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An Emotion Regulation Training Programme Focused on the Improvement of Mental Wellbeing through an Increase in Cognitive Reappraisal

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An Emotion Regulation Training Programme Focused on the Improvement of Mental Wellbeing through an Increase in Cognitive Reappraisal

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**A thesis submitted in partial fulfilment of the requirements for the degree of PhD
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Abstract

Healthy emotion regulation is a vital component of wellbeing. Numerous intervention programmes have been created to foster adaptive emotion regulation; however, this research has been plagued by theoretical ambiguity and methodological limitations. Thus, the aim of the current research was to develop and validate a brief, methodologically sound, theory-based emotion regulation-training programme (ERT) enhancing cognitive reappraisal. In total, three studies were conducted to test the efficacy of this programme. The ERT training programme consisted of 4 major components: reappraisal, expressive writing, self-talk and mindfulness. In the first study, the programme was piloted in order to test the practicality and social validity of the programme. The second study employed a Canadian community sample (N = 75) that was randomly allocated to an intervention or control group. In this study, a one-year follow-up was conducted. The results showed that enhancing cognitive reappraisal increased life satisfaction and decreased emotional suppression after one year. In the third study a Canadian community sample (N = 104) was recruited, using a non-random, matched pairs, longitudinal design. The third study replicated and confirmed the main findings of the second study. More specifically, reappraisal decreased emotional suppression, worry and depressive symptomology and increased life satisfaction. In addition, a performance test, (a speed test involving memorization after watching an emotionally evocative video clip) showed that ERT could significantly improve the cognitive abilities of the intervention group. Thus, across the three studies, the effectiveness and the social validity of the ERT programme was demonstrated, as the use of reappraisal was consistently increased, eliciting a significant impact on the mental health indicators measured. The implications of these findings are discussed alongside study limitations and directions for future research. In conclusion, this research has practical implications in the health care field due to the concision and positive effects demonstrated by this brief, preventative ERT intervention.

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The greatest weapon against stress is our ability to choose one thought over another.
—William James

1.0 Overview

Human emotions are one of the most powerful factors impacting wellbeing (Kotsou, Grégoire & Mikolajczak, 2011) and cognitive functioning (Bebko, Franconeri, Ochsner & Chiao, 2011; Eysenck, 2004; Gross, 2013). Emotions are a cardinal component of everyday life, affecting one's ability to function in an adaptive manner (Nezlek & Kuppens, 2008), influencing both intrapersonal and interpersonal processes such as self-esteem and relationship satisfaction (Koole, 2009). However, when emotions are overpowering, they become debilitating and intrusive in daily life (Frijda, 1986; Slee, Arensman, Garnefski & Spinhoven, 2007). Thus, the ability to effectively regulate emotions is paramount as it serves as a protective factor against psychological disorders such as anxiety (Cisler & Olatunji, 2012) and depression (Davidson, Pizzagalli, Nitschke & Putnam, 2002; Kemeny et al., 2012).

The literature review will begin by describing the evolution and aetiology of emotion regulation and contemporary emotion regulation training (ERT) interventions. Critically, it will consider the importance of this topic as it pertains to emotional wellbeing, whilst also explaining the crucial link between emotion dysregulation and psychopathology. In addition, it will define, outline and evaluate related constructs such as emotions, coping, mood regulation and affect regulation. The literature review will highlight the process model of emotion regulation (Gross, 2013; Gross, 2002; Gross 1998b), which posits that reappraisal is a more effective emotion regulation strategy than emotional suppression. Concordantly, extant

research has shown that reappraisal is associated with more beneficial health outcomes and enhanced cognitive performance when compared with suppression (Gross & John, 2003; Moore, Zoellner & Mollenholt, 2008; Shiota & Levenson, 2012).

Despite the important role of emotional regulation in the development of psychopathology, programmes that aim to enhance effective emotion regulation competencies are lacking. Therefore, the aim of this research was to develop and evaluate an emotion regulation-training programme (ERT) attempting to increase participant's use of cognitive reappraisal and various related emotion regulation strategies. Furthermore, the deleterious consequences of maladaptive strategies, such as emotional suppression, were discussed and participants were encouraged to reduce their use of this damaging regulatory technique. This training programme aimed to provide participants with an effective 'emotion regulation tool kit' in order to increase mental wellbeing and performance. In study 1, the training programme was piloted so the feasibility and social validity of the programme could be explored in greater depth. In study 2, the training programme was run with a Canadian community sample where outcome measures were taken via self-referenced questionnaires during the programme and re-measured at a one-year follow-up. In study 3, the results were replicated and a cognitive performance test was added as an objective measure of wellbeing to act as an alternative measure of the programme's efficacy.

1.1 Definition and Function of Emotions

The word ‘emotion’ stems from the Latin word *emovere*, which means ‘to displace’ or ‘to move out’ (cf.: ‘motivate’; ‘set in motion’) (Ahmed, 2004). Even this simple, lexicographic datum conveys the message that emotions attenuate response to events faced in daily life (Pe & Kuppens, 2012). However, defining emotion has proven to be a long-standing problem from a theoretical standpoint. To date, there is no widely accepted operationalization of emotion used, with more than 100 competing definitions posited in both traditional and contemporary literature (Frijda, 1986; Kleinginna & Kleinginna, 1981). Not surprisingly, research on emotion has been deemed one of the most difficult and confusing areas of modern-day psychology (Plutchik, 1994) predominately due to the ‘conceptual and definitional chaos’ that persists within the field (Buck, 1990, pp. 330).

Over the course of history, divergent views of both the definition and functionality of emotions have emerged. In the past, emotions were viewed as disruptive, dysfunctional phenomena. The great philosopher Plato himself was of this view, referring to emotions as ‘foolish counsellors’ (Plato, 69D2-3). However, in the late 1800s, this idea was challenged by influential researchers such as Charles Darwin (1872) and William James (1884) who viewed emotions as adaptive physiological reactions and behavioural patterns that occur in response to meaningful situations. More recently, Lang (1995) referred to emotions as transient, multifaceted experiences that involve changes in physiology, behaviour and subjective experience, while Lazarus referred to emotions as the ‘wisdom of the ages’ (Lazarus, 1991b, pp. 820).

From a contemporary standpoint, the most widely accepted definition of emotion has been posited by Gross and Thompson who define emotions (2007, pp. 5) as “[a] person-situation transaction that compels attention, has particular meaning to an individual, and gives rise to a coordinated yet flexible multi-system response to the on going personal-situation transaction” (see Figure 1, below).

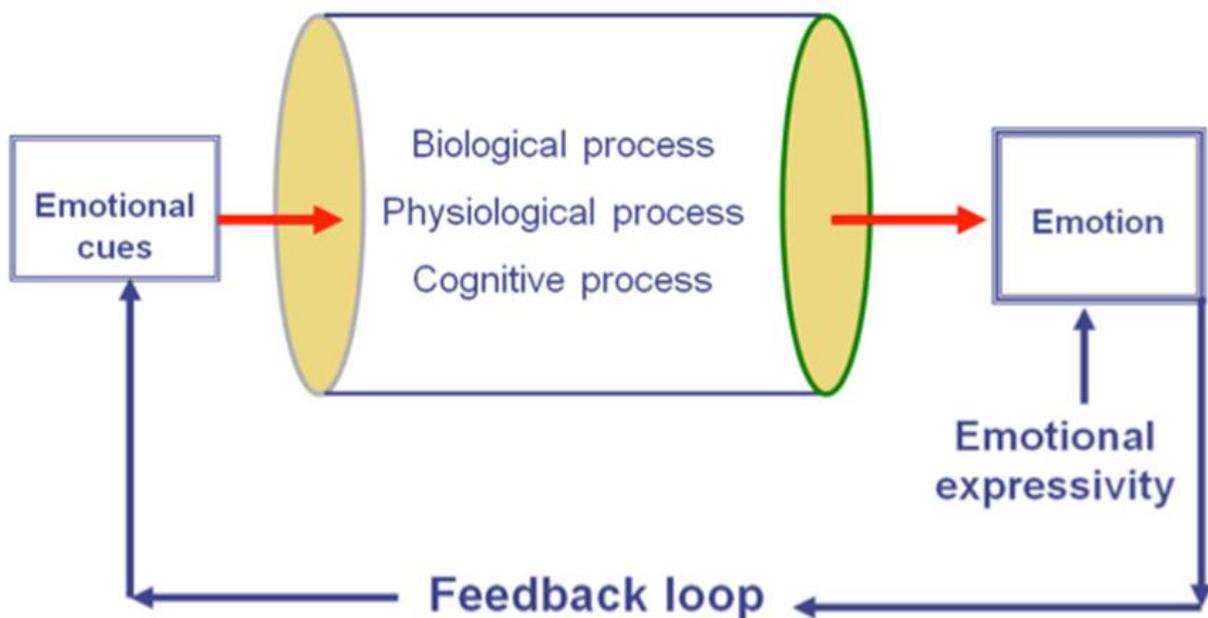


Figure 1. The Process of Emotion Generation, adapted from (Gross, 1998b)

Figure 1 schematically illustrates the process through which an emotion is generated, wherein an emotional cue, for example, watching a sad movie, elicits multi-level changes within a person that may occur on a physiological, behavioural or cognitive level. This understanding of affect highlights that emotions are transactional events operating in a continuous feedback-loop, wherein both the emotion-eliciting cue and the response are interrelated factors continuously influencing each other (McRae, Misra, Prasad, Pereira & Gross, 2012). In a

related vein, Barret, Mesquita, Ochsner and Gross (2007) emphasize that emotions are dynamic and multi-layered; therefore, contextual cues are paramount when an emotion is being experienced.

A key aspect of emotions, delineating their high degree of importance to humans, is their wide range of functions. Accordingly, emotions influence decision-making (Cassotti, Habib, Poirel, Aïte & Moutier, 2012; Mikels, Maglio, Reed & Kaplowitz, 2011; Oatley & Johnson-Laird, 1987), facilitate learning (Ahmed, van der Werf, Kuyper & Minnaert, 2013; Cahill, Prins, Weber & McGaugh, 1994), provide contextual information about the environment (Gross 1998a; Gross 1998b), mediate social behaviour (Averill, 1980; Mauss, et al., 2011), initiate and motivate goal pursuits (Koole, 2009) and provide insight into others' behaviours and motivations (Fridlund, 1994). Without the ability to experience emotions, people would not have the capacity for empathy, altruism or intimacy (the ability to form close, long-lasting relationships) and would not be able to establish a strong sense of self (Frijda, 2005; Greenberg 2004). Furthermore, emotions are powerful motivators that drive people to act in a way they believe will produce desired outcomes in the pursuit of meaningful goals (Tice, Bratslavsky & Baumeister, 2001).

1.1.1 Emotion Regulation

Emotions are complicated and dynamic, at times, they are damaging, and at times they are useful. For example, the emotion fear is arguably maladaptive in the context of an academic assessment (i.e. test anxiety), with the potential to adversely effect concentration and performance. However, within the context of a dangerous situation, such as being threatened

by an aggressor, the ability to express fear may be adaptive from an evolutionary perspective, as it may activate the fight or flight response, motivating the person to escape from harm. Thus, the key to optimal emotional functioning is to regulate emotions in a way that capitalizes on their helpful components while restricting their deleterious features (Gross & John, 2003). It is from this dualistic, paradoxical state, that emotion regulation comes into play.

Emotion regulation is defined as the heterogeneous set of processes an individual implements to modulate their emotional experience (Gross, 1998a). This definition subsumes both the ‘up’ and ‘down’ regulation of emotions, as people may decrease, increase or maintain negative and positive emotions (Erber, Wegner & Therriault, 1996; Parrot, 1993). In daily life people are constantly exposed to emotionally evocative stimuli, such as a baby crying (external stimuli) or a pounding headache (internal stimuli), yet a full-blown emotional response is rare (Canli, Ferri & Dunman, 2009; Gross, John & Richards, 2000). This suggests a high degree of emotion regulation is commonly applied in an individual’s ‘normal’ life experience (Davidson, 1998; Goleman, 1995; Gross, 2007). This was empirically demonstrated in a study by Gross, Feldman, Barrett and Richards (1998) which determined that 90% of undergraduates reported consciously regulating emotions at least once a day and could easily recite a recent example. However, this study was limited in its research design, as these researchers utilized a homogenous sample: undergraduates are predominately in their early 20s. Thus, this chosen method of sampling is problematic as it has been shown that emotion regulation changes as a person ages, with a natural shift towards the dominant use of reappraisal and a decreased use of suppression (Gross, Richards & John, 2006). In lieu of this

fact, the results from the Gross and colleagues' (1998) study cannot be generalized to broader populations that include older, more diverse samples. However, this study is important as it provides critical evidence indicating that emotion regulation is a subjective experience, the application of which, is contingent upon the individual's interpretation of their personal life events (Campos, Walle, Dahl & Main, 2011; Fridja, 1986).

This chapter will now turn to a brief description of the various emotion regulation strategies employed to deal with emotions as they arise. According to Canli, Ferri and Dunman (2009), nearly all aspects of emotional experience can be regulated; further research has highlighted the broad number of strategies that have been applied in order to exercise emotion regulation. For example, research has shown that emotional regulation can be employed by changing attentional focus (Rothermund, Voss & Wentura, 2008), reappraising the situation (Hofmann, Heering, Sawyer & Asnaani, 2009), modifying the situation (Gross, 1998b) and by suppressing one's emotions (Dalgleish, Schweizer & Dunn, 2009). Thus, the strategies of emotion regulation are highly individualized and vary according to individual dispositions, personality characteristics and situational demands (Malooly, Genet & Siemer, 2013; Mayer & Salovey, 1997). Accordingly, people who have strong emotion regulation capacities often alter the intensity, duration and impact of their emotions, rather than changing a specific emotion altogether, such as changing sadness to happiness (Koole, 2009). Moreover, those who are adept at emotion regulation often exhibit psychological flexibility by meeting situational demands with a wide range of responses that are spontaneous and socially appropriate (Kotsou et al., 2011).

Psychological flexibility is a dynamic construct referring to a person's ability to shift behavioural reactions and mind-sets according to the changing environment (Kashdan & Rottenberg, 2010). It may reflect emotional, behavioural, cognitive and psychological changes and can reflect change across a variety of important life domains (Bonanno, Papa, Lalande, Westphal & Coifman, 2004).

When a person is exhibiting psychological flexibility, they cultivate an open, aware and receptive attitude, aligning their behaviour in an optimal way to coincide with environmental demands (Bonanno et al., 2004). Psychological flexibility is an important concept accounting for humans' innate adaptability and contextual sensitivity. In daily life, diversity is the norm and continual stability is rare; thus, flexibility is an adaptive trait that can facilitate adaptive emotion regulation. Concordantly, emotion regulation and emotional expression are highly dependent on situational variables (Gross, 2007); therefore, optimal coping may be actualized when a person matches the environmental demands with their available cognitive resources (Cheng, 2001). Thus, when one investigates emotion regulation and includes the concept of psychological flexibility, it adds depth to this line of research, which often employs a static, categorical approach (i.e. emotion regulation is 'good' if reappraisal is utilized and 'bad' if suppression is employed) without investigating the importance of situational demands (Campos et al., 2011). This is limiting because dynamic constructs, such as emotion regulation, require diverse approaches that account for the relative dynamism of daily life (Kashdan & Rottenberg, 2010).

In addition to the strategy chosen, regulatory competency also plays an integral role in this process. Correspondingly, emotional regulation occurs on a broad spectrum ranging between emotional competence and emotional instability. Furthermore, poor emotion regulation skills are linked to psychopathology and the inability to regulate emotion has been labelled as a diagnostic feature in more than half of all the DSM-IV disorders (APA, 1994; Gross & Levenson, 1997). For example, numerous studies have shown emotional dysfunction is positively correlated with maladaptive behaviours such as alcohol abuse (Berking et al., 2011; Cooper, Frone, Russell & Mudar, 1995), binge eating (Lingswiler, Crowther & Stephens, 1989; Whiteside et al., 2007), anxiety (Cisler & Olatunji, 2012; Mennin, Turk, Heimberg & Carmin, 2004) and depression (Barlow, Allen & Choate, 2004; Campbell-Sills, Barlow, Brown & Hoffman, 2006; Joormann & Gotlib 2010; Kashdan & Steger, 2006; Mennin, 2006).

In addition to having devastating consequences on an individual level, emotional dysfunction also has negative consequences on a societal level. Currently, in Canada, 20% of the population will experience a diagnosable mental health issue in any given year. In Britain the frequency is even higher as 1 in 4 battle mental illness, making it the single, largest cause of disability within the UK (England Royal College of Psychiatrists, 2010). In general, 17.6% of adults have at least one common mental illness (i.e. anxiety and depression) and a similar amount manifest symptoms at a sub-clinical level (McManus, Meltzer, Brugha, Bebbington & Jenkins, 2009). These findings are mirrored in Canada, as 13% of the population suffers from clinical levels of anxiety and depression (Canadian Mental Health Association, 2013; Stephens, Dulberg & Joubert, 2000). Depression is specifically problematic due to its chronicity: once a person has been depressed two or more times, there is a 70% chance that

they will become depressed again over their lifespan, three times or more, the likelihood increases again, to 90% (Kupfer, 1991). These trends suggest the focus needs to shift to prevention in order to avoid long-term treatment.

Financially, mental illness costs Great Britain more than £105.2 billion each year (Centre for Mental Health, 2010), while Canada spends more than 56 billion dollars per annum treating mental health issues (Smetanin et al., 2011). These troubling statistics show both the prevalence and universality of mental illness, making a strong case for cost-effective, preventative interventions that effectively target this unmet need.

1.1.2 Individual Differences in Emotion Regulation

Emotion regulation is a crucial feature for human adaptation (Ochsner & Gross, 2005). However, although emotion regulation is a commonplace activity, the ways in which people regulate their emotions is varied. It may occur by influencing the input (antecedent-focused emotion regulation) or the output (response-focused emotion regulation) of the system (Gross, 1998b). Antecedent emotion regulation changes the impact of emotionally evocative cues, whereas, response-focused emotion regulation (emotional output) alters behavioural responses (Gross & Thompson, 2007). Emotion regulation influences the emotions a person experiences, when they experience these emotions and how they express them (Gross, 1999). This process occurs on a continuum of the controlled, automatic, conscious or unconscious, and can be expressed at different times during the emotion-eliciting experience (Koole, 2009).

The following section highlights the key factors influencing emotion regulation propensities. Accordingly, emotion regulation is a diverse construct influenced by various factors such as personality characteristics (John & Gross, 2004), genetics (Hariri & Forbes 2007), personal interactions (Campos et al., 2011) environmental cues (Frijda, 2006), cognitive disposition (Peterson & Bossio 2001), cultural background and early-life experiences (Gross, 2007). In addition, trait personality differences may impact the appraisal of events, which may explain why some people have stronger emotional reactions to certain situations than others (Van Reekum & Scherer, 1997). For example, people suffering from General Anxiety Disorder (GAD) often exhibit hyper-vigilance and are more emotionally reactive in situations perceived to be threatening, when compared with a non-clinical sample (Mennin, Heimberg, Turk & Fresco, 2005). In light of these distinct personality differences, it is probable that the goal of emotion regulation should not be to shift people from one discrete emotional state to another; this may be too simplistic, resulting in a one size-fits-all approach. Instead, a superior approach may be to alter peoples' emotions across a variety of dimensions such as arousal, valence and approach-avoidance, in a way that compensates for deficiencies, over-learned coping strategies and other maladaptive personal traits (Westphal, Seivert & Bonanno, 2010). For example, teaching a person struggling with anger management who often 'flies off the handle', to become more mindful of others, alerts that person of the need to disengage from negative emotions, and to accept, rather than habitually react to, stress-provoking situations.

Now that emotion regulation has been discussed at the individual level, it is important to also consider emotion regulation on a macro- level. In essence, adaptive emotion regulation can be viewed as occurring on a continuum where optimal regulation exists at the mid-point, with

over-regulation and under-regulation at the extreme ends (Greenberg, 2002). In this paradigm of emotion regulation, people who over-regulate their emotions have tight control over their feelings often inhibiting, suppressing or avoiding them altogether. Such a practice is both theoretically and practically inadvisable, as research has demonstrated links to cardiovascular disease and cancer (Gross, 1989). In contrast, those who under-regulate their emotions have limited control over their feelings in emotionally provocative situations (Greenberg, 2004). These individuals have an emotional experience that is intense, leading to increased physiological arousal (Vingerhoets, Nyklíček & Denollet, 2008). This is problematic as chronic physiological arousal can serve as a precursor to infectious diseases and cardiovascular illnesses (Lepore, 1998). Furthermore, due to the profound impact emotions have on them, people who under-regulate their emotions often have low impulse control and have difficulty expressing their emotions in adaptive ways (Van Dijke, 2008). Thus, different people will profit from different regulatory approaches. For example, people who under-regulate their emotions may benefit from focusing their attention on positive or neutral aspects of a situation; whereas, people who over-regulate their emotions may benefit from facing painful or negative emotions directly, rather than suppressing them or avoiding them altogether (Greenberg & Bolger, 2001).

1.1.3 Emotion Regulation as a Process

Emotion regulation is a dynamic process involving both primary and secondary appraisals of emotional stimuli (Greenberg, 2002; Lazarus, 1991; Smith, Craig & Leslie, 2009). The primary appraisal of emotion is an automatic process that is indicative of a persons' emotional

sensitivity, whereas, secondary appraisal is a controlled process indicative of emotion regulation (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986).

During primary appraisal, an emotion is simply registered, not elaborated upon (Nezlek, et al., 2008). This step serves as crucial input for the ensuing control and monitoring processes that characterize emotion regulation (Koole, 2009). Secondary appraisal occurs when the individual begins to ask what they can do to manage the current situation they are faced with; this is when coping strategies are identified and implemented (Folkman & Lazarus, 1990). For example, if a person believes the stressful situation they are faced with can be changed, it is likely that problem-focused strategies will be employed. However, if the person believes the situation is unchangeable, for example, the death of a loved one, then it is likely that emotion-focused strategies will be employed (Folkman & Lazarus, 1980). Secondary appraisal is influenced by a variety of factors such as goals, personality characteristics, the recognition of available resources and the assessment of situational demands (Kashdan & Rottenberg, 2010). Furthermore, secondary appraisal is influenced by environmental factors such as the immediacy of the potential threat, the duration of the stressor and the presence or absence of a social support network (Folkman & Lazarus, 1990).

The next section of this chapter will focus on the function of emotion regulation. In the past, psychologists believed the function of emotion regulation was to satisfy hedonic needs in order to maximize pleasure and minimize pain (Larsen, 2000; Westen, 1994). In part, this was due to the recognition that negative emotive states are exhausting, often forcing people to expend copious amounts of both physical and mental resources (Sapolsky, 2004; 2007). Yet,

even though hedonic needs may account for the vast majority of emotion-regulation processes, these needs cannot explain the entire range of these regulatory functions (Erber & Erber, 2000; Erber, Wegner & Therriault, 1996). For instance, when emotions are considered useful, individuals will aim to experience them even when they elicit unpleasant feelings (Gross, 2007). For example, a university student may choose to down-regulate positive emotions after achieving a high score on an exam due to the fact that their roommate failed the same exam, in order to protect their friend's feelings. Furthermore, strong goal pursuits may influence one's emotional response, causing people to seek delayed gratification in the pursuit of long-term goals (Mischel et al., 2011; Mischel & Ayduk, 2004). This shifts a person's regulatory strategy from a hedonistic to a goal-oriented approach, such that the individual is content to bear adverse consequences in the short-term, due to anticipated long-term gains (Van Dillen, Heslenfeld & Koole, 2009).

