my worries</td>
<td>1. I drink caffeine to help me forget my worries</td>
<td>1. I use prescription medication caffeine to help me forget my worries</td>
<td>1. I smoke cigarettes to help me forget my worries</td>
</tr>
<tr>
<td>2. I drink alcohol to cheer up when I'm in a bad mood</td>
<td>2. I drink caffeine to cheer up when I'm in a bad mood</td>
<td>2. I use prescription medication to cheer up when I'm in a bad mood</td>
<td>2. I smoke to cheer up when I'm in a bad mood</td>
</tr>
<tr>
<td>3. I feel more caring and giving after I've been drinking</td>
<td>3. I feel more caring and giving after I've had some caffeine</td>
<td>3. I feel more caring and giving when I’m taking prescription medication</td>
<td>3. I feel more caring and giving after I've been smoking</td>
</tr>
<tr>
<td>4. I drink alcohol to feel more friendly</td>
<td>4. I drink caffeine to feel more friendly</td>
<td>4. I use prescription medication to feel more friendly</td>
<td>4. I smoke to feel more friendly</td>
</tr>
<tr>
<td>5. I drink alcohol to put myself in a better mood</td>
<td>5. I use caffeine to put myself in a better mood</td>
<td>5. I use prescription medication to put myself in a better mood</td>
<td>5. I smoke to put myself in a better mood</td>
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</table>
Results

Preliminary Analyses

Across all variables, missing data were rare due to form validation settings (< 1%), and were again imputed with the mean for that variable (Tabachnick & Fidell, 2007). As in previous studies, emotion beliefs were not significantly related to gender or ethnicity and these variables are not discussed further. Means (M), standard deviations (SD), ranges, internal consistencies (α) and correlations for all variables can be seen in Table 15.

Emotion Beliefs, Attention Regulation, and Response Modulation

H1 predicted that entity beliefs about emotions would be negatively associated with adaptive attention regulation (e.g., mindfulness) and positively associated with maladaptive attention regulation (e.g., rumination, catastrophizing). Results indicated that entity beliefs did predict reduced adaptive mindfulness attention regulation as measured by different facets of the FFMQ: describing $B = -.47; R^2 = .04, F = 25.64, p < .001$; non-judgment $B = -.37; R^2 = .14, F = 14.72, p < .001$; non-reactivity $B = -.20; R^2 = .04, F = 3.96, p < .05$; and acting with awareness $B = -.28; R^2 = .08, F = 7.51, p < .01$. Consistent with predictions, entity beliefs also positively predicted catastrophizing $B = .20; R^2 = .04, F = 3.85, p < .05$. However, counter to predictions, entity beliefs were associated with reduced rumination $B = -.22; R^2 = .05, F = 4.88, p < .05$. H2 predicted that entity beliefs about emotions would be associated with increased use of later-stage response modulation strategies (e.g. alcohol, caffeine, nicotine and medication) as a means of regulation emotions. Again, there was partial support for this hypothesis. Entity beliefs predicted higher levels of alcohol use ($B = .21; R^2 = .04, F = 3.87, p < .05$) and medication ($B = .24; R^2 = .06, F = 5.51, p < .05$); but there were no associations between emotion beliefs, caffeine and cigarette use regulation strategies.
Table 15: Emotion Beliefs, Attention Regulation and Response Modulation – Descriptive Statistics, Cronbach’s Alphas, and Pearson Product-Moment Correlations (Study 6, N = 94)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>α</th>
<th>1</th>
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<td>Implicit Theories &amp; Attention Regulation</td>
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<tr>
<td>1. Entity Theory of Emotions (ITES-P)</td>
<td>10.86</td>
<td>2.92</td>
<td>4.00 – 20.00</td>
<td>.68</td>
<td>1</td>
<td>.20♦</td>
<td>-.22^</td>
<td>.14</td>
<td>-.47**</td>
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<td>-.28*</td>
<td>.20**</td>
<td>.03</td>
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<td>.24^</td>
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<tr>
<td>2. Catastrophizing (CERQ-short)</td>
<td>5.66</td>
<td>1.94</td>
<td>2.00 – 10.00</td>
<td>.70</td>
<td>1</td>
<td>.51**</td>
<td>.14</td>
<td>-.32*</td>
<td>-.65**</td>
<td>-.20^</td>
<td>-.44**</td>
<td>.29**</td>
<td>.31*</td>
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<tr>
<td>3. Rumination (CERQ-short)</td>
<td>6.33</td>
<td>1.59</td>
<td>2.00 – 10.00</td>
<td>.60</td>
<td>1</td>
<td>.13</td>
<td>.10</td>
<td>-.41**</td>
<td>.12</td>
<td>-.17</td>
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<td>.19</td>
<td>.22^</td>
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<tr>
<td>4. Observing (FFMQ)</td>
<td>24.84</td>
<td>5.41</td>
<td>8.00 – 40.00</td>
<td>.82</td>
<td>1</td>
<td>.19</td>
<td>-.13</td>
<td>.24^</td>
<td>-.17</td>
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<td>.30**</td>
<td>.09</td>
<td>.11</td>
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<tr>
<td>5. Describing (FFMQ)</td>
<td>25.65</td>
<td>6.36</td>
<td>8.00 – 40.00</td>
<td>.89</td>
<td>1</td>
<td>.37**</td>
<td>.35**</td>
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<tr>
<td>6. Non-Judgment (FFMQ)</td>
<td>25.63</td>
<td>7.22</td>
<td>8.00 – 40.00</td>
<td>.93</td>
<td>1</td>
<td>.14</td>
<td>.59**</td>
<td>-.25*</td>
<td>-.34**</td>
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<td>7. Non-Reactivity (FFMQ)</td>
<td>21.09</td>
<td>4.46</td>
<td>8.00 – 40.00</td>
<td>.78</td>
<td>1</td>
<td>.09</td>
<td>.28**</td>
<td>.14</td>
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<td>8. Acting with Awareness (FFMQ)</td>
<td>26.64</td>
<td>6.77</td>
<td>8.00 – 40.00</td>
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<td>1</td>
<td>-.34**</td>
<td>-.38**</td>
<td>-.19</td>
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<td>Response Modulation Strategies</td>
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<tr>
<td>9. Emotion Regulation with Alcohol</td>
<td>13.61</td>
<td>8.05</td>
<td>5.00 – 35.00</td>
<td>.92</td>
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<td>10. Emotion Regulation with Caffeine</td>
<td>11.91</td>
<td>7.51</td>
<td>5.00 – 35.00</td>
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<td>11. Emotion Regulation with Nicotine</td>
<td>12.41</td>
<td>7.93</td>
<td>5.00 – 35.00</td>
<td>.95</td>
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<tr>
<td>12. Emotion Regulation with Medication</td>
<td>11.02</td>
<td>6.64</td>
<td>5.00 – 35.00</td>
<td>.91</td>
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*p <.05, ** p <.01, *** p <.001

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The Indirect Effect of Attention Regulation Strategies

To test whether attention regulation strategies indirectly explained the associations between implicit theories and substance-based response modulation strategies (H3), I examined the indirect effect of emotion beliefs (the predictor) via adaptive and maladaptive attention regulation strategies (the intermediary) on response modulation (the dependent variable). For the purpose of simplifying the mediation analysis, I used the summed total on the FFMQ as a measure of adaptive mindfulness-based attention regulation, and the summed total of the CERQ items (catastrophizing and rumination) as a measure of maladaptive attention regulation (the intermediary). The dependent variable consisted of the summed total of the four different response modulation strategies (alcohol, caffeine, nicotine and medication, $\alpha = 94$). This indirect effect was quantified as the product of the coefficients, $a$ and $b$ (See Figure 17). The direct effect, $c'$, was also estimated but is not relevant when testing mediation or indirect effects (Hayes, 2009). As described previously, this indirect effect was tested for significance using the most recent version of the Preacher and Hayes (2008; Rucker, Preacher, Tormala, & Petty, 2011) SPSS PROCESS macros for indirect effects, which includes a bootstrap of 10,000 samples generating an empirically derived sampling distribution and confidence intervals to test for significance of the indirect effect. To evaluate the size of the indirect effects, Kappa Squared ($\kappa^2$) was again used as a ratio of the indirect effect to the maximum possible effect permitted by the design and data (Preacher & Kelly, 2011). Kappa Squared ($\kappa^2$) may vary between 0 (no indirect effect) to 1 (maximum possible indirect effect) and, they suggest interpreting it like R-squared with 0.01, 0.09 and 0.25 representing small, medium, and large effect sizes respectively.
Figure 17. Emotion Beliefs and the Mediating Role of Mindfulness (Study 6, n = 94)

**Figure 17.** The indirect effect of Entity beliefs about emotions on response modulation via mindfulness based attention regulation strategies. Values are standardized coefficients. When controlling for attention regulation, the regression coefficient for the effect of implicit theories (in parentheses) decreases to non-significance. *p < .05, *p < .01, **p < .001
Results indicated that the indirect effect of emotion beliefs via adaptive mindfulness-based attention regulation strategies was significant for the composite measure of response modulation strategies (alcohol, caffeine, cigarettes, medication), with 95% confidence intervals excluding zero (ab = .73, 95% CI = [.22, 1.58], $\kappa^2 = .08$); (see Figure 17). This was a medium effect according to standards for Kappa squared (Preacher & Kelly, 2011). There were no significant effects when examining the mediating effect of emotion beliefs on response modulation via maladaptive attention regulation strategies (catastrophizing and rumination) (ab = .03, 95% CI = [-.60, .65], $\kappa^2 = .004$).

**Discussion**

Findings from Study 6 indicate that when people believed they could not control their emotions, they were less likely to report engaging in adaptive mindfulness-based attention regulation strategies in daily life and were more likely to engage in catastrophizing. People holding entity beliefs about their emotions were also more likely to report using later-stage response modulation strategies like alcohol use and medication as a means of regulating their emotions, and attention regulation strategies indirectly explained the relationship between emotion beliefs and response modulation. Although these findings provide some preliminary support for the hypothesized links between emotion beliefs, attention regulation and response modulation, they are again based on cross-sectional data at a single time point, so cannot speak to the causal relationship between variables. These preliminary findings, however, point to mindfulness-based attention regulation as important emotion regulation strategies and indicate that emotion beliefs may play a role in their use. The next study (Study 7), aims to better clarify the causal relationship between variables in a longitudinal study by examining whether emotion beliefs mediate treatment outcomes in a mindfulness-based-intervention.
STUDY 7

10.3 Emotion Beliefs and Mindfulness Based Stress Reduction

Study 6 examined links between implicit beliefs about emotion, attention-based and response-focused emotion regulation strategies in a diverse cross-sectional sample. Results provided some preliminary support for the hypothesis that entity beliefs about emotions predict reduced use of mindfulness-based attention regulation strategies and increased use of later-stage substance-based response modulation strategies. Attention regulation also indirectly explained links between emotion beliefs and response modulation. These findings provide some preliminary support for the hypothesized links between emotion beliefs, mindfulness, and response modulation. They also indicate that emotion beliefs could play an important role in mindfulness-based clinical treatments. However, Study 6 also utilized a cross-sectional sample and data was collected at a single time point. For this reason, findings from Study 6 cannot speak to the directional relationship between variables. And, even though people’s perceived control over their emotions were successfully manipulated in Study 5, it is not yet clear whether emotion beliefs are subject to longer-term change, and what impact (if any) this has on psychological health and response modulation. To address these questions, Study 7 examines the role of emotion beliefs in a longitudinal intervention study utilizing mindfulness-based attention training. In this study, I examine the potential mediating role of emotion beliefs in an 8-week program of mindfulness based stress reduction (MBSR). To date, MBSR is among the most widely used and researched mindfulness training programs (Hölzel et al., 2011) with diverse benefits for physical and psychological health. I begin by reviewing research on MBSR, before examining the potential role of emotion beliefs as a mediator of MBSR-related treatment outcomes.
Mindfulness Based Stress Reduction (MBSR)

Mindfulness based stress reduction (MBSR) is a widely regarded 8-week program of intensive training in mindfulness and meditation practices designed to help individuals cultivate greater moment-to-moment awareness in their everyday life. The program was originally developed in 1979 by Jon Kabat-Zinn at the University of Massachusetts Medical Center, and was designed to provide a coping resource for patients suffering with chronic pain and other serious medical conditions (Kabat-Zinn, 1994b). Today, more than 24,000 people have completed the 8-week MBSR program at the University of Massachusetts and tens of thousands more have completed the trainings in other locations around the world in hospitals and clinics, community settings, schools and universities, prisons, athletic and military training programs, and in professional organizations and corporations (Center for Mindfulness, 2017). Growing interest in mindfulness programs has also led to adaptations of MBSR, including mindfulness-based cognitive therapy (MBCT; Segal, Williams & Teasdale, 2002) for recurrent depression; mindfulness-based relapse prevention (MBRP, Bowen, Chawla & Marlatt, 2010) for individuals in recovery from addictive behaviors; mindfulness-based eating awareness training (MBEAT; Kristeller & Hallett, 1999) for disordered eating; and other empirically-based psychological interventions like acceptance and commitment therapy (ACT, Hayes, Strosahl & Wilson, 1999) and dialectal behavior therapy (DBT, Linehan et al., 1999). Research on MBSR has also grown exponentially over the last 30 years, increasing from fewer than 50 publications between 1980 and 1995, to more than 500 clinical trials of MBSR published in peer-reviewed journals annually since 2012 (Williams & Kabat-Zinn, 2014).
Over the eight-week program, approximately half the time in each class is spent practicing formal guided meditation. The meditation practices taught in MBSR are non-elaborative, non-conceptual attention-focusing meditations that fall into two primary categories: (a) focused attention, defined as object-based selective attention in the present moment with ongoing assessment of the quality of attention (e.g., focusing awareness on the sensations of breathing), and (b) open monitoring, defined as broadening attention into a state of mere observation or monitoring in the present moment in any experience and without any explicit focus on an object (e.g., simultaneous awareness of sensations, sounds, thought, emotions as they arise and pass away in the field of awareness) (Lutz, Slagter, Dunne, & Davidson, 2008). Within these two primary categories, guided meditations are further divided into formal and informal practices. Formal meditation practices include: a lying-down body scan meditation; sitting meditations focusing on different objects of awareness (e.g. breath, sensation, sound, thoughts, emotions, open awareness); loving-kindness meditation, and meditation on movement (e.g. walking meditation and hatha yoga). Informal meditations, on the other hand, are designed to be more easily integrated into participants’ day-to-day lives and include: eating meditation, awareness of pleasant and unpleasant events, awareness of interpersonal communication habits and styles, awareness of repetitive cognitions and their relationship with body sensations and emotions, and awareness of helpful and harmful lifestyle habits and behaviors (Kabat-Zinn & Santorelli, 2014). Classes also provide information on such topics as: stress physiology and neuroplasticity, stress reactivity, the effects of perception, appraisal and cognitive distortions. They also cover seven key attitudinal themes: practicing with the freshness of a beginner’s mind, non-judgmental awareness, patience, non-striving, trust, acceptance and letting go. MBSR instructors are encouraged to make
these didactic elements of the curriculum “come alive” via elicitation of dialogue and class inquiry oriented around the direct experience of program rather than simply lecturing to participants (Kabat-Zinn & Santorelli, 2014).

To date, there is growing empirical support for the efficacy of MBSR in the treatment of a wide range of physical and psychological conditions. Published evaluations of medical outcomes resulting from patient participation have shown on average a 35% reduction in the total number of medical symptoms, a 40% reduction in psychological symptoms, and gains which were maintained at three and four-year follow-up (Kabat-Zinn 1982, 1985, 1986; Miller et al., 1995). MBSR has also been effective in the treatment of a wide range of specific medical problems. For example, MBSR has successfully been used to treat chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, 1985), with patients reporting a 33-50% decrease in pain symptoms, 44% of patients reporting decreased use of analgesics, and 28% of patients discontinuing analgesics altogether (Kabat-Zinn, 1985). Other research on chronic pain indicates that MBSR is associated with improved quality of life, increased perceived control and acceptance of pain, and decreased psychological distress in response to pain sensations (MacCoon et al., 2012; La Cour & Petersen, 2015). There is also evidence that the practice of open monitoring is particularly effective in pain management as seen in long-term meditators (Perlman, et al., 2010).

Outside of research on chronic pain, benefits of MBSR programs include: amplified immune functioning (Davidson et al., 2003); a four-fold increased skin clearing rates (vs. treatment as usual) in patients with moderate to severe psoriasis (Kabat-Zinn, Relman, Riley, Hosmer & Dossey, 2001); a 40 percent reduction in hot flashes among
women with menopause (Carmody, Crawford & Churchill, 2008); decreased physical symptoms and increased social and psychological functioning in patients with fibromyalgia (Schmidt et al., 2011; Weissbecker et al., 2002); clinically significant improvements in symptoms for patients with irritable bowel syndrome (Zernicke et al., 2013); improvements across a range of somatization disorders including fibromyalgia, chronic fatigue syndrome and irritable bowel syndrome (Lakhan & Schofield, 2013); lowered glucose levels in patients with type I diabetes (Rosenzweig et al., 2007); improvements in balance and a wide range of symptoms in patients with multiple sclerosis (Simpson et al., 2014; Mills, 2000); improvements in quality of life and stress in patients with asthma (Pbert et al., 2012), and in other studies actual improvements in functional status and frequency of asthma attacks (Devine, 1996); improvements in across a range of measures including blood pressure and BMI for patients with coronary heart disease (Parswani, Sharma & Iyengar, 2013); significantly reductions in blood pressure for patients with hypertension (Hughes et al., 2013)\(^{11}\); moderate to large improvements in memory and cognitive functioning among older adults aged 65 and older (Lenze et al., 2014); and improvements across a range of measures for patients with melanoma, prostate and metastatic breast cancer (Carlson et al., 2003; Shennan, Payne & Fenlon, 2011).

There is also growing interest in MBSR as a treatment for a wide variety of psychological conditions. For example, mindfulness practices are believed to increase awareness of – and therefore the potential to interrupt – dysfunctional thinking, self-focused attention, rumination and experiential avoidance characteristic of depression, OCD, PTSD and anxiety disorders (Baer, 2007; Segal, Williams & Teasdale, 2002). For

\(^{11}\) Other research has found minimal or non-significant effects for ambulatory blood pressure (see Blom et al., 2014).
patients with recurrent depression, there is evidence that MBSR has broad anti-depressive effects and is associated with reduced rumination and depressive symptoms when compared to waitlist controls (Marchard 2012; Ramel, Goldin, Carmona & McQuaid, 2004). The modified mindfulness-based cognitive therapy program (MBCT) is considered particularly effective in the treatment of depression and is widely recommended as an adjunctive treatment for unipolar depression and relapse prevention (Marchard 2012; Kuyken et al., 2010; Segal et al., 2010; Segal, Williams & Teasdale, 2002; Teasdale et al., 2000).

For patients with generalized anxiety disorder, panic disorder and agoraphobia, there is evidence that MBSR leads to significant reductions in stress, anxiety and depression (Grossman, Niemann, Schmidt & Walach, 2004; Kabat-Zinn et al., 1992; Vøllestad, Sivertsen & Nielsen, 2011), and that these improvements are maintained at 6-month (Vøllestad, Sivertsen & Nielsen, 2011) and 3-year follow-up (Miller, Fletcher & Kabat-Zinn, 1995). In one controlled experimental study using a laboratory stress test (consisting of mental arithmetic and a speech task), participants who completed MBSR also displayed larger pre-post decreases in systolic and diastolic blood pressure, but no differences in heart rate or cortisol levels (Nyklicek, Mommersteeg, Van Beugaen, Ramakers & Boxtel, 2013). Patients with social anxiety disorder also appear to benefit from MBSR training. In one randomized clinical trial, Goldin and Gross (2010) found that participants in the MBSR group reported significant reductions in stress, anxiety and depression, as well as significant increases in self-esteem. Pre-post functional magnetic resonance imaging (fMRI) assessments also verified patient self-reports, with MBSR participants displaying reduced amygdala activation and increased activity in brain
regions associated with emotion regulation and attentional deployment during a social evaluation task (Goldin & Gross, 2010).12

Further support for the efficacy of MBSR in the treatment of depression and anxiety disorders comes from several meta-analyses. In one meta-analysis of nine studies on mental health among breast cancer patients, MBSR resulted in clinically significant, moderate to large reductions in stress, anxiety and depression (Zainal, Booth & Huppert, 2013). A second meta-analysis of 39 studies and over 1,140 patients suffering from generalized anxiety disorder, depression and other psychiatric or medical conditions, MBSR led to clinically significant improvements in anxiety (Hedges’s g = 0.97) and mood symptoms (Hedges’s g = 0.95) (Hofmann, Sawyer, Witt, A. & Oh, 2010). In a third systematic review and meta-analysis (Goyal et al., 2014), researchers examined evidence for meditation programs exclusively from randomized clinical control trials with active control groups (to better account for possible placebo effects). The authors included studies on mantra-based meditation programs, transcendental meditation (TM), and clinically standardized meditation programs (CSM). Study results were also evaluated based on risk of bias, precision, directness and consistency, and effect sizes were calculated based on the relative difference between groups in change from baseline. From a total of 18,753 publications, 47 trials (with 3,515 participants) met inclusion criteria. Results indicated that mindfulness programs uniquely led to moderate improvements in anxiety (effect size, 0.38 [95% CI, 0.12-0.64] at eight weeks, and 0.22 [0.02-0.43] at 3-6 months) and depression (0.30 [0.00-0.59] at 8 weeks and 0.23 [0.05-0.42] at 3-6 months).

12 Research comparing MBSR and MBCT with cognitive behavioral group therapy (CBGT) for social anxiety disorder indicate that CBGT remains as effective (Piet et al., 2010), or more effective at treating social anxiety symptoms (Koszycki et al., 2007).
These effect sizes were comparable with (if not superior too) effect sizes for the use of antidepressants in primary care populations\textsuperscript{13}

Beyond research on depression and anxiety, there is evidence that MBSR is also associated with clinically significant reductions in suicidal ideation and symptoms of post-traumatic stress disorder (PTSD) among veterans (Goldsmith et al., 2014; Serpa, Taylor & Tillisch, 2014), and among adult survivors of childhood sexual abuse (Vujanovic, Niles, Pietrefesa, Schmertz & Potter, 2013). There is also some evidence from case reports (Patel, Carmody & Simpson, 2007) and nonclinical student samples (Hanstede, Gidron & Nyklicek, 2008) that MBSR may be beneficial in the treatment of obsessive-compulsive disorder (OCD), comorbid physical and psychological disorders (Hazlett-Stevens, 2012; Zainal et al., 2013), binge eating disorders (Smith, Shelley, Leahigh & Vanleit, 2006; Smith, Shelly, Dalen, Wiggins, Tooley & Bernard, 2008)\textsuperscript{14}, and well as transdiagnostic problems like insomnia (Zhang et al., 2015). Finally, in non-clinical settings MBSR is also associated with improvements in general psychological health and well-being in both underserved inner-city populations (Smith, Metzker, Waite & Gerrity, 2015), among caregivers of parents with dementia (Whitebird et al., 2013), and with inmates in correctional prison populations (Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007).

\textsuperscript{13} In a patient-level meta-analysis for antidepressant effects, Fournier et al. (2010) found that for patients with mild to moderate depressive symptoms, antidepressants had an effect size of 0.11 (95% CI, −0.18 to 0.41), whereas for those with severe depression, antidepressants had an effect size of 0.17 (−0.08 to 0.43) compared with placebo.