1.1.4 Emotion Regulation Framework

The aforementioned individual differences illustrate that emotion regulation is both diverse and multifaceted; therefore, to facilitate both a practical and successful intervention, it is imperative to employ a classification framework which allows one to consider emotion regulation in a deconstructed, linear, tangible fashion.

One approach for building a classification system to categorize the various emotion regulation strategies is to use the intended targets of emotion regulation as a necessary classification tool. The rationale behind such a classification method is grounded in the primary function of emotions, which is to regulate a particular cognitive or behavioural response. Through

analysing how and which facets of behaviour are influenced, as researchers, one can extract a certain degree of understanding into the underlying process through which emotions are regulated by first examining their intended targets (Koole, 2009).

The most commonly studied targets are knowledge, attention and bodily expressions (Philippot, Douilliez & Francart, 2004). The most widely researched form of emotional knowledge is cognitive appraisal, as it has to do with the subjective evaluation of emotional experience (Lazarus, 1991). Of primary importance during the appraisal process is whether a specific event is seen to facilitate or frustrate personally meaningful goals (Moors, 2007). Attention, the second emotion-eliciting system, is comprised of a series of neurological networks enabling people to selectively focus on incoming sensory information (Thompson et al., 2011). In the contemporary literature, emotion-regulation researchers have manipulated attention through tasks such as the Stroop Test and noted the change in emotional response (Newman & McKinney, 2002). The final system producing emotional changes is manifested by changes in body language, such as postural changes, facial changes and changes in psychophysiology (Maus & Robinson, 2010). An example of an emotion regulation strategy targeting the body is expressive suppression, as people will knowingly alter their facial expressions and body language to mask their inner feelings (Dalglish et al., 2009).

Although this classification system has been broadly outlined, an important weakness of this rudimentary approach is worth noting. If emotion regulation strategies were exclusively categorized by their targets this would lead to a high degree of ambiguity and semantic confusion. For example, mindfulness training may target attention processes if it involves

mindfulness meditation. However, if it also involves mindful yoga poses, which is a common occurrence in Mindfulness Based Stress Reduction (MBSR) (Kabat-Zinn, 1982), then it would also be targeting the body which would make this classification strategy too broad to be effective, as mindfulness would be categorized in two of the three available classification categories. Thus, an additional element is needed to enhance this classification system's effectiveness and specificity.

1.1.5 Function of Emotion Regulation

The key element required to complete this classification system involves tying the intended targets of emotion regulation to their relative functions. As was previously mentioned, a key component of emotion regulation is the fact that it is tied to the achievement of important goals and is undertaken in order to achieve desired outcomes (Gross, 2007). It is important to realize this is a universal function that is inherent of all strategies, irrespective of their intended targets, (i.e. knowledge, attention or body). Thus, the combination of both target and function establishes a stronger, more clear-cut classification system.

As mentioned previously, the primary function of emotion regulation is multi-faceted: it may involve the achievement of goals, the satisfaction of needs (need oriented ER) and the optimal functioning of the global personality system (Koole, 2009). Emotion regulation maximizing short-term gains while jeopardizing long-term affect goals is an example of hedonistic emotion regulation (ER) (Larsen, 2000). Repressive coping is an example of hedonistic regulation that targets attentional focus (Tice, Bratslavsky & Baumeister, 2001). An example of a person-oriented strategy targeting both attention and body is mindfulness-training

(Brown, Ryan & Creswell, 2007), which takes a holistic approach to wellbeing by focusing attention on present-moment awareness and through focused breathing exercises (Arch & Craske, 2006) (See Table 1 for examples of emotional targets and their goals.)

Table 1

Emotion Classification System (inspired by Koole, 2009).

Psychological Function			
Emotion-generating system	Need-oriented	Goal-oriented	Person-oriented
Attention	Repressive coping (Myers, 2010)	Thought suppression (Butler et al., 2003)	Mindfulness training (Baer, 2003)
Knowledge	Distraction (Ehring et al., 2010)	Cognitive restructuring (Gross & Thompson, 2007)	Expressive writing (Pennebaker & Chung, 2006)
Body	Exercising (Thayer et al., 1994)	Expressive suppression (Kashdan et al., 2006)	Diaphragmatic breathing (Consolo, Fusner & Staib, 2008)

Table 1 illustrates the psychological function of the various emotion-generating systems and the intrapersonal systems they target, providing an illustrative example of each category.

1.1.6 Weakness of this Classification System

Although this classification system provides a fundamental framework through which emotion regulation strategies can be classified, it is important to highlight major limitations and weaknesses of this approach.

Firstly, this model is very complicated, which is a concern for an applied practitioner attempting to design an emotion regulation intervention grounded in a theoretical framework. For example, one could argue that diaphragmatic breathing, paired with cue-controlled relaxation, targets body, attention and knowledge making classification of this strategy

convoluted and confusing. Thus, even though the combination of both targets and functions resolves some of the uncertainty surrounding the classification of various emotion regulation strategies, it is still possible that certain strategies would fit into multiple categories.

Secondly, this classification system does not seek to explain the interactions and relationships existing between knowledge, body and attention. Thus, from this model it is difficult to understand to what extent different behavioural and cognitive targets of emotion interact to form either dynamic or contradictory behavioural patterns (for example, laughing at a sad situation or crying with happiness). In contrast to this model, and in support of this limitation, literature that has focused on response coherence shows that different behavioural, cognitive and physiological components of emotion can interact with each other in a dynamic way in order to generate particular emotional responses (Mauss, Levenson, McCarter, Wilhelm & Gross, 2005).

Thirdly, the goal-oriented category is too broad, as it does not differentiate between long-term goals and short-term goals, which are often diametric. For example, Mischel and Moore (1973) demonstrated that delayed gratification is associated with positive health outcomes. In their early studies working with children, the child's short-term goal was to avoid eating a marshmallow in order to receive a later reward. It is likely that this short-term goal was difficult and probably quite frustrating for a hungry five year old; thus, it was associated with negative emotions. However, if the children were successful at abstaining from eating the treat for a set time limit (thereby, achieving their long-term goal), they received a greater reward, which was most likely associated with feelings of happiness and excitement. This

example illustrates that both goal achievement and goal setting is a complicated process that cannot be encapsulated in a broad, one-size-fits-all category, as this reductive approach runs the risk of missing important contextual information. In conclusion, the complex and intricate design of this classification system, combined with the subjective nature, does not facilitate the application of the knowledgeable practitioner for applied use in intervention research.

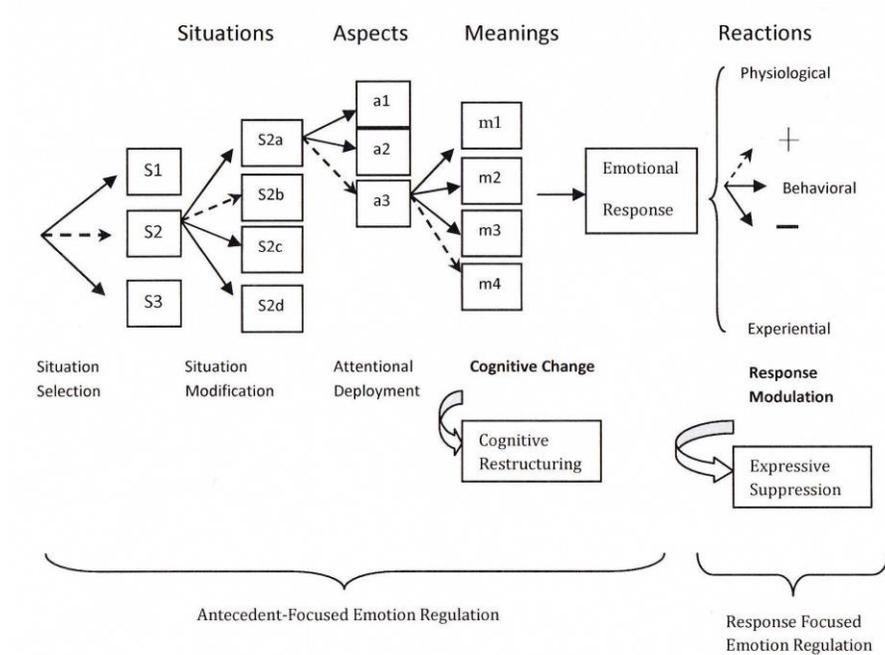
1.1.7 The Process Model of Emotion Regulation

The aforementioned classification system may be limited in certain settings; therefore, alternative classification systems are needed (Gross, 2002). In accordance, the process model of emotion regulation has been put forth (Gross, 2013). This model asserts that emotions can be regulated at five different points during the emotion-generating process. The five points of regulation are as follows: (a) situation selection, (b) situation modification, (c) attentional shift, (d) cognitive reappraisal, and (e) response modulation.

In general, these five points of regulation can be distinguished further as ‘antecedent-focused strategies’ and ‘response-focused strategies’. Antecedent strategies happen early in the emotion-generating process by altering the impact of emotion-eliciting cues. Antecedent methods include: situation selection, situation modification, attentional shift and cognitive reappraisal. In contrast, response-focused strategies happen late in the emotion-generating process by altering the behaviour and facial expression elicited by the current emotion. However, it is important to note that emotions do not follow a prescribed order as they unfold. For example, cognitive reappraisal may occur before attentional shift in some situations, such as when a person views a job interview as a chance to showcase their skills rather than as a

stressful test culminating in either success or failure. Consequently, they are able to perform an attentional shift to the key skills they possess that make them a good fit for the job. Often, reappraisal is used to down-regulate negative affect; however, it is important to note that it can also be used to up-regulate both positive or negative affect, or even change an emotion entirely. A classic example of this point would be viewing a conflict situation from the other persons' point of view during an argument, thereby enabling the transformation of anger into empathy (Gross, 2002).

The process model of emotion regulation is depicted in Figure 2. In this figure, the dotted line represents situational selection (where situation 'two' is knowingly chosen over situation 'one'). After being selected, the situation is modified to elicit the desired emotional impact, which occurs on a continuum of 'no change' (S1a) to 'substantial change' (S2b, S2c, S2d). As the diagram shows, situations vary in complexity from one with multiple features (a1, a2) to one with a single feature (a3), whilst attentional deployment determines which feature a person decides to focus on. However, even after these steps have been undertaken, the emotional impact of the situation can be changed through cognitive reappraisal, where a person decides what meaning to attach to the event (m1, m2, m3, m4). This in turn gives rise to an emotional reaction, which may impact the person on a behavioural, experiential and physiological level. Response modulation refers to the manipulation of these tendencies once they are activated, when the emotional reaction is about to occur. Figure 2 shows the up-regulation of the resultant behaviour (B-).



Inspired by Gross and John (2003)

Figure 2. The Process Model of Emotion Regulation

1.1.8 Strengths and Weakness of the Process Model of Emotion Regulation

In contrast to the aforementioned classification strategy, which focused on both the function and intended targets of emotion regulation, the process model (Gross, 1998b) is advantageous due to its simple, linear and straightforward design making it easily applicable to intervention research. Another key strength of this model is that it accounts for individual differences. As was previously outlined, research has shown that emotion regulation is highly variable and is influenced by a variety of factors such as personality, personal belief systems and long-term goals (John & Gross, 2004; Kashdan & Rottenberg, 2010). This model is further supported by the large body of literature that supports its predictions regarding the effectiveness of antecedent

strategies (such as reappraisal) over response-focused strategies such as suppression (See for example: English & John, 2013; Meyer, Smeets, Giesbrecht, Timo & Merckelbach, 2012; Troy, Wilhelm, Shallcross & Mauss, 2010). However, one critique of the process model, and specifically the empirical work done in the field, is the over-reliance on the cognitive aspects of emotion regulation (Scherer, 2001). This causes the process model to be primarily descriptive rather than prescriptive, as it does not include recent advancements in memory and attention that have occurred in the cognitive sciences (Eysenck & Derakshan, 2011). Thus, alternative multi-level models have been put forward that take these factors into consideration (Philippot & Schaefer, 2001). However, in spite of this limitation, the discerning reader will appreciate the practical and theoretical benefits of the process model of emotion regulation (Gross, 1998b), which is the most widely used model within the contemporary literature (Koole, 2009).

1.1.9 ER Strategies: The Benefits of Reappraisal over Emotional Suppression

To this point, this chapter has discussed emotion regulation from a broad perspective; the next section will narrow the focus, evaluating the extant research centred on reappraisal and emotional suppression.

Studies indicate that individuals who habitually use cognitive reappraisal have stronger interpersonal relationships and report greater mental wellbeing when compared to those who regularly suppress their emotions (Gross, 2013; Gross, 2002). The regular use of reappraisal has also been negatively correlated with risk-taking behaviours (Magar, Phillips & Hosie, 2008) and

has been shown to facilitate goal directed decision making during reward processing, which has auspicious implications for addiction research (Martin & Delgado, 2011).

In contrast, individuals who habitually utilize emotional suppression report increased negative affect (Srivastava et al., 2009), decreased positive affect (Gross & John 2003), decreased social functioning (English & John, 2013) and enhanced levels of depressive symptomology and obsessive thinking (Corcoran & Woody, 2009; Marcks & Woods, 2005). Furthermore, emotional suppression has been linked to decreased life satisfaction (Kashdan & Steger, 2006), decreased interpersonal skills (Butler et al., 2003), enhanced sympathetic nervous-system activation (Egloff, Schmuckle, Burns & Schwerdtfeger, 2006; Gross 1998b), increased stress-related symptomology (Moore, Zoellner & Mollenholt, 2008) and decreased memory recall (Richards, Butler & Gross, 2003; Richards & Gross, 2000). In addition, emotional suppression has been shown to lead to strained, distracted and avoidant behaviours that hinder a person's ability to form close interpersonal relationships (Gross & John, 2003). It has been hypothesized that these negative consequences may arise from an internal conflict within the psyche that stems from the inauthentic representation of one's feelings (Sheldon, Ryan, Rawsthorne & Ilardi, 1997). This in turn may lead to low self-esteem and social isolation (English & John, 2013).

Because suppression occurs late in the stages of the emotion-generative pathway, it is an effortful process that substantially depletes an individual's cognitive resources. This may explain the decrease in working memory or social functioning of frequent suppressors (Gross & John, 2003). In addition to the social and emotional costs, emotional suppression has also been linked to cognitive impairments. Supporting evidence has shown that the regulation of negative emotions

by expressive suppression leads to an increase in negative-mood states when cognitive load is substantial (Wegner, Erber & Zanakos, 1993). In line with these findings, two studies conducted by Richards and Gross (1999) determined that emotional suppression impairs working memory, which is supported by the work of Baumeister, Vohs and Tice (2007) who found that emotional suppression impaired the performance of cognitive tasks.

Since the early 1960s, researchers have compared various emotion-regulation strategies to determine the cognitive, physiological and behavioural outcomes of each, attempting to determine which is the most cost-effective and psychologically adaptive strategy in various situations (Gross, 1999). In an early study by Lazarus and Alfert (1964), participants were shown a ritualistic circumcision video of which the accompanying soundtrack had been altered to artificially stimulate cognitive reappraisal. In this study, half of the participants viewed the video with a soundtrack emphasizing the positive aspects of the ceremony and downplaying the pain involved in the procedure, while the rest of the participants watched the video with no soundtrack at all. When the two groups were compared, the no-soundtrack group exhibited higher skin-conductance, faster heart rates and lower mood states than the members of the group that had heard the soundtrack. A strength of this study was that it combined self-report measures with physiological data; however, a weakness of this study was that it utilized a homogenous sample of male psychology students, thereby limiting the generalizability of this work to broader populations. The aforementioned findings suggest that leading people to reappraise the video in a more positive light, in this case through the use of music, nullified the negative impact, transforming what could have been a highly stressful experience.

Similarly, Gross (1998a) conducted a study where participants watched an emotionally evocative film clip. In this study, one group was trained to reappraise what they were seeing in order to down regulate negative affect, while the other group was instructed to ‘just watch’ (control) the film clip. Again in this study, the reappraisal group reported a decrease in negative affect when compared to the control condition. Key strengths of this study are noteworthy. Firstly, this study employed a large sample size of 120 participants, making the findings more likely to be representative of population norms. Secondly, the fact that data was collected across three domains is advantageous. For example, during this study, participant’s subjective experience, expressive behaviour and physiology were all measured, allowing in depth inferences to be made regarding the varying behavioural, affective and physiological consequences arising from the use of different emotion regulation strategies.

A study by Moore, Zoellner and Mollenholt (2008) showed that emotional suppression correlated positively with stress-related symptoms such as anxiety and depression, in both a clinical and non-clinical sample. Conversely, within this study, reappraisal correlated negatively with stress-related symptoms. Although the aforementioned study had a number of strengths, such as the utilization of a large, divergent sample, important weaknesses are noteworthy. Firstly, this study utilized an exclusively female sample, which is logical from an emotion regulation standpoint, as gender differences are known to exist (Nolen-Hoeksema & Aldao, 2011); however, this limits the generalizability of the findings, as they cannot be applied to men. Secondly, because the trauma patients were not clinically diagnosed with PTSD, nor were they currently seeking treatment for their symptoms, the severity or even existence of this illness could be called into question within the experimental sample. An additional methodological limitation of this study

can be attributed to the unbalanced sample, which consisted of 292 non-clinical participants (undergraduates students) and 67 clinical participants (participants reporting a DSM-IV Criterion A traumatic event¹).

Emotional suppression has been shown to dampen the experience of positive emotions, such as pride and amusement, while the experience of emotions such as disgust and sadness have not been shown to change due to emotional suppression (Gross & Levenson, 1997). Thus, emotional suppression has an unbalanced impact on emotion, as it leads to the maintenance of negative affect and the down-regulation of positive affect, a pattern that is not observed in those who reappraise frequently. A study by Mauss, Cook, Cheng and Gross (2007) showed that those who frequently reappraise react more adaptively to emotionally charged events than those who do not reappraise frequently. When provoked to anger, high reappraisers reported less negative affect, less anger and better cardiac profiles than low reappraisers. Similarly, empirical research has demonstrated that the recurrent use of reappraisal does not utilize large amount of cognitive resources, when compared with response-focused strategies such as emotional suppression (Richards & Gross, 2000).

Adaptive emotion regulation is a critical component required to maintain optimum health. A recent longitudinal study corroborates this contention, demonstrating the significant impact emotion regulation has on physical health. Kubzansky, Park, Peterson, Vokonas and Sparrow, (2011) conducted a 13-year prospective study that included more than 1000 participants. This study determined that utilizing adaptive emotion regulation strategies was predictive of a

¹ According to the Diagnostic and Statistical Manual (DSM-IV; APA, 1994), a Criterion A trauma is an event that is distinctly different from other stressful life experiences; it often suggests an emotional threshold has been surpassed and the potential for posttraumatic stress disorder (PTSD) is increased.

decrease in coronary heart disease and subsequent risk of heart attacks even when controlling for traditional coronary risk factors. In a related vein, a study by Denolett, Sys and Brutsaert (1995) examined heart attack survivors experiencing various levels of distress who had practised emotional suppression at high and low levels of intensity and frequency. This study determined that the death rate of high emotional suppressors was greater (27%) than that of low emotional suppressors (7%), and that the distress levels of the latter group were significantly lower.

Although suppression is associated with negative health outcomes, it is important for the discerning reader to note that emotional suppression is not deleterious in all situations. For example, a recent study, by Schutte, Manes and Malouff (2009) concluded that while reappraisal is a more effective strategy than emotional suppression, they found that suppression is not always detrimental and in some situations it may be a useful strategy; further benefits of suppression have been identified by Gross and John (2003) who concluded that suppression can be adaptive in maintaining interpersonal relationships in a vocational setting. Furthermore, in some Asian cultures, emotional suppression is considered an adaptive emotion-regulation strategy, unlike in autonomous cultures (e.g., North America, the UK); therefore, its consequences do not manifest negatively in these environments (Butler, Lee & Gross, 2007). These findings illustrate that suppression is not maladaptive per se; rather, it is the context and frequency of use that becomes problematic when suppression is practised as the primary emotion-regulation strategy too often and too rigorously when other more beneficial and efficient strategies (such as reappraisal) could be implemented.

To summarize, in the long-term, people who resort to emotional suppression frequently and inflexibly show decreased interpersonal and social functioning and have poor memory recall for conversations and emotionally provocative events (Richards & Gross, 2000). In contrast, the frequent use of reappraisal has been shown to have a negligible effect on performance (Egloff et al., 2006) and in some cases has been linked to memory improvements (Jamieson, Mendes, Blackstock & Schmader, 2010). In the short-term, emotional suppression may be an appealing ER strategy because it allows one to present a desirable façade to the world. However, in the long-term, emotional suppression may be damaging because it prolongs the experience of negative affect (Campbell-Sills & Barlow, 2007), makes excessive use of cognitive resources (Gross & John, 2003) and keeps physiological arousal chronically activated (Egloff et al., 2006; Ohira et al., 2006).

1.1.10 Adaptive Forms of Emotion Regulation

Although a sound theoretical understanding of ER is important, the applied practitioner requires further understanding of how such processes are applied effectively by individuals in daily life. Correspondingly, a cardinal component of healthy emotion-regulation is emotional awareness and understanding, which is the ability to recognize and categorize both the causes and consequences of emotions (Zautra et al., 2008). Pragmatically speaking, on a day-to-day basis, a person may follow four main steps in order to adaptively regulate their emotions.

Firstly, one should pause to register what emotion is being experienced and note their primary emotional reaction (Feldman, Gross, Christensen & Benvenuto, 2001). Healthy emotion-regulation involves adopting a mindful rather than a reactive approach to emotions

(Weinstein, Brown & Ryan, 2009) as they arise. Therefore, it is important to take a moment to allow the emotion to emerge without suppression, avoidance, resistance or impulsive reaction (Hayes, Strosahl & Wilson, 1999).

Secondly, the individual needs to accurately label the primary emotion being experienced, as different emotions have different physiological, behavioural and cognitive components (Feldman et al., 2001). Primary emotions are the core emotions experienced due to internal or external events, for example, you may feel sad someone hurt you; whereas, secondary emotions are emotions you feel about the feeling itself; for example, feeling anger because you were hurt by someone you trusted.

Thirdly, the individual needs to determine the controllability of the situation that has given rise to the emotion, as well as the controllability of one's internal response to that particular situation (Marx, Heidt & Gold, 2005). For example, if you are dwelling on a negative thought such as "I am unlovable" you can choose to stop, recognize and replace this thought with a more realistic cognition (cognitive restructuring, internal control) or alternatively, you can choose to label this thought in a non-judgmental way, such as this is me 'thinking', and choose not to engage with this detrimental cognition (mindfulness, internal control) (Thompson & Calkins, 1996).

Fourthly, it is imperative to identify long-term goals pertaining to the situation so that the individual's emotion regulatory goals align with their distal goals (Sheppes et al., 2012).

In part, adaptive emotion-regulation comes from the deepened understanding of emotional states and the identification of important goals (Suveg, Sood, Comer & Kendall, 2009). Once emotions are clearly understood, the most appropriate regulatory strategy can be selected, allowing emotional expression to occur in a socially acceptable way (Aldao, Nolen-Hoeksema & Schweizer, 2010). It is important to note, that due to neuroplasticity, the brain is not statically hardwired. Thus, methodical training of the brain can be done to reframe irrational thought patterns and purposefully focus on positive aspects of a situation, which can lead to neurological restructuring (Davidson, Jackson & Kalin, 2000). Recently, it has been shown that brain plasticity and neurogenesis continues into adulthood (Doidge, 2007). Therefore, it can be hypothesized that ER interventions in adulthood can have a profound impact on neural functioning by influencing the neurological basis of emotions in order to promote enhanced positive affect and mental wellbeing.

2.0 Emotion Regulation Based-Interventions

Various interventions have been developed in order to train individuals to adaptively regulate their emotions. However, in order to facilitate the creation of an effective, evidence-based intervention scheme, it is important to outline and evaluate the advantages and disadvantages of each intervention. The major components of this Emotion Regulation Based-Intervention utilized in this research were: (a) reappraisal b) expressive writing c) mindfulness (d) self-talk and (e) progressive muscle relaxation.

Expressive writing was developed by Pennebaker and Beall (1986) more than 25 years ago, as a way to cope with stressful life events. Due to its efficacy, this method has seen a massive

surge in interest in recent years. By 1996 only 20 papers had been published in this area; however, by 2009 more than 200 papers from various countries had been published in high impact scientific journals (Pennebaker & Chung, 2012).

Similarly, mindfulness has become a mainstay of, modern third wave therapies, due to its effectiveness in treating a variety of mental and physical health issues (Weinstein, Brown & Ryan, 2009). Currently, a wide range of training programmes exist that include mindfulness as a core intervention component, due to its marked impact on global wellbeing (Allen, Chambers & Knight, 2006).

Two less widely researched techniques used extensively in the applied sector, due to their positive impact on health and performance, are self-talk and progressive muscle relaxation. In addition, this intervention will attempt to utilize cognitive reappraisal in a novel, therapeutic fashion. This will be done by training individuals to employ reappraisal on a more frequent basis due to the positive health outcomes that have been associated with this strategy in the extant literature (Gross, 2013; Jamieson, Koslov, Nock & Mendes, 2013; Troy et al., 2010).

The next section will focus on the specific emotion regulation strategies that will be taught during this intervention by discussing the findings in the contemporary literature and explaining the connection to the current research. In addition, the strengths and limitations of each strategy will be highlighted.

2.1 Cognitive Reappraisal: Definition and Underlying Processes

Cognitive reappraisal is an emotion-regulation technique involving the modification of the subjective interpretation of a situation in a way that reduces the emotional impact (Gross 1998a,b; Gross & Thompson, 2007). Of particular importance to the appraisal process is whether an event is tied to meaningful goals (Moors, 2007; Lazarus, 1991). A closely-related construct, which may be used in tandem with reappraisal, is cognitive restructuring which is the process through which one identifies negative, maladaptive thought patterns and replaces them with adaptive, realistic, self-affirming statements (Martin & Dahlen, 2005).

Challenging people's interpretations of emotionally charged events may change the causal attribution they make to negative events (Shurick et al., 2012). This eases their sense of helplessness by instilling a sense of personal empowerment. Cognitive reappraisal is a powerful technique allowing a situation to be interpreted in many different ways, and it is this interpretation, rather than the event itself, that impacts cognitions, behaviours and emotions (Malooly, Genet & Siemer, 2013; Wilding & Milne, 2010). Often, negative cognitions are influenced by negative feelings. They are typified by irrational, distorted beliefs characterized by a fatalistic all-or-nothing mentality, or, by overgeneralizations that are inaccurate representations of reality (Burns, 1989; Eysenk, 2000). Both cognitive reappraisal and cognitive restructuring encourage people to make specific, factual evaluations of an event, in place of global appraisals that are general and abstract, which can lead to rumination (Watkins, 2008). The practice of evaluating specifically and factually has been shown to empower the individual by lowering negative emotive states, such as anger and frustration, while increasing one's sense of control (Buceta, 1985). This is important because negative

affect increases the level of negative self-talk ('mood-dependent retrieval', (Bower, 1981), which exacerbates negative emotional states ('distress-augmenting emotion regulation', Mohiyeddini, in prep).

There are four ways in which an individual can appraise a meaningful situation: as a challenge, a threat, an advantageous opportunity or a detriment (Lazarus & Folkman, 1984). Once the primary appraisal of a situation is carried out, the individual mobilizes the personal resources they have available for coping with the situation. Reappraisal can occur in a variety of ways; thus, the main types of reappraisal will be defined and explained so that the topic can be explored in greater depth.

Firstly, reappraisal may involve the reinterpretation of either the situation or the environment; for example, viewing an entrance exam as an exciting opportunity to showcase your knowledge of a subject, rather than as a stress-provoking test of one's self worth (Gross, 1998b). Secondly, reappraisal can occur through the ascription of responsibility for a situation to self and not to others (or vice-versa) (Smith & Lazarus 1993). Thirdly, reappraisal may occur by evaluating the level of controllability of the emotion-eliciting event (McRae, Ciesielski & Gross, 2012). Furthermore, reappraisal can occur through the re-evaluation of expectation levels (Ortony, Clore & Collins, 1988), when they are unrealistic, the individual can choose to modify their goals accordingly, in order to minimize anxiety, frustration and negative affect. Finally, one can reappraise by distancing themselves from the disturbing stimuli by assuming a detached, third person attitude towards the event. For example, when watching a graphic film clip of a surgical amputation, the viewer can choose to look at the clip

in a detached, analytical way, synonymous to that of a doctor, choosing to focus on the actual details of the procedure, rather than the emotional aspects of the event (Koole, 2009; Ochsner & Gross, 2008). Cognitive reappraisal is an effective emotion regulation strategy because it can prevent the subjective experience of negative affect even though physiological arousal is not always reduced (Gross, 1998a; Steptoe & Vogele, 1986).

2.1.1 Cognitive Reappraisal and ER

The next section will discuss reappraisal as it relates to emotion regulation utilizing the process model (Gross, 1998b) as a theoretical framework. Emotion-regulation theories posit that the intensity and valence (either positive, negative or neutral) of an emotional response arises from the way a person appraises an event, not from the actual event itself (Joormann & Gotlib, 2010; Wilding & Milne, 2010). According to the process model of emotion regulation, cognitive reappraisal happens early in the emotion-generating process. This allows for the alteration of events leading to a full-blown emotional response (Gross, 1998b). This implies that reappraisal may consume fewer cognitive resources than other strategies, such as emotional suppression, which occurs much later in the emotion-generative process (Gross & John, 2003). This view is supported empirically by numerous studies (Gross, 1998a; Gross & Thompson, 2007; Ochsner et al., 2004).

2.1.2 Strengths of Cognitive Reappraisal: Links to Health and Wellbeing

In the context of cognitive reappraisal, it is important to assess the methodological stability and consistency demonstrated in previous literature. In the early work of Mischel and Moore (1973), cognitive reappraisal was used to cultivate children's delayed gratification. Within this study, children were shown how to think about palatable foods in an abstract way so they

would not focus on the enjoyment they would garner from eating the tasty treats (for example, pretending the marshmallow was a cloud). This mitigated their desire to treat themselves to the foods immediately, helping them restrain themselves to wait for a superior reward that would be theirs later in the day. These findings were replicated in the influential ‘marshmallow studies’, where children were able to practise emotion-regulation strategies, such as reframing and distraction, to delay gratification in the interest of garnering a greater reward at a later time (Mischel 1996; Mischel & Ayduk, 2004; Shoda, Mischel & Peake, 1990).

Two follow-up studies of the original ‘marshmallow’ research demonstrated significant findings. The first study by Mischel, Shoda and Peake (1988) found that preschool children, who delayed gratification longer, in the self-imposed delay paradigm, were described more than 10 years later by their parents as adolescents who were significantly more competent. The second follow-up study, found that the children who were able to delay gratification in the original study scored higher on Standard Aptitude Tests (SATs) than children whose ability to delay gratification was low (Shoda, Mischel & Peake, 1990). However, a potential weakness of this study was that it was cross-sectional in nature; therefore, causality could not be inferred. Thus, one could not state that delayed gratification in childhood predicted success later in life, as both could have resulted from environmental factors such as supportive parents, a stable home life or individual personality characteristics. This issue was addressed in a more recent follow-up of the original ‘marshmallow studies’ conducted by Mischel and colleagues (2011). This longitudinal research demonstrated the predictive validity of this test across a wide range of social, cognitive and mental health indicators. The strengths of this

follow-up study are noteworthy. Firstly, it had a strong experimental design, as it was longitudinal in nature, allowing for the causal nature of self-control to be explored in greater depth. Secondly, it involved a sample of roughly 1/3rd of the original 500 participants, even though it was conducted 40 years after the original study had occurred. Finally, a key strength was that it employed multi-level analysis, as it investigated neurological, social and cognitive implications of delayed gratification across the lifespan. Although it was not measured directly during any of these early self-regulatory studies, it is likely that children who rated high in delayed gratification also possessed greater levels of psychological flexibility. In these early studies, the children with high levels of delayed gratification were also shown to have higher levels of perseverance and curiosity, which has been associated with psychological flexibility in recent research (Peterson, Ruch, Beermann, Park & Seligman, 2007).

The positive findings of this early research foreshadowed what was to come in later years, as reappraisal has been consistently linked with positive outcomes in the contemporary literature (Gross, 2013). In recent years, reappraisal has proven successful in a variety of settings from enhancing children's self-regulation to decreasing adults' negative affect (Kotsou et al., 2011; McRae et al., 2012). In particular, the empirical literature has shown that the reappraisal of disturbing films fosters cognitive restructuring, which in turn decreases negative emotional reactivity (Gross, 1998a; Ray, Ochsner, Kateri & Gross, 2010). Concordantly, in an experiment in which participants were verbally provoked, Stemmler (1997) demonstrated that reappraisal decreased physiological response. A study by Nezlek and Kuppens (2008), comparing regulation via reappraisal and emotional suppression, concluded that the reappraisal of positive emotions was correlated with increased self-esteem, positive affect and

psychological adjustment, whereas, the suppression of positive emotions was correlated with decreased positive affect, self-esteem and psychological adjustment, and a concurrent increase in negative affect. Across various experiments, reappraisal has been shown to decrease emotional reactivity in adverse situations without imposing substantial physiological, cognitive or social costs to the individual (for reviews see Gross, 2002; Gross & Thompson 2007).

In line with these findings, an innovative study by Butler and colleagues (2003) paired strangers together to watch upsetting films, after which they discussed their thoughts and feelings about the film. Secretly, each participant had been given instructions to emotionally suppress, interact, reappraise or act naturally during the conversation. During this experiment, blood pressure ratings revealed that interacting with a person, whilst suppressing ones emotions was more stress-provoking than during reappraisal, a finding which indicates that emotional suppression may disrupt the natural dynamic occurring during interpersonal functioning. Similarly, in a study by Gross (1998a), two groups viewed a disturbing film; one group suppressed their emotions to the extent that an observer would be unable to determine their feelings, while the other group reappraised, viewing the film in such a way that they would not respond emotionally. Although the suppression condition was successful in decreasing their outward expression of emotion, they experienced the same amount of negative emotion as people who just watched the film (the control condition). However, in contrast, the reappraisal group was able to reduce the amount of negative affect experienced, whilst also reducing their behavioural expression, demonstrating that reappraisal was a more effective and less emotionally taxing strategy than suppression.

In 2003, Gross and John conducted a series of 5 studies investigating the relative use of emotional suppression and reappraisal in a large sample of nearly 1500 participants, in order to investigate the social, emotional and health related outcomes of these divergent strategies. The results of this comprehensive investigation determined reappraisal and emotional suppression were two distinct constructs, with diametric profiles. Reappraisers coped with stressful situations by adopting an optimistic attitude, actively trying to repair a bad mood and reinterpreting stressful events. From an emotional standpoint, they experienced and openly expressed more positive emotive states and less negative emotions than those who scored low in reappraisal. Reappraisers tended to have more socially close relationships and rated higher in self-esteem, life satisfaction and wellbeing and experienced lower levels of depressive symptomology.

In contrast, suppressors viewed themselves as inauthentic, which led to feelings of low self-esteem; consequently, they were less successful at mood repair and were more likely to ruminate. They experienced less emotionally close relationships and were prone to worry and experienced more depressive symptoms than reappraisers. They were less satisfied with their lives and experienced less positive emotion and more negative emotion than individuals who reappraised more frequently. Correspondingly, both longitudinally and cross-sectionally, Garnefski and colleagues have demonstrated a strong negative relationship between the reported use of reappraisal and depression in both adult and adolescent populations (Garnefski & Kraaij, 2006; Garnefski, Kraaij & Spinhoven, 2001; Kraaij, Pruyboom & Garnefski, 2002).

A recent study by Shurick and colleagues (2012) conditioned participants to fear snakes or spiders by pairing the images of these animals with a small shock to the wrist. Afterwards, participants were assigned to either a training group, that was taught cognitive reappraisal, or a control group that received no training. One day later, all participants returned to the lab at which time the intervention group demonstrated a significant reduction in electrodermal activity and fear response when compared with the control group. Key strengths of this study are worth highlighting: firstly, it utilized both subjective and objective measurements, which was a strongpoint, due to the over-reliance of subjective measurements in the field of emotion research. Secondly, the 24 hours delay, before re-testing participants, provided evidence that the comprehension and effective application of the skill was retained after a substantial amount of time had passed from the initial training induction. This is a superior approach when compared to the popular research methodology of testing participants immediately after the experimental induction occurs, which may inflate results (Shurick et al., 2012).

In a related vein, a recent study by Jamieson, Nock, Mendes and Berry (2012) assigned participants to one of three groups. The first group was a reappraisal condition, where participants were coached to think of physiological arousal as an adaptive response during a stressful task. The other participants were assigned to either an active (attention reorientation) or inactive control (no instruction) group. Results revealed that participants in the intervention group demonstrated a healthier cardiac profile under stress when compared to both the active and inactive control groups. Furthermore, the intervention group had decreased threat-related attentional bias and showed an increase in their perceived amount of available resources. This study highlights the fact that reappraisal has both cognitive and physiological advantages.

2.1.3 Cognitive Reappraisal: A Critical Evaluation of the Research

This chapter will now turn to a critical analysis of the current body of research that has been generated in relation to cognitive reappraisal. Although the existent research investigating the use of various emotion regulation strategies has been illuminating, a major weakness in this area has been the over-reliance of reappraisal and suppression as the primary strategies of investigation. Too much emphasis has been placed on studying these two strategies exclusively, while other strategies have been largely ignored. Alternative strategies such as attention selection should be investigated, as it is the third most commonly utilized emotion regulation strategy (Gross, Richards & John, 2006). In addition, psychological flexibility and its relative impact on wellbeing should be explored in greater depth. This refers to the ability to flexibly respond to a challenging event in accordance with situational demands above and beyond any *a priori* assumptions as to what constitutes a ‘positive’ or ‘negative’ emotion regulation strategy (Bonanno et al., 2004). A plethora of research has investigated the intrinsic value of various emotion regulation strategies, yet it is only in recent years that research has begun to investigate the value of psychological flexibility in regards to emotion regulation.

Emotion regulation does not occur in a vacuum; therefore, one could argue that situational factors strongly influence the choice of strategy utilized. Accordingly, Campos and colleagues (2011) have argued that a major weakness of extant research has been the over-reliance on an intrapersonal point of view. They recommend adopting a relational point of view, where interpersonal interactions and situational variables are taken into consideration in naturalistic settings, rather than exclusively employing laboratory and university settings when conducting emotion regulation research. In addition, future research needs to create

guidelines establishing the delineation of an adaptive emotion regulation strategy in various situations (Gross, 2013). For example, within Asian cultures, emotional suppression does not demonstrate negative social outcomes (Soto, Perez, Kim, Lee & Minnick, 2011). Furthermore, research has shown that when an individual is in a state of high emotional intensity, reappraisal is an ineffective regulatory technique (Sheppes, Catran & Meiran, 2009).

2.1.4 Summary

Research has shown that, in a variety of situations, cognitive reappraisal is associated with positive health outcomes, whereas, emotional suppression is associated with negative health outcomes (Hofmann, Heering, Sawyer & Asnaani 2009; Kashdan & Steger, 2006). In line with these findings, the current ERT intervention attempted to train participants to use reappraisal more frequently in daily life and decrease the use of maladaptive strategies such as suppression.

2.2 Expressive Writing: Definition and Underlying Processes

During the late 1980s, social psychologist James Pennebaker became the first theorist to apply writing to the paradigm of emotional regulation (Pennebaker & Beall, 1986). It is from this founding research that the technique, now commonly referred to as Expressive Writing (EW), was developed. EW involves journaling one's deepest thoughts and feelings in relation to stressful or significant life events (Cameron & Nichols, 1998). This technique encourages the expression of emotions, specifically negative emotions, without the need for control, suppression or avoidance (Pennebaker, Mayne & Francis, 1997).

In the first EW experiment, participants wrote about their private thoughts and feelings regarding a personal trauma (in the intervention group), while the second group wrote about superficial topics (the control condition). This writing exercise stretched over 4 consecutive days, with each writing session taking 15-to-30 minutes. Unfortunately, a limitation of this study was that the psychologists running the sessions did not evaluate the narratives generated during the EW sessions. Therefore, it was not possible to objectively analyse whether a shift in language occurred over the course of writing toward an increase in both causal and positive-emotion words (Baikie & Wilhelm, 2005). In later studies this pattern has been associated with positive health outcomes (Pennebaker, 1997). Nonetheless, regardless of the limitations of this study, it is encouraging to note, that within this research, physical health improvements were found in the intervention group as measured through physician visits, whereas, no change was observed in the control condition. The authors of this study inferred that health benefits were incurred through confronting previously inhibited emotions and thoughts regarding the traumatic event.

Originally, Pennebaker, Kiecolt-Glaser and Glaser (1988) hypothesized that the majority of people find it difficult, if not impossible, to discuss the traumatic events in their lives resulting in unresolved emotional anguish. Thus, writing about these difficult events affords individuals the opportunity to process these experiences, thereby gaining insight into and construing meaning from their traumas, which lessens the amount of negative distress experienced.

The effectiveness of EW has been demonstrated in both a therapeutic and non-therapeutic setting. In the latter setting it has demonstrated efficacy by helping cancer patients deal with

their illness (Stanton & Danoff-Burg, 2002); furthermore, it has been effective treating adolescents exposed to trauma (Lange-Nielsen, et al., 2012) and has proven to be a successful tool among university students by enhancing goal pursuits (Harrist, Carlozzi, McGoven & Harrist, 2007). However, it is critical to consider the role of individual difference in the successfulness of EW. In particular, factors such as timeframe, EW topic and gender have been shown to influence the results (Pennebaker & Chung, 2012; Pennebaker, Colder & Sharp, 1990). For example, participants writing about their thoughts and feelings regarding entrance into university saw an increase in GPA (Cameron & Nicholls, 1998), whereas, participants writing about severe health problems saw a reduction in physician visits (Willmott, Harris, Gellaitry, Cooper & Horne, 2011).

From a topical perspective, some researchers have posited that significant health benefits accrue only when traumatic events are the topics of the writing (Klein & Boals, 2001), while others have shown that EW workshops, centering on positive life events, can also lead to significant health benefits (Harrist et al., 2007; King, 2001). Furthermore, research has suggested that the length of time in which an individual is asked to complete an EW task can impact the effectiveness of the technique. A comprehensive meta-analysis by Smyth (1998) found that writing over a longer time span (e.g., four days) was more beneficial than writing over a shorter time period. However, a recent meta-analysis by Frattaroli (2006) indicated that effect size did not differ according to writing-period length. Frattaroli's findings (2006) gained support in a recent study by Chung and Pennebaker (2008), which determined that a 1-hour expressive-writing session, while more emotional taxing for the writers, exhibited comparable health benefits to those observed in the conventional three-day method. In this

study, Chung and Pennebaker (2008) explained that the original 3-5 day writing time frame was not used due to lab availability, nor for any theoretical reason. Due to the fact that attrition rates can be high for involved studies (Etter, 2005), it seems that the benefits of holding a one-day writing session may outweigh the potential disadvantages of having participants write over multiple days. Based on this rationalization, the condensed approach was utilized in the current research.

Although the benefits of EW are vast, disadvantages of this technique have been identified (Pennebaker & Chung, 2012). A comprehensive review indicated that intervention participants often report an increase in negative mood immediately following an EW session (Baikie & Wilhelm, 2005). In addition, EW has not been shown to impact health-related behaviours such as exercise, diet, alcohol, or drug abuse (Pennebaker, Kiecolt-Glaser & Glaser, 1988). Moreover, EW has been shown to have a deleterious impact on the health of Vietnam veterans suffering from Posttraumatic Stress Disorder (PTSD) (Gidron, Peri, Connolly & Shalev, 1996) and on adults who have endured childhood abuse (Batten, 2002). A therapeutic study by Gidron and colleagues (1996), working with a group of Israeli patients suffering from PTSD, determined that EW had a negative impact on health. Within this study, participants were divided into two groups: an intervention group and a control group. The intervention group wrote about their traumas on three separate occasions, after which they were asked to discuss the trauma they had just written about with the group. The control group followed an identical procedure with the exception of focusing both their writing and group discussion on superficial topics. This study revealed a decline in health and an increase in distress in the intervention group at a 5-week follow-up measure, when compared with the

control group. This unexpected finding was likely due to the insistence that participants in the intervention group discuss their personal trauma with the rest of the group. This may have been a re-traumatizing experience, which lead to an increase in negative symptomology. This could be seen as a methodological limitation that may have negatively impacted the findings.

More recently, an innovative adaptation of the writing paradigm developed by Yule and colleagues (2005) called “writing for recovery”, was created for adolescents exposed to war and disaster. In contrast to the aforementioned Gidron and colleagues (1996) study, during writing for recovery (Yule et al., 2005), the EW was private and not shared with the psychologists or other participants. This corresponds to the original EW paradigm, which associated writing with a plethora of positive health outcomes (see Pennebaker & Chung, 2012 for example). However, an important difference between the original EW paradigm and writing for recovery is worth noting. In this adaptation, the instructions changed slightly in order to guide participants to initially focus on their psychological reactions to the trauma and then to switch their focus to what they learned from their experience. This innovative approach may promote cognitive reappraisal: by focusing on what they have learned from the experience, participants may begin to see the positive aspects of their situation, which may effectively down regulate the negative affect elicited by the trauma.

Support for this adaptation of the EW paradigm was garnered by recent research. In the initial pilot study, Ali and Snell (in progress) showed positive short-term effects in a group of Iraqi adolescent refugees in Jordan. Similarly, in a randomized control study conducted in a group of berift adolescent refugees from Afghanistan, the intervention group showed a significant

reduction in distress when compared to the control condition (Kalantari, Yule, Dyregrov, Neshatdoost, & Ahmadi, 2012). However, findings obtained from various doctoral and master's projects, employing an adapted version of the manual, were not as positive (Yule, Dyregrov, Raundalen Smith, 2012b). This suggests that strict adherence to the manual, with highly skilled facilitators, may be required for optimal programme outcomes.