\textsuperscript{14} Research on mindfulness interventions for binge eating is mixed with some studies identifying a reduction in binge eating (Smith, Shelley, Leahigh & Vanleit, 2006; Smith, Shelly, Dalen, Wiggins, Tooley & Bernard, 2008) and other studies using MBCT identifying a decrease in objective binges but an increase in subjective perception of binge eating over the 8-week period (Baer, Fischer & Huss, 2005).
Potential Mediators of Mindfulness Based Stress Reduction

Taken together there is substantial evidence for the efficacy of MBSR in the treatment of a wide range of physical and psychological conditions. However, it is not yet clear why MBSR has so many positive benefits, or why some people benefit from MBSR programs while other do not. In an attempt to answer these questions, researchers have begun developing theoretical models of MBSR that include a wide range of potential mediators. For example: acceptance (Baer, 2003; Grabovac et al., 2011), exposure to unpleasant sensations, thoughts and emotions (Baer, 2003; Brown et al., 2007; Holzel et al., 2011; Shapiro et al., 2006), attention-regulation, cognitive change and decentering (Baer, 2003; Holzel et al., 2011; Shapiro et al., 2006); self-compassion (Kuyken et al., 2010; Bergen-Cico & Cheon, 2013; Keng et al., 2012), reduced worry and rumination (Heeren & Philippot, 2011; Labelle, 2012; Lengacher et al., 2014; Shahar et al., 2010) self-regulation and behavioral flexibility (Baer, 2003; Brown et al., 2007; Shapiro et al., 2006; Vago & Silbersweig, 2012).

In a recent meta-analytic review of MBSR and MBCT mediation studies, Gu, Strauss, Bond and Cavanagh (2015) used two-stage meta-analytic structural equation modeling (TSSEM) to evaluate the impact of assessed mediators on clinical outcomes. The authors identified 20 studies (15 of which were randomized control trials) that met inclusion criteria with samples ranging from 27 to 205 participants. Mental health outcomes assessed across studies included depression, anxiety, stress, distress and negative affect. The most commonly tested mechanisms in these studies included: mindfulness (n = 16) followed by rumination (n = 7), worry and concerns (n = 5), self-compassion (n = 3), psychological flexibility (n = 1), emotional reactivity (n = 1),
cognitive reactivity (n = 1), and autobiographical memory specificity (n = 1). Results indicated that there was strong and consistent evidence for the mediating effect of changes in cognitive and emotional reactivity. There was also consistent and moderate evidence for the mediating effect of mindfulness and changes in repetitive negative thinking (worry and rumination). The authors found only preliminary or insufficient evidence however, for the role of self-compassion and psychological flexibility.

These findings point to a range of potential mediating variables in MBSR treatment programs and begin to explain how and why MBSR lead to so many health benefits. However, one currently unexplored variable is people’s perceived control over their emotions. Study 6 identified significant associations between emotion beliefs and mindful awareness, worry, rumination, and reactivity. Given these links, and the evidence for the mediating role of these variables in MBSR, it is possible that people’s beliefs about their emotions play an important role in mindfulness based interventions. Study 7 aims to test this hypothesis in a longitudinal study by examining whether people’s perceived control over their emotions mediates MBSR-related treatment outcomes. Based on the research presented and findings from Study 6, Study 7 aimed to test the following predictions:

H1: Compared to participants in the matched control group, individuals completing MBSR will show a significant reduction in entity beliefs about emotions post-treatment and at 12-month follow-up.

H2: Compared to participants in the matched control group, individuals completing MBSR will show significant improvements in psychological symptoms (increased satisfaction with life and reduced loneliness, stress, anxiety, and depression).
Individuals completing MBSR will also show a reduction in response modulation strategies (reliance on alcohol, smoking, caffeine and medication) post-treatment.

H3: Participants’ beliefs about their emotions post-course (8-weeks) will mediate MBSR-related improvements in psychological health, well-being and response modulation at 12-month follow-up.

Methods

Participants

Participants consisted of 50 individuals (35 female) completing an 8-week mindfulness based stress reduction class, and 50 matched controls (35 female) recruited from Amazon Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011). All participants in the final sample were required to complete pre- post-class assessments.

MBSR-treatment Group. MBSR participants were recruited from four classes – two taught in Australia (n = 21) and two taught in the United States (n = 29). From an original baseline sample of 126 participants, 64 participants were excluded because they did not complete post-course surveys. Another 12 participants were also excluded because they had previously completed a MBSR class or were in training to become an MBSR teacher. All MBSR instructors were certified to teach MBSR through the University of Massachusetts, Centre for Mindfulness and adhered to the same 8-week course curriculum (Kabat-Zinn & Santorelli, 2014). There were no significant differences between classes or course instructors on outcome variables and these variables are not discussed further. MBSR participants ranged from 19 to 76 years of age and 46 per cent
had some prior experience with a mindfulness or yoga practice; however, no participants had previously completed an 8-week MBSR course.

**Control Group.** Control participants were selected from the larger Amazon Turk sample presented in Study 6. These participants were offered 50 cents in exchange for completing a short online survey. To control for variables that might be related to meditation interest (e.g., the self-selecting tendencies of people who elect to take MBSR), Turk participants were only eligible if they reported being interested in meditation and in taking an 8-week MBSR class. Meditation interest was assessed with two questions: “Meditation isn’t worth the time/effort” (1 = Strongly Agree; 5 = Strongly Disagree), and “If you had the opportunity to attend an 8-week Mindfulness Based Stress Reduction Course, how interested would you be in taking the course?” (1 = Not at all Interested; 5 = Extremely Interested). Turk participants were eligible for Study 7 if they scored above the midpoint (3 and above) on both of the meditation interest screening items. From the original sample of 100 participants, 16 people were excluded because they reported insufficient interest in mediation or mindfulness based stress reduction. The remaining subjects were selected based to match as closely as possible the demographic information and prior meditation experience in the MBSR treatment group. Demographic information for all participants in both samples is provided in Table 16.

**Measures**

**Emotion beliefs.** As with Study 6, implicit theories of emotion were assessed using the 4-item Personal Implicit Theories of Emotion Scale – see Table 5 (De Castella et al., 2013). Internal consistency in the current sample was adequate (α = .68).
Table 16. *Emotion Beliefs and MBSR – Demographic variables (Study 7, n = 100)*

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<td>Age (SD)</td>
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<td>% Female</td>
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<td>70</td>
</tr>
<tr>
<td>% Prior Mindfulness Practice*</td>
<td>46</td>
<td>50</td>
</tr>
</tbody>
</table>

* Note: Prior mindfulness practice included experience with meditation (Zen, Vipassana, transcendental meditation, yoga, tai chi or other personal practice).

**Psychological health.** Psychological health was assessed using the same measures provided in Study 4. These included measures of well-being (loneliness and life satisfaction) as well as measures of clinical symptoms (depression, anxiety, and stress).

For well-being, loneliness was measured using the 8-item revised version of the UCLA Loneliness Scale (ULS-8, Hays & DiMatteo, 1987). Life satisfaction was measured using the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Internal consistency was good for both scales in with MBSR participants (ULS-8, \( \alpha = .88 \); SWLS \( \alpha = .93 \)) and with participants in the Control Group (ULS-8, \( \alpha = .86 \); SWLS \( \alpha = .90 \)).

**Clinical symptoms.** Clinical symptoms were measured using the 21-item Depression, Anxiety, and Stress Scales (DASS-21; Henry & Crawford, 2005; Lovibond &
Lovibond, 1995). See Study 6 for details on the DASS. In the current sample, internal consistency for the DASS scales was good in both samples (MBSR Group: Stress $\alpha = .93$; Anxiety $\alpha = .86$; Depression $\alpha = .92$; Total DASS $\alpha = .95$; Control Group: Stress $\alpha = .90$; Anxiety $\alpha = .93$; Depression $\alpha = .94$; Total DASS $\alpha = .97$). Consistent with findings from Study 6, I report results for the Total DASS scale as a measure of clinical symptoms to streamline reporting in mediation analyses. Individual scale scores, correlations and descriptive statistics for both samples can be seen in Table 11.

**Response Modulation.** Response Modulation was measured with the same 20 items included in Study 6. These included questions that asked participants about their use of specific substances to regulate their emotions (alcohol, caffeine, cigarettes, and medication). Example items include, “I drink alcohol to help me forget my worries” and “I drink alcohol to cheer up when I’m in a bad mood.” Complete scale items can be seen in Table 14. Internal consistency for the current samples was also good (MBSR Group: Alcohol $\alpha = .91$; Caffeine $\alpha = .93$; Cigarettes $\alpha = .98$; Medication $\alpha = .80$; Control Group: Alcohol $\alpha = .92$; Caffeine $\alpha = .91$; Cigarettes $\alpha = .95$; Medication $\alpha = .89$).

**Procedure**

**MBSR Treatment.** MBSR is typically taught in small groups of 10 – 40 participants. There is a didactic component of instruction and discussion, group sharing, and a range of guided meditation and mindfulness practices covered in each class. Students meet for two and a half hour each week, for eight weeks, and also attend a daylong silent meditation retreat after their sixth class. In addition to the classes and retreat, students are encouraged to commit to significant home practice each week including: 45 minutes of guided meditation or yoga daily, informal mindfulness exercises,
and optional assignments or readings (Kabat-Zinn & Santorelli, 2014). Participants completing MBSR attended an initial 2.5 hour-long orientation, followed by eight-hour weekly classes and a silent full day mindfulness retreat after the 6th class. Classes were 2.5 hours in length. MBSR was taught according to the course curriculum (Kabat-Zinn & Santorelli, 2014). In addition to the classes and retreat, students were encouraged to commit to significant home practice each week, including 45 minutes of guided meditation or yoga daily, informal mindfulness exercises, and optional assignments or readings from the companion book Full Catastrophe Living (Kabat-Zinn, 1990).

**Assessments.** MBSR participants completed 20-minute online surveys at three time intervals: Week 1 (baseline n = 50), week 9 (post-MBSR n = 50), and at 12-month follow-up (n = 34). MBSR participants who completed all three assessments received a copy of a mindfulness book “Living with Your Heart Wide Open” as a free gift. Sixteen people in the MBSR group failed to complete 12-month follow-up assessments. For control group participants, online surveys were administered through Amazon Mechanical Turk at the same time intervals: baseline (n = 50), week 9 (n = 50), and at 12-month follow-up (n = 47). Participants received 50 cents for the baseline surveys and $1.50 for the follow-up assessments.

**Statistical Analyses**

To evaluate the effects of MBSR on patients’ emotion beliefs (H1), a 2 group (MBSR vs. Control) x 3 Time (baseline; 8-week; and 12-month follow-up) repeated-measures ANOVA was conducted followed by paired-sample t-tests for the MBSR and Control groups. Next, to examine the effect of MBSR on indicators of psychological health, well-being and response modulation strategies (H2), a 2 group (MBSR vs.
Control) x 2 Time (baseline and post-treatment/8-weeks) repeated-measures ANOVA was conducted followed by paired-sample t-tests for the MBSR and Control groups. Finally, to examine whether changes in people’s beliefs about their emotions post-treatment mediated treatment outcomes (improvements in psychological health, well-being and reduced reliance on response modulation, H3), separate mediation analyses were conducted for each of the dependent variables. Models examined the effect of MBSR vs. Control group (the predictor) on psychological health outcomes at 12-months (the dependent variables) via emotion beliefs post-MBSR/8-week follow-up (the mediator).

As reported previously mediation effects were tested using the Preacher and Hayes (2008; Rucker, Preacher, Tormala, & Petty, 2011) PROCESS macro for SPSS (see Studies 4 and 6). Bias-corrected 95% confidence intervals were also calculated based on a bootstrap of 5000 samples. Mediation analyses are repeated – and measures of effect size calculated – for each of the dependent variables. Although participants were not randomly assigned to treatment and control groups, by incorporating data at 3 distinct time points (baseline, post-MBSR and 12-month follow-up), it was possible to establish temporal precedence (an important requirement for assessing the causal relationship between variables). Results are reported as standardized coefficients.

**Results**

Prior to analysis, all variables were examined for missing values and distributional assumptions (Preacher & Hayes, 2008). Normality, linearity, and homogeneity of variance were all found to be satisfactory. Missing data were rare (less than 5% on any variable) and were imputed with the overall mean for that variable – a conservative technique in such cases (Tabachnick & Fidell, 2007). See Table 17 for descriptive statistics and correlations for all variables at baseline.
Table 17: *Emotion Beliefs and MBSR – Descriptive Statistics and Pearson Product-Moment Correlations at Baseline (Study 7, N = 100)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Theories &amp; Psychological Health</td>
<td></td>
<td></td>
<td></td>
<td>Correlations</td>
</tr>
<tr>
<td>1. Entity Beliefs about Emotions (ITES-P)</td>
<td>10.18</td>
<td>2.96</td>
<td>4.00 – 20.00</td>
<td>1 .10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>- .11</td>
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<td></td>
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<td></td>
<td>.31* .38**</td>
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<td>.36** .37**</td>
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<td>.30* .02</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>-.06 .25*</td>
</tr>
<tr>
<td>2. Loneliness (ULS-8)</td>
<td>16.69</td>
<td>4.80</td>
<td>8.00 – 30.00</td>
<td>1 -.53**</td>
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<td>.56** .56**</td>
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<td>.60** .59**</td>
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<td>.03 .23*</td>
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<tr>
<td>3. Satisfaction with Life (SWLS)</td>
<td>20.95</td>
<td>7.19</td>
<td>5.00 – 35.00</td>
<td>1 -.31*</td>
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<td>-.24* -.51**</td>
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<td>-.39** .05</td>
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<td>.08 .03</td>
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<td>-.11</td>
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<tr>
<td>4. Stress (DASS-Stress)</td>
<td>14.03</td>
<td>5.17</td>
<td>7.00 – 28.00</td>
<td>1 .79**</td>
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<td>.80** .94**</td>
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<td>.31** .27*</td>
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<td></td>
<td></td>
<td>.24^ .34**</td>
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<tr>
<td>5. Anxiety (DASS-Anxiety)</td>
<td>11.50</td>
<td>4.77</td>
<td>7.00 – 28.00</td>
<td>1 .75**</td>
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<td>.90** .30**</td>
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<td>.26* .35**</td>
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<td>.50**</td>
</tr>
<tr>
<td>6. Depression (DASS-Depression)</td>
<td>12.85</td>
<td>5.64</td>
<td>7.00 – 28.00</td>
<td>1 .92**</td>
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<td>.27* .24^</td>
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<td></td>
<td></td>
<td></td>
<td>.25^ .41**</td>
</tr>
<tr>
<td>7. Total Clinical Symptoms (DASS-Total)</td>
<td>38.38</td>
<td>14.41</td>
<td>21.00 – 84.00</td>
<td>1 .33**</td>
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<td></td>
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<td></td>
<td>.28** .31*</td>
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<td></td>
<td></td>
<td>.45**</td>
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<tr>
<td>Response Modulation Strategies</td>
<td></td>
<td></td>
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<tr>
<td>8. Emotion Regulation with Alcohol</td>
<td>12.36</td>
<td>8.11</td>
<td>5.00 – 35.00</td>
<td>1 .32**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.35** .43**</td>
</tr>
<tr>
<td>9. Emotion Regulation with Caffeine</td>
<td>12.36</td>
<td>7.82</td>
<td>5.00 – 35.00</td>
<td>1 .35**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.29**</td>
</tr>
<tr>
<td>10. Emotion Regulation with Nicotine</td>
<td>10.09</td>
<td>7.81</td>
<td>5.00 – 35.00</td>
<td>1 .64**</td>
</tr>
<tr>
<td>11. Emotion Regulation with Medication</td>
<td>8.18</td>
<td>5.36</td>
<td>5.00 – 35.00</td>
<td>1</td>
</tr>
</tbody>
</table>

*p < .05, *p < .01, **p < .001
At baseline assessment, there were no significant differences between groups (MBSR vs. Control) in age, gender, English language ability or prior experience with mindfulness/meditation. There was also no significant difference at baseline between groups on participants’ implicit beliefs about their emotions ($M_{MBSR} = 10.00$, $SD = 2.80$ vs. $M_{Control} = 10.36$, $SD = 3.13$), $t(98) = -0.61$, $p = .55$), or on any of the other dependent variables.

**MBSR and Emotion Beliefs**

Consistent with H1, a repeated-measures ANOVA revealed a significant treatment x time interaction, $F(2, 79) = 9.07$, $p < .001$, $R^2 = .10$. Follow-up planned paired t-tests showed that, compared to baseline, MBSR participants reported lower entity beliefs about their emotions post-MBSR ($M_{baseline} = 10.00$, $SD = 2.80$, $M_{9Weeks} = 8.44$, $SD = 2.64$; $t(49) = 4.90$, $p < .001$). For MBSR participants, this difference also remained significant at 12-month follow-up ($M_{baseline} = 9.71$, $SD = 2.54$, $M_{12M} = 7.97$, $SD = 2.34$; $t(33) = 4.23$, $p < .001$). There was, however, no significant difference over time for patients in the CONTROL group at 9 weeks ($M_{baseline} = 10.36$, $SD = 3.13$ vs. $M_{9Weeks} = 10.60$, $SD = 3.63$), $t(49) = -0.72$, $p = .48$) or at 12-month follow-up ($M_{baseline} = 10.40$, $SD = 3.11$ vs. $M_{12M} = 10.68$, $SD = 3.10$), $t(46) = -0.76$, $p = .45$) (see Figure 18).

**MBSR, Psychological Health and Response Modulation**

Consistent with H2, repeated-measures ANOVAs revealed significant treatment x time interactions for stress ($F(1, 98) = 20.38$, $p < .001$, $R^2 = .17$), anxiety ($F(1, 98) = 3.70$, $p < .05$, $R^2 = .04$), depression ($F(1, 98) = 8.19$, $p < .01$, $R^2 = .08$), and loneliness ($F(1, 98) = 9.45$, $p < .01$, $R^2 = .09$), but not for satisfaction with life ($F(1, 98) = 1.97$, $p = .16$, $R^2 = .02$) or response modulation ($F(1, 98) = 1.78$, $p = .19$, $R^2 = .02$). Separate analyses were also conducted to examine changes in each of the specific response modulation strategies. There were no significant treatment group x
time interactions for any of the strategies including self-reported use of alcohol (F(1, 98) = .20, p = .65, R² = .002); medication ((1, 98) = 1.72, p = .19, R² = .02); caffeine (F(1, 98) = .50, p = .49, R² = .005); or nicotine (F(1, 98) = .29, p = .59, R² = .003) to regulate emotions.

**Figure 18. MBSR-Related Changes in Emotion Beliefs Over Time (Study 7, n = 100)**

Follow-up planned paired t-tests showed that, compared to baseline, MBSR participants reported lower entity beliefs about emotions, lower levels of loneliness, and clinical symptoms (stress, anxiety and depression) post-treatment. For participants in the control condition however, there was no significant difference over time on any of the dependent variables (with the exception of stress, which had increased at follow-up). Results from paired-samples t-tests for the treatment and control conditions on all dependent variables can be seen in Table 18.
Table 18: *Paired Samples t-tests for Treatment and Control Groups at Baseline and Post-Treatment (9-weeks) (Study 7, N = 100)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>MBSR GROUP (n = 50)</th>
<th>CONTROL GROUP (n = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>9-weeks</td>
</tr>
<tr>
<td>Implicit Theories &amp; Psychological Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Entity Beliefs about Emotions (ITES-P)</td>
<td>10.00 (2.80)</td>
<td>8.44 (2.64)</td>
</tr>
<tr>
<td>2. Loneliness (ULS-8)</td>
<td>17.29 (5.60)</td>
<td>15.06 (4.44)</td>
</tr>
<tr>
<td>3. Satisfaction with Life (SWLS)</td>
<td>20.37 (7.62)</td>
<td>22.10 (6.85)</td>
</tr>
<tr>
<td>4. Stress (DASS-Stress)</td>
<td>14.18 (5.13)</td>
<td>11.96 (4.14)</td>
</tr>
<tr>
<td>5. Anxiety (DASS-Anxiety)</td>
<td>11.00 (3.52)</td>
<td>9.28 (2.97)</td>
</tr>
<tr>
<td>6. Depression (DASS-Depression)</td>
<td>12.40 (5.45)</td>
<td>10.60 (4.62)</td>
</tr>
<tr>
<td>7. Total Clinical Symptoms (DASS-Total)</td>
<td>37.14 (10.41)</td>
<td>32.02 (10.40)</td>
</tr>
<tr>
<td>8. Response Modulation Strategies Total</td>
<td>36.13 (16.31)</td>
<td>38.38 (17.40)</td>
</tr>
</tbody>
</table>

*p < .05, *p < .01, **p < .001
**Emotion Beliefs as a Mediator of MBSR**

To test H3, that beliefs about emotions would mediate MBSR-related treatment outcomes (loneliness, satisfaction with life, stress, anxiety, depression, and response modulation strategies), separate mediation analyses were conducted that examined each of the dependent variables. Mediation analyses included assessments at three different time points to help establish temporal precedence. This included examining the effect of MBSR vs. Control group (the predictor) on outcomes at 12-months (the dependent variables) via emotion beliefs post-treatment (MBSR/9-week follow-up, the mediator).

There was no significant effect for emotion beliefs as a mediator of loneliness ($ab = .80$, 95% CI = [-0.01, 2.21], $\kappa^2 = .08$ (95% CI = 0.01, 0.21)) or satisfaction with life ($ab = -.24$, 95% CI = [-1.59, 0.93], $\kappa^2 = .02$ (95% CI = 0.00, 0.06)) at 12-months. However, post-MBSR beliefs about emotions did mediate clinical symptoms at 12-month follow up. This was true for stress ($ab = 1.22$, 95% CI = [0.40, 2.49], $\kappa^2 = .13$ (95% CI = 0.04, 0.25)), anxiety ($ab = 1.00$, 95% CI = [0.31, 2.05], $\kappa^2 = .11$ (95% CI = .04, .22)) and depression ($ab = 1.18$, 95% CI = [0.33, 2.52], $\kappa^2 = .12$ (95% CI = .03, .23)). Post-MBSR beliefs about emotions also mediated self-reported use of response modulation strategies at 12-months ($ab = 2.785$, 95% CI = [.25, 6.88], $\kappa^2 = .07$ (95% CI = .01, .16)). According to Preacher and Kelly’s (2011) standards, effects sizes for kappa squared of 0.01, 0.09 and 0.25 represent small, medium and large effects respectively. These findings indicate medium to large effect sizes for stress, anxiety and depression and a small to medium effect for response modulation (see Figure 19).
Figure 19. The mediating effect of MBSR on clinical symptoms and response modulation at 12-months via post-treatment/follow-up beliefs about emotions (Study 7, n = 100)

Note: The mediating effect of treatment (8-week MBSR Course vs. 8-week Control Group) on stress, anxiety, depression and response modulation at 12-month follow-up via post-course beliefs about emotions. Values are standardized coefficients. In all models, when controlling for post-treatment beliefs about emotions, the regression coefficient for the effect of implicit theories (in parentheses) decreases to non-significance. *p < .05 **p < .01 ***p < .001


Discussion

Study 7 examined the role of emotion beliefs as a mediator of treatment in a longitudinal intervention study of mindfulness-based stress reduction (MBSR). Participants consisted of 50 people enrolled in an 8-week MBSR course and 50 matched control participants completing online assessments at the same time intervals. Consistent with prior findings (Studies 2 and 4), at baseline, entity beliefs about emotions were associated with lower satisfaction with life and increased symptoms of stress, anxiety and depression. Consistent with findings from Study 6, entity beliefs were also associated with the self-reported use of later-stage response modulation strategies like alcohol use and medication as a means of regulating emotions. At the end of the 8-week mindfulness meditation program, participants in the MBSR group (compared with the control group) were more likely to view their emotions as things they could change or control. This change in thinking also persisted at 12-month follow-up. Compared to control participants, at the completion of the program MBSR participants also showed significant improvements in psychological symptoms (reduced loneliness, stress, anxiety, and depression), and participants’ beliefs about their emotions mediated these MBSR-related treatment outcomes (reduced stress, anxiety, depression and response modulation) at 12-month follow-up.

10.4 Chapter Summary: Studies 6 & 7

The primary aim of Studies 6 and 7 was to examine links between implicit beliefs about emotions, and the use of attention-focused and response-focused emotion regulation strategies. In a cross-sectional study (Study 6), people who believed they could not control their emotions reported engaging less in mindfulness-based adaptive attention.
regulation strategies (e.g. describing, non-judging, non-reactivity and acting with awareness) than those who believed they could control their emotions. Entity beliefs about emotions were also positively associated with catastrophizing and with the use of later-stage response modulation strategies (e.g. managing emotions with alcohol and medication). An analysis of indirect effects further indicated that entity beliefs about emotions predicted increased use of response modulation via reduced use of mindfulness-based attention regulation.

Building on the cross-sectional findings presented in Study 6, the relationship between emotion beliefs, attention regulation and response modulation were then examined in longitudinal intervention study (Study 7). Fifty participants completed an intensive 8-week course in mindfulness meditation and daily home practice in formal and informal mindfulness-based attention regulation strategies. MBSR participants completed pre- and post-course assessments as well as follow-up assessments at 12-months. A matched control group (who did not complete the MBSR training) also completed assessments at the same time intervals. Results indicated that at baseline, fixed entity beliefs about emotions were again associated with increased stress, anxiety and depression, as well as increased self-reported use of alcohol and medication to manage emotions. At 9-weeks (post-MBSR) participants in the MBSR group (compared to controls) reported significantly lower entity beliefs about their emotions. MBSR participants also reported reduced stress, anxiety, depression and loneliness, however there was no significant change in the use of response modulation strategies at 9-week follow-up. Mediation analyses indicated that people’s beliefs about their emotions post-MBSR significantly explained treatment-related improvements in stress, anxiety, depression and response-modulation at 12-month follow-up. Participants who held lower
entity beliefs about their emotions at the completion of the MBSR program were more likely to report lower levels of stress, anxiety and depression, as well as reduced use of response modulation strategies at 12-month follow-up. Emotion beliefs however, did not mediate changes in loneliness or satisfaction with life.

**Implications for Research on Emotion Beliefs**

These findings provide new evidence for the causal role of implicit beliefs about emotions in attention-focused and response-focused emotion regulation. To date research on emotion beliefs has focused mostly on associations with psychological health and cognitive-change (which will be covered in the next chapter). To address this gap in the literature, this chapter examined associations between emotion beliefs and mindfulness-based attention regulation strategies. Findings from the current study suggests that when people hold fixed entity beliefs about their emotions, they may also be less likely to use adaptive attention regulation strategies and may even resort to response-modulation strategies (like alcohol and medication) to manage difficult emotions when they arise. Although emotion beliefs were not experimentally manipulated (as in Study 5), findings from Study 7 indicate that it is possible for people to change their implicit beliefs about their emotions. This may even happen naturally when people are introduced to, and gain practice with, adaptive strategies for regulating their emotions (like formal and informal mindfulness practices). These findings also help clarify some of the pre-existing links that have been identified between emotion beliefs and psychological health outcomes (see Studies 2 – 4). In addition to cognitive and behavioral avoidance, Study 6 and 7 indicate that emotion beliefs may also be associated with adaptive and maladaptive attention
regulation and response modulation strategies, that are in-turn associated with psychological health and well-being.

Implications for Research on Mindfulness

Findings from Studies 6 and 7 also contribute to growing research on mindfulness based stress reduction and point to emotion beliefs as another potential mechanism of change in mindfulness interventions. Consistent with previous research (Hofmann, Sawyer, Witt, A. & Oh, 2010; Goyal et al., 2014), participants completing MBSR reported reductions in stress, anxiety and depression post-treatment and at 12-month follow-up. However, the current study indicates that participants who came to view their emotions as more controllable post-treatment were the ones who reported significant greater reductions in symptoms at 12-months. Understanding how and why programs like MBSR are so effective is important for fine-tuning existing interventions, trainings and for the development of future mindfulness-based treatment programs. It may also help explain why some participants fail to experience benefits. Consistent with the research already presented (Studies 2 - 6), beliefs about emotions may predispose people towards specific emotion regulation strategies that have more or less adaptive consequences for psychological health. MBSR may prove to be a helpful and adaptive training program for attention-based emotion regulation. However, it may be that participants who come to view their emotions as malleable, stand to benefit the most from this clinical treatment.

Findings from Study 7 also fit with existing research on mindfulness training and response modulation: namely, that mindfulness practices can help reduce reliance on maladaptive substance or food-based coping strategies like disordered eating (Kristeller & Hallett, 1999), drinking and substance use (Bowen, Chawla & Marlatt, 2010) as well as
the use of analgesics and other medications (Kabat-Zinn, 1985). As an early stage emotion regulation strategy, attention regulation offers an added advantage of helping individuals regulate emotions in the beginning stages before they have fully arisen (Sheppes & Gross, 2011). In this light, mindfulness attention regulation may help reduce reliance on modulation strategies because attention helps bring awareness to reactive and habitual patterns of responding and because the ability to regulate emotions effectively at early stages may also help reduce reliance on later-stage substance-based response modulation strategies.

In summary, Study 7 demonstrated that beliefs about emotions may be an important mechanism of change in treatment helping to explain how MBSR exerts its effects on so many diverse areas of functioning. These findings also raise questions about the potential role of emotion beliefs in other psychological treatments and interventions, for example, widely used short-term therapies like cognitive behavioural therapy (CBT). Studies 2 – 7 have examined links between emotion beliefs and three stages of the process model: situation selection (avoidance); attentional deployment (mindfulness) and response modulation (substance-use). Chapter 11 will examine the potential associations between emotion beliefs and cognitive change (the fourth stage in the Process Model of Emotion Regulation). I begin by examining associations between emotion beliefs and cognitive strategies in community and clinical samples before examining the role of emotion beliefs in cognitive-change focused treatments.
11. IMPLICIT THEORIES AND COGNITIVE CHANGE

11.1 Introduction to Studies 8, 9 and 10

The previous chapters examined implicit theories of emotion and their role in adaptive and maladaptive attention regulation and response modulation. In a correlational study (Study 6), entity beliefs about emotions predicted greater maladaptive attention regulation (e.g., catastrophizing) and lesser adaptive attention regulation (e.g., mindfulness). In a longitudinal treatment study using an attention-regulation focused intervention (Study 7), emotion beliefs were examined pre- and post- an 8-week Mindfulness-Based Stress Reduction (MBSR) program and again at 12-month follow-up. Compared to participants in a matched control group, MBSR participants were more likely to view their emotions as things they could change and control post-treatment. These changes in emotion beliefs mediated treatment outcomes (reduced stress, anxiety, depression and response modulation) at 12-month follow-up. Together with findings from Studies 2 -6, these findings provide some preliminary evidence for associations between emotion beliefs and the selection and implementation of a variety of emotion regulation

15 This chapter utilises previously unreported findings from Study 2 (Chapter 8). Findings from this chapter have been published in three separate publications:


strategies. Building on these findings, Chapter 11 focuses on the role of emotion beliefs within the third part of the Process Model of Emotion Regulation – strategies involving cognitive change. Study 8 examines associations between emotion beliefs, cognitive change and well-being outcomes in a college student sample. Study 9 examines associations between emotion beliefs, cognitive change strategies and psychological health in a clinical sample of patients with social anxiety disorder. And Study 10 utilizes a randomized clinical control trial of cognitive behavioural therapy (a cognitive-change focused therapy) to further examine the role of belief-change in clinical treatments and interventions.
STUDY 8  

11.2 Emotion Beliefs and Cognitive Change

Cognitive change emotion-regulation strategies refer to any strategies that involve changing how we appraise or think about a situation in order to change how we feel. Examples include: problem solving, denial, defensive pessimism, projection, intellectualization, and upward or downward social comparison. As with each class of strategies, cognitive change strategies can be used adaptively and effectively or in maladaptive and ineffective ways depending on the specific strategy and context. One cognitive change strategy that has a broadly adaptive profile, however, is cognitive reappraisal (Gross, 2002; Gross & John, 2003; Gross & Thompson, 2007). This emotion regulation strategy involves changing the way one thinks about an emotion-eliciting situation in order to change its emotional impact (Gross & Thompson, 2007). While it is true that reappraisal can be used in ways that are beneficial or detrimental, in general, reappraisal is considered an effective emotion regulation strategy for decreasing negative, and increasing positive emotions in the present moment (Goldin et al., 2009). Habitual use of reappraisal as an emotion regulation strategy is also associated with higher levels of positive, and lower levels of negative affect, as well as improved interpersonal functioning, fewer depressive symptoms, greater self-esteem, and improved satisfaction with life (Gross & John, 2003). See Chapter 3.5 for a review of research on cognitive reappraisal.

As with the adaptive and maladaptive attention regulation strategies reviewed in the previous chapter, not everyone makes use of adaptive strategies like cognitive reappraisal in daily life. This is not surprising, as cognitive reappraisal often requires
greater introspective skills and emotional awareness than strategies which are focused on attending to, changing, or avoiding aspects of emotion-arousing situations (Gross & Thompson, 2007). In addition to these basic challenges with using cognitive reappraisal, one important determinant of reappraisal use may be the beliefs people hold about the nature of the emotions they experience. For example, when people believe that emotions cannot readily be controlled, they may be less inclined to see value in using intentional cognitive strategies (like reappraisal) to regulate their emotions in daily life.

At the time when Study 8 was under development (see De Castella et al., 2013), there was only one peer-reviewed publication, which had examined associations between implicit theories of emotion and cognitive reappraisal in daily life (Tamir et al., 2007). In their longitudinal study with undergraduate students, Tamir and colleagues (2007) found that prior to college, students holding entity beliefs about emotions reported using cognitive reappraisal less frequently than their incremental counterparts (see Chapter 5.5 for a review of the Tamir et al., 2007, study). The goal of Study 8 was to extend this initial research by examining whether cognitive reappraisal actually mediated associations between personal beliefs about emotions and psychological health. I predicted:

H1: Entity beliefs about emotions will be negatively associated with cognitive reappraisal. Entity beliefs will also be negatively associated with well-being (reduced self-esteem and satisfaction with life), and positively associated with psychological distress (stress and depression).

H2: The relationship between implicit beliefs and well-being/psychological distress will be explained by reappraisal frequency.
Methods

Participants and Procedure

Participants consisted of 216 undergraduate psychology students (67% female) from Stanford University. The current sample was used previously to examine the utility of the revised implicit theories of emotions (self-theory) scale (see Study 2 for details).

Measures

**Emotion Beliefs.** Emotion beliefs, well-being and psychological distress measures are identical to those presented in Study 2. They include: the four-item Implicit Beliefs about Emotion Scale (Tamir et al., 2007); the personal beliefs about emotions scale (De Castella et al. 2013).

**Well-being.** For a global measure of well-being this study included: The Single-Item Self-Esteem Scale (SISE; Robins, Hendin & Trzensniewski, 2001) and the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985).

**Clinical symptoms.** For psychological distress, measures included the four-item Perceived Stress Scale (PSS-4; Cohen, Kamarck & Mermelstein, 1983); and the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). See Study 2, Chapter 8 for a review of these measures.

**Emotion Regulation (Cognitive Reappraisal).** In addition to these well-being and psychological distress measures, cognitive reappraisal use was assessed using the six-item cognitive reappraisal scale from the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) (e.g., “When I want to feel less negative emotion, I change the way I’m
thinking about the situation”). Responses are rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Research indicates that the scale is internally consistent (values ranging from .83 to .86, Moscovitch, 2011) and displays strong convergent and discriminant validity (Gross & John 2003). Cronbach’s alpha for the current sample was .89.

Results

Preliminary Analyses

As described previously in Study 2, prior to analysis, all variables were examined for missing values and distributional assumptions of multivariate analysis. Of the total sample, eight surveys were left blank or incomplete (missing data > 10%) and were excluded from the analysis. This reduced the total sample to 208. Across all variables, missing data were rare (< 1%), and were imputed with the overall mean for that variable – a conservative technique in such cases (Tabachnick & Fidell, 2007). Means (M), standard deviations (SD), ranges, internal consistencies (α) and correlations for all variables are presented in Table 6.

Hypothesis 1: Links to Emotion Regulation, Well-Being, and Psychological Distress

As previously reported in Study 2, both the general and personal scales demonstrated significant correlations the well-being measures, and measures of psychological distress. Consistent with predictions, entity beliefs were also associated with reduced cognitive reappraisal (r = -.34, p < .001). Cognitive reappraisal use was also associated with greater overall well-being: self-esteem (r = .34, p < .001) and satisfaction with life (r = .37, p < .001); and lesser clinical symptoms: stress (r = -.33, p < .001) and
depression ($r = -.38, p < .001$). As in previous work, beliefs about emotion were not significantly related to gender or ethnicity and these variables are not discussed further.

**Hypothesis 2: The Indirect Effect of Cognitive Reappraisal**

To test whether the relationship between implicit beliefs and well-being and psychological distress was explained by reappraisal frequency (H2), I examined the indirect effect of implicit beliefs via reappraisal using separate analyses for each of the dependent variables (self-esteem, satisfaction with life, stress, depression). As reported previously (see Study 4), the Preacher and Hayes (2008) SPSS macros were used for calculating indirect effects. Gender, age and ethnicity were not associated with implicit beliefs, reappraisal or any of the dependent variables. Results indicated that the indirect effect of emotion beliefs via cognitive reappraisal was significant in each analysis, with 95% confidence intervals excluding zero: self-esteem ($ab = -.03, 95\% \text{ CI} = [-.06, -.01]$); satisfaction with life ($ab = -.24, 95\% \text{ CI} = [-.47, -.10]$); stress ($ab = .07, 95\% \text{ CI} = [.02, .14]$), and depression ($ab = .31, 95\% \text{ CI} = [.10, .67]$). See Figure 20a and 20b.

In addition to testing the proposed causal model, three alternative models were also examined: (a) Reverse causation: well-being and clinical symptoms linked with entity beliefs via reappraisal, (b) Entity beliefs predicting reappraisal via well-being and clinical symptoms, and (c) Reappraisal predicting well-being and clinical symptoms via entity beliefs. Model 1 was significant for all DVs except depression. Model 2 was significant for all DVs. For Model 3, the indirect effect of reappraisal via entity beliefs was only significant for stress and depression and not for self-esteem or life satisfaction.

16 To accommodate alternative analyses of indirect effects I also ran Sobel tests for each of well-being and clinical measures. The effect of implicit beliefs via reappraisal was significant in each analysis: self esteem ($z = -2.98, p < .001$), satisfaction with life ($z = -3.49, p < .001$), stress ($z = 2.74, p < .01$) and depression ($z = 2.92, p < .01$).
Figure 20a and 20b. Emotion Beliefs and the Mediating Role of Cognitive Reappraisal (Study 8, n = 216)

The indirect effect of entity beliefs about emotions on self-esteem and life satisfaction via reappraisal.

Figure 20a. The indirect effect of entity beliefs about emotions on well-being via reappraisal. Values are standardized coefficients. When controlling for cognitive reappraisal use, the regression coefficient for the effect of implicit beliefs (in parentheses) decreases to non-significance for satisfaction with life but remains significant for self-esteem. ^p < .05. *p < .01 **p < .001.

The indirect effect of entity beliefs about emotions on stress and depression via reappraisal.

Figure 20b. The indirect effect of entity beliefs about emotions on psychological distress via reappraisal. Values are standardized coefficients. The regression coefficient for the effect of implicit beliefs (in parentheses) decreases when controlling for cognitive reappraisal but not to non-significance. ^p < .05. *p < .01. **p < .001.
Discussion

Findings from the current study indicated that the more students endorsed entity beliefs about emotions, the less likely they were to report using cognitive reappraisal (an adaptive cognitive change strategy) in daily life. Entity beliefs about emotions were also associated with decreased well-being (reduced self-esteem and satisfaction with life) and increased psychological distress (stress and depression) via differences in students’ habitual use of reappraisal. Results from Study 8 indicate that differences in reappraisal use partially explain the relationship between implicit beliefs, well-being and psychological distress. These findings suggest that, in addition to situation selection strategies (Chapter 9), and attention regulation strategies (Chapter 10), emotion beliefs are also associated with important differences in adaptive use of cognitive change strategies (Chapter 11). These strategies in-turn may have important consequences for psychological health and well-being. Beyond merely linking emotion beliefs with reappraisal use, Study 8 demonstrated cognitive reappraisal use is one variable that explains the associations between emotion beliefs and psychological health outcomes.

Despite this contribution, some limitations of the current study should be noted. First, it is important to recognize that finding from Study 8 are correlational and based on student samples. As with much of the research on implicit beliefs in other domains (see Dweck, 1999), a reliance on student samples significantly limits generalizability to other populations – particularly clinical populations which are of primary interest in studying deficiencies in emotion regulation. For this reason, Study 9 focuses on examining how non-clinical and clinical populations differ in their beliefs about their emotions and what role emotion beliefs play in clinical symptoms and psychological illness.
Planning Next Studies

Results from Study 8 indicated that people who believed they could control their emotions were more likely to use adaptive emotion regulation strategies like cognitive reappraisal in daily life. This, in-turn, partly accounted for their increased levels of well-being and decreased psychological distress. Given that adaptive use of cognitive regulation strategies is absent in many clinical disorders (Werner & Gross, 2009), emotion beliefs may also have important implications in clinical settings. For this reason, Studies 9 and 10 focus on examining the role of emotion beliefs in clinical populations. These studies focus specifically on social anxiety disorder (SAD) – an extremely prevalent anxiety disorder and a disorder that may be particularly relevant to research on beliefs about emotion. Patients with SAD struggle with attending to, describing, expressing, and regulating their emotional experiences (Mennin, McLaughlin, & Flanagan, 2009; Werner, Goldin, Ball, Heimberg, & Gross, 2011) and frequently underestimate their control over external events (Leung & Heimberg, 1996). Barlow (2000) argues that, for patients with SAD, repeated experience with uncontrollable events and aversive emotional reactions may also reinforce a belief that their emotions, in particular, are outside of their control, which in-turn perpetuates fear and avoidance of social situations. The aim of Study 9 was to examine how patients with SAD differed from healthy controls in their beliefs about emotions. Study 10 then examines belief change in the context of a randomized clinical trial of cognitive behavioural therapy for SAD. At the time of publication, these studies represented the first published research on implicit beliefs about emotions in clinical samples. I begin by outlining research on social anxiety and the role of maladaptive beliefs in this disorder.
11.3 Emotion Beliefs in Clinical and Non-Clinical Samples

(Patients with Social Anxiety Disorder)

Social anxiety disorder (SAD) is a common condition affecting approximately 15 million Americans at any one time (Kessler, Berglund, et al., 2005) and approximately 1.35 million Australians in their lifetime (Crome et al., 2015). This equates to a lifetime prevalence of up to 12.1% in the United States (Kessler, Chiu, Demler, Merikangas, & Walters, 2005) and 8.4% in Australia (Crome et al., 2015). It is the fourth most common psychiatric disorder after major depression, substance use disorders, and specific phobias (Kessler et al., 2005). It is also a chronic and disabling disorder, with symptoms typically developing at an early age and following a chronic, unremitting course (Reich, Goldenberg, Vasile, Goisman, & Keller, 1994). SAD can interfere noticeably with daily life, often leading to avoidance behaviours, stress, and impairments in work (Bruch, Fallon, & Heimberg, 2003), school (Kashdan & Herbert, 2001; Schneier et al., 1994), friendships, and intimate relationships (Montesi et al., 2012; Rodebaugh, 2009).

Beliefs About Emotions in Social Anxiety Disorder

Study 9 represents one of the first clinical studies to examine differences in implicit beliefs about emotions in clinical populations. There is, however, some preliminary evidence that implicit beliefs may play a role in maintaining and exacerbating anxiety symptoms, particularly in social and performance situations. In a study of teenagers with generalized anxiety disorder (GAD), Da Fonseca et al. (2008) experimentally manipulated students’ implicit beliefs about intelligence. Compared to
control subjects, anxious students who received information about how their intellectual ability could be controlled performed better on a subsequent IQ test and scored lower on measures of state anxiety.

In the context of shyness (a feature of social anxiety), implicit theories have also influenced whether patients choose to approach or avoid anxiety-provoking situations. In a series of self-report and experimental studies, Beer (2002) found that when undergraduates held an entity theory about their shyness – “my shyness is something about me that I can’t change very much” – they reported and demonstrated greater avoidance-behaviour in social settings. Shy incremental theorists on the other hand, were more likely to view social situations as learning opportunities. They reported and exhibited more approach-orientated behaviour despite their fears, and were also rated as more socially skilled, likeable, and talkative in conversation tasks by independent observers. These findings suggest that implicit beliefs, particularly about one’s emotions and one’s anxiety, may play an important role in understanding social anxiety disorder.

Hofmann (2005) suggests that when patients with SAD believe they cannot control their anxiety, they may avoid social situations, in part, because they anticipate a lack of control over their emotions when exposed to social threat. In contrast to other kinds of maladaptive beliefs, it may be this perceived lack of control – and subsequent concerns about blushing, sweating, panic attacks, etc. – that make social situations so threatening. Research indicates that individuals with social anxiety often display distorted beliefs both about the likelihood of negative social events (a probability bias), and distorted beliefs about the consequences of these events being awful or unbearable (a cost bias). In research by Hofmann (2005) patients perceived control over their anxiety
mediated the relationship between probability/cost biases and fear/avoidance in SAD.

These results provide preliminary support for the potential role of emotion beliefs in SAD. They are, however, based on a small cross-sectional study and so cannot adequately address questions concerning the potential role these beliefs may play in treatment.

**The Current Study**

The goal of the current study was to examine whether patients with SAD and non-clinical participants differ in their beliefs about their emotions. For Study 9 participants completed measures of (a) general and (b) personal beliefs about emotions, as in Study 2. They also completed measures of (c) more specific beliefs about social anxiety, which may be particularly important for patients who are struggling to control their anxiety symptoms. By assessing emotion beliefs in several different domains, I sought to further examine whether people’s beliefs about the controllability of emotions in general differed from their beliefs about the controllability of their own emotions and, more specifically, their beliefs about the extent to which they could change or control their social anxiety.

I predicted that:

H1: Compared to healthy control subjects, patients with SAD will hold stronger entity beliefs about emotions.

In keeping with findings from Studies 2, I also predicted that:

H2: As with beliefs about intelligence, non-clinical control subjects will display stronger entity beliefs about emotions in general than about their own.

Patients with SAD, on the other hand, will view themselves as deficient in
emotion regulation (compared to others) and will endorse stronger entity beliefs about their own emotions than about emotions in general.

Finally, based on findings from Study 8, I also expected that for patients with SAD:

**H3:** Entity beliefs about emotions will be negatively associated with well-being (positive and negative affect, self-esteem, and satisfaction with life), and positively associated with clinical symptoms (social anxiety, perceived stress, and trait anxiety).

In these analyses, I also conducted hierarchical linear regressions to examine the extent to which patients’ emotion beliefs explained unique variance in the dependent variables above and beyond what might already be explained by their existing level of social anxiety. Finally, in addition to these self-report measures, I assessed the association between beliefs about emotions and positive and negative beliefs about the self, using a computer task called the self-referential encoding task (SRET). I predicted that:

**H4:** Compared to healthy non-clinical subjects, patients with SAD would display greater endorsement of negative self-attributes and lesser endorsement of positive self-attributes.