In terms of practical application, it is important to consider the benefits of the EW method as well as the limitations. In terms of emotional regulation methods, due to the volatile nature of emotions themselves, it is perhaps unlikely that a method that bypasses *post-hoc* limitations exists, and thus searching for one, represents the academic equivalent of searching for a theoretical 'holy grail'. Therefore, it is important that the discerning reader generates a balanced understanding of the EW method. In context, although EW can be emotionally draining, many participants report that they viewed it as a personally meaningful experience (Pennebaker, Mayne & Francis, 1997). Furthermore, although the immediate result of EW is often an increase in negative affect, this does not seem to have a lasting impact on health (Hockemeyer, Smyth, Anderson & Stone, 1999). A review by Smyth (1998) argued that the health benefits accrued from EW were similar to those produced by other psychological interventions that were more elaborate, time-consuming and costly. In addition, a review by Frisina, Borod and Lepore, (2004) found that in clinical populations, engagement in EW produced significant health benefits that were not offset by the short-term increase in negative affect.

2.2.1 Underlying Processes of EW

Competing theories have emerged to explain the underlying mechanisms through which EW operates (Baikie & Wilhelm, 2005). The mechanisms commonly identified include emotional catharsis (Pennebaker & Beall, 1986), habituation (by repeatedly writing about the same topic) (Lepore & Smyth, 2002), inhibition and confrontation (Pennebaker, 1985), cognitive processing (Harber & Pennebaker, 1992), enhanced self-understanding (Park & Blumberg, 2002) and the cessation of rumination (Mohiyeddini, 2005). The available body of evidence both supports and refutes elements of these competing theories. At this point, no single theory is capable of explaining the process through which EW operates in its entirety.

With a focus on the ‘catharsis’ hypothesis, posited by Pennebaker and Beall (1986), writing about trauma leads to the release of previously inhibited emotions, which culminates in health benefits. However, there is limited evidence to support this hypothesis, as empirical evidence has shown that writing about undisclosed traumas could not differentially predict health improvements when compared with publicly known traumas (Greenberg & Stone, 1992). Further contradictory evidence stems from the fact that the short-term consequence of EW is often an increase in negative emotions, rather than an increase in positive emotions (Smyth, 1998). In addition, the number of health benefits accrued from EW are not correlated with the number of negative emotions expressed during writing, which one would expect if emotional catharsis were the defining operational mechanism of EW (Baikie & Wilhelm, 2005).

Pennebaker’s (1985) initial ‘emotional inhibition and confrontation’ theory of EW posits that suppressing the emotions associated with a challenging or traumatic event requires a

substantial level of cognitive and physiological resources. This emotional suppression could be considered a chronic low-grade stressor (Sapolsky, 2004; 2006). Therefore, suppressing the negative emotions associated with a traumatic event is thought to increase the proclivity to rumination, stress reactivity and long-term health complaints, as the body is constantly under chronic stress (Pennebaker, 1985). Thus, Pennebaker (1985) believed that recognizing and confronting emotions, generated by traumatic events, directly decreases the physiological stress of inhibition, which lowers the amount of strain being placed on the body.

Although this theory has intuitive appeal, empirical results have been equivocal (Baikie & Wilhelm, 2005). Conflicting evidence stems from the fact that journaling about traumas does not always lead to health benefits (Greenberg & Stone, 1992). In addition, health benefits have been shown in participants who have written about hypothetical traumas (Greenberg, Wortman & Stone, 1996). Therefore, it can be argued that, although some studies have shown an improvement in physiological and immune system functions, there is no direct evidence that this improvement stems from disinhibition, as no longitudinal studies have tested this hypothesis and inferred causality (Baikie & Wilhelm, 2005). Thus, although inhibition may play a crucial role in the EW process, the underlying mechanics of EW cannot be explained in terms of disinhibition alone.

A further attempt to explain the EW mechanism is the 'exposure' hypothesis. This hypothesis posits that health benefits accrue through the process of habituation, which decreases a person's negative emotional response to traumatic events (Lepore, 1997). The exposure hypothesis may begin to explain why structured writing programme have been efficacious in various studies working with clinical samples of patients diagnosed with PTSD (Emmerik,

Kamphuis & Emmelkamp, 2008; Klaschik, Karunakara, Elbert, Neuner & Schauer, 2004). One of the main characteristics of PTSD is the intrusion of disturbing memories and images (Yule, Smith, Perrin & Clark, 2012a); therefore, it is possible that expressive writing may be a helpful treatment for this disorder, as it may habituate the person to the negative stimuli. Partial support for this hypothesis was provided by Foa and Rothbaum (1998) who determined that chronic exposure to traumatic events decreased negative symptomology in patients suffering from PTSD. However, the timeframe of EW is problematic for the credibility of this hypothesis, as the EW task is typically undertaken for 15-30 minutes, while habituation has been shown to take 45-90 minutes before it has a significant effect (Jaycox, Foa & Morral, 1998). In addition, the fact that participants have experienced health benefits when writing about hypothetical events is an incongruent finding weakening this hypothesis (Greenberg, Wortman & Stone 1996).

A final theory put forth to explain EW is the cognitive processing hypothesis. Inherently, thinking is chaotic and disorganized, as it involves strong emotions, images, words and memories (Foa & Riggs, 1993). Thus, thinking about traumas or stressful events may keep them cycling in the mind until they are recorded or become integrated into an organized schema (Harber & Pennebaker, 1992). By writing about trauma, a person is given the opportunity to organize the event. As they label their emotions they gain insight into what happened, which allows them to organize the event into a coherent narrative, rationalize it and move on from their traumatic experience (Esterling, L'Abate, Murray & Pennebaker, 1999).

The cognitive processing hypothesis ascertains that writing about traumatic events allows the participant to systematize their distressing memories, thereby creating a more adaptive and integrated perspective, restructuring their views of themselves and others, as well as the situation as a whole (Van der Kolk, McFarlane & Weisaeth, 1996). Articulating a trauma in words helps systematically organize the experience by bringing it into conscious awareness (Campbell & Pennebaker, 2003). Furthermore, by capturing an emotion in writing, writers can evaluate and reflect on their feelings, cultivating a new meaning from the traumatizing event by integrating the new perspectives that this reflection reveals (Margola, Facchin, Revenson & Molgora, 2010). By making a narrative of a trauma one can re-organize, store and integrate it more effectively within a person's self-schema, which can decrease the amount of distress associated with the event (Sloan, Marx, Epstein & Dobbs, 2008). Once the person has been given a chance to cultivate a deepened understanding of their trauma, the memory can "be summarized, stored, and forgotten more efficiently" (Pennebaker & Seagal, 1999, pp. 1248). Normally, when a person is distressed by a traumatic experience, memory does not organize it into a cohesive narrative, which can result in the trauma being stored as an obsessive rumination, sensory perception or behavioural re-enactment (Van der Kolk & van der Hart, 1991).

Support for this theory has been demonstrated empirically, as results from EW studies indicate that health improvements are related to an increased use of insight and causal words, which may demonstrate acceptance across the writing process (Pennebaker, Mayne & Francis, 1997). This may show that writers are cognitively processing the event and restructuring their reality, allowing them to move on from the trauma after reaching a place of self-understanding

and personal growth. This is supported by the work of Pennebaker and Lay (2002), who determined that maximal health benefits accrue for those who use (as their writing progresses) a moderate number of negative-emotion words, a large number of positive-emotion words, and a large number of causal and insight words. In addition, a study by Warner and colleagues (2006) further supports this theory: they determined that in a youth sample, suffering from asthma, the EW intervention condition utilized a larger number of cognitive and emotion words which may have inferred greater emotional understanding. This study was in line with the work of Reynolds, Brewin and Saxton (2000) who determined the EW intervention group utilized a greater number of emotionally expressive words as well as more cognitive phrases when compared with the control condition. Similar results were obtained through a study by Settanni, Kliewer and Ciairano (2009), investigating the impact EW had on Italian youths, when writing on the subject of peer bullying. These researchers determined that EW was positively associated with enhanced coping, positive reframing and optimism, which lends further support to the cognitive processing hypothesis.

The aforementioned finding corresponds with the work of Lyubomirsky, Sousa and Dickerhoof (2006), who determined that the analytic and structured nature of EW facilitates emotion processing when dealing with a traumatic event, as it allows participants to externalize these events through their writing, enabling them to gain deeper insight and move past their traumatic experience. However, key limitations of this study are worth highlighting; firstly, all outcome measures were taken via self-report. In addition, the study sample was composed exclusively of students with a mean age of 19 years. An inherent limitation of self-report is social desirability and response bias, which could lead to skewed results. Moreover, the

homogenous nature of the study group presents a serious question to the generalizability of this research.

In summary, although numerous studies have lent support to this theory, it is difficult to test due to the very nature of cognitions, which are ephemeral and subjective. Thus, they are difficult to measure empirically with accuracy, due to a myriad of factors such as social desirability, cognitive bias and poor memory recall. However, there is evidence that EW increases working memory capacity, which may reflect enhanced cognitive processing (Klein & Boals, 2001). This may begin to provide objective proof of this theory, although further work is needed, as this is merely speculative at this point.

Currently, the competing hypotheses attempting to explain the EW process are those that postulate ‘inhibition and confrontation’, ‘emotional catharsis’, ‘exposure’ and ‘cognitive processing’ (Baikie & Wilhelm, 2005). Empirical research shows it is probable that cognitive processing plays an integral role in the EW process, as the development of a cogent narrative seems to help restructure traumatic events into more psychologically adaptive, internal self-schemas (Pennebaker & Chung 2012). However, each hypothesis has some measure of support, thereby demonstrating the need for further research, as the underlying mechanics of the EW process are clearly complex, making it likely that a combination of these theories is needed to explain the EW process exhaustively.

2.2.2 Expressive Writing and Emotion Regulation

In the next section of this thesis, expressive writing will be discussed in relation to its use as an emotion regulation strategy. Using the process model of emotion regulation (Gross, 1998b), EW has been conceptualized as both a response-focused and an antecedent-focused ER strategy (see Fig. 3). EW serves as an antecedent-focused strategy because cognitive change may be observed as writer's deal with emotionally charged events (Frisina, Borod & Lepore, 2004). Cognitive reappraisal shifts attentional focus to the crucial aspects of a situation, allowing for cognitive restructuring to occur, as writers re-assess the meaning of past events (Lepore & Smyth, 2002; Cameron & Jago, 2008). Thus, EW provides relief by enabling the transformation of traumatic events into cogent narratives (Smyth, True & Souto, 2001). This down-regulates negative affect enabling self-reflection to occur, as the writer gains deeper insight into their emotions and a greater understanding of the situation (Kuhl, 2000; Pennebaker, Mayne & Francis, 1997). A study by Paez, Velasco and Gonzalez (1999) found that as EW sessions progress, participant's re-conceptualize their traumas redefining the impact of the event. It is plausible that viewing negative emotions as emotions, within one's control, would decrease their relative impact, and therefore, the persistence of negative affect.

As a response-focused strategy, EW changes participants' perceptions of their reactions to a situation; thus, behavioural changes can be planned for when similar situations occur in the future (Meadows & Foa 1999). In addition, when EW addresses difficult topics regularly, a stimulus-and-response habituation is established, which neutralizes the emotional impact of challenging events (Foa & Kozak, 1986).

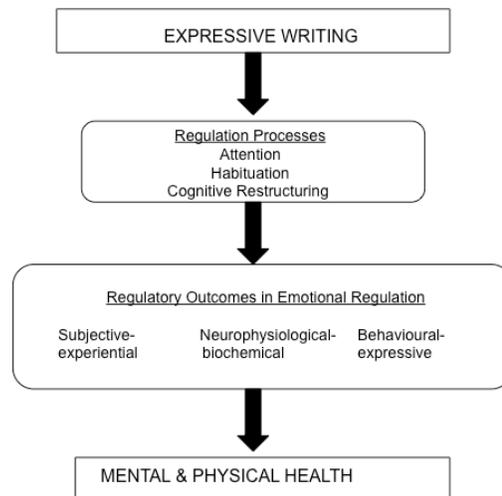


Figure 3. Expressive Writing and Emotion Regulation Model, adapted from Lepore and Greenberg, (2002)

The above figure illustrates how EW serves as an antecedent ER strategy by impacting attentional focus and eliciting cognitive change. As a response-focused strategy, EW can lead to habituation; therefore, when a similar situation is faced in the future, it will change the behavioural and physiological response the individual has to that specific situation.

2.2.3 Strengths of Expressive Writing: Links to Health and Wellbeing

Initially, early studies demonstrated the efficacy of EW with reference to objective health measurements, such as a reduction in the frequency of physician visits (Pennebaker & Beall, 1986). However, later research highlighted further benefits, such as improved immune-system function (Sloan & Marx, 2004), increased GPA (Pennebaker & Chung, 2012), increased self-efficacy (Kirk, Schutte & Hine, 2011) and decreased anxiety levels (Pennebaker, Mayne & Francis, 1997).

A recent study by Margola and colleagues (2010), investigated the impact EW had on youth who utilized this strategy to cope with the death of a classmate. This study revealed a

transformation across the three days of writing. In this sample, the writing from day one went from being completely factual, pertaining to participant's specific reactions to the death, to enhanced emotional and cognitive processing, on day two of writing. On the final day, participants demonstrated an insightful outlook in their writing, focusing on the importance of family and relationships.

This result may suggest cognitive reappraisal occurred as the EW process progressed. Thus, EW may have served as an effective coping tool, as students eventually came to terms with what had happened to their friend. This is a significant finding, as past research has shown youth are inclined to emotional suppression when facing a traumatic event, such as the death of a loved one (Dyregrov, Gjestad, Wikander & Vigerust, 1999; Harrison & Harrington, 2001). Therefore, this technique may have helped students improve their mental wellbeing by enabling them to draw meaning from their trauma (Park & Folkman, 1997; Taylor, 1983) through emotional and cognitive processing (Pennebaker, 2004; Smyth, Pennebaker & Arigo, 2012; Tedeschi & Calhoun, 2006). Thus, EW may have enhanced emotion regulation by giving the students a sense of control and mastery as they processed the trauma into an organized narrative (Giannotta et al., 2009). Due to its positive outcomes, it is important to recognize a strong point of this research. Accordingly, the data was collected in a naturalistic setting, immediately following an acute trauma; therefore, the ecological validity of this study was high. In conclusion, from an applied practitioner's perspective, having a client write about a traumatic event may be a non-intrusive, cost effective way to improve emotional adjustment.

Apart from the psychological benefits, EW has also been shown to improve physical health in a variety of ways, such as reducing the severity of symptoms in rheumatoid and asthmatic patients (Kelly, Lumley & Leisen, 1997; Smyth, Stone, Hurewitz & Kaell, 1999), improving immune system functioning (Booth, Petrie & Pennebaker, 1997; Petrie, Booth & Pennebaker, 1998; Petrie, Fontanilla & Thomas, 2004) and facilitating cancer recovery (Stanton & Danoff-Burg, 2002). A recent study by Lu, Zheng, Young, Kagawa-Singer and Loh, (2012) investigating the efficacy of an EW intervention for Chinese breast cancer survivors, determined EW was an effective intervention improving mental and physical wellbeing with medium to large effect sizes, when measured at a 3 and 6 month follow-up. These researchers found that a brief, EW intervention resulted in both high compliance and high completion rates by participants; furthermore, from a subjective standpoint, the intervention was considered to be very helpful by participants.

This finding may be specifically relevant for a Chinese population, as emotional suppression is a cultural norm (Sue & Sue, 1999). Therefore, as it is considered socially desirable to suppress one's emotions within this culture, it may be difficult for women who are struggling with strong emotions, due to their illness, to find an acceptable emotional outlet. These women may have wanted to reach out to others to build a social support network, but may have felt conflicted, as the outward expression of strong emotions may have been seen as a cultural taboo. Thus, the very nature of EW may lend itself to this population, as it allows one to privately express their emotions openly and honestly through writing. Consequently, the harmony of the group is upheld and emotions are expressed in a way that does not conflict with social norms (Lu et al., 2012). Although this study yielded positive findings, a few

limitations are worth noting. Firstly, this study did not utilize a control group; therefore, the positive outcomes of this research may have resulted from alternative factors, such as the natural aetiology of recovery for cancer survivors (Andersen, Bowen, Morea, Stein & Baker, 2009). In addition, the use of a small, non-random sample that was analysed via self-referenced questionnaires is a further weakness, limiting the generalizability of these findings.

On an interpersonal level, EW has been shown to enhance social and behavioural functioning by improving social and linguistic behaviour (Pennebaker & Graybeal, 2001). A study by Wong and Rochlen (2009) investigating EW in emotionally inexpressive men, determined that men in the intervention group, writing about the ideal emotional connection they could have with a romantic partner, exhibited a decrease in psychological distress when compared to the control group who wrote about neutral topics. Thus, EW may have given men, in the intervention group, a chance to deconstruct the way they interact with their partner, allowing them to proactively trouble shoot their weaknesses in this area. After this initial process had occurred, they then had the opportunity to cognitively process and emotionally restructure their beliefs and opinions regarding their interactions with their partner in a more adaptive way. It would have been interesting if this study had included the partner's views and opinions regarding the relationship at the follow-up measurement, to determine whether the partners had noticed any positive changes in the participant's emotional behaviour.

2.2.4 Expressive Writing and Psychopathology

EW is a robust technique that has demonstrated efficacy in the treatment of mental health issues (Baikie & Wilhelm, 2005). A recent meta-analysis investigating the effectiveness of EW on clinical samples by Frisina, Borod and Lepore (2004), determined that EW led to a significant improvement in health outcomes.

EW has also been shown to improve mental health through the reduction of depressive symptoms prior to examinations (Lepore, 1997). Other improvements attributed to engagement in EW are mood repair (Pennebaker, Kiecolt-Glaser & Glaser, 1988), greater emotional comfort (Rosenberg, Rosenberg & Ernstoff, 2002) and increased overall psychological wellbeing (Park & Blumberg, 2002). An intervention study by Sloan, Marx, Epstein and Dobbs (2008) determined that a brooding, ruminative response style moderated the impact of an EW intervention, such that writers, who scored high in brooding, reported a significant reduction in depressive symptomology at a 6 month follow-up measurement, when compared with writers who scored low in brooding. Rumination is characterized by cognitive inflexibility (Davis & Nolen-Hoeksema, 2000; Ward, Lyubomirsky, Sousa & Nolen-Hoeksema, 2003); therefore, it is possible that EW provides a vehicle through which rigid thought patterns may be challenged, organized and restructured into more adaptive cognitions (Lyubomirsky, Sousa & Dickerhoof, 2006). Sloan and colleagues (2008) summed up their results boldly stating, “the effects of brooding can be undone with a brief and easily implemented intervention” (Sloan et al., pp. 305).

2.2.5 Expressive Writing: A Critical Evaluation of the Method and the Extant Research

Although the benefits of EW are widespread, it is important to critically evaluate this method and the body of research that has determined its efficacy. In particular, the most important limitation of EW, as a technique, is that the original writing paradigm (Pennebaker & Beal, 1986) lacks critical reflexivity. In order to address this particular limitation, a modification of the writing paradigm was utilized in the current study, where participants were first educated about the damaging effects of rumination. After writing, participants were asked to critically evaluate what they had written, crossing out irrational and unrealistic passages. This was done to increase self-awareness and challenge irrational beliefs in an attempt to break the maladaptive cycle of ruminative thinking, which has been positively correlated with depression (Deyo, Wilson, Ong & Koopman, 2009).

An additional drawback to EW is that the technique itself is subjective and is based on a person's inherent writing skills. Thus, individual differences may play a causal role in outcome effects. For example, people who are adept writers may find this technique more useful when compared to novice or infrequent writers who may experience frustration due to the writing process itself.

A further limitation of this technique is emotional discomfort, as many participants report being very upset by the EW experience itself in the short-term (Pennebaker, Mayne & Francis, 1997). This may be an issue with this technique when used with a clinical sample or with people who have a fragile mental psyche. Therefore, EW may be a more suitable technique for a non-clinical, community-based sample (Harrist et al., 2007).

From a methodological standpoint, a current limitation existing within the extant EW literature is, the absence of randomized clinical trials conducted on large, diverse samples (Mead, 2003). An additional weakness is the large degree of variation that occurs within studies between follow-up measurements. Contemporary studies have varied dramatically, as some have failed to include a follow-up measurement; whereas, others have conducted a follow-up measurement 6 months after the original study had taken place (Pennebaker & Chung, 2012). However, developing a standardized follow-up procedure, within this area would be difficult, due to the large diversity of outcome measures utilized, which have ranged from measuring changes in GPA, to investigating frequency in physician visits (Cameron & Nichols, 1998). In contrast, when determining the appropriate duration for a follow-up measurement, one should consider utilizing multiple measurement techniques, such as gathering both objective and subjective data. In addition, one should determine a realistic time course relating directly to the outcome measures that are under investigation, within that specific study.

2.2.6 Summary

In a clinical setting, the writing paradigm is recognized as an auspicious approach to the amelioration of depressive symptoms (Pennebaker, Mayne & Francis, 1997). A recent study by Pennebaker and Chung (2006), found that an EW intervention decreased depressive symptomology, a result that was mediated by a reduction in ruminative coping.

This technique was adapted by Mohiyeddini (2005) for a clinical sample. In this study, the sample was first educated about rumination, and how it can be identified in the participants

themselves. Participants were then asked to focus their writing on the ruminative content of their negative cognitions, instead of merely journaling about their deepest thoughts and feelings. In the first stage of this programme, introspection allowed participants to identify ruminative thought patterns. Being aware of the nature of ruminative thinking, the individual increased self-awareness, and acquired the ability to challenge irrational beliefs. This self-awareness empowered the individual, enabling them to break the chain of maladaptive, cyclical thinking they were accustomed to. In the intervention study by Mohiyeddini (2005) depressive symptoms were shown to significantly decrease in the intervention group. In the current research, the EW intervention workshop followed the EW protocol used by Mohiyeddini (2005), where expressive writing was used in an attempt to decrease the use of ruminative coping and depressive symptoms.

2.3 Self-talk: Definition and Underlying Processes

In the next section of this chapter, self-talk, another component of the emotion-regulation based intervention, will be defined and discussed from a critical perspective. Self-talk is a form of intrapersonal communication; it consists of the internal dialogue we conduct with ourselves throughout the day (Hardy, Oliver & Tod, 2009). According to a critical review by Hardy (2006), self-talk is a dynamic, multidimensional construct comprised of both verbal and non-verbal self-statements. The content of these statements serves either a functional or motivational purpose to the speaker. An important aspect of self-talk, often overlooked in the literature, is that the contents of this speech contain interpretive aspects to the speaker (Hardy, Gammage & Hall, 2001). In particular, both the manner in which an individual uses self-talk and the content of these self-statements, is highly subjective and will vary depending on the background, behaviour and personality of the individual employing self-talk.