**H5:** For patients with SAD, entity beliefs about emotions will be associated with greater negative and lesser positive views about the self, and these differences will be explained by via cognitive reappraisal use in daily life.
Methods

Participants and Procedure

Participants were recruited in 2007 to 2010 as part of a larger study on the neural substrates of emotion regulation conducted in the Clinically Applied Affective Neuroscience (CAAN) lab at Stanford University. This broader multi-year research study examined the neural substrates of emotion regulation in generalized SAD and its treatment with cognitive behavioural therapy (CBT, see Goldin et al., 2012). The primary researchers involved in that CAAN lab at this time were: Philippe R. Goldin, Michal Ziv, Hooria Jazaieri and Stanford CAAN Lab director, James Gross. The overall design of the study and its main outcomes, including adherence to CONSORT guidelines, have been reported elsewhere (Boden et al., 2012; Goldin et al., 2012).

A total of 436 potential patients expressed interest in the study and were phone screened to assess study eligibility. Because participants were part of a larger study using functional magnetic resonance imaging, they also had to be right-handed and pass safety screening. They were also excluded if they reported a history of medical disorders, head trauma, current pharmacotherapy or psychotherapy. From this initial screening, 110 subjects qualified and were administered a semi-structured interview to determine whether they met diagnostic inclusion and exclusion criteria. From these interviews, 75 participants (40 men, 35 women) met the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994) criteria for a principal diagnosis of generalized SAD and agreed to participate in the study.
In addition to this clinical sample, 42 healthy, non-clinical participants (20 men, 22 women) were recruited and also underwent the same screenings and diagnostic interviews. Non-clinical participants had no history of current or past DSM-IV psychiatric disorders. All participants were between 21 and 53 years of age (M = 33yrs, SD = 9yrs) and were ethnically heterogeneous (55% Caucasian; 29% Asian; 7% Latino; 2% Filipino; 1% African American; 6% Other). There were no significant age, gender, ethnicity, or educational differences between SAD patients and non-clinical participants (all p values > .75). Non-clinical participants and patients with SAD both underwent extensive diagnostic screening prior to selection including survey and telephone screening as well as an in-person diagnostic interview (the Anxiety Disorders Interview Schedule Lifetime Version (ADIS-IV-L) for the DSM-IV (Brown, DiNardo, & Barlow, 1994)). Clinical psychologists conducted the interviews, which assessed current (and past) episodes of anxiety, mood, somatoform and substance use disorders as well as patients’ medical and psychiatric treatment history. Among patients, current Axis-I co-morbidity included 14 with generalized anxiety disorder, five with specific phobia, three with panic disorder, and three with dysthymic disorder. All other co-morbidities were exclusion criteria. Thirty-six patients reported past psychotherapy (i.e., ended more than one year ago), and 25 reported a past history of pharmacotherapy. Informed consent was obtained from all participants.

Measures

**Implicit Theories of Emotions.** General beliefs about the malleability of emotions were assessed with the 4-item Implicit Theories of Emotion Scale (Tamir et al., 2007) and Personal beliefs about the malleability of emotions were assessed using the 4-
item personal scale (See Table 5 for scale items and coding). In addition to these emotion belief measures, a revised version of the implicit theories of emotion scale was constructed to assess beliefs about the malleability of social anxiety. Once again, efforts were made to ensure the four scale items stayed closely aligned to the originals with each reflecting a first-person claim about one’s ability to change or control one’s social anxiety. These items were as follows: “If I want to, I can change the social anxiety that I have,” “I can learn to control my social anxiety,” “The truth is, I have very little control over my social anxiety,” and “No matter how hard I try, I can’t really change the social anxiety that I have.” Descriptive Statistics, Correlations and Cronbach’s alphas for all scales can be found in Tables 19 and 20.

**Emotion Regulation.** Cognitive reappraisal use was assessed again using the eight-item cognitive reappraisal scale from the Emotion Regulation Questionnaire (ERQ; Goldin, T. Manber-Ball, et al., 2009; Gross & John, 2003) Participants were asked to ‘consider the past month’ while rating their agreement with a series of statements (e.g., “When I want to feel less negative emotion, I change the way I’m thinking about the situation”). Responses are rated on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). See study 8 for research on the ERQ reliability and validity. Cronbach’s alpha for the current sample was .94.

**Stress.** Stress was again measured with the four-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). See Study 2, Chapter 8 for a review of this measure. In clinical samples, the PSS-4 has been shown to be internally consistent and reliable (Hewitt, Flett, & Mosher, 2012).
**Anxiety.** Trait anxiety was measured with the trait subscale of the State Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI-T is a widely-used measure of clinical anxiety and assesses how patients “general feel” (e.g., “I worry too much over something that really doesn’t matter”). Responses are scored on a four-point Likert-type scale ranging from 0 (almost never) to 3 (almost always). Summed scores ranged from 20 to 80. Overall, the STAI-T displays good convergent and discriminant validity, internal consistency, and retest reliability (Spielberger et al., 1983).

**Social interaction anxiety.** Social interaction anxiety was measured with the Social Interaction Anxiety Straightforward Scale (SIAS-S, Rodebaugh, Woods, & Heimberg, 2007; Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006). Based on the original 20-item SIAS (Mattick & Clarke, 1998), the revised SIAS-S excludes three reversed-keyed items, reducing the scale to 17 straightforward items that measure social anxiety in social situations, dyads and groups (e.g., “I have difficulty making eye-contact with others”). Items are rated on a five-point Likert-type scale ranging from 0 (Not at all characteristic or true of me) to 4 (Extremely characteristic or true of me). Summed scores ranged from 0 to 68. The SIAS-S has demonstrated good internal consistency and construct validity, and research indicates it is an improved measure of social interaction anxiety in clinical and non-clinical samples (Rodebaugh, Woods & Heimberg, 2007; Rodebaugh et al., 2006).

**Social anxiety.** Social anxiety was assessed with the self-report version of the Liebowitz Social Anxiety Scale (Fresco et al., 2001). The LSAS is a commonly used clinical measure of social anxiety, and the clinician administered (Liebowitz, 1987) and self-report versions yield equivalent results (Fresco et al., 2001). The scale consists of 24
items, which assess fear and avoidance of social (e.g., meeting strangers) and
performance (e.g., taking a written test) situations during the past week. Participants rate
their fear and avoidance on a four-point scale from 0 (no fear/avoidance) to 3 (severe fear
or anxiety/ usually avoid). Total scores, summing fear and avoidance ratings, range from
0 to 144. Research indicates the scale is reliable and displays good convergent and
discriminant validity (Fresco et al., 2001; Ledley, Erwin, Morrison, & Heimberg, 2013).

Well-being Measures

Self-esteem. Self-esteem was assessed using the Rosenberg Self-Esteem Scale
(RSES, Rosenberg, 1965). The RSES is a widely-used measure of global self-esteem. It
contains 10-items rated on a four-point Likert-type scale (total scores ranging from 10 –
40). The scale demonstrates good convergent validity, test-retest reliability, and internal
consistency in research on social anxiety (Kuo, Goldin, Werner, Heimberg, & Gross,
2011).

Life satisfaction. Life satisfaction was measured using the five-item Satisfaction
with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985). The SWLS is a
commonly used measure of life satisfaction (e.g., “In most ways my life is close to ideal”).
See Study 2, Chapter 8 for a review of this measures. Items are rated on a seven-point
Likert-type scale with total scores ranging from 5 to 35.

Positive and negative affect. Positive and negative affect was assessed using the
20-item Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). The
scale consists of two 10-item subscales containing adjectives that assess positive (e.g.,
enthusiasm) and negative affect (e.g., irritable) over the last week. Responses are scored
on a five-point Likert-type scale with total scores ranging from 10 to 50. The scale is a widely-used measure of positive and negative affect and displays excellent psychometric properties (Crawford & Henry, 2004; Watson et al., 1988).

Self-Referential Encoding Task (SRET)

The self-referential encoding task (SRET; Derry & Kuiper, 1981) is considered an information-processing measure of self-schema. In this task, a series of pre-selected adjectives are randomly presented to subjects who are asked to make a categorical decision about whether the word is self-descriptive or not. Stimuli for the current study consisted of 25 positive and 25 negative social trait adjectives from the Affective Norms of Emotion Words database (Bradley & Lang, 1999). Adjectives were balanced on word frequency, number of letters, arousal and valence (all \( ps > .51 \)), based on the nine-point Self-Assessment Manikin rating system (Lang, 1980). In the current study the SRET was programmed with Eprime software (Schneider, Eschman, & Zuccolotto, 2002). The computer task ran for five minutes, 39 seconds. Participants completed four trials. Each trial began with the word “READY” and a prompt (either “Describes ME?” or “UPPER case?”). Next five adjectives of the same valence were presented one at a time for three seconds each. The “Describes ME?” condition assessed self-referential social-evaluative processing. The “UPPER case?” condition used case identification as a comparison control condition asking subject to indicate whether the words presented consisted of all upper- or all lowercase letters. After the prompt, the stimulus adjective appeared in the center of the screen and participants were instructed to respond – indicating whether or not a word was self-descriptive or appeared in uppercase letters – by pressing one of two keys corresponding with ‘yes’ and ‘no’. Neutral adjectives were not used as a control in
this study because there are few neutral adjectives that could not be misconstrued as positive or negative by a patient with SAD. Block sequences and word order were both randomized. SRET analyses were performed on a reduced sample because eight of the SAD subjects; and four of the healthy control subjects failed to complete the SRET task.

Results

Means (M), standard deviations (SD), ranges, internal consistencies ($\alpha$), and correlations among the three emotion belief domains and measures of clinical symptoms, anxiety, perceived stress, and well-being are presented in Tables 19 and 20.

Hypothesis 1 and 2: Emotion Beliefs in SAD Patients and Non-Clinical Controls

To examine whether patients with SAD differed from non-clinical participants (NC) in their beliefs about emotions, I conducted a 2 group (SAD vs. NC) x 3 belief type (personal, general, anxiety) mixed analysis of variance (ANOVA), with the first independent variable between participants, and the second within participants. Consistent with H1, there was a significant main effect for group ($F(1, 115) = 34.06, p < .001, R^2 = .23$), and consistent with H2, there was also a significant group x belief domain interaction ($F(1, 115) = 29.25, p < .001, R^2 = .20$). Follow-up planned t-tests showed that, compared to non-clinical participants, patients with SAD were significantly more likely to hold fixed entity beliefs about their own emotions ($t(115) = 6.04, p < .001, d = 1.18$). They also held stronger entity beliefs about emotions in general ($t(115) = 2.04, p < .05, d = 0.40$) and about their social anxiety ($t(115) = 7.80, p < .001, d = 1.42$). This was a small to medium effect on the general scale and a large effect on the personal and anxiety belief scales, according to Cohen’s (1988) conventions. The interaction indicated that for
Healthy Controls, entity beliefs decreased as beliefs became more specific (from general beliefs to personal and to personal beliefs about anxiety). The reverse was true for patients with SAD who reported increased entity beliefs as they became more specific. Figure 21 displays the interaction effect between conditions (SAD vs HC) on belief type.

Paired-samples t-tests for each group were also used to examine whether participants’ personal beliefs about their own emotions differed significantly from their beliefs about emotions in general. I also examined whether their personal beliefs differed from their beliefs about their social anxiety. Patients with SAD endorsed stronger entity beliefs on the personal scale than on the general scale ($t(74) = -4.71, p < .001, d = 0.54^{17}$), indicating a greater perceived lack of control over their own emotions. They also held stronger entity beliefs about their social anxiety than about emotions in general ($SD = 3.44, t(74) = -4.40, p < .001, d = 0.51$). There was no significant difference between patients’ scores on the personal and anxiety belief measures ($t(41) = -1.17, p = .25, d = 0.14$).

For non-clinical participants, the reverse pattern emerged. Consistent with findings in Study 2, non-clinical participants endorsed entity beliefs less on the personal measure than on the general measure, indicating greater perceived control over their own emotions ($SD = 3.17, t(41) = 2.94, p < .01, d = 0.45$). They also endorsed entity beliefs less on the anxiety scale than on the general scale ($t(41) = 3.84, p < .001, d = 0.60$), indicating greater perceived control over their social anxiety. Once again there was no significant difference between non-clinical participants’ scores on the personal and anxiety belief measures ($t(41) = 1.83, p = .08$).

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17 Within-subjects estimates of effect size using J. Cohen’s $d$ have been corrected for dependence between the means (See equation 8, Morris & DeShon, (2002))
Table 19. Descriptive Statistics, Cronbach’s alphas, Means and Standard Deviations for Patients with Social Anxiety Disorder (SAD, n = 75) and Non-Clinical Participants (NC, n = 42, Study 9)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible Range</th>
<th>SAD</th>
<th>NC</th>
<th>SAD</th>
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<td>Emotion Beliefs</td>
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<td></td>
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<td>.81</td>
<td>.64</td>
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<td>20 – 80</td>
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<td>.87</td>
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<td>.88</td>
<td>44.63</td>
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<td>7. Social Anxiety (LSAS-SR)</td>
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<td>.92</td>
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<td>.79</td>
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<td>28.10</td>
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<td>11. Negative Affect (PANAS)</td>
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<td>.87</td>
<td>25.64</td>
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</table>
Figure 21. Clinical vs. Non-Clinical Differences in Emotion Beliefs (Study 9)

Note: Patients with SAD held stronger entity beliefs about emotions than non-clinical participants (in all belief domains), and stronger entity beliefs on the personal and anxiety scales than on the general scales. Non-clinical participants, by contrast, held weaker entity beliefs on the personal and anxiety scales than on the general. For patients with SAD and non-clinical participants, there was no significant difference between emotion beliefs on the personal and anxiety scales.
Hypothesis 3: Emotion Beliefs, Clinical Symptoms and Well-being in SAD

H3 predicted that emotion beliefs would be negatively associated with well-being and positively associated with clinical symptoms. See Table 20 for correlations between SAD patients’ beliefs about their emotions and clinical symptoms and well-being. Consistent with predictions, among patients with SAD, personal emotion beliefs and anxiety emotion beliefs were significantly correlated with perceived stress and trait anxiety. Social anxiety beliefs were also positively correlated with social interaction anxiety. General emotion beliefs, by contrast, were only associated with perceived stress. None of the emotion belief scales were associated with fear and avoidance of social situations as indicated on the LSAS-SR.

To test whether patients’ emotion beliefs predicted stress and trait anxiety above and beyond what might already be explained by their existing social anxiety symptoms, a series of two-step hierarchical regressions were conducted which controlled for social anxiety (LSAS-SR and SIAS) in the first step. Emotion beliefs were then entered in the second step to examine the unique variance explained on each of the dependent variables (see Table 21). Results revealed that even when controlling for social anxiety, patients’ beliefs about their emotions (general, personal and anxiety belief measures) accounted for 11 - 23 per cent of unique variance in stress. For trait anxiety, personal emotion beliefs also contributed four per cent of unique variance. The general and anxiety belief scales however, did not predict stress or trait anxiety over and above social anxiety symptoms.
Table 20. Correlations Between Measures for Patients with Social Anxiety Disorder (Study 9, n =75).

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
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<td>.51***</td>
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<td>-.42***</td>
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<td>11. Negative Affect (PANAS)</td>
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Note: Correlations for patients with social anxiety disorder (n =75). PSS-4 = Perceived Stress Scale; STAI-T = State Trait Anxiety Inventory (Trait Scale); SIAS-S = Social Interaction Anxiety Straightforward Scale; LSAS-SR = Liebowitz Social Anxiety Scale (Self-Report); RSES = Rosenberg Self-Esteem Scale; SWLS = Satisfaction with Life Scale; PANAS = Positive and Negative Affect Schedule. * p < .05, ** p < .01, *** p < .001
Table 21. *Regressions Predicting Variables from Emotion Beliefs in SAD Patients (n = 75)*

<table>
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<tr>
<td>Anxiety Emotion Beliefs</td>
<td>.44</td>
<td>.21</td>
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</table>

* p < .05, ** p < .01. Results from hierarchical regression analyses. Significance levels are based on two-tailed significance tests. Increments for variables entered at R²Change significance levels are based upon F tests for that step.
To examine whether entity beliefs about emotions were associated with lower levels of well-being in patients with SAD, I examined Pearson product-moment correlations between emotion beliefs and the well-being measures. Greater personal entity beliefs about emotions were associated with lower self-esteem and greater negative affect. The same pattern emerged for patients’ beliefs about their social anxiety however; neither measure was associated with positive affect or life satisfaction. General emotion beliefs, on the other hand, were not correlated with any of the well-being measures.

To see whether patients’ emotion beliefs accounted for unique variance in well-being, I again conducted a series of hierarchal regressions controlling for social anxiety following the procedures outlined above. Once again, personal and anxiety emotion beliefs (but not general beliefs) accounted for unique variance: explaining an additional 11 – 12 per cent of the variance in self-esteem; and 5 – 6 per cent of the variance in negative affect. None of the emotion belief measures however, were significant predictors of life satisfaction or positive affect. Overall, these findings indicate that even when controlling for symptom severity, patients with SAD differ in their beliefs about the controllability of their emotions, and these beliefs uniquely predict stress, trait anxiety, self-esteem and negative affect over and above patients’ social anxiety symptoms.

**Hypothesis 4: Self-Referential Processing in Healthy Subjects and Patients with SAD**

To assess the association between beliefs about emotions and positive and negative self-endorsement, I examined clinical and non-clinical participants’ results on the self-referential encoding task (SRET). First, to ensure patients with SAD and non-clinical participants (NC) both completed the SRET task accurately, responses to the control condition – which asked about whether adjectives appeared in all “UPPER CASE”
or “lower case letters” – were examined for accuracy. Between subject t-tests revealed no significant differences between patients with SAD and HCs in case-accuracy on positive \( (t(103) = -1.88, p > .05) \) or negative adjectives \( (t(103) = -1.83, p > .05) \). Next, to examine whether patients with SAD differed from non-clinical participants (NC) in their self-referential processing (H4), I conducted a 2 group (SAD vs. NC) x 2 adjective type (positive vs. negative adjectives) mixed analysis of variance (ANOVA), with the first independent variable between participants and the second within-participants.

Figure 22. Self-Referential Processing for Patients with SAD and Non-Clinical Subjects (Study 9, SAD \( n = 75 \), NC \( n = 42 \)).

Note: Patients with SAD were significantly more likely than non-clinical subjects to endorse negative trait- adjectives and were significantly less likely to endorse positive trait adjectives. There were no significant differences between groups in the case-accuracy control conditions.
Results indicated a significant main effect for adjective type \( (F(1, 103) = 103.15, p < .001) \) and a significant group x adjective type interaction \( (F(1, 115) = 137.76, p < .001) \). See Figure 22 for a visual representation of the interaction between positive and negative self-referencing among patients with SAD and non-clinical subjects. Follow-up planned t-tests showed that, compared to non-clinical participants, patients with SAD endorsed significantly fewer positive trait adjectives as self-descriptive \( (t(103) = -12.53, p < .001, d = 2.33) \), and significantly greater negative trait adjectives as self-descriptive \( (t(115) = 12.57, p < .001, d = 2.29) \). There was a large difference in endorsement of positive and negative adjectives for non-clinical subjects \( (t(37) = 29.47, p < .001, d = 7.56) \) but no significant difference for SAD patients \( (t(66) = -1.10, p > .05, d = 0.24) \).

**Hypothesis 5: Implicit Theories of Emotion and Self-Referential Processing**

To examine whether implicit beliefs about emotions were associated with cognitive reappraisal and self-referential processing (H5), I examined Pearson product-moment correlations between subjects’ implicit beliefs, cognitive reappraisal frequency, and their endorsement of positive and negative trait-adjectives (see Table 22). Among patients with SAD, personal and social anxiety entity beliefs were significantly correlated with lower endorsement of positive trait adjectives but were not significantly correlated with negative adjectives. For non-clinical subjects, however, the reverse pattern emerged - personal and social anxiety entity beliefs were significantly correlated with higher endorsement of negative trait adjectives but were not significantly correlated with positive adjectives. General emotion beliefs, were not associated with SRET endorsement in either group.
Table 22. Correlations Between Emotion Beliefs, Cognitive Reappraisal and Self-Referential Processing in Patients with SAD (n = 75) and Non-Clinical Subjects (n = 42).

<table>
<thead>
<tr>
<th>Variable</th>
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<td>.66**</td>
<td>.51**</td>
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<td>-.19</td>
<td>.15</td>
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<td>.79**</td>
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<td>-.24^</td>
<td>.12</td>
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<td>3. Entity Theory of Emotions (Anxiety)</td>
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<td>.71**</td>
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<td>.36*</td>
<td>-.32*</td>
<td>-.25</td>
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Note: Correlations for patients with SAD (n = 67) are reported above the diagonal. Correlations for non-clinical subjects (n = 38) are reported below the diagonal. ^p <.05 *p <.01 **p <.001

The Indirect Effect of Cognitive Reappraisal on Self-Concept for Patients with SAD

To test the potential intervening role of cognitive reappraisal (H5), I examined whether the effect of implicit theories of emotion (the predictor) on positive and negative self-referring (the dependent variable) was explained via frequency of using cognitive reappraisal in daily life (the intermediary). This indirect effect (see Figure 23) was tested for significance using the same methods described previously (see Studies 4, 6, 7 and 8).

In H5, I predicted that SAD patients’ implicit beliefs about their emotions would indirectly explain differences in self-referring (SRET) via cognitive reappraisal use in daily life. As predicted, the indirect effect for cognitive reappraisal frequency was significant with confidence intervals excluding zero. This was true both for positive self-endorsement ($ab = -.58$, 95% CI = [-1.49, -.11], $\kappa^2 = .09$ [95% CI = .02, .22]), and negative self-endorsement ($ab = .65$, 95% CI = [.13, 1.68], $\kappa^2 = .09$ [95% CI = .02, .22]). These were medium effects by Preacher and Kelly’s (2011) standards (see Figure 23).
Discussion

Results from Study 9 indicate that in addition to their associations with emotion regulation and psychological health, implicit beliefs about emotion can help to distinguish patients with SAD from healthy non-clinical participants. For SAD patients, these beliefs are linked to differences in cognitive-change based emotion regulation, clinical symptoms, stress, anxiety, and well-being. There was also a significant interaction between SAD patients and health controls on belief type. Patients with SAD, reported significant strong entity beliefs about their own emotions and anxiety than about emotions in general. Healthy controls, on the other hand held stronger entity beliefs about emotions in general than about their own indicating a belief that they had greater control over their emotions than might be true of others (emotions in general). SAD patients also differed in their perceived control over their emotions even when controlling for their self-reported social anxiety symptoms and these beliefs explained unique variance on clinical symptoms and well-being. Those who believed they could not change or control their emotions, reported...
higher levels of perceived stress and anxiety, higher levels of negative affect, and lower levels of self-esteem. Interestingly, entity beliefs were not significantly correlated with positive affect or life satisfaction. These results are somewhat inconsistent with observed links between emotion beliefs and indices of well-being in larger non-clinical samples (See Study 2, 4, 7 and 8). However, it is possible that for patients with SAD, emotion beliefs have a smaller – or indirect – association with these indices of positive well-being. The large degree of variance in the LSAS-SR (see Table 19) may have also explained the lack of association between emotion beliefs and this measure of social anxiety.

The clinical significance of emotion beliefs, accord well with existing research. Hofmann (2000, 2005, 2007) suggests that perceived control over emotions may also play an important role in promoting treatment for SAD. Patients with SAD typically struggle with their symptoms for a prolonged period, often waiting more than nine years before finding appropriate specialist care (Wagner, Silove, Marnane, & Rouen, 2006). If patients with SAD more readily hold fixed entity beliefs about their emotions and anxiety – believing them to be stable qualities or personality traits rather than a treatable psychiatric disorder – this may help explain why many sufferers fail to seek treatment (Grant et al., 2005). Acknowledging discrepancies between people’s broader beliefs and their beliefs about themselves is also important in the context of clinical interventions. Treatment credibility and positive expectations for change in treatment are considered one of the most potent nonspecific factors in predicting general treatment response (Arnkoff, Glass, & Shapiro, 2002). Such expectations are linked to treatment outcomes for patients with SAD (Safren, Heimberg, & Juster, 1997), and they predict rate of change in CBT for SAD patients (Price & Anderson, 2011).
These results provide important insights into how beliefs about emotion operate in clinical populations. This study was the first of its kind to examine implicit beliefs about emotion in a clinical sample. Results indicated that patients with social anxiety disorder hold significantly greater fixed entity beliefs about their emotions than healthy control subjects. Even when controlling for social anxiety symptom severity, the beliefs patients held about their emotions uniquely predicted levels of stress, trait anxiety, negative affect and self-esteem. Importantly fixed entity beliefs about emotions were associated with reduced likelihood of using adaptive cognitive change strategies like cognitive reappraisal in daily life. Reappraisal use in-turn mediated links between emotion beliefs and positive and negative self-referencing (an important indicator of social anxiety disorder). Since the publication of this study, researchers in the field have also begun examining the role of implicit beliefs in other clinical domains. For example, recent work by Yalch, Schroder, Dawood & Donnellan (2017) found that fixed entity beliefs about anxiety predicted clinical symptoms in borderline personality disorder above and beyond maladaptive personality traits (as outlined in the current edition of the DSM-5). These findings indicate that personality traits and implicit beliefs about emotions are independent predictors of symptoms in clinical disorders and may therefore come to play an important role in their etiology and treatment.

Findings from Study 9 also contribute to growing research on implicit theory measurement. The current study demonstrated that patients’ implicit beliefs about their anxiety are an even stronger predictor of clinical outcomes than their personal and general beliefs about their emotions. Researchers in the field have recently extended this work by examining the domain specificity of a variety of health-related implicit theories. For example, Schroder, Dawood, Yalch & Moser (2016) recently evaluated the latent
structure and predictive ability of implicit beliefs across seven different domains: emotions, personality, intelligence, anxiety, social anxiety, depression and drinking tendencies. For the purposes of this research, the authors also created new implicit theory scales for depression, social anxiety and drinking tendencies. Results found support for an underlying global dimension of entity or incremental beliefs that cuts across implicit theory domain, significantly predicting mental health symptoms. There was also evidence for the specificity of implicit theories with specific emotion beliefs (e.g. beliefs about anxiety) predicting specific clinical symptoms (e.g. worry and social anxiety symptoms).

These findings, and results from the current study, indicate that domain-specific measures of implicit theories may be an important construct for future clinical research (Schroder et al., 2016). Despite important contributions to research on emotion beliefs and social anxiety, several limitations should be noted. The first limitation relates to generalizability. Patients in the current study were carefully screened and only eligible if they met the criteria for a principal diagnosis of generalized SAD. Although this carefully defined clinical population is a key strength of the current study, it is also a limitation. SAD is highly prevalent and is frequently comorbid with other mood and anxiety disorders (Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). These findings then, while representative of most patients with SAD, cannot be generalized to all people with social anxiety. It is also important to note that in clinical studies patients are typically seeking treatment for their symptoms and are often required to undergo multiple assessments as part of the overall research program. In this way, clinical samples such as this one, typically reflect a highly-motivated population who likely believe in the utility of research, therapy and their capacity to change. Given that many patients fail to seek treatment (especially patients with SAD), it is possible – and even likely – that entity
beliefs about emotions are even more prevalent among non-treatment-seeking individuals with SAD in the general population. It will also be important to examine whether links between emotion beliefs, clinical symptoms and well-being can be generalized across multiple mood and anxiety disorders or alternatively, whether these findings are unique to patients with SAD. Examining patients’ beliefs about emotions in other clinical populations will help clarify the role these beliefs play more broadly in emotion dysregulation and psychological illness.

Second, although the current study documents robust cross-sectional associations between emotion beliefs, perceived stress, anxiety, and well-being, we still know little about the origins and role of treatment in changing patients’ beliefs about their emotions. Research is also needed to better understand the causal links between emotion beliefs, perceived stress, anxiety and well-being, and the implications these beliefs might have for psychosocial interventions and long-term recovery. Findings from Study 7 indicate that emotion beliefs can change in clinical treatments like mindfulness based stress reduction (MBSR). Results from the current studies indicate that beliefs about emotions may also play an important role in cognitive change strategies like reappraisal, and may therefore be particularly important in therapeutic treatments like cognitive behavioural therapy (CBT), which actively teaches patients strategies for changing and controlling their emotions. It is also possible that entity beliefs reflect existing deficiencies in emotion regulation or that alternative variables account for the relationship between beliefs and symptoms. Study 10 begins to address these questions by directly examining if and how patients’ beliefs about their emotions can be changed in clinical treatment, and what effect (if any) this has on clinical symptoms and long-term recovery.
STUDY 10

11.4 Emotion Beliefs and Cognitive Behavioural Therapy (CBT)

Results from Study 9 indicate that patients with SAD differed from non-clinical subjects in their beliefs about the controllability of emotions, and the personal emotion belief scales again explained greater variance than the general scale on measures of psychological health and well-being. Implicit emotion beliefs also predicted clinical symptoms and well-being even when controlling for patients’ degree of social anxiety symptoms. These findings indicate that patients’ beliefs about their emotions and anxiety are not simply a product of the severity of their anxiety symptoms – irrespective of anxiety levels, patients with SAD differ in their beliefs about their ability to control their emotions, and these beliefs predict important psychological health indicators via their influence on the selection and implementation of emotion regulation strategies like cognitive reappraisal (see also Study 8). Results from the current studies provides some insight into the role of emotion beliefs in clinical settings. They also suggest that in addition to situation selection (Chapter 9) and attention regulation (Chapter 10), cognitive changes strategies like reappraisal may be an important variable that helps explain associations between emotion beliefs and clinical outcomes.

The mediation models presented in Studies 8 and 9 are ones in which implicit beliefs about emotion guide emotion regulation strategies, which in turn have important consequences for clinical symptoms and psychological health. While there is a great deal of empirical support for the causal role of implicit theory interventions and treatments in educational settings (Aronson et al., 2002; Blackwell et al., 2007; Good, Aronson & Inzlicht, 2003; Kamins & Dweck, 1999; Muller & Dweck, 1998), few studies have
examined how emotion beliefs change in therapy and clinical treatments. Results from Study 7 indicated that programs like mindfulness-based stress reduction (MBSR) do successfully change participants’ beliefs about their emotions. At the end of an 8-week mindfulness meditation program, participants in the MBSR group (compared with the control group) were significantly more likely to view their emotions as things they could control (an outcome that also persisted at 12-month follow-up). Furthermore, changes in participants’ beliefs about their emotions mediated MBSR-related treatment outcomes for patients. These findings raise and important question: Could emotion beliefs be an important factor in the success of other clinical treatments and interventions?

The aim of Study 10 was to examine whether cognitive-focused clinical treatments – like cognitive behavioural therapy (CBT) – also lead to reliable long-term shifts in patients’ implicit beliefs about their own emotions and what impact, if any, this has on clinical outcomes. In the current study, I examine emotion beliefs and their role as a potential mediator of CBT-treatment outcomes. In an effort to extend research on emotion beliefs beyond healthy non-clinical samples, in this study I focus on a clinical population of patients with social anxiety disorder. I begin by reviewing research on cognitive behavioural therapy for social anxiety disorder, before examining some of the existing research on mechanisms of change in CBT-based treatments.

**Cognitive Behavioural Therapy for Social Anxiety Disorder**

One of the most common treatments for SAD is cognitive behavioural therapy (CBT) (Wong, Gordon, & Heimberg, 2012). CBT for social anxiety aims to correct patients’ dysfunctional beliefs through cognitive restructuring and systematic exposure to feared stimuli. Research indicates that CBT is an effective treatment for SAD (Ledley et
al., 2009) and in many cases, is more efficacious than interpersonal psychotherapy (Stangier, Schramm, Heidenreich, Berger, & Clark, 2011), psychodynamic therapy (Leichsenring et al., 2013), exposure and relaxation training (Clark et al., 2006), or treatments combining medication with either self-exposure (Clark et al., 2003) or emotional support (Mortberg, Clark, Sundin, & Aberg Wistedt, 2007). There is also evidence that CBT results in sustained long-term improvements in SAD (Heimberg, Salzman, Holt, & Blendell, 1993; Mortberg, Clark, & Bejerot, 2011). However, despite clear evidence for the efficacy of CBT, many SAD patients still fail to respond to treatment (Brozovich & Heimberg, 2011), and little is known about the mechanisms underlying CBT-based interventions (Hofmann, 2000).

**Potential Mediators of CBT in Treatment for SAD**

Cognitive models of SAD (Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2010; Hofmann, 2007) emphasize a number of cognitive distortions and dysfunctional beliefs in the disorder’s etiology and maintenance. For example, research indicates that patients with SAD often hold biased beliefs about the probability of negative social incidents occurring (probability biases), and biased beliefs about the costs or consequences of these negative incidents (cost biases) (Possis et al., 2013; Smits et al., 2012). In a destructive cycle, cognitive factors like these are believed to lead to exaggerated emotional reactivity, dysregulation, and avoidance behaviour. Probability and costs biases are, however, just two of a range of cognitive factors that have been studied in SAD. Hofmann (Hofmann, 2000, 2007), believes that maladaptive beliefs contribute to the SAD’s development and maintenance and he broadly divides these beliefs into three categories: 1) beliefs about social situations – including unrealistic goals
and expectations for social performance, poor social self-efficacy, and dysfunctional beliefs about the probability and cost of behaving poorly; 2) beliefs about the self—including negative self-perception, rumination, and heightened self-focused attention; and 3) beliefs about emotions—including the belief that one has little control over one’s emotions. Although there has been a good deal of research on probability and cost biases, and on maladaptive self-beliefs in SAD, to date there has been very little research on patients’ beliefs about how much they can change or control their emotions. This is surprising as emotion beliefs have been presented as a key mechanism of change in cognitive models of the disorder (Hofmann, 2000, 2007), and many have called for research on their role in treatment (Hofmann, 2000, 2007; Manser, Cooper, & Trefusis, 2011; Tamir & Mauss, 2011).

Understanding the changes in cognitive processes that occur during treatment is an important goal of clinical research (Hertel & Mathews, 2011; Hofmann, 2000). Intervening variables form the basis of many psychological theories and are of particular interest in clinical treatments and interventions. Existing research on beliefs as intervening variables in SAD has largely focused on beliefs about social situations—for example, probability biases (e.g., the likelihood that you will be ignored by someone you know) and cost biases (e.g., how bad or distressing it would be if this were to happen) (Smits et al., 2012). In their recent review article, Smits and colleagues (2012) systematically examined evidence for probability and cost biases as potential mechanisms of change in a variety of treatments for anxiety disorders. Only two of these studies examined mediation in the context of traditional CBT interventions for SAD. Although there was no support for change in probability estimates as a mediator of treatment outcome, both studies found some evidence for the indirect role of reduced social cost
biases (Foa, Franklin, Perry, & Herbert, 1996; Hofmann, 2004). Recent work by Possis et al. (2013) also found that reductions in cost biases explained improvements in a single-session cognitive restructuring intervention for SAD.

Maladaptive beliefs about social situations have also been examined from the perspective of perceived social self-efficacy – another variable that may play a role in treatment for SAD (Gaudiano & Herbert, 2003; Hofmann, 2000, 2007; Leary & Atherton, 1986). Social self-efficacy refers to patients’ beliefs that they are capable of presenting themselves in a favourable light and avoiding negative evaluation in social situations (Leary & Atherton, 1986). To date, no studies have formally examined changes in social self-efficacy as a mediator of CBT treatment for SAD, although there is some evidence that CBT-related changes in these beliefs – along with changes in fears of negative evaluation – predicted post-treatment reductions in social anxiety (Gaudiano & Herbert, 2003).

In addition to research on probability and cost biases and perceived social self-efficacy, researchers have also examined the role of negative self-beliefs in the treatment of SAD. For example, Rapee, Gaston and Abbott (2009) found that changes in patients’ negative beliefs about their appearance (together with their beliefs about the costs of negative evaluation) accounted for 29% of the variance in symptom reduction using a treatment comprised of cognitive restructuring, exposure, and attention retraining. The independent contribution of self-beliefs in this study, however, remains unclear. More recently, Boden et al. (2012) tested the role of maladaptive beliefs directly in the context of a randomized controlled trial of CBT for SAD. Rather than focusing on dysfunctional beliefs in particular domains (e.g., achievement and appearance), the authors developed a
global measure of maladaptive interpersonal beliefs characteristic of SAD. These core beliefs, drawn from patient reports and clinician interviews, consisted of unhelpful evaluative cognitions related to the self in interpersonal contexts (e.g., I am unlovable; I don’t fit in). Assessments pre- and post-treatment revealed that CBT (compared to waitlist) led to significant reductions in maladaptive interpersonal beliefs, and these reductions also accounted for CBT-related changes in social anxiety symptoms. In summary, there is some evidence for changes in social cost biases and maladaptive self-beliefs as important variables in the treatment of SAD (Boden et al., 2012; Foa et al., 1996; Hofmann, 2004; Rapee et al., 2009).

The Current Study

The aim of Study 10 was to examine the role of emotion beliefs as a mechanism of change in CBT for social anxiety disorder. In addition to general aim, I was interested in examining the specificity of emotion beliefs and their reliability over time. In this study, I chose to focus on beliefs about anxiety because findings in Study 9 indicated that anxiety beliefs were more strongly associated with clinical outcomes than general beliefs in patients with SAD. In the context of a randomized clinical controlled trial of CBT for SAD, I hypothesized that:

H1: Compared to waitlist participants (WL), patients receiving CBT will show a significant reduction in entity beliefs about their emotions post-treatment.

H2: Changes in patient’s implicit beliefs about their emotions will mediate CBT-related improvements in social anxiety.
H3: Implicit beliefs will predict unique variance in post-treatment social anxiety beyond that accounted for by patients’ baseline social anxiety levels, and while also controlling for alternative belief measures (e.g., beliefs about social costs; perceived social self-efficacy and maladaptive interpersonal beliefs).

H4: Changes in implicit beliefs about emotions during CBT will persist and will be predict social anxiety at 1-year follow-up.

Method

Study Design

Participants were recruited from 2007 to 2010 as part of a larger study on CBT and the neural substrates of emotion regulation in generalized SAD. This research was conducted in the Clinically Applied Affective Neuroscience (CAAN) lab at Stanford University (See Study 9 for more details). The overall design of the study and its main outcomes, including adherence to CONSORT guidelines, have been reported elsewhere (Boden et al., 2012; Goldin et al., 2009; 2012).

Participants

From the total 75 participants with SAD (who were included in Study 9), 53 (24 men, 29 women), went on to complete 16-weeks of CBT or waitlist (WL) assessments in a randomized clinical control trial of CBT for social anxiety. All patients met DSM-IV (American Psychiatric Association, 1994) criteria for a primary diagnosis of generalized SAD as assessed by the Anxiety Disorders Interview Schedule for the DSM-IV-Lifetime version (ADIS-IV-L, Brown, DiNardo, & Barlow, 1994). Patients were between 21 and
53 years of age ($M = 34\text{yrs}, SD = 9.3\text{yrs}$), and were ethnically heterogeneous (62% White; 19% Asian; 9% Hispanic; 4% Filipino, 2% Pacific Islander; 4% Other). All patients underwent extensive diagnostic screening, including telephone and in-person diagnostic interviews by clinical psychologists. Patients were ineligible if they were receiving concurrent psychotherapy or pharmacotherapy, and were excluded for comorbid psychiatric disorders other than secondary diagnoses of generalized anxiety disorder, specific phobia, panic disorder, or dysthymia. After being admitted to the study, participants completed a series of online questionnaires. Patients were then randomized to 16 weekly sessions of individual CBT for SAD ($n = 24$) or a 16-week WL group ($n = 29$). During the 16 sessions of CBT, SAD patients completed assessments of anxiety and emotion regulation (Goldin et al., 2012) as well as a battery of assessments pre- and post-treatment, and at 1-year post-CBT. There were no significant differences between groups on age, gender, years of education, duration of SAD, or comorbid diagnoses.

Demographic information for SAD patients and WL controls are presented in Table 23.

Table 23. Emotion Beliefs and CBT – Demographic and clinical variables for all included participants (Study 10, $n = 53$)

<table>
<thead>
<tr>
<th></th>
<th>CBT $n = 24$</th>
<th>Wait List $n = 29$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (SD)</td>
<td>34.21 (8.1)</td>
<td>33.14 (10.8)</td>
</tr>
<tr>
<td>Age of onset (SD)</td>
<td>12.36 (8.5)</td>
<td>13.04 (6.6)</td>
</tr>
<tr>
<td>Years of education (SD)</td>
<td>16.14</td>
<td>16.35</td>
</tr>
<tr>
<td>% Female</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>% Married</td>
<td>43</td>
<td>20</td>
</tr>
<tr>
<td>% Comorbid axis I</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Duration of SAD in years (SD)</td>
<td>22.91 (12.1)</td>
<td>20.0 (13.6)</td>
</tr>
</tbody>
</table>
Measures

**Implicit beliefs about social anxiety.** Beliefs about the malleability of anxiety were assessed using the four-item Implicit Beliefs About Social Anxiety Scale (See Study 9). Results from Study 9 indicate the scale displays high internal consistency in both non-clinical subjects (NC) and in patients with SAD (NC $\alpha = .81$, SAD $\alpha = .92$). Moreover, the IBSA displays good convergent and discriminant validity, predicting stress and anxiety, self-esteem, and negative affect in patients with SAD (De Castella et al., 2014). All scale ranges and reliabilities at baseline, and post-CBT are reported in Tables 24 and 25.

**Social anxiety.** Severity of social anxiety was assessed with the self-report version of the *Liebowitz Social Anxiety Scale* (LSAS-SR, Fresco et al., 2001). The LSAS-SR is a commonly used, reliable, and valid measure of social anxiety (Ledley, Erwin, Morrison, & Heimberg, 2013). The scale consists of 24 items, which independently assess fear and avoidance of social (e.g., meeting strangers), and performance (e.g., taking a written test) situations during the past week. Participants rate their fear and avoidance on a scale from 0 (no fear/avoidance) to 3 (severe fear or anxiety/usually avoid). Total scores range from 0 to 144.

**Other maladaptive beliefs in SAD.** To examine the specificity of emotion beliefs (H2), I included three additional measures based on existing research with SAD patients:

(1) *The Social Costs Questionnaire* (SCQ, Foa, Franklin, Perry, & Herbert, 1996) which measures perceived costs associated with social events by asking patients to rate 40 negative hypothetical situations (e.g., “How bad would it be to unexpectedly be called in
to see your supervisor at work?”). Responses are recorded on a Likert-type scale ranging from 0 (not at all bad) to 8 (extremely bad).

(2) The Perceived Social Self-Efficacy Scale (PSSE, Smith & Betz, 2000) which assesses confidence in one’s abilities to engage in social interaction tasks necessary for initiating and maintaining interpersonal relationships. The scale consists of 12 items (e.g., “How confident are you that you can mingle with others at a party or other social function.”) Responses are recorded on a Likert-type scale ranging from 0 (cannot do at all) to 10 (certain can do).

(3) The Maladaptive Interpersonal Beliefs Scale (MIBS, Boden et al., 2012) measures endorsement of nine negative self-beliefs relevant to SAD (e.g., “If people could see who I really am, they would reject me”). Responses are rated on a Likert-type scale ranging from 1 (Definitely false or Strongly disagree) to 5 (Definitely true or Strongly agree).

Cognitive Behavioural Therapy

Patients receiving CBT completed 16 individual sessions with trained clinical psychologists hired by the Stanford CAAN lab. Sessions were 1hr, except for the first in-session exposure session, which lasted 1.5hrs. CBT was delivered using a manualized treatment protocol which included a therapist guide (Hope, Heimberg, & Turk, 2006) and a client workbook (Hope, Heimberg, Juster, & Turk, 2000), and featured training in cognitive restructuring techniques for identifying and modifying negative self-beliefs. CBT sessions also involved psycho-education and graded exposure to anxiety-provoking situations both within session, and as homework. All sessions were recorded and coded.
for adherence by the primary researcher and trained researchers working in the CAAN lab. Coding was conducted according to the Therapist Adherence Scale (Hope, VanDyke, Heimberg, Turk, & Fresco, 2001). There was no significant difference between therapists based on the adherence ratings ($M = 4.16, SD = 0.24, F(3,33) = 0.11, p = .96$).

**Statistical Analyses**

To evaluate the effects of CBT on patients’ implicit beliefs (H1), a 2 group (CBT vs. WL) x 2 Time (baseline vs. post-treatment/WL) mixed analysis of variance (ANOVA) was conducted, with the first independent variable being between subjects and the second being within subjects. This was followed by paired-sample $t$-tests for the CBT and WL groups. Next, to test the potential intervening role of implicit beliefs (H2), while accounting for baseline social anxiety, I first computed orthogonalized, residual gains scores for the LSAS-SR using pre-post output residuals. Orthogonalized scores represent a measure of change during treatment that is independent of pre-treatment status. Using orthogonalized scores I was able to account for baseline social anxiety in all analyses, and control for baseline correlations between the LSAS-SR and the other belief measures. Because orthogonalized scores are uncorrelated with baseline severity these scores also represent a more conservative estimate of change following treatment (Cohen, Cohen, West, & Aiken, 2003). I then examined the effect of CBT vs. WL (the predictor) on the LSAS-SR residuals (the dependent variable) via patients’ implicit beliefs (the intermediary). Indirect effects analyses were calculated using the Preacher and Hayes (2008; Rucker et al., 2011) PROCESS macro for SPSS and the same methods described previously. Gender, age and ethnicity were not associated with implicit beliefs or either of the dependent variables, and were not included as covariates. Indirect effect analyses were
repeated – and measures of effect size calculated – for each of the alternative belief measures (social costs, perceived social self-efficacy, and maladaptive interpersonal beliefs). In the current study, all waitlist subjects were offered treatment at the completion of the 12-week waitlist period. For this reason, a treatment vs. waitlist-control comparison can only be made at two time points: baseline and post-treatment. Results are reported as standardized coefficients.