Self-talk has a number of positive benefits. For example, it may help people understand their life experiences by offering motivational or instructional cues (Hackfort & Schwenkmezger, 1993). In addition, it may improve confidence by influencing attentional focus and regulating effort (Theodorakis, Hatzigeorgiadis & Chroni, 2008). Furthermore, self-talk has been linked to self-regulation (Fernyhough & Fradley, 2005), performance (Hatzigeorgiadis, Theodorakis & Zourbanos, 2004), problem solving (Depape, Hakim-Larson, Voelker, Page & Jackson, 2006) and self-efficacy (Hardy, Hall, Gibbs, and Greensdale, 2005). Moreover, positive self-talk has been cited as a cardinal prerequisite in the cultivation of both personal (Gardner, 1983, 1999) and emotional intelligence (Salovey & Mayer, 1990), as it allows individuals to incorporate other's viewpoints into their own internal dialogue (Lane, Thelwell, Lowther, & Devonport, 2009).

2.3.1 Self-talk and ER

In the next section, the link between self-talk and emotion regulation will be discussed. When treating emotional disorders with self-talk, a core component of treatment is the replacement of negative self-talk with either neutral or positive self-talk (Kendall & Choudhury, 2003; Wilding & Milne, 2010). Research produced by Kendall and Treadwell (2007) determined that a reduction in the amount of negative self-statements influenced intervention outcomes in a positive way. This study demonstrated that positive self-statements played a key role in cultivating positive intervention outcomes for youth dealing with anxiety disorders. Accordingly, positive self-talk may facilitate the maintenance or intensification of positive emotions (hedonistic emotion regulation, Larsen, 2000), and may function in mood repair (Salovey, Mayer, Goldman, Turvey & Palfai, 1995) by changing the valence of emotions.

During intervention for emotional disorders, attention diversion techniques are often employed. For example, rather than focusing on past failures or negative thoughts, individuals are trained to focus their attention on the task at hand, using self-talk as a cue telling themselves to “stay in the moment” (Cox, 1998). This is an adaptive strategy allowing the individual to maintain focus on a difficult task by blocking out both external and internal distractions.

In addition, the thought-stopping technique is taught. This involves the initial recognition of negative cognitions by the individual, who then instructs themselves to ‘STOP’ and replace the maladaptive cognitions with more adaptive, self-affirming thoughts (Davis, Robbins-Eshelman & McKay, 2000).

Generating positive self-talk helps individuals focus on the positive aspects of a situation; this builds confidence and increases self-awareness (Kirschenbaum, 1997; Zinsser, Bunker & Williams, 2006). Self-talk using phrases such as ‘have to,’ ‘must’ and ‘need to’ are discouraged, as they tend to increase pressure levels. All self-talk is framed in positive linguistic structures, so a phrase such as ‘don’t give up’ is replaced with ‘keep going’, which focuses attention on the desired action.

However, not all of the outcomes for self-talk can be regarded as positive. In particular, negative self-talk has been linked to a myriad of psychopathologies, such as guilt (Kubany, Hill & Owens 2004; Firestone, 1987), anxiety (Goldin, Ball, Werner, Heimberg & Gross, 2009; Treadwell & Kendall, 1996) and the onset, maintenance and propagation of major

depressive disorder (Beck, Brown, Steer, Eidelson & Riskind, 1987; Kelly, Zuroff & Shapira, 2009). This is why the reduction of negative and distorted self-talk is crucial and is one of the targets of the ERT intervention utilized within the current research project.

2.3.2 Strengths of Self-talk: Links to Health and Wellbeing

The majority of strengths related to the self-talk technique can be conceptualized by evaluating the findings from previous literature. A study by Kubany and colleagues (2004) utilized cognitive therapy for battered women suffering from PTSD. This therapeutic programme taught participants to monitor self-talk and address negative self-talk directly, by breaking the habitual tendency towards negative, evaluative self-talk, replacing it with more adaptive cognitions. Within this large, ethnically diverse sample, PTSD abated in 87% of the population with strong reductions in shame, depression and guilt and significant increases in self-esteem. These psychological gains were maintained at both a 3- and a 6- month follow-up. Concordantly, in three consecutive studies by Koole, Smeets, Knippenberg and Dijksterhuis (1999) participants completed what they believed to be an IQ test. On this test all participants in the experimental group were told that they had failed, whereas, control participants were told they had been successful. In study 1 and 2, failure feedback was positively correlated with an increase in rumination, when compared with the control conditions. However, rumination was reduced in the intervention group when participants were given the opportunity to self-affirm, via self-talk, both before (Study 1 and Study 2) and after failure (Study 3) feedback was given. Furthermore, self-affirmation was linked to enhanced positive affect; thus, these researchers concluded that the use of positive affirmation statements was a viable strategy for the cessation of ruminative thinking.

2.3.3 Self-talk: A Critical Evaluation of the Research

Self-talk is a universal human phenomenon; humans have nearly 50,000 thoughts a day, making self-talk one of the most frequent activities a person engages in during daily life (Morin, 1993). Due to its frequency and importance in emotion generation, strong methodological research into this area is warranted. However, this has not been the case, as research has been plagued by small sample sizes and a lack of theory-driven research investigating the underlying mechanism through which self-talk operates (Hardy, 2006). In addition, research has largely overlooked the interpretive aspect of self-talk, which may moderate outcome effects. For example, if athlete A tells themselves 'try harder' and they associate this phrase with feelings of guilt and failure, this will probably be associated with negative outcomes; however, if athlete B tells themselves 'try harder', yet they associate this with motivation and vigour, this phrase would probably be associated with neutral or positive outcomes.

An additional weakness in this field is the lack of research investigating the use of positive self-talk as an adaptive strategy for emotion regulation. From a theoretical stand-point, it seems logical that negative emotive states may increase the frequency of negative self-talk (mood-dependent retrieval, Bower, 1981) which, in turn, may maintain or strengthen negative affect (distress-augmenting emotion regulation, Mohiyeddini, in prep). Conversely, positive self-talk may maintain or strengthen positive affect (hedonistic emotion regulation, Larsen, 2000) and serve as an emotion regulation strategy functioning in mood repair (Salovey et al., 1995). Thus, future investigation is warranted using large samples so that advanced statistical techniques can be employed, such as structure equation modelling. This would be

advantageous, as a comprehensive, theoretical model could be built that explains the relationship between self-talk and emotion regulation in detail. In addition, future research should seek to investigate the relationship between emotional suppression (Gross, 2002), rumination (Nolen-Hoeksema, 2000) and negative self-talk in greater depth, to better understand the causal role self-talk plays in the maintenance and propagation of psychopathology.

2.3.4 Summary

Self-talk is a cornerstone of human functioning: it influences emotions, thoughts and behaviours (Brinthaup, Hein & Kramer, 2009). In the current research project, self-talk was addressed in the final workshop, where participants were taught to recognize cognitive distortions (Burns, 1989) and restructure them through the thought-stopping technique. In addition, participants focused on their personal strengths and achievements, in order to construct positive affirmation statements to use in times of stress to combat rumination.

2.4 Mindfulness: Definition and Underlying Processes

Another component of emotion-regulation-based interventions is mindfulness. The word mindfulness is derived from the Pali word *sati*, which means ‘to remember’ (Bodhi, 2000). However, when used in contemporary psychology, mindfulness refers to sustained attention to the physiological, somatic and emotional aspects of the current situation, without judgment. Mindfulness is entrenched in the fundamental processes of consciousness: awareness and attention (Brown & Ryan, 2003). The leading expert on the topic, John Kabat-Zinn has defined mindfulness as, “paying attention in a particular way: on purpose, in the present

moment and non-judgmentally” (Kabat-Zinn, 1994, pp. 4). However, in order to comprehend mindfulness, from both a practical and theoretical standpoint, one must first have a formative understanding of metacognition.

Metacognition refers to the stable knowledge, or beliefs, about one’s own cognitive system, and to one’s knowledge about factors affecting the functioning of this system (Myers & Wells, 2005). An example of a metacognition is ‘it is bad to worry all the time’, or conversely, ‘worrying will help me find the answers to all my problems’. Metacognitions fuel the action of the cognitive system, leading to alternative thinking styles that can either impede or facilitate the processing of emotions (Wells & Mathews, 1996).

Sometimes, emotional disturbances are exacerbated because people become trapped in maladaptive metacognitions, to the point where these metacognitions make it natural for them to react to negative events in a way that heightens their negative emotional experience (Wells & Sembi, 2004). Metacognitive coping styles can adversely affect the outcomes of a stressful experience if a person’s preservative style sets in motion the rumination cycle, or if thought-suppression strategies are implemented (Wells, 2008). Metacognitions play a crucial role in propagating maladaptive coping styles (e.g. heightened self-focus, cyclical thinking patterns and threat monitoring) contributing to the development and maintenance of psychological dysfunction (Wells, 2000). Maladaptive metacognitive styles have been linked to psychopathology in the form of pathological worry (Wells & Papageorgiou, 1998), depression (Papageorgiou & Wells, 2003), obsessive-compulsive disorder (Myers & Wells, 2005), post-traumatic stress disorder (Roussis & Wells, 2006), stress reactivity (Spada, Nikcevic, Moneta

& Wells, 2008) and test-anxiety (Matthews, Hillyard & Campbell, 1999; Spada, Nikcevic, Moneta & Ireson, 2006).

In theoretical application, three types of metacognitive styles have consistently been linked to psychological dysfunction: (i) negative beliefs about worry, with regards to uncontrollability and danger; (ii) beliefs about the need to control one's thoughts; and (iii) low cognitive confidence (Spada, Mohiyeddini & Wells, 2008). It is probable that these dimensions of metacognitive belief play a critical role in the prediction of negative affect, by propagating enduring, negative perceptions of internal experiences, which leads to an increase in both anxiety and depressive symptomology (Wells, 2000).

2.4.1 Metacognition and ER

Metacognitions are intimately tied to emotion regulation. Metacognitions influence antecedent-based emotion regulation strategies because an individual's views regarding their cognitions impact both their attentional foci and their cognitive appraisal of a situation (Bartsch, Vorder, Mangold & Viehoff, 2008). Therefore, the goal of metacognitive therapy is to shift a person's mode of processing to first identify worry, rumination and hyper-vigilance strategies (Fisher & Wells, 2008) and then displace these strategies with a state of 'detached mindfulness' (Wells & Matthews, 1996), when dealing with difficult situations. Detached mindfulness can be defined as a deepened awareness of thought, with no attempt to cope or judge (Wells & Matthews, 1994). Metacognitive therapy involves a shift from rumination and worry to a state of cognitive flexibility that may be conceptualized as a state of detached mindfulness (Wells & Sembi, 2004). This adaptive processing style is characterized by

flexibility in attention control, low levels of rumination, and high levels of acceptance and mental stimulation (Wells & Sembi, 2004).

Metacognitions and mindfulness are closely linked. The activation of metacognitive processes, such as thought monitoring, is required before one can enter into a state of mindful awareness (Wells, 2005). In addition, many mindfulness training programmes teach metacognitive insight, where thoughts are seen as passing events in the mind, rather than inherent aspects of the self or as accurate reflections of reality (Teasdale et al., 2002). However, mindfulness is also regarded as an independent construct in its own right. Thus, a detailed discussion of mindfulness is warranted, as it has become a ubiquitous component of many third wave therapies (Allen, Chambers & Knight, 2006).

In essence, mindfulness is non-elaborative, flexible awareness (awareness free of secondary appraisals) of present-moment experience (Germer, 2005). It consists of purposeful attention to current cognitive, sensory and emotional experiences, without elaboration or judgment (Kabat-Zinn, 1990): what is experienced is simply registered. This does not, however, imply a passive process, as being mindful is an active endeavour involving enhanced awareness of the current moment (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006).

Mindfulness allows one to cultivate an open and receptive mind-set, where information, emotions and sensations are observed in an unbiased way (Brown, Ryan & Creswell, 2007). Mindfulness involves 'decentering' from both emotions and thoughts, letting them come and go without attaching any particular truth or meaning to them. Doing this promotes a certain

degree of freedom from ingrained, reflexive reactions (Segal, Teasdale & Williams, 2002). This allows people to experience both external and internal events openly, without cognitive distortions or ego defensivity (Brown & Kasser, 2005).

The mind is prone to worry about the future, or to dwell on the past; mindfulness shifts this propensity by promoting present-moment awareness (Begley, 2007). It encourages one to face thoughts and feelings directly, instead of avoiding or suppressing them, even when they are negative (Weinstein, Brown & Ryan, 2009). This allows behavioural choices to be made that facilitate the achievement of long-term goals, rather than choices aimed at reducing or eradicating current discomfort (Kabat-Zinn, 1994). When being mindful, one accepts thoughts and emotions without automatically responding to them (Bishop, Lau, Shapiro, Carlson & Anderson, 2004). Segal, Teasdale and Williams (2002) state that accepting one's current experience, with a sharpened sense of awareness, disrupts the automatic, maladaptive responses individuals have often habituated to when experiencing negative emotions. Kabat-Zinn (2003) notes that the aim of mindfulness-training is not relaxation, but rather to gain deeper insight into, and a better understanding of, each moment through immediate experience, without labelling or judging that experience.

Mindfulness skills include staying in the moment, being non-judgmental, heightening awareness and acceptance (Germer, 2005). Mindfulness training teaches participants not to engage with disturbing emotions and to avoid actively re-structuring or suppressing them (Weinstein, Brown & Ryan, 2009). Instead, waiting is encouraged, both for the disturbing emotion to pass, and for the advent of a more adaptive emotion; thus, attempts to restructure

or avoid emotions are recognized but not acted upon (Kabat-Zinn, 1990). During mindfulness training, participants are urged to first identify and then abandon thought-control strategies (Safran & Segal, 1990). They are then advised to engage in active awareness. Active awareness is a process that involves experiencing difficult thoughts and feelings, while learning to merely notice them. Avoiding or disputing thoughts is discouraged, which ultimately decreases emotional reactivity (Hayes, Wilson, Gifford, Follette & Strosahl, 1996). Participants are taught to distinguish cognitions, emotions and feelings from the person who is having them; for example, a trained mindful person will say: 'I'm thinking that I'm a bad person', rather than 'I am a bad person' (Kohlenberg, Hayes & Tsai, 1993, pp. 588).

In the next section of this thesis the underlying processes delineating mindfulness will be discussed. Although, the mechanism through which mindfulness operates is currently unknown, a variety of hypotheses have emerged attempting to explain this process; they are known as the cognitive, exposure and acceptance hypotheses. (Chambers, Gullone & Allen, 2009).

From a cognitive perspective, mindfulness training encourages one to observe both thoughts and feelings, descriptively but non-judgmentally (Baer, 2003) allowing the individual to realize that thoughts are merely thoughts and are not always true reflections of reality (Linehan, 1993). Taking a mindfulness approach, the person thinking 'I am unlovable' will notice and accept this as being an inconsequential thought, not the articulation of a concrete fact. This changes the emotional impact of the cognition, thereby impacting behaviour. Thus, mindfulness may be understood as cognitive reappraisal, occurring on a process rather than a

content level (Siegel, 2007). Mindfulness focuses on changing the function of thoughts, rather than their actual content, as it encourages disengagement from harmful cognitions and emotions (Kabat-Zinn, 1990). Individuals are encouraged to accept thoughts without trying to change their actual content.

The 'exposure' hypothesis states that mindfulness training improves the ability to experience pain without a strong emotional reaction. This is possible through a desensitization process by which participants explore their chronic pain and the associated emotions, accepting the painful sensations and negative thoughts (Kabat-Zinn, 1982). Thus, even though the amount of pain experienced may not be reduced, the level of distress the individual suffers is lowered through the desensitization process.

The 'acceptance' hypothesis of mindfulness posits that experiencing an event in its entirety, without defence or secondary appraisal, promotes adaptive emotion-regulation (Hayes & Wilson, 1994). In the past, with the current emphasis on cognitive behavioural therapy, clinicians may have overemphasized the importance of changing all unpleasant thoughts and feelings into something more positive. This approach can prove deleterious, as it may lead to avoidant behaviour (Baer, 2003). Thus, acceptance strategies of mindfulness may contravene maladaptive, response-focused emotion-regulation strategies, such as avoidance or emotional suppression.

2.4.2 Mindfulness and ER

In the following section, the link between mindfulness and emotion regulation will be outlined. The process model of emotion regulation consists of antecedent-focused emotion regulation strategies that come early in the emotion generative process, thereby impacting cognition. In addition this model includes response-focused strategies that come much later in this process, thereby impacting behaviour (Gross, 1998b). Despite decades of research, the relationship between mindfulness and emotional regulation is still ambiguous.

Hofmann and Asmundson (2008) hypothesize that mindfulness alters one's relationship to the current situation. This implies that mindfulness operates as a response-focused emotion-regulation strategy, as it involves learning to accept, rather than automatically react to cognitions and emotions. However, a mindfulness-training intervention by Brown, Ryan and Creswell (2007), conceptualized mindfulness as an antecedent-focused strategy because it utilizes attentional deployment, as participants are taught to disengage from disturbing thoughts and feelings. This is supported by the work of Lutz, Slagter, Dunne and Davidson (2008) who propose that mindfulness training leads to an 'improvement in the capacity to disengage from aversive emotional stimuli ... enabling greater emotional flexibility' (pp. 4). Thus, certain aspects of mindfulness training (for example, meditation) may influence attentional deployment (antecedent-focused emotion-regulation). This can enhance the control of attention-allocation and regulation (Slagter, Lutz, Greischar, Nieuwenhuis & Davidson, 2009), self-focused attention (Goldin, Ramel & Gross, 2009), negative rumination (Ramel, Goldin, Carmona & McQuaid, 2004) and orientation to a spatial cue (Jha, Krompinger & Baime, 2007).

Although it may not be clear at what point mindfulness influences the emotion-generating process, mindfulness has been shown to have a positive impact on emotion regulation capacities (Erisman & Roemer, 2010). A study by Arch and Craske (2006) determined that when compared with controls, a mindfulness-intervention group showed a greater willingness to be exposed to disturbing images, as well as a reduced reaction to negative slides. This was manifested through lower levels of negative affect and emotional volatility. Strong points of this study are worth highlighting: firstly, this experiment employed both subjective and objective measurements. Secondly, during the mindfulness induction, the experimenter left the room while the participants were viewing the slides, in order to decrease the experimental demands placed on the participant and to combat social desirability. Thus, this experiment employed a strong experimental design. However, a small homogenous sample and the fact that participants claimed they did not put much effort into following the mindfulness induction instructions are limitations of this study.

Further support for the role of mindfulness in adaptive emotion regulation, was gathered in a recent study by Erisman and Roemer (2010) that determined participants, in a mindfulness condition, reported significantly higher levels of positive affect in response to a negative film, when compared with a control group. Concordantly, a study by McKee, Zvolensky, Solomon, Bernstein and Leen-Feldner, (2007) found that higher levels of negative affect and anxiety were correlated with lower levels of mindfulness skills. However, causality cannot be inferred from this study due to its correlational research design. In line with these findings, Coffey and Hartman (2008) determined that an inverse correlation between mindfulness and stress was mediated by emotion regulation capacities. On a neurological level, mindfulness may enhance

emotion regulation competencies by increasing pre-frontal cortex activation while concurrently inhibiting amygdala responses when emotional information is being processed (Creswell, Way, Eisenberger & Lieberman, 2007; Goldin & Gross, 2010).

2.4.3 Strengths of Mindfulness: Links to Health and Wellbeing

In recent years, mindfulness practices have been adapted for clinical use in both a mental health and medical environment (Kabat-Zinn, 2003). Some of the more popular programmes currently utilizing mindfulness are: mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1982), dialectical behaviour therapy (DBT; Linehan, 1993), acceptance and commitment therapy (ACT; Hayes & Wilson, 1994) and mindfulness-based cognitive therapy (MBCT; Segal, Teasdale & Williams, 2002).

The aforementioned training programmes view mindfulness as a tangible skill that can be enhanced through guided exercises, personal practice and social support (Kabat-Zinn, 1990). Both MBSR and MBCT are heavily reliant on formal meditation, whereas DBT and ACT involve shorter exercises and do not require participants to engage in formal meditative practices (Chambers, Gullone & Allen, 2009). Predominantly, the majority of research in the field of stress, anxiety and wellbeing has been carried out using either MBCT or MBSR (Chiesa & Serretti, 2009). Although MBSR is extremely popular and one of the most widely used mindfulness programmes, it has been criticized in the extant literature, due to its programme length (30 hours of training with a final 8 hour full day session) and the high degree of commitment expected from participants (45 minutes of homework at least 6 days a week throughout the duration of the programme). Consequently, this has resulted in high

dropout rates in experimental research (Baer, 2003). Nevertheless, in both controlled and uncontrolled studies, these two intervention programmes have demonstrated efficacy in both the long and short term (see Baer, 2003; Grossman, Niemann, Schmidt & Walach, 2004 for reviews).

In a clinical setting, a study by Bach and Hayes (2002) determined that 4 sessions of individualized ACT therapy lowered the rate of hospitalization for chronically hospitalized patients suffering from psychosis by 50%, which was sustained over a 4 month period. In addition, ACT has been shown to be an effective intervention strategy for treating psychological symptoms in healthy populations experiencing high levels of stress (Bond & Bunce, 2000). A recent study by Zautra and colleagues (2008) that compared the efficacy of a cognitive behavioural therapy intervention (CBT), a mindfulness emotion-regulation intervention programme and a positive placebo (disease education training) in rheumatoid arthritis patients, concluded that both the CBT training group and the emotion-regulation group showed an increase in coping efficacy, when compared with the placebo. In addition, the CBT group also showed the highest increase in self-reported and observed pain control. In this study, emotion-regulation training was the most beneficial for the depressed participants. Although this study showed a significant difference between the intervention and the placebo group, as a control group was not utilized within this study, there was no means of determining whether the intervention alone produced the observed results. In addition, methodological inconsistencies may have influenced the results, as the CBT intervention followed a well-established procedure, whilst the mindfulness-training procedure was created for the current study and had not been experimentally validated within the literature. In

addition, the number of depressed participants receiving emotion-regulation training was small (N = 6), which leaves these findings incapable of generalization to larger populations.

In clinical samples, mindfulness therapy has been effective in treating anxiety (Evans et al., 2008), depression (Ma & Teasdale, 2004), decreasing the risk for depression (Deyo et al., 2009), preventing the relapse of major depression (Segal, Williams & Teasdale, 2002; Teasdale et al., 2000) and treating residual depressive symptoms (Kingston, Dooley, Bates, Lawlor & Malone, 2007). A study on recurrent depression by Ma and Teasdale (2004) determined that, in participants who had experienced three or more bouts of depression, mindfulness training was able to reduce the relapse rate from 78% to 36%. Similarly, a study by Smith and colleagues (2011), on urban firefighters, determined that mindfulness training was linked to fewer physical symptoms, less PTSD symptoms and lower depressive symptomology and alcohol-related problems. This study implies that, in careers characterized by high burn out rates, mindfulness may serve as a protective factor, providing resilience to stress and exhaustion. Concordantly, a study by Kuyken and colleagues (2008), investigating the treatment of recurrent depression, compared anti-depressant medication with MBCT training. This study determined that relapse rates were lower for the MBCT group at a 15-month follow-up, when compared to the medication intervention group. Thus, MBCT was a more effective intervention for reducing residual depressogenic symptoms and improving overall quality of life in resistant depression cases than traditional medications, which are frequently employed as a first line of defence in Western medical traditions (Goleman, 2003).