To examine whether the patients’ implicit beliefs predicted unique variance in treatment outcomes – beyond what might already be explained by their baseline social anxiety level, or by the alternative belief measures (H3) – I conducted two-step hierarchical regression analyses on the LSAS-SR residual scores. Post-treatment scores for perceived social costs (SCQ), perceived social self-efficacy (PSSE), and maladaptive interpersonal beliefs (MIBS) – were entered in the first step, followed by post-treatment implicit beliefs about social anxiety (IBSA) in the second step. Finally, to test whether CBT led to lasting changes in patients’ implicit beliefs and symptoms (H4), I conducted follow-up assessments with subjects in the CBT group (n = 24) at 12-months. Changes in implicit beliefs were assessed using paired-sample t-tests and by examining the Pearson product-moment correlation between scores at the two time points. To examine whether implicit beliefs predicted social anxiety at follow-up, I again conducted two-step hierarchical regression analyses on 12-month LSAS-SR residual scores, which controlled for baseline social anxiety. Post-treatment scores on the alternative belief measures (SCQ, PSSE and MIBS) were entered in the first step, followed by post-treatment implicit beliefs in the second step. Tables 24 and 25 display means, standard deviations and correlations for all study variables at baseline and post treatment for CBT patients.
Table 24. *Emotion Beliefs and CBT for SAD – Means, Standard Deviations, Reliabilities and Correlations of Study Variables at Baseline (Study 10, N = 53)*

<table>
<thead>
<tr>
<th>Variable</th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Possible Range</td>
<td>α</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1. Entity Beliefs (IBSA)</td>
<td>11.85</td>
<td>3.87</td>
<td>4 – 20</td>
<td>.78</td>
<td>1</td>
<td>.28*</td>
</tr>
<tr>
<td>2. Social Anxiety (LSAS-SR)</td>
<td>82.76</td>
<td>19.36</td>
<td>0 – 144</td>
<td>.92</td>
<td>1</td>
<td>.28*</td>
</tr>
<tr>
<td>3. Social Costs (SCQ)</td>
<td>205.4</td>
<td>47.08</td>
<td>0 – 320</td>
<td>.96</td>
<td>1</td>
<td>-.35*</td>
</tr>
<tr>
<td>4. Social Self-Efficacy (PSSE)</td>
<td>50.85</td>
<td>20.33</td>
<td>0 – 120</td>
<td>.90</td>
<td>1</td>
<td>.10</td>
</tr>
<tr>
<td>5. Interpersonal Beliefs (MIBS)</td>
<td>30.36</td>
<td>5.54</td>
<td>9 – 45</td>
<td>.85</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. IBSA = Implicit Beliefs about Social Anxiety Scale; LSAS-SR = Liebowitz Social Anxiety Scale-Self Report; SCQ = Social Costs Questionnaire; PSSE = Perceived Social Self-Efficacy Scale; MIBS = Maladaptive Interpersonal Beliefs Scale. *p < .05, **p < .01, ***p < .001

Table 25. *Means, Standard Deviations, Reliabilities and Correlations of Study Variables Post-Treatment for CBT patients (Study 10, N = 24)*

<table>
<thead>
<tr>
<th>Variable</th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Possible Range</td>
<td>α</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1. Entity Beliefs (IBSA)</td>
<td>7.08</td>
<td>3.49</td>
<td>4 – 20</td>
<td>.75</td>
<td>1</td>
<td>.54**</td>
</tr>
<tr>
<td>2. Social Anxiety (LSAS-SR)</td>
<td>50.50</td>
<td>19.97</td>
<td>0 – 144</td>
<td>.91</td>
<td>1</td>
<td>.10</td>
</tr>
<tr>
<td>3. Threat Appraisal (SCQ)</td>
<td>187.08</td>
<td>40.66</td>
<td>0 – 320</td>
<td>.97</td>
<td>1</td>
<td>-.39*</td>
</tr>
<tr>
<td>4. Social Self-Efficacy (PSSE)</td>
<td>69.70</td>
<td>20.89</td>
<td>0 – 120</td>
<td>.90</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5. Interpersonal Beliefs (MIBS)</td>
<td>23.00</td>
<td>6.93</td>
<td>9 – 45</td>
<td>.85</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. IBSA = Implicit Beliefs about Social Anxiety Scale; LSAS-SR = Liebowitz Social Anxiety Scale-Self Report; SCQ = Social Costs Questionnaire; PSSE = Perceived Social Self-Efficacy Scale; MIBS = Maladaptive Interpersonal Beliefs Scale. *p < .05, **p < .01, ***p < .001
Results

Prior to analysis, all variables were examined for missing values and distributional assumptions (Tabachnick & Fidell, 2007). At baseline, there were no significant differences between groups in age, gender, ethnicity, income, marital status, education, current or past Axis I comorbidity, or prior experience with medication or psychotherapy. There were also no significant differences between groups on beliefs about anxiety ($M_{CBT} = 11.71, SD = 3.78$ vs. $M_{WL} = 11.97, SD = 4.00$), $t(51) = -0.24, p = .81$.

Implicit Beliefs and CBT for Social Anxiety

Normality, linearity, and homogeneity of variance were all found to be satisfactory. Missing data were rare (less than 5% on any variable) and were imputed with the overall mean for that variable – a conservative technique in such cases (Tabachnick & Fidell, 2007). Consistent with H1, the mixed-measures ANOVA revealed a significant treatment x time interaction, $F(1, 51) = 30.03, p < .001, R^2 = .37$. Follow-up planned paired $t$-tests showed that, compared to baseline, CBT patients reported lower fixed entity beliefs about their anxiety post-treatment ($M_{baseline} = 11.70, SD = 3.78, M_{Post} = 7.08, SD = 3.49; t(23) = 6.18, p < .001$). This was a large effect by Cohen’s (1988) standards $d = 1.27$. There was, however, no significant difference over time for WL patients ($M_{baseline} = 11.97, SD = 4.00$ vs. $M_{Post} = 12.34, SD = 3.43, d = .10), t(28) = -0.69, p = .50$ (see Figure 24).
Figure 24. CBT-Related Changes in Emotion Beliefs for SAD patients (Study 10, n = 53)

Note: At baseline patients in CBT and WL groups did not differ in their implicit beliefs about anxiety. Post-treatment entity beliefs about anxiety declined for patients receiving CBT (n = 24) but not for waitlist patients (n=29). Error bars represent the standard error of the mean.
The Mediating Effect of Implicit Beliefs

In H2, I predicted that patients’ implicit beliefs about their emotions would mediate CBT-related changes in social anxiety. As predicted, the mediating effect for implicit beliefs was significant, with confidence intervals excluding zero, \( ab = 12.87, 95\% \text{ CI} = [5.21, 24.00], \kappa^2 = .28 [95\% \text{ CI} = .12, .46] \). This was a large effect by Preacher and Kelly’s (2011) standards (see Figure 25).

Figure 25. The mediating effect of patients’ implicit beliefs about anxiety on post-CBT social anxiety, while controlling for baseline social anxiety symptoms (Study 10, n = 53)

The regression coefficient for the effect of treatment decreases when controlling for implicit beliefs about anxiety. Values are standardized regression coefficients. \(^a\) LSAS-SR residuals represent post-CBT social anxiety (LSAS-SR) controlling for baseline social anxiety, \(^b\) When controlling for implicit beliefs about anxiety, the association between treatment and social anxiety is no longer significant. IBSA = Implicit Beliefs about Social Anxiety; LSAS-SR = Liebowitz Social Anxiety Scale – Self-report.

To compare the indirect effect of implicit beliefs with other intervening variables, I conducted additional analyses of indirect effects for perceived social costs (SCQ), perceived social self-efficacy beliefs (PSSE), and maladaptive interpersonal beliefs (MIBS). There were no significant indirect effects for perceived social costs (SCQ, \( ab = .38, 95\% \text{ CI} = [-3.07, 4.89], \kappa^2 = .13 [95\% \text{ CI} = .00, .04] \)) or for perceived social self-
efficacy beliefs (SSE, $ab = 5.04$, 95% CI = $[-.25, 14.20]$, $\kappa^2 = .13$ [95% CI = .01, .32]). However, the indirect effect for maladaptive interpersonal beliefs (MIBS) was significant with confidence intervals excluding zero, $(ab = 10.26$, 95% CI = $[3.85, 20.29]$, $\kappa^2 = .26$ [95% CI = .11, .43]). This was also a large effect by Preacher and Kelly’s (2011) standards. These findings indicate that the extent to which patients’ beliefs about their anxiety changed in treatment determined their post-CBT social anxiety symptoms.

**Implicit Beliefs and Other Belief Measures**

In H3, I predicted that implicit beliefs would explain unique variance in post-treatment social anxiety while accounting for baseline social anxiety and for the independent contribution of the other belief measures – perceived social costs (SCQ), perceived social self-efficacy (PSSE), and maladaptive interpersonal beliefs (MIBS). As predicted, implicit beliefs explained unique variance in social anxiety, above and beyond that explained by baseline social anxiety, the SCQ, PSSE, and MIBS. Table 2 displays the standardized regression coefficients ($\beta$), $R^2$, and $R^2$-change for this analysis.

**Implicit Beliefs about Anxiety at Follow-up**

In the final analysis, I examined whether CBT led to lasting changes in patients’ implicit beliefs, and if so, whether implicit beliefs would continue to predict anxiety outcomes at 12 months (H4). Of the original 24 subjects in the CBT-group, 18 completed the 12-month follow-up assessment. From treatment-completion to 12-month follow-up, patients’ implicit beliefs about anxiety were strongly correlated, with no significant differences between the two time points, $r = .91$, $p < .001$, ($M_{\text{post}} = 6.44$, $SD = 3.22$ vs. $M_{12m} = 6.28$, $SD = 4.31$; $t(17) = 0.36$, $p = .71$). Results of hierarchical linear regresions
revealed that post-treatment implicit beliefs and the alternative cognitive variables (SCQ, PSSE, and MIBS), together accounted for 29% of the variance in LSAS-SR residuals at 12-months ($R^2 = .41$, $R^2$ adjusted = .29, $F(4,19) = 3.31, p < .05$). Consistent with H4, implicit beliefs explained unique variance in social anxiety, above and beyond that explained by the alternative belief measures ($b = 2.4$, $t(19) = 2.06, p < .05$, $R^2$ change = .13). These findings indicate that CBT-related changes in implicit beliefs persisted and continued to predict symptom severity 12 months after treatment completion.

Table 26. Hierarchical regression predicting post-treatment social anxiety (LSAS-SR) accounting for baseline anxiety and alternative belief measures (Study 10, n = 53).

| Step 1 | | | | | |
|--------|--------|--------|--------|--------|
|  | B     | SE B   | β      | $R^2$ change | F     |
| Step 1 | .47*** | 14.48*** |
| 1. Social Costs (SCQ) | .01 | .05 | .01 |
| 2. Perceived Social Self-Efficacy (PSSE) | -.14 | .15 | -.15 |
| 3. Maladaptive Interpersonal Beliefs (MIBS) | 1.5* | .41 | .57* |
| Step 2 | | | | | |
|  | | | | | |
|  | | | | | |
|  | | | | | |
| 1. Social Costs (SCQ) | .02 | .05 | .06 |
| 2. Perceived Social Self-Efficacy (PSSE) | -.06 | .15 | -.07 |
| 3. Maladaptive Interpersonal Beliefs (MIBS) | 1.19** | .41 | .45** |
| 4. Entity Beliefs about Anxiety (IBSA) | 1.37* | .59 | .29* |

Note: LSAS-SR = Liebowitz Social Anxiety Scale-Self Report; IBSA = Implicit Beliefs about Social Anxiety Scale. Adjusted $R^2$ values and increments for $R^2$ change are based upon $F$ tests for that step. *p < .05, **p < .01, ***p < .001
The primary aim of Study 10 was to examine whether patients’ implicit beliefs about their ability to control their emotions predict CBT outcomes for patients with SAD. In Study 8, I identified links between implicit theories of emotions and cognitive reappraisal, and in Study 9 I found links between implicit theories and clinical symptoms in SAD patients. Cognitive models of SAD (Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2010; Hofmann, 2007) have emphasized the role of maladaptive beliefs and dysfunctional cognitive content – particularly dysfunctional beliefs about social situations, and dysfunctional beliefs about the self. To date, however, there has been very little emphasis on patients’ beliefs about their emotions, and no studies have examined the role of emotion beliefs as a mediator of CBT for SAD.

In Study 10, implicit beliefs and social anxiety were assessed at baseline, and at the completion of a 16-week randomized clinical control trial of CBT for SAD. As predicted, patients receiving CBT (compared to waitlist controls) were less likely to hold fixed entity beliefs about their anxiety post-treatment. This shift in thinking explained treatment-related reductions in social anxiety. Additional analyses revealed that patients’ implicit beliefs also uniquely predicted how much they benefited from treatment, even when controlling for baseline social anxiety and other categories of beliefs. Finally, implicit beliefs stayed constant at 12-month follow-up and continued to predict anxiety symptoms one year after completing CBT. At follow-up emotion beliefs uniquely explained 13% of the variance in anxiety symptoms.
Emotion Beliefs and CBT for Social Anxiety

The current results suggest that implicit beliefs about emotions may play an important role in clinical treatments and interventions even mediating treatment outcomes for patients. This is true both for attention-based interventions like MBSR (see Chapter 10), and also for cognitive change based therapies like cognitive behavioural therapy (CBT). The current chapter examined links between emotion beliefs and cognitive reappraisal (an adaptive cognitive change strategy). It also extended prior work on emotion beliefs in community samples to the clinical domain with two specifically looking at emotion beliefs in patients with social anxiety disorder (SAD). CBT for SAD teaches patients the skills required to ‘reframe’ and confront anxiety-provoking situations, and to examine the core beliefs that underlie their fears and avoidance behaviour (Heimberg et al., 2010; Hofmann, 2007). Patients learn about various cognitive distortions, attention and memory biases, are taught how to skilfully work with these habits to manage and reduce their anxiety (Ledley et al., 2013), and are empowered to use these skills through graded exposure. In working with fear and avoidance hierarchies through treatment, patients are also provided with direct evidence that their self-reported fear and anxiety levels do change. In this way, over time, patients in CBT may come to experience and internalize greater belief in their ability to change and control their emotions, even if this message is not explicitly emphasized as in interventions based on implicit theories of intelligence (Blackwell et al., 2007; Good et al., 2003).

The Role of Emotion Beliefs in Treatment

There are a number of explanations for why patients’ beliefs about their emotions may play an important role in treatment. First, Hofmann and Barlow (2002) suggest that
for patients with social anxiety, it may actually be the perceived lack of control over one’s emotional response – independent of judgment biases and fears of negative evaluation – that triggers fear and avoidance of social situations. This helps explain the prevalence of panic attacks among patients with SAD (Kessler et al., 2006), and why many attribute their fears more to panic attacks than traumatic events or indirect conditioning (Hofmann, Ehlers, & Roth, 1995). In this way, if patients come to believe they have greater control over their emotions, reductions in fear and avoidance behaviour may follow.

Second, incremental beliefs about emotions may be a necessary prerequisite for many adaptive forms of emotion regulation (see Chapter 6 for a review of the potential role of emotion beliefs in the identification, selection and implementation of emotion regulation strategies). Research indicates that patients with SAD typically use maladaptive emotion regulation strategies in day-to-day life, such as situational avoidance and emotional suppression (Werner, Goldin, Ball, Heimberg, & Gross, 2011). These strategies make sense as preventing or hiding one’s emotional reactions may be the only option if patients believe they cannot change or control their emotions. In Study 7 with a non-clinical sample, entity beliefs about emotions were linked with reduced likelihood of using adaptive emotion regulation strategies like cognitive reappraisal (De Castella et al., 2013; Tamir et al., 2007). If CBT leads to a reliable shift in patients’ beliefs about their emotions, this may, in turn, promote use of a variety of more adaptive emotion regulation strategies (in addition to cognitive reappraisal). Given that many features of psychopathology involve poorly implemented, inflexible or context-insensitive strategies (Werner & Gross, 2009), examining how implicit beliefs influence emotion regulation choice is an important area for future research.
Third, patients’ beliefs about whether they can learn to control their emotions may play a key role in their commitment to and engagement with psychotherapy. Positive expectations for change in treatment are regarded as one of the most important nonspecific factors in predicting general treatment response (Arnkoff, Glass, & Shapiro, 2002). Positive expectations for change also predict rate of change (Price & Anderson, 2011), and treatment outcomes (Chambless, Tran, & Glass, 1997) for patients with SAD. Not surprisingly, these findings have led to renewed interest in motivational interviewing (MI, Miller & Rollnick, 2002), and its manualized variant, motivational enhancement therapy (MET, Miller, Zweben, DiClemente, & Rychtarik, 1992). Research indicates MI and MET techniques are effective additions to CBT for generalized anxiety (Westra, Arkowitz, & Dozois, 2009), and there is some support for their efficacy with SAD patients (Buckner & Schmidt, 2009). MI approaches, however, do not explicitly focus on patients’ beliefs about their emotions or the efficacy of treatments for managing one’s anxiety. If treatment ambivalence is due in part to patients’ implicit beliefs about their emotions, focusing on implicit beliefs in treatment, or as part of an orientation to treatment, may prove beneficial for improving MI and MET interventions.

Finally, before one even finds their way to clinical professionals, emotion beliefs may influence help-seeking behaviour and one’s openness to various forms of treatment. Study 5 demonstrated that when people hold entity beliefs about their emotions they are more likely to avoid seeking psychological help. This is a particularly important finding given the current results from Studies 9 and 10. SAD is frequently misdiagnosed and under-treated, (as noted above) with patients often waiting more than nine years before finding appropriate specialist care (Wagner, Silove, Marnane, & Rouen, 2006). If patients with SAD hold entity beliefs about their anxiety – as something that is fixed and
uncontrollable rather than malleable and treatable – they may fail to seek treatment. When patients do seek help, emotion beliefs may also influence treatment preferences, with patients holding entity beliefs more readily turning to medication and symptom management over active cognitive change strategies taught in therapies like CBT. Study 4 found some evidence for this with entity beliefs about emotions being positively associated with help-seeking avoidance. To date, however, there is still limited work in this area, and additional research examining links between emotion beliefs, help-seeking, and treatment preferences is needed.

**Implications, Limitations and Future Directions**

Although the current study makes important contributions to research on implicit theories and social anxiety, several limitations should be noted. The first relates to measurement. As with much of the research on implicit theories (see Dweck, 1999), this study is based largely on participant self-reports. Self-report data provide valuable insights into patients’ beliefs and their anxiety, and using self-reports has long been the primary approach for examining implicit theories. However, self-report methods – particularly for psychological symptoms – are not always as objective as other methods, such as independent evaluations, psychophysiological assessments, and behavioural tasks. And, self-report scales also fail to capture the richness of data present in more qualitative methods. In the future it will, therefore, be important to explore additional methodologies and approaches of measurement to further replicate, and extend these findings.

A second limitation relates to the potential intervening role of cognitive variables in treatment. In the current study, I examined several cognitive variables that might explain treatment outcomes in CBT for SAD. These variables included: implicit beliefs
about emotion, perceived social costs, perceived social self-efficacy, and maladaptive interpersonal beliefs. By controlling for pre-treatment social anxiety, I was also able to examine the unique role of cognitive variables in treatment separate from patients’ pre-existing levels of anxiety. Results revealed significant indirect effects for implicit beliefs and maladaptive interpersonal beliefs. Indirect effects, however, are not evidence of causation, and they do not rule out the possibility of other additional intervening variables. Researchers for example, have also examined the potential mediating role of emotion regulation strategies (Goldin et al., 2012), negative self-talk (Kendall & Treadwell, 2007), as well as attention, memory and information processing biases relevant to fear and anxiety (Hofmann, Moscovitch, Kim, & Taylor, 2004; Mansell & Clark, 1999). It will therefore be important in future research to directly examine the relative strength of these and other candidate variables, and their role in treatment. By incorporating experimental manipulations, clinical interventions, and/or multiple assessments throughout treatment, future studies may also be able to better clarify the degree to which cognitive variables play a causal role in healing and recovery.

A final limitation relates to generalizability. Results from the current study should only be generalized to CBT for SAD. It remains to be seen whether implicit beliefs about emotions explain treatment-related gains in other disorders, and in other forms of psychotherapy, or whether findings reported in the current study are unique to CBT for SAD alone. Despite these limitations, this study provides preliminary evidence for the role of implicit beliefs in CBT treatment for SAD. Chapter 10 also found evidence for emotion beliefs as a mediator of attention-focused treatments like MBSR. Together these findings indicate that emotion beliefs do play a role in at least two diverse clinical interventions. It’s possible, then, that these beliefs also play a role in others. Study 10 also
consisted of a randomized clinical trial with a waitlist control group, which provides strong grounds for examining the efficacy of CBT and potential mechanisms of therapeutic change. While there has been growing research on the role of cognitive variables in treatment for SAD, to date, there is limited research on patients’ beliefs about their emotions. Study 10 demonstrates that CBT leads to a reliable long-term change in patients’ implicit beliefs. Implicit beliefs, in turn, explain treatment related reductions in social anxiety and account for unique variance in symptoms over and above that explained by baseline anxiety and alternative cognitive variables – perceived social costs, perceived social self-efficacy, and maladaptive interpersonal beliefs. These findings indicate that maladaptive beliefs – particularly about the self and about one’s emotions – may be important mediating variable in clinical treatments and interventions.

### 11.5 Chapter Summary: Studies 8, 9 & 10

Results from the empirical works presented in Chapters 8 – 11 indicate that people differ in their implicit beliefs about their emotions and these beliefs have important implications for emotion regulation and psychological health. Emotion beliefs appear to play an important role in the selection and implementation of a range of adaptive and maladaptive emotion regulation strategies. Studies 9 and 10 began extending this work to the clinical domain by examining the role of implicit beliefs about emotions in a clinical sample of patients suffering with social anxiety disorder. Study 10 also examined emotion beliefs as a potential mediator of treatment outcomes. Results indicated that fixed entity beliefs about emotions are robust predictors of psychological health and clinical recovery for patients with social anxiety.
Implications for Clinical Disorders

Since these preliminary findings were published (see De Castella et al., 2014a; 2014b), there has been growing interest in the role of emotion beliefs in clinical populations (Schroder et al., 2015; 2016; Yalch et al., 2017). In a recent article, Kneeland, Dovidio, Joormann and Clark (2016) argue that implicit theories about emotions may be particularly relevant to problems of anxiety and depression. Cognitive theories of depression for example, typically focus on the role of an individual’s attributional style, emotional schemas, and impaired emotion regulation, all of which may be influenced by their implicit beliefs about their emotions. Research indicates that people suffering from major depression are significantly more likely to make stable, internal, and global attributions for negative experiences (e.g., “negative things will always happen to me because I’m depressed”) (Abramson, Seligman, & Teasdale, 1978; Sweeney, Anderson, & Bailey, 1986). The belief that one can’t change the emotions one experiences may therefore reinforce this attributional style by promoting an externally oriented perceived of lack of control and by promoting self-blame for negative experiences (Kneeland et al., 2016). Other researchers have also linked symptoms of depression with perceptions of emotions as invalid, incomprehensible, and uncontrollable arguing that these beliefs perpetuate the depressive cycle by inclining individuals towards maladaptive emotion regulation strategies (like avoidance, substance use and rumination) that further contribute to depressive symptoms (Leahy, 2002). Kneeland et al. argue that “it could be the belief that emotion is fixed provides the genesis of a cognitive schema about how one’s own emotions are outside of personal control, thereby providing the foundation and maintenance for clinical levels of depression and psychological distress” (2016, p. 18).
Like cognitive models of depression, cognitive models of anxiety also highlight the perceived lack of control over anxiety as a central feature in the development and maintenance of many anxiety disorders (Barlow, 2015; Hofmann, 2007). This perceived lack of control contributes to heightened distress in emotion-eliciting situations and promotes rigid cognitive or behavioural avoidance of social situations or phobic stimuli. Increased perceived anxiety coupled with avoidance (see Studies 4 and 5) and maladaptive emotion regulation strategies (see Studies 6 – 10), in-turn, reinforces anxiety symptoms and beliefs about the perceived lack of control over anxiety (Barlow, 2000; Heimberg, Brozovich, & Rapee, 2014; Hofmann, 2007). From this perspective, holding entity beliefs about one’s emotions may play a key role in perpetuating cycles of anxiety and avoidance.