In addition to its strengths at improving mental health, mindfulness has also demonstrated efficacy at improving physical health. For example, mindfulness has been shown to be an

effective intervention for chronic pain (Kabat-Zinn, 1982; Raluca, 2011). In an early study by Kabat-Zinn (1982), patients suffering from chronic pain completed the 10-week MBSR training programme. Results revealed that participants demonstrated a significant decrease in pain, psychiatric symptoms and overall mood disturbance, which was maintained at a 15-month follow-up measurement (Kabat-Zinn, Lipworth & Burney, 1985). Concordantly, in a recent study by McCracken, Gutiérrez-Martínez and Smyth (2012), which employed a robust sample of 150 participants suffering from chronic pain, the ability to cultivate the mindfulness skills of decentering and acceptance explained 23.6% of the variance of observed levels of psychosocial disability and depression. It is interesting to note that within this study, actual pain levels only accounted for 2.5% of the observed variance.

In non-clinical populations, mindfulness training has also shown strong positive outcome effects. Mindfulness has been shown to lower negative self-focused attention (Murphy, 1995), to decrease the intensity and frequency of negative affect (Brown & Ryan, 2003) and to decrease destructive emotional responses (Ramel, et al., 2004). Moreover, mindfulness has been shown to change distorted self-images (Goldin, Ramel & Gross, 2009) and improve physical health (Davidson et al., 2003). Davidson and colleagues (2003) employed a healthy sample of 41 participants, assigning them to either a control (N = 16) or training (N = 25) MBSR condition. After 8 weeks, the training group showed a marked improvement in immune system functioning, when compared with the control group.

In addition, mindfulness has been linked to decreased stress reactivity (Davidson et al., 2003), decreased negative affect (Chambers, Lo & Allen, 2008) and improved levels of mood and

wellbeing in cancer patients (Carlson, Speca, Kamala & Goodeya, 2004; Speca, Carlson, Goodey & Angen, 2000). A recent meta-analysis by Piet, Würtzen and Zachariae (2012), investigating the efficacy of mindfulness at treating anxiety and depression in cancer patients and survivors, analysed 22 studies that included 1,403 participants. This comprehensive review revealed that mindfulness training significantly reduced depression and anxiety levels with moderate effect sizes of 0.42 (depression) and 0.60 (anxiety), leading the authors to endorse mindfulness training as a viable technique to be utilized within this population.

In line with these findings, a recent study by Shapiro, Brown and Biegel (2007) determined that mindfulness training decreased anxiety, worry and stress levels. In this study, counselling students who underwent mindfulness training had significantly lower levels of negative affect, when compared to a control group that did not receive training. This study was methodologically sound as it employed a lengthy, 8-week MBSR intervention with a sample of 54 participants, who completed the study in its entirety. A further strength of this study was that involvement was voluntary and students were not given extra credit for their participation; therefore, participants were completely unbiased in their motives for participation. However, a few weaknesses of this study are noteworthy. The study utilized a non-random sample of Masters psychology students, from a private Jesuit school, making the generalizability of these findings low. As well, as these students were highly trained in psychology, they may have determined the primary hypothesis and biased the results. Further limitations of this study were that it utilized a small sample size, mainly comprised of women, and that no post-intervention follow-up was conducted to determine if the results were long-lasting.

2.4.4 Mindfulness: A Critical Evaluation of the Research

A recent review investigating the efficacy of mindfulness interventions by Hofmann, Sawyer, Witt and Oh (2010), consisting of a large sample of 1,140 participants, determined that mindfulness was a promising intervention for anxiety and depression, as their study had robust effect sizes that were maintained at the follow-up measurement. In line with these findings, a comprehensive review of 22 studies by Baer (2003) demonstrated that mindfulness interventions led to significant improvements in psychological wellbeing by decreasing or alleviating the severity of symptoms in a variety of mental illnesses. However, although the Baer (2003) review found a substantial intervention effect, she noted that few studies employed a sound methodological design (i.e. lack of control group, small sample size); consequently, further research is needed to validate the current findings.

The following year, Grossman, Niemann, Schmidt and Walach, (2004) conducted a meta-analysis of 20 mindfulness-based stress-reduction studies. This meta-analysis covered a vast range of both clinical and non-clinical populations suffering from both physical and psychological complaints. This study concluded that both controlled and uncontrolled studies were efficacious, with similar effect sizes of 0.5, which can be categorized as a medium effect-size, according to Cohen's (1988) recommendations. Although the aforementioned reviews (Baer, 2003; Grossman et al., 2004; Hofmann et al., 2010) found that mindfulness interventions had a positive impact on health, a recent review by Toneatto and Nguyen (2007) investigating the efficacy of mindfulness training, concluded that mindfulness had a negligible effect on both anxiety and depression. This finding was supported by the work of Bishop (2002), who investigated the extant literature on MBSR and concluded that there was a lack of methodologically sound studies (similar to Baer's (2003) review conducted the following

year); thus, he was unable to endorse mindfulness training with confidence. However, he did state that it showed promise and warranted further investigation employing more scientifically rigorous methods (i.e. control studies, long-term follow-ups etc.) Thus, further research is needed to resolve these incompatible findings. These recommendations were taken into consideration during the current research project, which employed a control group and collected follow-up data to test the longevity of the programme's effects.

2.4.5 Summary

Mindfulness involves a mind body connection. A recent study by Tang and colleagues (2007) used a mindfulness hybrid intervention (IBMT) involving a combination of mindfulness, guided imagery and body relaxation. This intervention was offered in brief, 20-minute sessions, occurring over five days. Although this intervention was short, it was effective, as the intervention group saw a significant reduction in depression, anxiety, fatigue, and anger with a concurrent increase in vigour, when compared with the control condition. In addition, the intervention group had an increase in immune system functioning and a decrease in stress-related cortisol release, when compared with the control group. This study illustrates the efficacy of combining mindfulness with body relaxation techniques.

Within the current ERT intervention, participants were first educated about the mindfulness construct, as both the importance and benefits of mindfulness were outlined. Mindfulness was then discussed in the broader context of adaptive emotion regulation and its relationship to wellbeing. For the remainder of the workshop, participants engaged in mindfulness activities, such as a three-minute mindfulness awareness exercise and a worksheet that practised the core components of mindfulness: describing, accepting, observing and staying in the moment.

2.5 PMR: Definition and Underlying Processes

Within the next section of this chapter, Progressive Muscle Relaxation (PMR), a response-focused component of the ERT training intervention, will be discussed. PMR is a body relaxation technique involving tensing and relaxing muscles in a systematic way to achieve maximal relaxation (Robb, 2000). PMR elicits both psychological and physiological relaxation by decreasing the stress response, pain sensations and muscle contractions (McCaffery & Pasero, 1999). PMR has been shown to lower heart rate and decrease cortisol levels (Pawlow & Jones, 2002). In addition, it has been shown to decrease perceived stress and anxiety levels (Rankin, Gilner, Gfeller & Katz, 1993; Rausch, Gramling & Auerbach, 2006), decrease the severity of symptoms in multiple sclerosis patients (Ghafaari et al., 2009) and has been effective treating the myriad of symptoms involved in stress-related illnesses (Carlson & Hoyle, 1993; Esch, Fricchione & Stefano, 2003).

2.5.1 PMR and ER

The relationship between PMR and emotion regulation will be discussed in the following section. On the process model of emotion regulation, PMR is a response-focused emotion-regulation strategy as it elicits physiological, behavioural and experiential changes upon activating an emotion (Gross, 1998b). PMR has been recognized as an adaptive, functional way of regulating strong emotions by decreasing salivary cortisol levels and relieving stress-related muscle tension (Pawlow & Jones, 2002).

2.5.2 Strengths of PMR: Links to Health and Wellbeing

PMR training has been shown to be an effective strategy in both clinical and non-clinical populations, as it promotes muscle relaxation, optimal mental health (Hall & Long, 2009) and improved life quality (Cheung, Molassiotis & Chang, 2003).

A study by Ghoncheh and Smith (2004) compared the psychological benefits of a five-week PMR training programme with that of a five-week yoga-training programme. This study demonstrated that the PMR training group had greater levels of disengagement, physical relaxation and mental serenity, when compared with the yoga intervention group. A recent study by Dolbier and Rush (2012) demonstrated the efficacy of abbreviated, PMR training in a highly stressed, collegiate sample, consisting of 128 participants. Within the intervention group, substantial increases in mental and physical relaxation were observed. In addition, a reduction in low to high frequency heart rate variability (HRV) was observed, as was a reduction in anxiety and cortisol levels, although the effect sizes were small. These researchers concluded that a brief, 20-minute PMR intervention was able to elicit short-term health benefits in a collegiate sample. In a related vein, a study by Kiselica, Baker, Thomas and Reedy (1994) investigated the impact of stress inoculation training, employing PMR, assertiveness training and cognitive restructuring in a youth sample. In this study, the intervention group showed a reduction in stress-related symptomology and trait anxiety, which was maintained at a four-week follow-up, when compared with the control group.

Similarly, a brief, intervention study, by Rausch, Gramling and Auerbach (2006), involving a large sample of three hundred and eighty-seven undergraduate students was designated to one

of three conditions: PMR, meditation, or a control condition. After 20 minutes spent in their designated group, participants were exposed to a 1-minute stressor, followed by 20 minutes of their relative group designation. The results revealed that participants in the PMR and meditation group had a reduction in somatic, cognitive and overall general state anxiety, when compared with the control group. Concordantly, a study investigating the efficacy of PMR on treating tension headaches, divided participants into four groups: two intervention groups that involved PMR or PMR combined with cognitive behaviour therapy and two control conditions. After an eight-week period, the intervention groups (PMR and PMR cog.) had improved health, when compared with the control conditions. Furthermore, in both the intervention groups, a significant reduction of headache medication occurred, relative to the control groups (Blanchard et al., 1990). Strengths of this study were that a 3-month follow-up was conducted and that an active control group was utilized.

In addition, PMR has also demonstrated efficacy when dealing with clinical samples. A study by Borkovec and colleagues (1987) investigated the efficacy of PMR in a small sample of 30 participants diagnosed with clinical anxiety disorder. The sample was divided into 2 groups: 14 participants were given nondirective therapy and PMR and 16 were given cognitive therapy and PMR. Overall, the entire group showed a significant reduction in anxiety. However, the combination of cognitive therapy and PMR produced substantially better results on several pre- to post- therapy questionnaires, which may imply that the combination of cognitive therapy and PMR was a superior approach. However, a limitation of this study was that the therapists conducting the training were relatively inexperienced (0-5 years) compared to therapists used in previous studies (Barlow et al., 1984), which may have

influenced the findings. Similarly, a study conducted by Carlson and Hoyle (1993) investigating the impact of PMR on stress-related illness further supported these positive outcomes. This review article calculated effect sizes for 29 different studies; results revealed PMR's efficacy with moderate ($r = 0.40$) effect sizes across studies. In addition, for studies that included a follow-up, effect sizes were similar ($r = 0.43$), while studies employing a longitudinal research design detected a stronger effect size than those utilizing a cross-sectional research design.

2.5.3 PMR: A Critical Evaluation of the Research

The history of PMR has shown a preference for more practice-based application than theoretical consideration. In an applied setting, PMR is considered methodologically robust, as it has been shown to reduce psychological distress, muscle tension and anxiety (Antoni et al., 1991), thereby, demonstrating the ecological validity of the technique. However, in the context of ERT, it is important that this technique is objectively evaluated in terms of its theoretical benefits to the domain of ER and also within the broader context of an individual's global wellbeing. Clearly, theory-based research investigating the underlying mechanism through which PMR operates is needed. Additionally, this area of research has been plagued with methodological inconsistencies, which makes broad generalizations difficult. Thus, further research utilizing multi-level measurements and long-term follow-ups employing large, diverse sample sizes is warranted. The current research project addressed this concern, utilizing a large, community based sample with a diverse age range from 18-66 years, as emotion regulation propensities have been shown to improve with age (Gross, 2007).

2.5.4 Summary

In summary, albeit methodologically criticised, the evidence from practice-based work and assessment, offers an indication that this technique requires; (1) further theoretical exploration and (2) incorporation into future models of emotional regulation. Therefore, within the current study, PMR was initially defined for the participants and the benefits of the technique explained. During the workshop, participants completed related activities, such as diaphragmatic breathing and abbreviated PMR exercises, in order to familiarize themselves with the PMR process. Following this, cue-controlled relaxation was introduced; each participant was asked to pair the deep feeling of relaxation achieved at the end of a PMR session with a personally meaningful cue word such as ‘calm’ or ‘relax’. It was explained to participants that, after they had practiced PMR for a few months, they could elicit the same feelings of relaxation by saying their cue word to themselves (Cox, Qui & Liu 1993).

2.5.5 Research Strategy

In the context of this thesis, it is important to critically discuss how the techniques outlined above will be employed within this research. The aforementioned literature highlights the variability with which people regulate their emotions (Webb, Miles & Sheeran, 2012) and thus, the discerning reader will appreciate, that adaptive regulation is also variable. This can be explained by the dynamic nature of emotions themselves, existing in tandem with personality and individual differences, which may predispose individuals to select specific strategies over others. Finally, the fact that there are various time points in the emotion generative process, at which emotions can be regulated, is a viable reason for offering a multifaceted intervention, teaching a variety of strategies (Gross, 1998a). For example, if a

person was unsuccessful at turning their attention away from a situation causing them to become angry and tense, they may choose to go running as a way to release muscle tension and improve mood through the increased production of serotonin and dopamine, that occurs during cardiovascular exercise (Petzinger et al., 2007; Young, 2007). Thus, regulation may involve up-regulation, down-regulation or maintenance of a variety of different emotive responses, which would be too expansive for the scope of the current research project. Therefore, in accordance with Gross (2007), the proposed intervention predominantly focused on increasing one's ability to cognitively reappraise difficult situations, which is believed to be a state rather than a trait characteristic, making it amenable to change and ideally shaped through therapeutic intervention. In addition, this intervention aimed to increase emotional awareness and increase adaptive emotional expression through techniques such as expressive writing, self-talk, progressive muscle relaxation and mindfulness.

Through the utilization of the aforementioned techniques, the cultivation of specific emotion regulation skills were targeted, in accordance with the recommendations from Berking and von Känel (2007), who highlight nine core components necessary for adaptive regulation: (1) the correct identification and accurate labelling of emotional experience; (2) emotional awareness; (3) the accurate interpretation of the cognitive, physiological and behavioural aspects of emotions; (4) emotional resilience; (5) understanding emotional triggers; (6) acceptance of emotions, even those that may be difficult; (7) actively engaging in mood repair; (8) having the ability to tolerate negative emotional states and (9) facing tough emotional states in order to achieve or work towards important goals. Therefore, the key to effective emotion regulation is knowing when and how to use the differing strategies, in a

context-appropriate manner (Guiliani, McRae & Gross, 2008; Kashdan & Rottenberg, 2010). This is crucial knowledge as emotion dysregulation is emerging as a cardinal component in both the development and propagation of anxiety and depression (Berking et al., 2008; Mennin, 2006). Therefore, effective interventions improving emotional competency are critically needed; thus, in the next section existent intervention studies will be both outlined and evaluated.

2.6 Critical Analysis of Emotion Regulation Intervention Studies

Although a formative understanding of the techniques employed in ER may be beneficial, it is vitally important that these techniques are critically evaluated in the context for which they are intended. Therefore, a meta-analytical approach will be taken to review the scope of the current intervention literature (see Table 2). From a theoretical standpoint, assessing the efficacy of intervention studies is essential before they can be endorsed for use within the applied sector. Such reviews provide deeper understanding of which emotion regulation strategies have the ability to improve mental wellbeing and enhance life satisfaction (Gross, Richards & John, 2006).

In support of ERT interventions, a recent review article had auspicious results, concluding that emotion-regulation interventions have the ability to confer substantial health benefits (Cameron & Jago, 2008). However, this line of research is convoluted and has been plagued with methodological inconsistencies, such as the lack of a control group and long-term follow-ups (Baer, 2003). Often, the internal validity of complex intervention programmes is threatened due to the research-design flaws, such as the utilization of a small sample size (Kotsou et al., 2011). However, retaining a large sample poses great challenges, due to the

high degree of compliance required during intervention research. Furthermore, a possible disadvantage of large sample sizes is that it may lead to a standardized, one-size-fits-all intervention that may struggle to meet participants' varying needs (Brent, 2004). Furthermore, many emotion-regulation intervention studies do not assess genuine emotional reactions, but instead, investigate the regulation of hypothetical emotions (Campos et al., 2011). This is a further weakness because it limits the external validity of the findings.

In spite of the many methodological and practical challenges, strong, empirically based research has been published in this field, yielding significant findings. For example, a recent intervention, that took place prior to the 2011 Palestinian bid for UN admittance, was centred on reappraisal (Halperin, Porat, Tamir & Gross, 2013). This intervention randomly assigned Israeli participants to either a training group where reappraisal was taught, or a wait-list control group. Results of this study revealed that, a week after the intervention had occurred the training group demonstrated enhanced support for peace-making policies and were less supportive of aggressive policies directed towards the Palestinians. In addition, this intervention had lasting effects, as these opinions were still present at a five-month follow-up measurement. In a related vein, a CBT intervention study by Berking and colleagues (2008), conducted on a large sample of more than 500 participants, found a significant increase in the use of healthy ER strategies in the intervention group. More specifically, within the intervention group, participants increased their ability to tolerate, accept and actively modify negative emotive states, when compared with the control group; furthermore, this intervention was shown to have a strong effect size.

Concordantly, an intensive 8-week emotion regulation training intervention by Kemeny and colleagues (2012) was designed to promote a pro-social response while concurrently reducing the re-enactment of destructive emotions. This study was conducted on 82 females working in the educational sector who were randomly assigned to either an intervention or a control condition. Self-report results revealed a decrease in depression, anxiety, negative affect and rumination with a concomitant increase in positive affect and mindfulness in the intervention group, when compared with the control group. In addition, the training group demonstrated reduced physiological response to stress and showed an increase in emotional intelligence. Furthermore, the majority of these benefits were maintained at a five-month follow up measurement.

Similarly, a CBT intervention by Suveg, Sood, Comer and Kendall (2009) showed a decrease in anxiety and an increase in emotional awareness and self-efficacy following intervention. In addition, within this study, participants demonstrated enhanced coping skills and less emotional dysregulation (operationalized as rumination). However, a weakness of this study was that all data came from self-reported measures, which may have been affected by response bias or recall deficiencies. Furthermore, this study failed to include a control group; therefore, the outcome cannot be attributed to the training programme itself, due to this methodological limitation. However, a study by Gaab and colleagues (2003) corroborates the findings of this study with biological data. Their findings determined that a stress-management intervention incorporating cognitive-behavioural techniques decreased the neuroendocrine reaction to a laboratory-induced stressor in healthy participants.

In a study by Cameron and Nicholls (1998), an emotion regulation intervention utilizing expressive writing was conducted. The results from this study showed a decrease in illness-related visits to the clinic by a student sample composed of both optimists and pessimists, when compared with a control group. Similarly, an intervention study by Cameron, Booth, Schlatter, Ziginskas and Harman (2007), investigating the impact of an expressive writing intervention on women battling breast cancer, determined that participants in the experimental group reported a larger reduction in anxiety, depression and rumination. Interestingly, these researchers also noted an increase in coping capabilities and emotional wellbeing in the intervention group, when compared with patients receiving standard care. Although the emotion-regulation intervention in the Cameron and colleagues (2007) study conferred significant benefits, a methodological weakness of this study was that it was highly problem-focused in nature and may have downplayed the interpretation of emotional states, which is a crucial part of the emotional regulatory process (Gross, 2007). In line with this rationale, a psycho-educational intervention, for myocardial infarction patients, found that problem-focused emotion-regulation strategies did not influence the recovery rates and health behaviours of participants, who manifested high emotion-regulation requirements because of their predispositions towards an anxiety-evoking behavioural response (Petrie Cameron, Ellis, Buick & Weinman, 2002). Thus, it can be inferred that interventions should give attention to both emotion-focused and problem-focused strategies, in order to produce maximal health benefits (Lorig & Holman, 2003).

Recently, auspicious intervention results have been obtained through the work of Kotsou and colleagues (2011), who developed and scientifically validated an emotion regulation-training

programme that has been thoroughly tested with methodological rigor. Many of the current interventions utilized, within the applied sector, have failed to follow this method. Even in cases where empirical research has been undertaken, past research has been riddled with methodological flaws (Matthews, Zeidner & Roberts, 2007). These issues were addressed in the study by Kotsou and colleagues (2011), which employed a large sample of 132 healthy adult participants. This study determined that a 15-hour emotion regulation intervention, followed by an email follow-up was able to significantly increase core emotion regulation skills in the intervention group, when compared with the control condition. This finding was supported with experimental data, as the intervention group showed decreased cortisol secretion, a reduction in somatic health complaints, improved physical wellbeing and enhanced subjective wellbeing. Furthermore, the intervention group experienced an increase in the quality of both their social and marital relationships. No significant change was observed in these factors within the control group. These findings were corroborated by peer reports, and the majority of these benefits were maintained at a one-year follow-up, which suggests that emotion regulation can be enhanced on both a personal and interpersonal level with long lasting, effectual benefits.

This study was methodologically sound and scientifically rigorous; thus, a few of its strong points are worth noting. Firstly, it employed a large sample size, which can be extremely difficult to do in intervention research due to high dropout rates. Secondly, it utilized subjective, physiological and objective measures in order to corroborate the findings. Thirdly, it utilized a control (non-active) group in order to determine if the changes were due to the intervention itself rather than extraneous factors, such as group dynamics, group cohesion or

other confounding variables. Fourthly, a one-year follow-up was conducted which is important, as psychological interventions can take up to six months to be transformed into applied skills (Rae, 2002).

However, a few weaknesses of this study are noteworthy. Firstly, the fact that an active control group was not utilized is a limitation, as group factors unrelated to the intervention may have been fostering positive change. Secondly, all participants included in the study were required to submit a motivation letter to the research team in order to be included in the study. This may be seen as a limitation because this indicates perspective participants were already highly motivated for positive change and were willing to take behavioural action towards it (i.e. composing and sending the letter). This may not be indicative of general population norms, where it has been documented that only 27% of intention (for example to adhere to an exercise programme) is translated into actual behaviour ('the intention behaviour gap' see for example Mohiyeddini, Pauli & Bauer, 2009).

Based on the positive outcomes of the initial study, later that year, Kotsou and his team of researchers conducted a similar study, in order to further evaluate the efficacy of their newly developed, emotion-regulation training programme. This study further validated the initial findings, as it determined that an 18-hour intervention, accompanied by e-mail follow-up, improved emotional competence (Nelis et al., 2011). More specifically, the training group showed an increase in emotional knowledge, emotional abilities and the ability to apply emotion regulation in daily life. This change in emotional competencies facilitated long-term personality changes as participants in the intervention group showed an increase in

agreeableness and extraversion and a decrease in neuroticism. These changes were maintained at a six-month follow-up measurement. In addition, the results revealed that the training group demonstrated an increase in subjective health and psychological wellbeing and an improvement in their social relationships and enhanced employability rates when compared with the control group. This intervention was shown to have a large effect size on outcome measures.

This study had a number of methodological strengths that are worth noting. Firstly, it utilized a large sample size. Secondly, it utilized both subjective and objective outcome measures. Thirdly, it utilized an active control group and fourthly, it conducted a 6-month follow-up measure, which is important as it allowed for the lasting effects of the intervention to be tested. However, a few weaknesses of this study are noteworthy. A homogenous sample was an inherent limitation, as the sample was predominantly female; this is problematic because significant gender differences in emotion regulation have been demonstrated within the extant literature (Gross, 2007); therefore, these findings may not be generalizable to men. Furthermore, participants were required to write a letter of motivation to participate in the study; thus, this sample may have been motivated for personal growth and positive self-change. Therefore, this intervention might not translate as well to the general population. Thus, further research in the general population is required in order to see if these results can be replicated.

2.7 Delineation of a Successful Intervention

The next section of this chapter will focus on the crucial components of a successful ERT intervention. Accordingly, it is imperative that successful ER interventions focus on the key areas of psychological dysfunction. This involves changing behavioural tendencies stemming from disordered emotions, restructuring maladaptive thought patterns and preventing both the avoidance and habitual suppression of emotions (Moses & Barlow, 2006). Recent research has determined that emotion regulation is a highly adaptable process that improves as people age (Carstensen, Fung & Charles, 2003) and can be cultivated through directed exercises (Brown, Ryan & Creswell, 2007; Dandeneau et al., 2007; Serrano, Latorre, Gatz & Montane's, 2004).

A strong, theoretical framework of emotion regulation has been developed, which delineates the process and mechanism through which emotion regulation occurs. Utilizing the process model of emotion regulation (Gross, 1998b), this research aims to deploy both antecedent and response- focused emotion-regulation strategies to participants by discouraging recourse to expressive suppression and increasing reliance on cognitive reappraisal. This is a unique aspect of the current training programme, as many interventions employing cognitive-behavioural techniques for emotion regulation often attempt to increase the use of reappraisal; however, they do not attempt to reduce the use of maladaptive techniques, such as suppression (Moore, Zoellner & Mollenholt, 2008). Research has shown that reappraisal and suppression are independent constructs (Gross & John, 2003); therefore, increasing the use of reappraisal may not decrease the use of suppression, which has been shown to have a myriad of negative health consequences (Gross, 2007).

The current research aimed to explore the efficacy of this programme by utilizing a longitudinal research design employing a control group, in order to gain a deeper understanding of the underlying dynamics and cognitive processes that fuel emotion regulation. As independent techniques, progressive muscle relaxation, expressive writing, self-talk and mindfulness have each been shown to increase mental wellbeing in both clinical and community samples (Deyo et al., 2009; Dolbier & Rush 2012; Koole et al., 1999; Pennebaker & Chung, 2012). However, this research has been riddled with methodological limitations such as uncontrolled studies, high attrition rates and the lack of a long-term follow-up. Due to the significant impact emotion regulation has on optimal human functioning, a critical evaluation of a methodologically sound, emotion-regulation training programme is warranted.

2.7.1 Outcome Measures Utilized

The next section of this thesis will provide justification for the outcome measures that were utilized during the current study in order to measure the programme's effectiveness. Since self-report was the primary method of assessment, a variety of psychometric tools were employed to measure individual differences related to emotion regulation, life satisfaction, emotionality and cognition, in order to achieve multi-variant assessment of participants. Within the context of this research, stress, anxiety and depressive symptomology were investigated due to the substantial amount of research that has demonstrated their debilitating impact. For example, chronic stress has been associated with the six most common causes of death: cancer, heart disease, suicide, liver disease and accidents (Sapolsky, 2004; Schneiderman, Ironson, & Siegel, 2005). A comprehensive, North American survey

determined that elevated stress levels were associated with emotional disturbances, family disruption and decreased physical health (APA, 2010). Concordantly, prospective studies have delivered convincing evidence for the deleterious impact severe stress can have on wellbeing, as it has been linked to cancer, cardiovascular illness and depression (Cohen, Janicki-Deverts, & Miller, 2007). In addition, perceived stress levels have been linked to various health factors or health related illnesses, such as vulnerability to the common influenza virus (Cohen, Tyrrell, & Smith, 1993), severity of upper respiratory illnesses (Cohen, Doyle, & Skoner, 1999) and relative antibody status (Burns, Carroll, Ring, Harrison, & Drayson, 2002). Moreover, increased stress has been positively correlated with reduced life satisfaction (Carboni, Gilman, 2012) and has been linked to various forms of psychopathology (Conway, Hammen & Brennan, 2012), such as depression (Liu & Alloy, 2010) and anxiety (Connolly, Eberhart, Hammen & Brennan, 2010) in both clinical (Chun, Cronkite & Moos, 2004) and community samples (Harkness & Luther, 2001).

As the previous section has highlighted, the link between stress and anxiety has been well documented in the extant literature. The next section of this thesis will discuss the deleterious impact of anxiety, depression and rumination in greater depth, demonstrating their importance as key mental health indicators, within the context of this research.

Anxiety is highly prevalent and is one of the most commonly diagnosed mental illnesses (Kessler, et al., 2002). Those suffering from anxiety disorders frequently overuse health services, which has a negative impact on the economy (Stanley, Roberts, Bourland, & Novy, 2001). Anxiety has been positively correlated with decreased life satisfaction and subjective

wellbeing (Brenes, Guralnik, Williamson, Fried, & Penninx, 2005). Moreover, the manifestation of anxious (Bubier, Drabick, 2009) and depressive symptoms has been linked to the onset of illness (Deyo et al., 2009), specifically following a stressful life event (Monroe & Harkness, 2005).

Depression is one of the most common and oppressive mental illnesses (Kessler, Chiu, Demler, & Walters, 2005). Globally, the World Health Organization (WHO) recognizes depression as the leading cause of disability (WHO, 2012). In general, depression is associated with impaired functioning in numerous areas, such as emotional functioning, behavioural responding, and has been linked to impairments in both biological and cognitive domains (Snyder, et al., 2013). In addition, a strong association between depression and rumination has been established within the literature (Lo, Ho, & Hollon, 2008). This is important, as rumination is also associated with a myriad of negative health outcomes (Kirkegaard, 2006).

Rumination has been consistently linked to the onset and propagation of depression (Aldao, Nolen-Hoeksema & Schweizer, 2010) and is a risk factor for the development of an anxiety disorder (Nolen-Hoeksema, 2000). Furthermore, it is associated with intrusive thoughts (Watkins, 2004), an increase in negative affect (Seegerstrom, Tsao, Alden, & Craske, 2000), suicidal thoughts (Eshun, 2000) and increased cortisol release after exposure to a stressor (Roger & Jamieson, 1988). A recent study, by Genet and Siemer (2012), investigated the mood of undergraduates by requiring them to keep a daily diary of their emotions and associated coping strategies. This study revealed that rumination moderated the effect

between negative emotions and negative life events. This corresponds with the findings of Giorgio and colleagues (2010), who determined that rumination was negatively associated with the acceptance of negative emotions. Not surprisingly, an increased rate of alcohol abuse (Nolen-Hoeksema & Harrell, 2002) and substance abuse (Cranford, Nolen-Hoeksema, & Zucker, 2011) has been found in those scoring high in rumination, as this may be seen as an attempt to cope with difficult emotions that the individual finds overwhelming. Partial support for this supposition was garnered by the work of Hayes and colleagues (1996), who determined that rumination was positively correlated with avoidant behaviour. In a related vein, rumination has been linked to further maladaptive emotion regulation strategies, such as behavioural disengagement, passive coping (Marroquin Fontes, Scilletta & Miranda, 2010) and emotional suppression (Nolen-Hoeksema, Wisco & Lyubomirsky, 2008). In addition, rumination has been negatively linked to life satisfaction (Gilbert, Cheung, Irons & McEwan, 2005), which will be discussed in the next section.

Satisfaction with life is considered a key component of optimal mental functioning (Sin & Lyubomirsky, 2009). A burgeoning literature has linked life satisfaction with increased marriage satisfaction, enhanced work performance (Lucas, Clark, Georgellis & Diener, 2003), increased income, enhanced social relationships (Harker & Keltner, 2001), improved health (Lyubomirsky, Sousa & Dickerhoof, 2006), and a reduction in the symptoms of psychopathology (Diener & Seligman, 2002). Furthermore, satisfaction with life has been negatively correlated with depression (Beutel, Glaesmer, Decker, Fischbeck, & Braehler, 2009; Nes, et al., 2012) and suicidal thoughts (Swami Furnham, Georgiades, & Pang, 2007). Importantly, longitudinal studies have demonstrated the predictive capabilities of low

satisfaction with life in determining those who are at high risk for developing depression (Koivumaa-Honkanen, et al., 2004). In addition, within healthy populations, low satisfaction with life has been linked to the development of both non-psychiatric and psychiatric work disability; for example, high absenteeism rates due to the presence of anxiety or depression (Koivumaa-Honkanen, et al., 2004).

According to Diener Lucas and Scollon (2006), people with high life satisfaction are characterized as, “Individuals who... like their lives and feel that things are going well. Of course their lives are not perfect, but they feel that things are mostly good... For most people in this high-scoring range, life is enjoyable, and the major domains of life are going well – work or school, family, friends, leisure, and personal development” (Ra, 2010, pp. 15). In contrast, the majority of people, living within developed nations, are characterized by average satisfaction with life. This category is characterized by a strong need for improvement in certain life domains; most people falling into this category would aspire to move to a higher level by making positive changes in their life (Diener, Lucas & Scollon 2006). In support, research has shown that even though many people in North America are happy (Diener & Diener, 1996), less than 20% of adults report that they are thriving (Keyes, 2002). Critically, innovative research has moved one step further, indicating the vast majority of people seem dissatisfied with their lives, left ‘wanting more’, or feeling ‘stuck in a rut’, yet still do not meet the diagnostic criteria for a mental illness (Fredrickson & Cohn, 2008).

An increasing trend in the contemporary literature is to define psychological wellbeing as a multi-dimensional construct representing both the absence of psychopathology and the

presence of positive psychological characteristics, such as subjective wellbeing which consists of a person's life satisfaction, happiness, optimism and positive affect (Sin & Lyubomirsky, 2009). Thus, in accordance with this multi-dimensional approach, the current research attempted to improve mental wellbeing by lowering the levels of negative factors, such as stress, anxiety and depressive symptomology, while, concurrently increasing the presence of positive factors, such as reappraisal and life satisfaction. During the current research, by tapping into a range of individual variables, including affectivity, emotionality and cognition (via validated self-referenced psychometric questionnaires) and pairing this with an experiment measuring cognitive performance, a multi-level measurement of mental wellbeing was achieved.

3.0 Justification for the Current Research

The justification for the current research is twofold, combining evidenced-based techniques for practitioners, whilst also making a unique contribution to the theoretical domain of emotion regulation research. Thus, the contribution to knowledge can be disseminated into both practical and theoretical benefits.

3.1.1 The Need for Flexibility and Prevention through ERT

The next section will discuss the pressing need for brief interventions, tailored to the needs of a busy populace. Research shows that emotion regulation training (ERT) is successful in clinical samples (Chambers, Gullone & Allen, 2009); furthermore, recent work has determined it has strong preventative properties, as it serves as a protective factor against depression (Deyo et al., 2009). In addition, studies have shown that ERT is successful in

enhancing emotion regulation competencies in adult community samples (Kotsou et al., 2011; Niels et al., 2011). Thus, the current research project will explore the extent to which emotion regulation can enhance mental wellbeing in the general population, thereby reducing the need for intervention in a clinical setting.

Although many types of psychological interventions exist (MBSR, MBCBT, Dialect Behaviour Therapy to name a few), the intervention used in the present research is unique in that it was designed for a non-clinical, adult community sample and contains multiple techniques based on Gross's (1998b) process model of emotion regulation. The current intervention offered a small dose (1.5-2.0 hours) of each training component and was offered in a preventative fashion, in order to provide participants with coping skills in the event of a future stressful situation or negative life event. Generally speaking, although there are similarities between the training programme utilized in this project and conventional CBT interventions, this intervention incorporated broad techniques found in many different training programmes.

Recent research by Smyth and Arigo (2009), determined that the combination of Cognitive Behavioural Techniques (CBT) and Emotion Regulation Techniques (ERT), garnered maximum benefits when compared with interventions that employed either set of techniques independently. These researchers suggest interventions that focus initially on the experience and effective management of emotion, through innovative techniques such as expressive writing, may create an ideal environment for the later employment of CBT techniques, thereby, increasing the intervention's effectiveness. In line with this recommendation, within the current research project, the final workshop delivered was the most heavily reliant on CBT

techniques, focusing on cognitive distortions and positive self-talk. This workshop was deliberately held after the expressive writing workshop, in order to promote optimal emotional expression by the participants.

To the researcher's knowledge, the only other programme based on a similar concept, that is, to explore the extent to which emotion regulation can enhance mental wellbeing in the general population, was developed by Kotsou and colleagues (2011). Similarly, this group of researchers also trained a non-clinical, adult sample; however, there are two distinct differences between this programme and the current study. Firstly, the programme designed by Kotsou and colleagues (2011) focused exclusively on increasing emotional competence (EC), which is a person's ability to identify, comprehend, manage and express one's emotions and the emotions of others (Mayer & Salovey, 1997). This is a very broad objective; in the intervention utilized in the current research, a more specific objective was put forth. Although this study did attempt to increase certain aspects of EC, for example, the identification and proper labelling of emotions, this was only a minor component of the training touched upon in workshop 1. In subsequent workshops, the training programme also strived to increase the use of specific techniques, such as reappraisal and mindfulness and to reduce the use of emotional suppression and rumination. Secondly, the two studies differed in their method of participant recruitment. In the Kotsou and colleagues (2011) study, all participants were required to write a motivational letter to the researchers, explaining why they were motivated to take part in the study; in contrast, during the current research project, participants volunteered of their own volition and no compensation was offered for participation in the study.

3.1.2 The Economic Need

The next section will highlight the strain mental illness puts on available economic resources. Based on the current economic climate, with Canada still struggling as a nation to recover from the economic crisis of 2009, there is, currently, an unmet need for brief, cost effective interventions that increase wellbeing. Therefore, this research aimed to provide a short, methodologically robust and effective intervention programme, with a flexible application to suit the needs of a diverse and adaptive population. From such development, it is proposed further research and application may help reduce the economic and social burden placed on the Canadian population.

3.1.3 Reappraisal, The Lost Method

Reappraisal has been shown to be a theoretically robust emotion regulation technique (Jamieson et al., 2012; Shiota & Levenson, 2012; Mauss et al., 2007). However, practice-based research investigating the role reappraisal can play in ERT is alarmingly absent. This project aims to address this important topic in the current research.

Individuals are constantly called upon to regulate their emotions, and the inability to do so has deleterious consequences, as emotion dysregulation is thought to be critical to the development of negative psychological outcomes (Gross & Levenson, 1997). Gross (1998b) conceptualized the timing of regulation strategies as key to this relationship, with antecedent-focused strategies (which occur much earlier in the emotion-generative process), such as reappraisal, being more beneficial to health and wellbeing (Moore, Zoellner & Mollenholt, 2008) when compared with response-focused strategies (which come later in the emotion-generative process) such as emotional suppression.

This contention is supported by numerous studies that have shown that cognitive reappraisal is linked to positive health outcomes; whereas, emotional suppression is linked to negative health outcomes (English & John, 2013; Gross & John, 2003). Gross and Munoz (1995) highlight the need to transform knowledge to application by applying our nascent understanding of emotion regulation to alleviate human suffering, by tailoring interventions to help those who require support.

Whilst conducting research with young adults, Gross, Richards and John (2006) found that for many participants, thinking concretely about the strategies they used to regulate their emotions was a novel event. Based on this finding, these researchers recommended designing interventions that train individuals to increase their use of reappraisal and decrease their reliance on emotional suppression, in an attempt to mould emotion-regulatory propensities in adaptive ways that positively impact health and wellbeing.

3.1.4 Presentation and Functionality

The successfulness of ERT is well stated in the literature (Kemeny et al., 2012; Sin & Lyubomirsky, 2009; Smyth & Arigo, 2009). However, many of these programmes are lengthy and highly involved, which leads to low rates of completion. For example, the MBSR intervention, which is the first mindfulness intervention to be introduced in Western culture (Kabat-Zinn, 1982), consists of 30 hours of instruction, including one full 8-hour day of mindfulness training. In addition, this programme requires that participants complete 45 minutes of homework, 6 days a week for the entire 8 weeks of the training programme. The length of this programme and intense commitment required by participants has been criticized in the extant literature, as the rigorous time involvement has culminated in high attrition rates

(Baer, 2003). In light of this criticism, the current research aims to explore the successfulness of implementing a short, concise, cost-effective prevention programme, thereby increasing completion rates and reducing the economic impact.

3.1.5 ERT, A Multi-Dimensional Approach

The next section will present the advantages for implementing a multidimensional approach in programme delivery. A variety of techniques, such as reappraisal, mindfulness and expressive writing have been shown to positively impact emotion regulation (Ma & Teasdale, 2004; Moore, Zoellner & Mollenholt, 2008; Pennebaker & Chung, 2012). As a result, a plethora of research has investigated both the frequency and effectiveness of the strategies predicted by the process model of emotion regulation (Gross, 1998b). It is crucial, within the context of this thesis, to critically evaluate the extant research in order to achieve a holistic and pragmatic rationale for the inclusion of the aforementioned methods, when compared to other facets of the process model.

A study by Gross (1999) determined that both situation modification and situation selection are emotion regulation strategies that are very rarely used. In the aforementioned study, these researchers had only one documented episode of each of these strategies. In contrast, the other three antecedent-emotion regulation strategies were found to be much more common, as attentional deployment was utilized 39% of the time, emotional suppression was utilized 40% of the time and reappraisal was utilized 83% of the time. A more recent meta-analysis, by Webb, Miles and Sheeran (2012), also investigated both the frequency and effectiveness of emotion regulation strategies, derived from the process model of emotion regulation. This

study revealed that response modulation had a small effect on emotional outcomes; attentional deployment had no effect on emotional outcomes and reappraisal had a small to medium effect on emotional outcomes. Due to the fact that the appraisal process plays an integral part in the generation of emotions, strategies that target maladaptive appraisals appear to be markedly effective (Troy, et al., 2010). In addition, recent research supports the efficacy of mindfulness interventions for combating both suppression and rumination (Deyo et al., 2009; Segal, Williams & Teasdale, 2002). Similarly, research endorses the use of expressive writing as an effective technique to combat emotional suppression (Moore, Zoellner & Mollenholt, 2008). Furthermore, expressive writing may lower the risk for depression (Gortner, Rude & Pennebaker, 2006; Mohiyeddini, 2005) and has been shown to foster the expression of emotions (Foa, Huppert & Cahill, 2006), while discouraging rumination in response to stressful events (Purdon, 2004). Moreover, expressive writing has been shown to bring attention to important aspects of a situation, which increases understanding and cognitive restructuring thereby facilitating proactive coping (Bower, Kemeny, Taylor & Fahey, 1998; Lepore, Greenberg, Bruno & Smyth, 2002).

3.1.6 Research Objective and Aims

The current research project aimed to develop and validate an ERT training programme that was brief, cost-effective and preventative in nature, allowing for a broad, but tailored, application by the general population. The novelty of the proposed ERT is that it is based on a multi-dimensional approach, offering a variety of skills to participants for the creation of a unique, individualized, effective ‘emotion regulation tool-kit’ for dealing with daily life stressors. Relying on the process model of emotion regulation (Gross, 1998b), this research

attempts to bridge the gap between theory and application by designing an intervention endorsing the use of effective emotion regulation strategies, while discouraging participants in the use of deleterious techniques. This work is crucial for the development of emotion regulation competencies, which provides for the enhancement of interpersonal relationships, work productivity and health (Niels et al., 2011), allowing one to have a more flourishing life experience.

3.1.7 Hypothesis

To date, no study has examined the effects of a theory-based, multi-dimensional emotion regulation-training programme that targets improvements in mental wellbeing and cognitive performance. To address this gap in the literature and extend our knowledge in this line of research, the current programme examined the effects of a brief ERT in a healthy adult community population. The primary hypothesis of this study was that ERT would (a) increase overall satisfaction with life, (b) decrease depressive symptoms, anxiety and stress, (c) decrease emotional suppression and negative affectivity and (d) increase cognitive performance.

Study 1 aimed to pilot the ERT training programme to test its feasibility. In study 2, the programme was run in a large, community-based sample, where a one-year follow-up was conducted employing subjective measures. Study 3 aimed to replicate the results of study 2, utilizing a larger sample and pairing the subjective measures with objective data to further corroborate the findings.

During the current intervention, each of the emotion-regulation workshops was divided into three parts: education, activities and bibliotherapy. Emotion-regulation is a dynamic process that is highly individualized (Gross, 2007); thus, a variety of different skills were taught in order to provide the participants with options. Multiple techniques were introduced on the assumption that each participant would individualize the training programme by adopting the techniques they found to be most useful. In past research, there has been an over-emphasis on exclusively studying reappraisal and emotional suppression or on cultivating a specific ER strategy, such as expressive writing.

This study is novel in its approach as it aims to teach a variety of different strategies, allowing the participant to decide what strategies work best for them, an objective that is operationalized as psychological flexibility. Those who possess psychological flexibility may be more effective at regulating emotions in real world settings, when compared with those who follow a rigid pattern of regulation, even when an effective strategy is employed (Kashdan & Rotterberg, 2010). In part, this may be due to the fact that psychological flexibility prevents people from becoming locked in specific emotion regulatory patterns, instead, cultivating flexibility in dispositional personality functioning (Rothermund, Voss & Wentura 2008). In conclusion, this intervention provided an opportunity for determining the efficacy of offering a hybrid emotion regulation tool kit as compared to the numerous existing training programmes that teach a single technique, such as MBSR (Kabat-Zinn, 1982) or expressive writing interventions (Pennebaker & Beall, 1986).