**Implications for Clinical Treatment**

To date there is growing research on the important role of implicit theories of emotions in emotion regulation and psychological health. There is also evidence that, for many people, these beliefs do change on their own in clinical treatment (see Studies 7 and 10). But is it possible, through psychoeducation and targeted interventions, to more directly change people’s implicit theories? Study 5 successfully manipulated people’s beliefs about their emotions, demonstrating that it is possible to temporarily change people’s beliefs, but the longer-term influence of these experimental manipulations remains unclear. In non-clinical settings entity and incremental beliefs have been induced experimentally through explicit messages, case studies, and vignettes (Bergen, 1991), and indirectly through feedback, praise or criticism (Kamins & Dweck, 1999; Mueller & Dweck, 1998). Other interventions focusing on creating longer-term change in implicit
beliefs have taught an incremental theory using scientific research on brain plasticity through online programs (Brainology, 2010), workshops (Blackwell et al., 2007) and videos, mentoring, and letter writing tasks (Aronson, Fried, & Good, 2002; Good, Aronson, & Inzlicht, 2003). See Chapter 5 for a review of implicit theory interventions.

To date, implicit theory interventions have typically focused on teaching people about brain plasticity and the potential for change and growth; however, it is a message that may not reach all who hear it. Discrepancies between general implicit theories and people’s personal theories about their own abilities (see Studies 1, 2, 4 and 9: De Castella & Byrne, 2015; De Castella et al., 2013; De Castella et al., 2014) indicate that knowing change is possible is not the same as believing personally in one’s ability to change. And to date, no interventions have directly focused on changing people’s implicit beliefs about their emotions (or the consequences of these kinds of interventions in clinical settings). This will be an important area for future research and many researchers have called for work in this area (Kneeland et al., 2016; Schroder et al., 2015; 2016; Yalch 2017). Kneeland et al. (2016) argue that implicit theories of emotion may be a potent mechanism of change in therapy and a necessary precondition for intervention work:

“Through engaging in cognitive exercises, such as cognitive restructuring, clinicians are either explicitly or implicitly conveying the message that emotions are malleable, and these cognitive therapeutic exercises could work through this mechanism. Importantly, it could be that having clients or patients endorse the idea that emotion is malleable and that they can actively work to change their emotions then provides the basic premise for these exercises and provides the platform through which these interventions have their efficacy… If a client has
more fixed emotion beliefs (either about emotions in general or their own emotions), the client could then benefit from a targeted treatment module that explicitly focuses on enhancing a more malleable view of emotion before initiating more active cognitive and behavioural interventions that rely on the premise that emotions, by their very nature, are changeable and dynamic… It is likely important to address emotion malleability beliefs in the therapy room, perhaps through psychoeducation, before clinicians engage clients to change the way they regulate their unwanted emotions. More research is needed to determine how best to promote a more malleable view of emotion in therapeutic contexts to enhance treatment outcomes”. (Kneeland et al., 2016 p. 25-26).

The final chapter of this thesis will present a case study, which takes a qualitative look at the role of implicit theories in clinical settings. It examines how these beliefs may manifest for clients struggling with anxiety and depression, and the challenges involved in using psychoeducation and targeted interventions of the kind described by Kneeland et al. (2016).
12. CLINICAL CASE STUDY\textsuperscript{18}

“In response to the question, “where is the person in personality research?”
it can be said that the person is there, waiting to be engaged by those of us
who are willing to undertake the rather arduous task of trying to fathom
[them] in all their complexity.” (Fowler & Epting, 1976, p. 159).

12.1 Introduction

The previous empirical chapters have documented evidence for the importance of
implicit beliefs about emotions in a wide range of emotion regulation strategies. Chapter 8
(Studies 1, 2 and 3) employed survey research and qualitative content analysis to examine
more closely how people actually think about their emotions. Chapter 9 (Studies 4 and 5)
used correlational and experimental studies to demonstrate that emotion beliefs lead to
differential use of avoidance-based situation selection strategies. Chapter 10 (Studies 6
and 7) employed survey and longitudinal research to examine associations between
emotion beliefs and attention regulation. In a controlled treatment study of mindfulness
based stress reduction (MBSR), emotion beliefs also served as a mediator of change in
treatment. Finally, Chapter 11 (Studies 8, 9 and 10) examined associations between
emotion beliefs and cognitive change strategies like reappraisal. Study 9 identified
important differences in emotion beliefs in clinical and non-clinical populations and

\textsuperscript{18} The current chapter is currently in prep for submission:
study of the role of emotion beliefs in emotion regulation and clinical treatment. *Journal of
Clinical Psychology.*
Study 10, a randomized clinical control trial of cognitive behavioural therapy (CBT), demonstrated that changes in emotion belief mediate treatment outcomes for patients. This empirical work demonstrates that people’s beliefs about their ability to control their emotions influence emotion regulation efforts, psychological health and well-being, and even play a key role in clinical disorders. Importantly, there is also evidence that emotion beliefs are one potential mediator of change in clinical treatments and interventions (like MBSR and CBT).

Findings presented in Studies 1 – 10 indicate that emotion beliefs could be an important focus of treatment in clinical psychotherapy. Some researchers have even suggested that clinicians should focus on addressing these beliefs using psychoeducation at the outset of therapy (Kneeland, Dovidio, Joormann & Clark, 2016). However, no research to date has investigated the efficacy of this approach – or examined what these beliefs actually mean to clients in real-life settings. Furthermore, the research presented to date has been almost exclusively quantitative in nature which may not capture the nuance and complexity of people’s beliefs about their emotions, their meaning, and why they hold them. As Berg and Lune explain:

“quantitative measures appear objective, but only so long as we don’t ask questions about where and how the data were produced... pure objectivity is not a meaningful concept if the goal is to measure intangibles [as] these concepts only exist because we can interpret them” (Berg & Lune, 2012, p. 340).
For this reason, mixed methods research — which utilises both quantitative and qualitative methods – is increasingly regarded as the “gold standard” for research in social and psychological sciences (Oneuegbuzie & Leech, 2004). Despite many notable strengths, quantitative (experimental and survey) research methods are largely context-bound and influenced by the structure of questionnaires and stimuli, and the specific hypotheses under investigation. These methods cannot control for all possible variables in real-life situations, and they often fail to take into account people’s unique ability to interpret their experiences and construct their own meanings. Based on these criticisms, many researchers argue that psychological science would benefit from better integration of research methods and paradigms with mixed-methods approaches offsetting the inherent weaknesses of any one approach (Berg & Lune, 2012; Driscoll, Appiah-Yeboah, Salib & Rupert, 2007; Gerring, 2004; Madill & Gough, 2008; Greene, Caracelli, & Graham 1989; May 2011).

To address these shortcomings, the current chapter uses a previously reported clinical case study to illustrate the richness and complexity in one individual’s unique interpretation of his ability to control his emotions. In this case study, I examine the utility of psychoeducation as a clinical intervention as advocated by researchers like Kneeland et al. (2016). I also examine potential difficulties that can arise when working with patients who hold fixed entity beliefs about their emotions, and explore why these beliefs can feel protective for clients even when they are associated with a range of maladaptive emotion regulation outcomes.
12.2 Case Presentation

The following chapter focuses on a real-life case treated by the first author. This research was conducted under the supervision of Professor David Gard at San Francisco State University and adhered to all ethical requirements regarding clinical treatment, research and supervision. This case study is also based on a report that was submitted as part of clinical training through San Francisco State University. The case study is relevant to the theoretical and empirical chapters presented in this thesis, but is not being presented as part of the dissertation’s empirical works because it is based on work that has been previously submitted. In the following case study, the clients name and all identifying information have been modified for privacy and confidentiality. Some of the information presented is fictitious and has been changed to protect this client’s anonymity, but core elements of this case and all quotes are presented verbatim.

Client Demographics

At the time of intake, this client (pseudonym: “Alex”) was a 20-year-old – a heterosexual Latino-American male who grew up in Northern California. Alex was a full-time college student in his sophomore year at a public university, and he lived in a share apartment with three other students’ off-campus. Alex moved from his home city the previous year for study, and was receiving some financial support from family, but mostly worked part-time on campus to support himself. Prior to intake, Alex had received a previous diagnosis of depression and anxiety from a local psychiatrist. Alex also had prior experience with psychotherapy and school counseling. At the time of intake, he was taking fluoxetine, tetracyclic antidepressants and lorazepam to manage his symptoms of insomnia, anxiety and depression.
Assessment

Intake assessment with Alex consisted of a 90-minute clinical interview and several self-report surveys including: the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); the Beck Anxiety Inventory (BAI) (Beck, Epstein, Brown, & Steer, 1988); and the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980). Alex’s initial score on the BDI at intake was 46 (indicating severe depression). He also scored 31 on the BAI (indicating moderate anxiety) and 29 on the UCLA loneliness scale (low/moderate loneliness).

Presenting Complaints

Alex’s primary goal for therapy was to manage his ‘depression and anxiety’. He explained that he had “a long history of mental illness” since he was eight years old and had been formally diagnosed with depression at 13 years. Alex later developed symptoms of anxiety and panic, and had been intermittently taking medications for most of his life. Alex described his anxiety and depression symptoms as “coming out of the blue” rarely with any precipitating thoughts or events as triggers. These periods of feeling anxious and depressed could last from several hours to several days and Alex felt he had few options but to “tolerate” and “endure” these periods. Alex struggled with adaptive emotion regulation and in an effort to manage his emotions when feeling anxious or depressed, he would typically hide and minimize his feelings, isolate herself in his room and sleep, or engage in non-suicidal self-injury in the form of cutting.
**Beliefs about Emotions**

Although Alex was motivated to begin therapy, it was clear at the outset that he held firm fixed entity beliefs about his emotions – he understood his difficulties as “biologically based” and “part of his personality”. In Alex’s words, “depression and anxiety ran in his family,” it was “genetic,” “hereditary,” “a disease,” and something that had been “passed down through his family just like high blood pressure.” Alex was concerned that he too would pass the “depression and anxiety genes” on to his children and this also left him feeling conflicted about one day being a father. Alex was also convinced he would remain anxious and depressed for the rest of his life – a belief that worried people around him. For Alex, it was “safer and more realistic to expect the worst, than hope for the best.” Regular psychotherapy (like medication) was intended not for long-term clinical change, but rather as a necessary part of symptom management.

**12.3 History**

Alex grew up an only child in a middle-class single parent family. Alex remembers his parents fighting a lot when he was younger, eventually separating when he was five years old. Alex lost contact with his father shortly afterwards. When asked about his feelings towards his father, Alex reported that he “couldn’t care less about him.” He also resented that past therapists had focused so much on his father as an explanation for his problems. During his early childhood, Alex’s mother worked long hours. She had several other turbulent relationships with men, but never remarried. When Alex’s mother was unavailable or busy with work, Alex would stay with his maternal grandparents. He had a very close relationship with both grandparents who also helped care for Alex’s aunt.
who struggled with substance use and had been repeatedly hospitalized for self-harming and attempted suicide when Alex was between the ages of 8 and 11.

Although Alex was estranged from his father and ostensibly indifferent to his departure, he reported having an extremely close relationship with his mother: “we didn’t have anyone else, we had to be a team.” Alex recalled having separation anxiety as a boy when away from his mother, as well as nightmares and other phobias. Alex was very protective of his mother but also described times when times she could be ‘upset’ – sometimes depressed and down (crying behind closed doors), and at other times angry, explosive and controlling. Alex had difficulty understanding or preempting these mood swings and remembers “doing his best to be a good boy” and always wanting to know what was wrong and how he could help. Alex also appeared to carry a lot of guilt about his potential role in his mothers’ difficulties: “I was a really bad kid. My mother didn’t deserve that.” This guilt however, appeared largely disproportional to Alex’s actual descriptions of his “bad” behaviour, which consisted of: “having a bad attitude,” “withdrawing”, or “never wanting to go out and do things.” In addition to these early difficulties, Alex also struggled making friends in primary school and was bullied for over five years – a secret he mostly kept from his family. During his primary school years, Alex remembers angrily bursting into tears and being unable to explain what he was feeling. These outbursts were embarrassing for Alex when they occurred in front of other students. When they occurred in front of his mother, Alex would also be yelled at in frustration because his mother could not understand why he was crying.
12.4 Initial Case Conceptualization

The initial case conceptualization for Alex focused on the problem of his implicit beliefs about his emotions. As with other kinds of implicit beliefs – like implicit beliefs about intelligence – it was possible that for Alex, these beliefs had been acquired through information provided by family members, teachers and/or other authoritative sources like Alex’s psychiatrist who may have sought to explain his anxiety and depressive symptoms primarily in biological terms (a strategy that could be have been used to encourage him in the direction of medication management). In one of our sessions, Alex explained that his psychiatrist did tell him about the genetic basis of his anxiety and depression. He reported that he had been told that “depression is, after all, recognized as being just like other hereditary diseases and health problems.”

Based on this information, and in the absence of other ways of understanding his distress, it appeared that Alex had come to hold entity beliefs about his emotions. Consistent with theories and empirical evidence presented in Chapters 6 – 11 Alex’s entity beliefs about his emotions were also associated with a range of maladaptive coping strategies and emotion regulation efforts: Alex displayed difficulties with psychological health, stress, anxiety and depression, and he made global and stable attributions for his difficulties reporting a general feeling of hopelessness over his symptoms. In light of his perceived lack of control, Alex relied on medication and avoidance-based strategies (cognitive, behavioural and experiential avoidance), maladaptive attention regulation (ruminating, catastrophizing, distraction and suppression), and other maladaptive strategies like non-suicidal self-injury. Together these maladaptive and avoidant coping
strategies likely heightened the experience and duration of his distress in emotion-eliciting situations, reinforcing a perceived lack of control his emotions (see Chapter 6.5).

12.5 Initial Course of Treatment

Based on the theory and research presented (Chapter 6 – 11), and recommendations made by researchers in the field (Kneeland et al. 2016), the initial treatment plan for Alex focused initially on psycho-education. Alex agreed to once weekly psychotherapy and during the first phase of treatment, sessions focused primarily on understanding Alex’s symptoms in the context of the diathesis-stress model. This involved explicating the combined influence of genetics and environmental factors in the etiology and maintenance of anxiety and depressive symptoms. These sessions involved discussing neuroscientific research on brain plasticity and the structural and functional brain change – and associated changes in emotion regulation – that can take place with treatment. Sessions also explored Alex’s current emotion regulation strategies and the role of maladaptive and avoidance-based coping in the etiology and maintenance of clinical anxiety and depression. Finally, sessions focused on discussing and highlighting examples of change and recovery, and even identifying examples from Alex’s own experience where he was able to successfully manage his emotions. As a supplement to these discussions, Alex was given a copy of Carol Dweck’s book Mindset (2006) – which discusses the role of entity and incremental beliefs and presents a variety of case studies and stories about personal growth, recovery and resilience.
Assessment of Progress and Treatment Obstacles

Despite the effectiveness these interventions in research settings, this initial course of psychoeducation proved largely ineffective with Alex, as evidenced by a wide range of therapeutic rupture markers. Safran and Muran (1996) define a rupture in the therapeutic alliance as deterioration in the relationship between the patient and the therapist or a difficulty in establishing such a relationship. According to Harper (1989) ruptures can be divided into withdrawal and confrontation: Withdrawal ruptures occur when the patient disengages from the therapist, the therapy or his/her own internal experience (e.g., by avoiding the therapist’s questions or by being overly deferential and appeasing); while confrontation ruptures occur when the patient moves against the therapist or some aspect of the therapeutic process in an aggressive, controlling, hostile or non-collaborative manner (e.g., by expressing complaints, resentment or dissatisfaction).

In these early sessions, Alex displayed several signs of withdrawal markers when the discussions inquired about, or presented information that challenged his fixed entity beliefs about his emotions. These rupture markers included: 1) minimal responding (e.g., going silent or providing single word answers to questions); 2) avoidant storytelling/shifting topics (e.g., shifting the discussion to an alternate topic like a conflict with a friend or difficulty with a teachers); 3) abstract communication (e.g., using vague or abstract language to keep the discussion away from his thoughts and feelings); 4) deferential and appeasing responses (e.g., being overly compliant and deferential to avoid conflict with single word statements of agreement); 5) content/affect splits (e.g., joking, smiling, laughing, minimizing or being very matter-of-fact about upsetting events and experiences thereby exhibiting positive affect that deflects and does not match the
difficult or upsetting content of what is being discussed); and 6) denial (e.g., conscious or unconscious denial of his true feelings). In addition to these withdrawal rupture markers, there were also several signs of confrontation ruptures such as: 7) efforts to control the therapist (e.g., covert warnings against talking about certain topics: “my last therapist tried to make all of this about my dad leaving… they didn’t get it”) and, 8) rejection of therapist interventions (e.g., responding to information about the potential to change one’s emotions with statements like “maybe that’s true for other people, maybe some people can change their depression or anxiety, but not me”).

12.6 Revised Case Conceptualization

In light of the ruptures that took place in the initial phase of therapy, it became clear that Alex’s implicit beliefs were serving an important protective function. Alex’s belief that he could not change or control his emotions was not something that could simply be addressed with psychoeducation. Berger warns against falling into the role of “therapist as the imparer of knowledge” (Berger, 1987 p. 194). It became clear throughout the initial course of treatment that efforts to challenge this belief directly were experienced both as serious empathic failures and potentially threatening to Alex’s identity. For Alex, this belief was a deeply held organizing schema. Without it – and the associated biological explanations the belief afforded for his anxiety and depression – Alex would be forced to consider alternate explanations for his difficulties.

An alternative conceptualization of Alex’s case sought to incorporate an understanding of his symptoms, and his implicit beliefs about his emotions, within the context of his early life experiences: Alex grew up in an emotionally dysregulated, unstable family environment. The conflict between his parents and the experience of
abandonment by his father could have been grounds for a painful pathogenic belief that he was the problem – in his words “a mistake”. Without siblings or children his age, Alex entered an adult world, full of adult problems (including his parents’ separation and aunt’s hospitalizations). Alex’s mother and aunt frequently turned to him for psychological and emotional support, beyond his years, and it is possible that Alex also became the object of parental focus for his mother after her separation. Alex’s close relationship with his mother may have also resulted in a degree of enmeshment and fusion in thinking and feeling. Alex displayed many of the problematic characteristics of enmeshed relationships, such as: a strong need for attention and approval; difficulty dealing with others’ expectations; a tendency to blame himself for conflicts and problems; feelings of responsibility for others’ happiness; difficulties with emotional awareness and regulation; reduced tolerance for anxiety; and impulsive behaviour (like self-harming) as a means of relieving anxiety (Papero, 1983).

Alex’s extreme sensitivity to his mother’s emotional states and his aunt’s distress also left him concerned about burdening others with his problems. Early adolescence is a vulnerable period for most young adults, and for Alex this was no exception. In addition to the typical pressures of school life Alex struggled with school and bullying. Despite this, he chose not to disclose these problems to his family. Alex’s close relationship with his mother, coupled with his mother’s emotional dysregulation and invalidation, undoubtedly made it difficult for Alex to separate, understand, and express what he was feeling. Despite being highly attuned to others’ emotions, Alex lacked an understanding of how to work with his own. And, unable to express his emotions, Alex came to believe they were “out of control,” and there was “something wrong with him”. In the absence of alternative strategies for regulating his emotions, Alex ultimately turned to a range of
maladaptive emotion regulation strategies such as cognitive and behavioural avoidance, minimization, denial, suppression, self-harming and defensive pessimism. Alex’s mother’s need for extreme closeness with Alex also likely left Alex feeling responsible for his mother’s happiness, as well as guilty and conflicted about his own growth, independence, and closeness with others (issues that would later play out in his personal and romantic relationships). In addition to these difficulties with individuation, emotional awareness, and emotion regulation, Alex’s close relationship with his mother likely also led him to internalize his feelings of anger, rather than express them. By directing his anger at himself, Alex could preserve his relationships with his family, but only at the expense of chronic feelings of inferiority, doubt, guilt, and self-criticism.

**Why Beliefs about Emotions Can Feel Protective**

In re-evaluating Alex’s case formulation, it became apparent that Alex’s ‘fixed’ biological explanation for his depression and anxiety may have felt protective even if these beliefs also proved harmful. By identifying as someone with fixed and biologically-based symptoms, Alex was able to find an external explanation for his problems. Framing ‘the problem’ in purely medical terms, provided Alex with a way of rationalizing his difficulties while also diverting responsibility away from relevant others and experiences. This may have served to protect and redirect anger away from vulnerable or important family members (e.g., Alex’s mother and aunt), and it may have also helped defend against the potential impact of other difficult experiences (e.g., Alex’s father leaving, school bullying etc.). Redirecting accountability away from Alex’s mother may have been particularly important given the protectiveness, guilt and shame Alex reported feeling in this relationship. Entity beliefs about emotions also served to protect against therapeutic
efforts aimed at exploring potentially difficult and vulnerable topics. With a biological explanation for his anxiety and depression, Alex saw little point in talking about memories of past experiences (especially if they were painful and distressing). His resistance to the idea that these relationships may have played a role in his problems emerged as a reoccurring theme in therapy: “people are always trying to blame their parents for their problems,” “my aunt thinks she’s responsible because of everything that happened, but I don’t see it that way” and “I hate that other therapists are always asking, ‘is it because your dad left?’

Entity beliefs about emotions afforded Alex the opportunity to be depressed and anxious, without having to explain to other people what he was feeling or why. As an organizing belief however, entity beliefs also had the potential to be harmful because they denied Alex agency over his difficulties, deprived him of opportunities for deeper work in therapy, and become self-fulfilling prophecies that promoted maladaptive emotion regulation, which in turn confirmed his belief that he could not control his emotions.

12.7 Revised Course of Treatment

Rupture Resolution Strategies

To facilitate greater openness to the therapeutic process, the second phase of treatment focused primarily on rupture repair work and on cultivating a stronger therapeutic alliance. Safran and Muran (1996) outline several core rupture resolution strategies that were used in these sessions including: 1) clarification of misunderstandings (e.g., acknowledging misunderstandings in the moment and clarifying/explaining comments); 2) changing tasks or goals (e.g., “I’m interested in this topic, and I also want
to make sure we have enough time today to revisit this import thing you brought up at the end of our last session…”); 3) **acknowledgement of therapist contributions to ruptures** (e.g., “I wonder if it felt like I misunderstood you there – you’ve struggled with this for most of your life and what I’m saying might feel like I just don’t get what it’s been like for you); 4) **invitations to discuss thoughts and feelings about therapy** (e.g., “I wonder if you might be a little frustrated with me and feel like it’s not OK to be frustrated with me?”; “when you say therapists are always thinking that, I wonder if you think I might also be thinking that?”); 5) **therapist disclosure of internal experience of the interaction** (e.g., “you’ve gone a little quite right now, I’m left wondering if there’s something I’ve said that upset you…”; “I noticed you laughed as you told me that, but I’m actually quite troubled by what you just said…”); 6) **linking rupture to larger interpersonal patters** (e.g., “you’ve spoken about how you sometimes feel like you just have to agree with what your mom’s saying, I’m wondering if you’re feeling that way with me right now too – like it’s not okay for you to disagree”).

**Empathic Responding**

In addition to this focus on rupture resolution, a second goal of this phase of treatment was to return to a focus on empathic responding. In Kahn’s words this involved “putting one’s own world aside and fully entering that of the client’s” (Kahn, 1997, p.177). Rogers’ also described empathic responding as follows:

“To sense the client’s private world as if it were your own, but without ever losing the ‘as if’ quality - this is empathy, and this seems essential to therapy. To sense the client’s anger, fear, or confusion as if it were your own, yet without your own anger, fear, or confusion getting bound up in it, is the condition we are endeavouring to describe. When the client’s
world is this clear to the therapist, and he moves about in it freely, then he can both communicate his understanding of what is clearly known to the client and can also voice meanings in the client’s experience of which the client is scarcely aware” (1957, p.99).

In sessions with Alex, this emphasis on empathic responding required completely letting go of ‘the therapist agenda’ to disconfirm his beliefs about his emotions. Instead it required curiosity about Alex’s lived experience and a focus on opportunities for deeply understanding, reflecting, and validating Alex’s emotions. Chung and Bemak (2016) explain that empathic understanding alone is not effective – therapists must also have the skills to communicate and demonstrate their empathic understanding. Appropriate use of therapist vulnerability and self-disclosure, particularly when Alex had shared something moving, also began to facilitate greater connection and vulnerability in sessions.

This focus on empathic responding was an essential intervention with Alex not only for cultivating a more trusting therapeutic alliance and more open exploration of experience, but also for helping Alex learn how to better become aware of, identify and express his own emotions. Throughout the entire first phase of treatment, Alex had expressed very little emotion in sessions. Despite extremely high scores on the BDI and BAI at intake, Alex had never appeared sad or cried in the therapy room, nor had he displayed any visible signs of anxiety, stress, frustration or anger. Although he often spoke about his depression and anxiety in abstract terms, he also used very few other words to describe what he was feeling. There was no gradient in valence or intensity, no room for nuance in different kinds of emotional experience, and no apparent awareness of the association between his actions, thoughts and his feelings.
Working with Affect

Brems (2000) argues that clients must first be aware of affect before they can begin to explore how they experience it and what it ‘feels like’ in the moment. They must also have this basic awareness of affect and understanding of internal experience before they can turn toward healthy and conscious outer expression (2000, p. 292). Using Brems’ model as a guide, sessions in the second phase of treatment focused on: 1) helping facilitate greater awareness of affect (e.g., with questions about what Alex actually felt (or was feeling) in his body during difficult experiences); 2) helping identify basic inner experiences of affect (e.g., helping Alex identify when he was feeling “off” and facilitating curiosity about this feeling rather than labelling it ‘depression’); 3) helping with labelling of basic affect (e.g., reflecting the emotional content of what was being shared in sessions and offering a wider range of feeling words for making sense of emotional experience); 4) helping with identification of default affect (e.g., helping Alex expand his repertoire of experienced affects and their associated labels); 5) helping with identification of affect intensity (e.g., utilizing reflective listening to help Alex identify and differentiate subtle shades of feelings such as slight sadness to overwhelming depression, irritation to rage etc.); 6) helping Alex identify mixed and conflicted affect (e.g., reflecting and validating the complexity of emotional experience and the ability to feel two conflicted emotions in the same moment, or towards the same person); 7) helping Alex identify underlying affect (e.g., differentiating between kinds of affect, and facilitating exploration of vulnerable and painful emotions); and 8) helping Alex with acceptance of affect (e.g., reflecting, contextualizing and validating his experience). In addition to Brem’s (2000) stage-model of working with affect, a final intervention for Alex focused on challenging his belief that vulnerable emotions were dangerous, harmful
and burdensome to others. By modelling self-disclosure and vulnerability, and through sharing personal stories of challenges with expressing emotions, it was possible to communicate that vulnerability can also be a sign of strength, and can facilitate greater intimacy and connection with others. These sessions provided the basis for discussions about the beneficial and healing process of ‘feeling feelings’ even when they are painful and difficult.

Assessment of Progress

Alex committed himself to weekly psychotherapy (which continued for two and a half years). He gradually brought more emotionally laden content into sessions and embraced a willingness to explore, discuss, and acknowledge the impact of difficult life events and early childhood experiences. Through focusing on rupture resolution, empathic responding, and working with affect, Alex began to display a more nuanced understanding of his inner emotional world and he gradually become better able to identify and describe painful and conflicting emotional experiences. He even began identifying his own defences (humour, minimization and distraction) and was able to connect more fully to what was really going on underneath them. Over time, Alex displayed increased ability to express his feelings, assert his needs, and show vulnerability both in sessions and in close relationships with others.

After several months of therapy, Alex also started to let himself become more emotional and cry in a session. These moments of shared vulnerability facilitated deeper connection and may have served as the beginning of corrective emotional experiences – demonstrating that can be safe and even beneficial to feel one’s feelings fully and share them with others. Paradoxically by feeling his feelings, Alex also discovered that he
could bring them under control in the wider sense – in his words, “surfing the highs and lows without getting dumped.” At the conclusion of therapy, Alex still believed that there were some biological components to his emotional difficulties, but he reported feeling more in control of his emotions and described feeling that his depression and anxiety was much more manageable. Alex also began utilizing more adaptive emotion regulation strategies – drawing, writing, connecting with friends, and reaching out for help (instead of isolating himself), when he felt overwhelmed. He also displayed more compassion for his emotional reactions when they arose, and was better able to understand them as valid and reasonable within the broader context of his life. Finally, Alex reported acknowledging the significant changes that had taken place for him over his time in therapy: “I wanted to tell [a friend struggling with depression], that it’s OK – it gets better. Look at me now and where I was a couple of years ago…” By the end of treatment, Alex had also stabilized off his prescription medication.

### 12.8 Conclusions and Recommendations

Implicit theories about emotions are beliefs that have important consequences for emotion regulation and psychological health. Research presented in this thesis has linked ‘fixed’ entity beliefs about emotions with increased stress, reduced self-esteem, and reduced overall satisfaction with life; as well as with increased depression and anxiety in community and clinical samples. These beliefs are also linked with cognitive and behavioural avoidance and with greater use of maladaptive emotion regulation strategies in day-to-day life. Based on this growing research, there have been calls for interventions aimed at explicitly addressing these beliefs in clinical settings. Kneeland et al. (2016) for example, argue that targeted treatment modules using psychoeducation should be
implemented to address and disconfirm people’s beliefs about their emotions prior to therapy in order to enhance treatment outcomes. These authors however, overlook some of the potential pitfalls with this approach.

In the current case study, directive psychoeducation interventions repeatedly failed to change Alex’s implicit beliefs about his emotions. Instead these direct attempts to challenge his beliefs head-on caused ruptures and a deterioration in the therapeutic alliance. The current chapter identified many ways in which entity beliefs about emotions can be protective for clients like Alex. It also illustrated the importance of rupture resolution strategies, empathic responding, and working with affect to more skilfully address the underlying reasons clients may hold these beliefs in the first place. Meyers (Myers, 1999, 2003) explains that in many cases it is the therapeutic relationship, not the relinquishing of a harmful belief, that is the source of healing and recovery. Instead, through empathy and connection with a therapist, a client is able to more fully understand themselves and with this understanding, develop compassion: “Through being listened to and empathized with, the client is freed to listen more accurately to himself, with greater empathy toward his own visceral experiencing, his own vaguely felt meanings” (Rogers, 1975, p.8). As Meyers (2003) explains, it is this felt experience of being understood that helps one better understand themselves and why they hold the beliefs they do.
13. GENERAL DISCUSSION

13.1 Review of Thesis Aims and Objectives

Implicit theories about emotion refer to people’s beliefs about whether their emotions are fixed (entity beliefs) or malleable (incremental beliefs). The primary aim of this thesis was to examine how these beliefs are related to emotion regulation and psychological health. Chapters 1 – 4 reviewed research on emotion and emotion regulation and introduced the process model of emotion regulation (and the extended process model) as a framework for the current thesis. Chapters 5 – 7 introduced research on implicit theories and integrated this research with the extended process model of emotion regulation by considering the potential impact of emotion beliefs on the identification, selection, and implementation of different emotion regulation strategies. From these chapters, three central propositions formed the basis of future testable hypotheses. These included:

1) Implicit beliefs about emotion will influence emotion regulation processes – specifically the identification, selection and implementation of regulatory strategies that in turn determine how successful one is at regulating one’s emotions.

2) Implicit beliefs about emotion will be associated with psychological health and well-being outcomes via their influence on emotion regulation processes.

3) Implicit beliefs about emotion will serve as a key mechanism of change in clinical treatments and interventions.
13.2 Review of Empirical Findings

Results from empirical work presented in Chapters 8 – 11 found significant support for all three propositions. A summary of each of these empirical chapters is provided below:

Chapter 8: Scale Development

The first three studies of this thesis (Chapter 8) focused on scale development. Before undertaking additional research on implicit beliefs about emotions, it was necessary to develop a revised measure that assessed participants’ personal beliefs about their unique capacity for change (their personal implicit theories). I predicted that entity beliefs would be associated with a range of maladaptive regulation strategies and that a revised first-person measure of implicit theories would explain greater variance in outcomes. Consistent with predictions in Study 1, personal entity beliefs about intelligence predicted fewer achievement goals, greater helplessness attributions and poorer self-reported academic grades among Australian high school students (n = 643). Fixed 'entity' beliefs were also predictive of increased self-handicapping, truancy and disengagement from school, with the self-theory scale uniquely explaining greater variance on all measures over and above general implicit theories. In Study 2, personal entity beliefs about emotions predicted increased stress and depression as well as reduced self-esteem and satisfaction with life among American university students (n = 216). Once again, the new self-theory scale uniquely explained greater variance on all measures over and above general implicit theories. In Study 3, the revised personal implicit theory of emotion measure was further evaluated using a qualitative content analysis of open-ended responses from online surveys (n = 124). Blind content analysis further validated
the new scale and revealed that compared to incremental theorists, entity theorists spontaneously referred to fewer strategies for regulating their emotions. Consistent with predictions, entity theorists also referred to proportionally fewer internal strategies (e.g. cognitive change and attentional deployment) and a proportionally greater number of external and antecedent-focused strategies for regulating their emotions (e.g. avoidance, problem solving etc.).

**Chapter 9: Avoidance and Situation Selection Strategies**

Using the newly developed implicit theories of emotion measure, Chapter 9 examined the relationship between emotion beliefs and the use of avoidance-based emotion regulation strategies. This chapter examined emotion regulation strategies relevant to the first and second stages of the process model (situation selection and situation modification). Studies 4 and 5 tested the prediction that entity beliefs would promote greater use of avoidance-based emotion regulation strategies. Consistent with predictions, results from Study 4 (a correlational study, n = 112) indicated that entity beliefs about emotions were associated with increased use of self-reported cognitive and behavioral avoidance in daily life. The more strongly people believed they could not control their emotions, the more they also reported difficulties with psychological health – increased loneliness and decreased satisfaction with life, as well as increased stress, anxiety and depression. Avoidance strategies also mediated theses associations between implicit theories and psychological health outcomes. Study 5 (an experimental study, n = 101) successfully manipulated people’s beliefs about their emotions by leading them to infer that they either struggled with (entity condition) or had control over (incremental condition) their emotions. Compared to participants in the incremental condition,
participants in the entity condition reported greater intentions to use cognitive and behavioral avoidance strategies in daily life, were more likely to avoid psychological help, and were significantly more likely to avoid future fictitious emotion regulation research studies.

**Chapter 10: Attentional Deployment and Response Modulation Strategies**

Chapter 10 examined emotion beliefs as a predictor of attention-regulation-based strategies. Attentional deployment strategies are the focus of the third stage of the process model. In Study 6 (a correlational study, \( n = 94 \)) entity beliefs were associated with greater use of maladaptive attention-regulation strategies (e.g., catastrophizing) and lesser use of adaptive attention-regulation strategies (e.g., mindful awareness). Study 6 also examined links between emotion beliefs and substance-based response modulation strategies (the fifth stage of the process model). Results indicated that when people believed they could not control their emotions they were more likely to report using alcohol and medication to manage difficult emotions when they arose. Mindfulness-based attention regulation also indirectly explained this relationship with greater mindful awareness predicting reduced reliance on response modulation strategies.

Study 7 then examined the role of belief-change in a longitudinal attention-regulation-based intervention of Mindfulness-Based Stress Reduction (MBSR). Data were collected from 50 participants who completed an eight-week course in MBSR, and a matched online control group who were interested in participating in an MBSR course in the future (\( n = 50 \)). While there was no significant change in implicit beliefs about emotions for control subjects, participants completing MBSR reported significantly greater perceived control over their emotions at the end of the 8-week class, and at 12-
month follow-up. Participants completing MBSR also reported significantly reduced stress, anxiety and depression post-treatment and reduced reliance on response modulation strategies (like alcohol and medication). Mediation analyses revealed that changes in MBSR-participants’ implicit beliefs about emotions mediated these treatment outcomes.

Chapter 11: Cognitive Change Strategies

Chapter 11 examined emotion beliefs as a predictor of cognitive-change-based emotion regulation (the third stage of the process model). Studies 8 and 9 tested the prediction that entity beliefs would be associated with lesser use of adaptive cognitive regulation strategies. Results from study 8 (a correlational study, n = 216) indicated that the more students endorsed entity beliefs about emotions, the less likely they were to report using cognitive reappraisal (an adaptive cognitive change strategy) in daily life. Entity beliefs about emotions were also associated with decreased well-being (reduced self-esteem and satisfaction with life) and increased psychological distress (stress and depression) via differences in students’ habitual use of cognitive reappraisal. Study 9 (a clinical study) examined how clinical and non-clinical samples differed in their implicit beliefs about emotions. Beliefs about emotions were examined in a sample of patients with social anxiety disorder (SAD, n = 75) and in a sample of healthy control subjects (n = 42). Results indicated that compared to healthy controls, patients with SAD held significantly greater fixed entity beliefs about their emotions. Entity beliefs also predicted stress and anxiety, negative affect, and lower overall self-esteem, even when controlling for the overall severity of social anxiety symptoms.
Finally, in Study 10 (a clinical intervention study, n = 53), implicit beliefs and social anxiety symptoms were assessed at baseline, and at the completion of a 16-week randomized clinical control trial of cognitive behavioral therapy (CBT) for SAD. Patients receiving CBT (compared to waitlist controls) were less likely to hold fixed entity beliefs about their anxiety post-treatment/waitlist, and this shift in thinking explained treatment-related reductions in social anxiety symptoms. Additional analyses revealed that patients’ implicit beliefs about their emotions also uniquely predicted how much they benefited from treatment, even when controlling for baseline social anxiety and other kinds of maladaptive beliefs. Implicit beliefs also continued to predict anxiety symptoms at 12-month follow-up uniquely explaining 13% of the variance in clinical outcomes.

Chapter 12: Clinical Case Study

Based on growing research on implicit beliefs about emotions, there have been increasing calls for interventions aimed at explicitly disconfirming these beliefs using psychoeducation at the outset of psychotherapy (e.g. see Kneeland et al., 2016). The final chapter of this thesis examined the utility of this approach using a clinical case study of a client (pseudonym: Alex) who held fixed entity beliefs about his emotions. Consistent with predictions and empirical findings, for Alex these beliefs were also associated with a range maladaptive emotion regulation strategies (e.g., cognitive and behavioral avoidance, defensive pessimism, catastrophizing, self-harming) and perceived helplessness in the face of his depression and anxiety symptoms. Interestingly, psychoeducation interventions repeatedly failed to change this clients’ implicit beliefs about his emotions. Instead these direct attempts at belief-change caused ruptures and deterioration in the therapeutic alliance. A revised case formulation identified several ways that fixed entity
emotion beliefs can feel protective for clients (even when they can also be harmful). This case study illustrates the importance of rupture resolution strategies, empathic responding, and working with affect as ways of skilfully addressing the underlying reasons clients may hold these beliefs.

13.3 Conclusion

Emotion regulation is difficult. As reviewed in Chapter 4, effective emotion regulation requires correctly identifying, selecting and implementing the right strategy for the right context, at the right time. Over the past decade, there has been exponential growth in research on emotion regulation. Much of this work has focused on exploring different kinds of regulation strategies and their effectiveness (Augustine & Hemenover, 2009; Aldo, Nolen-Hoeksema & Schweizer, 2010; Webb, Miles & Sheeran, 2012). While we are gradually coming to understand more about emotions and emotion regulation, we still know little about why people habitually choose to regulate their emotions the way they do and why, with so many adaptive strategies available, people so often turn to maladaptive strategies or use adaptive strategies in maladaptive ways.

The current thesis examines people’s beliefs about their ability to control their emotions as one important variable that may help explain individual differences in emotion regulation preferences and tendencies. The theoretical and empirical work presented indicates that people’s beliefs about their emotions do indeed have important implications for emotion regulation and psychological health. Across several studies a perceived lack of control over emotions predicted increased stress, anxiety and depression, and even distinguished clinical populations from healthy non-clinical controls. Entity beliefs also predicted increased avoidance in daily life, increased avoidance of
psychological help for emotional difficulties, and increased reliance on response modulation strategies like alcohol use and medication as a means of managing emotions. In addition to predicting a range of potentially maladaptive emotion regulation strategies, entity beliefs also predicted decreased use of adaptive emotion regulation like mindfulness-based attention regulation and cognitive reappraisal. Finally, in clinical treatments like mindfulness-based stress reduction (MBSR) and cognitive behavioural therapy (CBT), changes in participants’ beliefs about their emotions mediated treatment outcomes determining how much participants benefited from these programs. At the end of 8-weeks of MBSR or 12-weeks of CBT, the participants who had come to believe they could change their emotions experienced the greatest reductions in clinical symptoms and the greatest improvements in quality of life. For both programs, participants’ beliefs about their emotions also remained constant at follow-up and predicted psychological health and well-being 12 months after treatment completion. These findings have important implications for research on implicit theories, emotion regulation and clinical treatment.

Implications for Research on Implicit Theories

Research indicates that people hold implicit beliefs about the fixed or malleable nature of a wide range of traits and abilities (see Chapter 5 for a review). When work began on this thesis, there was only one published paper examining people’s implicit beliefs about their emotions (Tamir et al., 2007). Research in this field has grown significantly over the last 5 years, and findings from the current thesis have contributed to this nascent literature. Each of the studies presented represents novel and previously unexplored areas of research on implicit beliefs about emotions. Studies 9 and 10 represent the first known works on implicit theories with clinical populations (patients
with social anxiety disorder), and Studies 7 and 10 are to date, the first know studies to examine implicit theories as a mediator of change in clinical treatments and interventions (MBSR and CBT).

In addition to extending research on implicit theories to the clinical domain, the works presented in the current thesis have important implications for how implicit beliefs should be measured. As described in Studies 1 and 2, the implicit belief that change is possible does not necessarily mean people are confident in *their own* ability to change. People may, and often do, hold different theories for themselves and others – endorsing entity or incremental beliefs more or less depending on whether they are appraising their own abilities. In the current thesis, I developed revised self-theory measures of implicit beliefs about intelligence (Study 1), emotions (Study 2) and anxiety (Study 9). Across numerous studies (e.g. Studies, 1, 2, 4, 9, 10) implicit self-theories uniquely explained greater variance in outcome variables over and above general implicit theories. These findings indicate that people’s beliefs about *their* emotions are a more powerful predictor of emotion regulation, psychological health and well-being than their beliefs about emotions in *general*. There have been increasing calls for the development of self-theory measures in other domains (Howell, Passmore & Holder, 2016) and this will be a valuable area for future research.

**Implications for Research on Emotion Regulation**

The current thesis draws upon the process model of emotion regulation as a guiding framework for exploring links between emotion beliefs and different emotion regulation strategies. The process model assumes that emotions unfold in a series of stages and each stage offers opportunities for regulating the unfolding emotion. These
five stages include: situation selection, situation modification, attentional deployment, cognitive change and response modulation (see Figure 8). The extended process model further examines difficulties associated with the identification, selection, implementation and monitoring of emotion regulation strategies. This model also describes variables that can influence what strategies people use and when they use them. For example, emotion regulation researchers have examined regulatory failures due to difficulties with basic emotional awareness, regulatory flexibility, emotion type and intensity, the availability of internal and external resources, and an individuals’ motivation, goals, preferences, habits and skills (see Chapter 4). The theory and research presented in this thesis indicates that in addition to these variables, the beliefs one holds about one’s emotions may determine regulatory success or failure. Chapter 4 presents a theoretical review integrating research on implicit theories with the process model (and extended process model). Empirical works presented in this thesis indicate that these beliefs may affect emotion regulation efforts at all five emotion regulation stages – situation selection and modification (Chapter 9); attentional deployment (Chapter 10); cognitive change (Chapter 11) and response modulation (Chapter 10). Given the diversity of strategies associated with emotion beliefs, it will be important for emotion regulation researchers to continue exploring how and why these beliefs influence regulatory efforts, and whether there are other emotion regulation strategies (e.g. distraction, problem solving, suppression, humor, exercise etc.) that have similar associations with people’s perceived control over their emotions. While the current thesis highlights many important links between entity beliefs and emotion regulation difficulties, it will also be important to further examine the cause of these problems. For example, do entity theorists struggle primarily with identifying their emotions and the need to regulate them? Do they struggle choosing from a restricted
range of emotion regulation strategies? Is the problem motivation, persistence or resilience when it comes to implementing adaptive emotion regulation strategies? Do they actually lack the necessary skills and abilities to regulate their emotions effectively? And, to what extent do emotion beliefs become self-fulfilling prophecies (see Chapter 6.5)? These are just some of the important questions that remain to be explored by researchers in the field.

**Implications for Research on Psychological Health**

Research indicates that emotion beliefs have important consequences for psychological health and well-being and may even play a role in clinical disorders and their treatment. In the current thesis, emotion beliefs consistently predicted clinical symptoms (stress, anxiety and depression) and well-being outcomes (self-esteem, life satisfaction, loneliness, positive and negative affect – see Studies 2, 4, 7, 8 and 9). The association between emotion beliefs and psychological health is also indirectly explained by specific emotion regulation strategies including: avoidance (Study 4), mindfulness-based attention regulation (Study 6) and cognitive reappraisal (Study 8). These are three potential mediating variables that help clarify why fixed beliefs about emotions have such diverse consequences for psychological health and well-being. Future research, however, will need to examine the potential mediating role of other emotion regulation strategies.

This research also has important implications for clinical disorders and their treatment. Study 9 examines emotion beliefs in a clinical sample of patients with social anxiety disorder. Results revealed that entity beliefs about emotions predicted clinical symptoms even when controlling for social anxiety severity. These beliefs were a defining feature of this clinical population and in Study 10 changes in emotion beliefs
served as a mediating variable in CBT-based treatment. Results from Study 7 (a longitudinal intervention study of MBSR) also indicated that compared to control participants, people completing MBSR came to hold more incremental beliefs about their emotions post-treatment. As with Study 10, belief change persisted at 12-month follow-up and predicted treatment outcomes for participants. Together these findings indicate that emotion beliefs play an important role in clinical disorders and psychological health. They may also play an important role in psychotherapy, clinical interventions and treatment. Based on this early work some researchers have already called for psychoeducation-based interventions that explicitly target patients’ fixed entity beliefs about their emotions (Kneeland, Dovidio, Joormann & Clark, 2016). However, results from the clinical case study presented in Chapter 11 indicate that while people’s beliefs about their emotions are in themselves malleable, changing them is not always an easy process. In the clinical case study, psychoeducation-based interventions repeatedly failed to shift a client’s beliefs about his emotions. These attempts actually contributed to ruptures in the therapeutic relationship. While these beliefs did shift over time, it is more likely that this change took place through concrete experience with successfully changing one’s emotions over time. While CBT and MBSR both successfully led to changes in participants’ beliefs about their emotions, further research is still needed to understand how this change took place. Understanding how people come to believe they can control their emotions may help with developing targeted interventions. It also remains to be seen whether emotion beliefs play a role in the etiology and treatment of other clinical disorders. In both cases, research on emotion beliefs promises to be a fruitful area for clinical research.
References


Gutentag, T., Halperin, E., Porat, R., Bigman, Y & Tamir, M (2017). Successful emotion regulation requires both conviction and skill: Beliefs about the controllability of


Tamir, M., & Ford, B. Q. (2012b). When feeling bad is expected to be good: Emotion regulation and outcome expectancies in social conflicts. Emotion, 12, 807-816.