Table 2

*Summary of Intervention Studies*²

Researchers	Intervention	Duration	Sample	Outcome
Cameron and Nicholls (1998)	ERT through expressive writing 3 group: control, self-regulation (SR) and disclosure task (D)	3 weeks	122 university students who were categorized as either optimists (O) or pessimists (P)	Compared to control, the SR and D saw increases in mood state and adjustment to college. The SR task reduced illness-related clinic visits for both O's and P's, whereas the D task did so for O's only
Cameron, et al., (2007)	ERT for women with breast cancer	12 weeks	154 women were placed in 3 conditions: ppl. receiving standard care (S) N=54, ERT intervention group (N=54), group that refused the intervention (N=56)	Compared to S group, ERT group reported greater use of anxiety reduction techniques over the following year. ERT reported greater reductions in anxiety, cancer worry and improvements in emotional well-being and coping efficacy during treatment
Allard (2007)	Psychoeducational telephone ERT intervention, facilitating adjustment following breast cancer surgery	Two telephone sessions, 3-4 days and 10-11 days after surgery	117 breast cancer surgery recipients divided into an ERT intervention group (N=61) and a control group (N=56) who received standard care (S)	The ERT group (compared to the S group) had lowered distress, confusion, and functional abilities and increased coping competencies
Zautra et al., (2008)	Comparison of mindfulness meditation and cognitive behavioural interventions for rheumatoid arthritis participants with and without a history of depression	8 weeks	144 participants were randomly assigned to 1 of 3 treatments: cognitive behavioural therapy for pain (P); mindfulness meditation and emotion regulation therapy (M); or education-only group (E), which served as an attention placebo control	Participants receiving P showed the greatest improvement in self-reported pain control. Both P and M groups showed more improvement in coping efficacy than the E group. RA patients with depression benefited most from M increasing positive affect and improved physicians' ratings of joint tenderness

² Table 2. Summarizes the major findings of recent emotion regulation studies. The overall trend in the aforementioned studies shows positive benefits from the ERT training programs when compared with control groups although effect

Chapter 4.0 Pilot Study

4.1 Aims and Objectives

The purpose of the pilot study was to develop a brief emotion regulation training programme focused on cognitive reappraisal and to hone the research design and apply the Emotion Regulation Training (ERT) programme in a real world setting, in order to explore the social validity of the programme. In general, the overarching aim of the pilot study was to prepare for study 1 and to ensure the methodology, measurement tools and ERT intervention was sound.

The pilot study was crucial, as it optimized the research design and explored the content and social validity of the ERT training programme. The objective of social validity research is to determine the programme's acceptance and the feasibility of the intervention (Schwartz & Baer, 1991). In a critical paper, Wolf (1978) asserted that “‘social importance’ is a subjective value judgement that only society is qualified to make” (pp. 206–207). There are three crucial components of an intervention that can be accurately assessed via social validity. These aspects are a) the significance of treatment goals as they pertain to society, b) the social acceptability and suitability of the programme procedures and c) the social significance of intervention outcomes.

Within the current research, social validity was a critical component necessary for investigation during the pilot study, as it provided in-depth evaluation of the current ERT training programme. This information allowed modifications to be made in order to capitalize on the positive aspects of the programme, whilst making changes to aspects of the programme that were less constructive. This was achieved through a questionnaire, developed specifically for the programme and

completed at the end of the intervention that allowed participants to rate the effectiveness of each workshop and their overall use of each technique. In addition, participants were asked if they had any further comments regarding the programme's effectiveness or if they could identify any areas of the programme requiring further improvement. Furthermore, the pilot study enabled the primary researcher to examine the feasibility and social validity of the new programme in order to determine if any procedural or length modifications were required or if any surveys needed to be removed from the questionnaire package; additional programme feedback was provided by the Director of Studies, who was an expert in the field of emotion regulation. This supervisor monitored the workshops throughout the course of the pilot study and provided constructive feedback, which further facilitated programme improvement.

4.2 Methodology

Using a cross-sectional study design, the pilot study implemented a within-group comparison condition. A focus group of 10 students at Roehampton University were recruited in late April of 2010. The sample consisted of 7 females and 3 males, ($M_{\text{age}} = 24.36$, $SD = 3.39$, Range = 22-28 years).

4.2.1 Materials

Each baseline questionnaire package contained the following materials:

1. Consent Form
2. General Information Questionnaire (generic Roehampton template)
3. General Health Questionnaire
4. Positive And Negative Affect Scale (PANAS; Watson et al., 1988)
5. Emotion Regulation Questionnaire (ERQ) (ERQ, Gross & John, 2003)
6. Depressive Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995)

During the intervention, state measurements of emotion were taken via PANAS (Watson et al., 1988)

* See study 1 for a detailed discussion of all questionnaires that were utilized for general data collection during the pilot study and during both study 1 and study 2.

4.2.2 Procedure

Recognizing that emotion-regulation is a dynamic process that is highly individualized (Gross, 2007), during the ERT intervention, a variety of skills were taught including cognitive reappraisal, positive self-talk, mindfulness and PMR in an open trial approach. All workshops were facilitated by the primary researcher and supervised by the Director of Studies. At the end of the four workshops, participants filled out an evaluation form that rated how beneficial each training session had been for them on a personal level. In addition, participants noted if their ability to use the ERT techniques had changed over the course of the intervention. On the final day of the intervention, participants were asked to provide further comments or impressions they had regarding the ERT training programme. In addition, the entire group, including the Director of Studies, discussed the programme's strengths and weakness in order to provide further programme feedback.

4.3 Results

Table 3 includes descriptive statistics for all variables utilized during the pilot study. All scales demonstrated acceptable reliability as estimated via Cronbach's alpha, with values ranging from 0.76 and 0.93 (See Appendix 3). All the descriptive statistics reported below were in the normal range (Bayram & Bilgel, 2008) and reappraisal was in the high range (Gross & John, 2003).

Table 3

Descriptive Statistics for the Emotion Regulation Questionnaire (ERQ) and the Depression, Stress and Anxiety Scales at Pre-Test (DASS-21) (N = 10)

Questionnaire Subscale	Mean	SD
DASS-Stress	5.40	4.50
DASS-Anxiety	2.30	3.23
DASS-Depression	4.43	4.66
ERQ-Reappraisal	5.04	0.97
ERQ-Suppression	3.43	1.50

Table 4 contains the descriptive statistics for all Positive and Negative Affect Scale (PANAS) measurements taken at the beginning and end of the expressive writing and the self-talk workshops. This questionnaire measured state levels of positive and negative affect. For the expressive writing workshop both positive and negative affect were decreasing. For the self-talk workshop positive affect was increasing and negative affect was decreasing.

Table 4

Descriptive Statistics for Between Group Comparisons for the Pilot Study Workshops from Pre- to Post Test (N = 10)

Workshop	Subscale	Mean	SD
Expressive Writing	Positive Affect 1	2.88	0.59
	Negative Affect 1	1.79	0.73
	Positive Affect 2	2.28	0.71
	Negative Affect 2	1.34	0.51
Self-Talk	Positive Affect 1	2.30	0.87
	Negative Affect 1	1.52	0.60
	Positive Affect 2	2.73	0.87
	Negative Affect 2	1.18	0.21

* All 4 workshops were analysed but only those that reached significance ($p < 0.05$) were discussed in the results section

Table 5 includes the results from a Wilcoxon Signed Ranks Test that was run in order to determine if there was a significant difference in either positive or negative affect from pre- to post-intervention. In the expressive writing workshop, the results showed there was a significant decrease in the scores for negative affect from pre-intervention ($M = 1.79$, $SD = 0.73$) to post-intervention ($M = 1.34$, $SD = 0.51$); $Z(9) = 2.67$, $p = 0.01$). In addition, for the self-talk workshop, the results showed there was a significant increase in the scores for positive affect from pre-intervention ($M = 2.30$, $SD = 0.87$) to post-

intervention ($M = 2.73$, $SD = 0.87$); $Z(6) = 2.20$, $p = 0.03$. However, the Wilcoxon, with p-value of 0.03, should be interpreted with caution as it would be forfeited with a Bonferroni correction for type 1 error ($p < 0.025$)

Table 5

PANAS: Wilcoxon Signed Ranks Test ($N = 10$) for Expressive Writing (EW) and Self-Talk (ST) Workshops

PANAS Dimension	Z	p
EW Positive affect 1 & EW Positive affect 2	1.47	ns
EW Negative affect 1 & EW Negative affect 2	2.67	0.01
ST Positive affect 1 & ST Positive affect 2	2.20	0.03

Table 6 describes the correlations between the Emotion Regulation Questionnaire (ERQ) and the Depression, Anxiety and Stress Scales (DASS-21). A strong positive correlation was found between stress and anxiety ($r = .84$, $p < .01$) and a strong negative correlation was found between depression and reappraisal ($r = -.78$, $p < .05$).

Table 6

Bivariate Correlations Between the Dimensions of Emotion Regulation and Depression, Anxiety and Stress ($N = 10$)

	1	2	3	4
1 DASS-D	1			
2 ERQ-RE	-.78*	1		
3 DASS-S	.58	-.28	1	
4 DASS-A	.18	-.13	.84**	1
5 ERQ-S	.28	-.59	-.25	-.20

* $p < .05$, ** $p < .01$.

4.3.1 Social Validity of ERT

This study assessed the social validity of the training programme in order to evaluate participant's acceptance of the programme. The findings revealed that 7 out of 10 (70%) participants felt the workshops were significantly beneficial (**Expressive writing** 8 out of 10 (**80%**), **Self-talk** 8 out of 10 (**80%**), **Reappraisal** 6 out 10 (**60%**) and **Mindfulness** 6 out 10 (**60%**)). Furthermore, the majority of participants saw an improvement in their skills across workshops (**Expressive writing** 7 out of 10 (**70%**), **Self-talk** 8 out of 10 (**80%**), **Reappraisal** 6 out of 10 (**60%**) and **Mindfulness** 5 out 10 (**50%**)). Qualitatively, in order to improve the programme, participants recommended less academic terminology, a reduction in surveys and an increase in activities and worksheets.

4.4 Discussion

4.4.1 Primary Findings: Workshop Efficacy

Within the primary findings, the first element to consider concerns the main aim of the pilot study, which was to assess whether the workshops represent a viable and effective ERT toolkit. Overall, the majority of participants were satisfied with the ERT programme and felt that their emotion regulation competencies improved over the course of the training programme. In general, the expressive writing and the self-talk workshops were deemed to be more beneficial than the mindfulness and reappraisal workshops. This may be explained by the fact that both workshops were heavily reliant on cognitive behaviour techniques, which is currently the gold standard in psychosocial interventions (Otte, 2011).

In terms of skill proficiency, participants rated mindfulness as the skill that showed the lowest level of improvement over the course of the training programme. This may be due to the brevity of the workshop, as contemporary mindfulness training programmes generally train participants for 30 hours, with an additional 40 hours of homework over the course of the training programme (Kabatt-Zin, 2003). In contrast, expressive writing and self-talk were rated to be the most improved emotion regulation technique. In reality, this finding may actually reflect participant's enjoyment of the skill, rather than their actual level of improvement. This supposition is supported by the fact that participants rated self-talk to be one of the most beneficial strategies of the entire programme. Further support is garnered by the work of Wong (1999), who posited that programme ratings are directly related to skill enjoyment rather than its actual level of utility. In relation to the training programme, other skills such as mindfulness are difficult to learn and require extensive practice to

master, which may explain why participants rated lower, both in their level of improvement and also in their perceived usefulness.

In terms of the primary findings, due to the small sample size utilized within the pilot study, the long-term effects of the intervention were not evaluated; instead, within-treatment effects were the primary focus of statistical analysis.

In the expressive writing workshop, the results showed there was a significant decrease in the scores for negative affect from pre- to post-intervention. These findings are contrary to findings in the extant literature, as participants frequently report an increase in negative affect immediately after writing (Pennebaker & Chung, 2012). However, it is important to note that the variation of the writing paradigm (Pennebaker & Beall, 1986) utilized within the current study, involved evaluation of the written content, followed by identification and elimination of cognitive distortions within the written material. This may have encouraged reappraisal in subsequent writing sessions. Thus, this conflicting finding may stem from participants focusing on the positive aspects of their stressor and on what they had learned from the event, thereby, generating a cogent narrative, which involved reappraising the stressful event in a less threatening way (Lepore, Greenberg, Bruno & Smyth, 2002). This supposition corresponds to the findings of Park and Blumberg (2002) who showed that, within the intervention group of their study, appraisals of the traumatic event changed as the writing progressed, such that participants viewed the situation as less aversive (for example less overwhelming and less stressful). In addition, within this study, the intervention group also showed a reduction in avoidant and intrusive thinking. Concordantly, within a psychology graduate sample, Nelson, Dell'Oliver, Koch and Buckler (2001) demonstrated that students frequently employ

reappraisal, which may lend support to the contention that the graduate students, in the current study, were utilizing reappraisal as the writing sessions progressed.

Thus, in the pilot study, the critical evaluation and challenging of distorted thought patterns may have facilitated reappraisal as the writing exercises continued, which may have fostered adaptive processing of the emotionally evocative material. In addition, the process of repeatedly thinking about, then reading through and writing about a stressful topic would have provided extensive exposure to the stressful event. This exposure may have facilitated the habituation process, allowing participants to tolerate negative emotions more effectively by the final writing assignment (Foa & Rothbaum, 1998). This may explain why the results in the current study showed a decrease in negative affect. The expressive writing workshop may have reduced negative affect by bringing participants' attention to the negative event, so emotions could be explored in greater depth. The mere act of EW itself calls for a certain amount of structure, emotional acknowledgment and emotional labelling.

In order to explain the current finding, it is important to consider inherent characteristics of the EW technique itself. Accordingly, an important feature of the EW technique is transcribing thoughts into words, which demands an analog-to-digital processing of the event, which requires a different mental representation by the brain and associated memory processes (Pennebaker & Chung, 2012). Thinking about a trauma is often fractured and disorganized, involving vivid memories, intrusive thoughts and intense emotions (Foa et al., 1993; Yule et al., 2012b). Therefore, when one repeatedly thinks about a traumatic or stressful life event, it may become overpowering, manifesting as rumination, intrusive thoughts or event flashbacks, until the mind has had the chance

to consciously process the event and organize it into a coherent narrative (Harber & Pennebaker, 1992). Therefore, writing about trauma in an organized way may provide a viable platform for this to occur (Yule et al., 2012a). As such, the initial act of writing may provide the opportunity for organization, while the analysis of the writing may give participants a higher degree of self-awareness, enabling them to challenge distorted perspectives in order to gain a deeper insight into the event so it can be “be summarized, stored, and forgotten more efficiently” (Pennebaker & Seagal, 1999, pp. 1248). An important consequence of this is that the cognitive changes associated with this process provides the potential for people to find new meaning in their traumas and reappraise stressful events in more adaptive ways (Crum, Salovey & Achor, 2013; Lepore & Greenberg, 2002). In addition, within the current study, the fact that the sample consisted exclusively of graduate students in psychology, one could reasonably assume their ability to analyse and critically evaluate would be highly proficient, due to their years of academic training. Furthermore, as all participants were pursuing advanced degrees in psychology, they may have felt comfortable evaluating and analysing their deepest thoughts and feelings. In conclusion, the reduction in negative affect, found within the current study, may have corresponded with Pennebaker’s and Chung’s (2012) finding that, even though participants found expressive writing to be difficult, overall, they found it to be a meaningful experience. This would explain the reduction in negative emotions such as anger, disgust etc. within the current sample.

Within the pilot study, for the self-talk workshop, the results revealed there was a significant increase in the scores for positive affect from pre-intervention to post-intervention. This finding is in line with the extant research, as positive self-talk has been shown to both maintain and intensify positive mood state (Larsen, 2000). A study by Koole and colleagues (1999) further supports this

finding, as it determined that positive self-talk was associated with enhanced positive affect. Furthermore, within this study, these researchers determined that positive self-talk served a protective function, as it led to a reduction in ruminative thinking.

4.4.2 Links to Improved Wellbeing

Within the current study, at the pre-test, the mean level of emotional suppression (3.43), as measured by the ERQ, was comparable to population norms, whereas, the level of reappraisal (5.04) was higher than the average level. This finding is in line with the current literature as a seminal paper, by Gross and John (2003), investigated individual differences in the use of suppression and reappraisal in a large, diverse sample of nearly 1500 undergraduates, determining population norms for these two variables. Within the aforementioned study, the average score for suppression was 3.39 with a normal range occurring between 2.84 and 4.54. For reappraisal the average score was 4.61 with a normal range occurring between 3.63 and 5.59.

The increased level of reappraisal, found within the current sample, may stem from the fact that the Gross and John's (2003) study utilized undergraduates, whereas, the current study utilized post-graduates, as the use of reappraisal has been shown to increase with age (John & Gross, 2004). Emotion regulation is a dynamic process that has been shown to change over the lifespan, manifesting a shift towards an increased use of reappraisal and a decreased use of suppression as a person ages (Gross, Richards & John, 2006). In general, post-graduates are older than undergraduates and have more experience navigating the educational system, thus, it is plausible that post-graduates would possess a healthier emotion regulation profile (i.e. more frequent use of reappraisal). This supposition is supported by the work of Nelson and colleagues (2001) who

determined that a sample of graduate students, studying psychology, reported the frequent use of positive reinterpretation, a form of cognitive reappraisal. Alternatively, it could be that undergraduates who did not cultivate adaptive coping strategies during the undergraduate years and who frequently employed suppression during this time, did not pursue higher academic training and were not available for sampling.

A potential weakness of the extant research employing the ERQ has been identified by Moore, Zoellner and Mollenholt (2008), who note that the majority of studies utilizing the ERQ have used non-representative samples, consisting entirely of undergraduate students, which limits the generalizability of these findings. In addition, these studies have primarily measured broad characteristics of personality and have examined few factors that may be indicative of psychopathology. Thus, more diverse samples should be utilized when employing this research tool and the relationship between the ERQ and alternative mental health indicators such as anxiety, stress and depressive symptomology should be explored in greater depth. This issue was addressed in study 1 and 2, where a diverse community sample was gathered and the impact the ERT intervention had on a variety of mental health indicators, such as satisfaction with life and anxiety, was investigated using the ERQ to measure emotion regulation competencies.

4.4.3 Secondary Findings: Psychopathology and Wellbeing

In the current study, DASS and ERQ levels were determined to fall within the normal range. Importantly, although participants manifested normal levels of reappraisal and depressive symptomology within this research, a strong negative correlation between depressive symptomology and reappraisal was observed. This is a key finding highlighting the importance of

targeted interventions that increase reappraisal capacities, as it may serve as a protective factor against depressive symptomology in non-clinical samples (Ehring et al., 2010).

This finding is supported by the work of Martin and Dahlen (2005), who found that within a large student sample of more than 300 students, reappraisal was negatively correlated with depression, stress and anxiety. Correspondingly, a study by Moore Zoellner and Mollenholt (2008) determined that suppression was related to an increase in stress-related symptomology, whereas, reappraisal was related to a reduction in stress-related symptoms in a large, student sample. In line with these findings, Gross and John (2003) determined that reappraisal was a more adaptive strategy when compared with suppression, as suppression was linked to memory impairments, less emotionally close relationships and a higher rate of depressive symptomology, when compared with reappraisal. However, it is important to note that there is a limited body of research investigating students' self-care practices and their relationship with mental health indicators, specifically within a psychology graduate population (Myers, Smeets, Giesbrecht & Merckelback, 2012). This is an important population to study, as working in the field of psychology can be an emotionally demanding career (for example working in clinical therapy or working at a rehabilitation centre) culminating in high burn out rates. Therefore, having effective coping tools is paramount for young psychologists entering into the field (Myers et al., 2012).

4.4.4 Critical Evaluation of the Current Study

Although the findings from the pilot study were promising, a few limitations needed to be addressed before the training programme could be implemented in a large-scale study. Firstly, the pilot study utilized a cross-sectional design; therefore, causality could not be inferred. In addition, this study did not include a control group, which is a methodological weakness. A further

methodological limitation, previously touched upon, was the utilization of a small sample population, however, it is important to note, that during social validity research, employing small sample sizes is the norm (Barrett, Shortt, Fox & Wescombe, 2001). In addition, the use of a homogenous sample population, extensively trained in psychology, was a limitation due to the fact that demand characteristics may have influenced the findings. Thus, this sample may not be representative of the general population. Due to these methodological limitations, future research should investigate a more diverse population, utilizing a community-based sample to test the intervention's efficacy in alternative environments in which institutional and professional stressors are apparent. Examples of such environments include high schools, where bullying has become an increasing social issue within recent years (Moskos, Achilles, Gray, 2004) or, within the private sector, working with companies who's employees engage in high stress occupations, such as social work, the stock market or in the field of law enforcement. The aforementioned limitations of the pilot study were addressed in study 1, where a larger, more diversified, sample was recruited.

Although the pilot study was exploratory in nature, some key strengths of this initial investigation are noteworthy. The advantages of this research are multifaceted, as it offers benefits on both a practical and individual level. From a practical standpoint, the pilot study demonstrated the social validity of the training programme, as it showed that this short programme had effective intervention outcomes. Secondly, based on the premise that emotion regulation is highly variable (Gross, 2007), it determined that a multidimensional method of training was an effective mode of delivery, offering participants the selection of a variety of strategies. In addition, the pilot study facilitated the knowledge of the applied practitioner, with regards to programme length, ideal programme delivery and effective time management. Further strengths of the pilot study were the positive, productive, feedback that was garnered from both participants and the Director of Studies.

On a larger scale, the pilot study was a success based on its positive contribution to the field of health and wellbeing, as the workshops were shown to decrease negative affect and increase positive affect in a university sample.

4.4.5 Conclusion

In summary, the pilot study demonstrated the social acceptance and feasibility of the ERT training programme. The results demonstrated the workshop efficacy, as the EW and self-talk workshop both significantly decreased negative affect. In addition, the findings highlight the importance of reappraisal as a regulatory strategy, due to its negative links with depressive symptomology. These finding may have broader applications in the health sector, due to the prevalence and debilitating nature of depression (England Royal College of Psychiatrists, 2010). Thus, the concision of this training programme and the positive findings garnered are auspicious; therefore, replication in a larger, more diverse sample is warranted.

Chapter 5.0 Study One

5.1 Study 1 Research Question

After examining the social validity of the programme, it is important to examine the programme's efficacy in a large, diverse sample. Specifically, the primary aims of this study were to (a) enhance satisfaction with life and reappraisal and (b) decrease depressive symptomology, anxiety, stress and emotional suppression.

5.2 Methodology

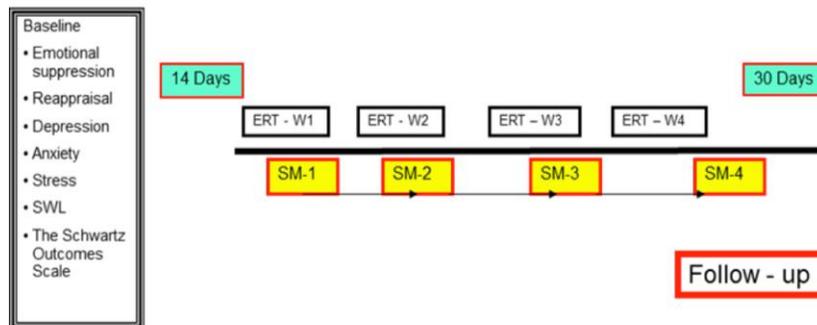
5.2.1 Study Design

This study utilized a randomized, controlled, 2 (intervention vs. wait-list control group) \times 3 (baseline, post-intervention and follow-up) study design, yielding a between-groups comparison condition (see Figure 4). A Canadian, community sample, from Quesnel, B.C., was randomly allocated to one of the following two groups: intervention group (emotion regulation training N = 38) vs. wait-list control group (N = 37). Baseline measurements were taken 14 days prior to the commencement of the experiment and 30 days after the experiment ended. Each measurement involved an identical questionnaire package to measure variables, such as satisfaction with life, stress, suppression, anxiety, depressive symptomology and reappraisal.

The main dependent variables measured within this study were satisfaction with life, stress, anxiety, depressive symptoms, positive affect, negative affect and suppression. The independent variable measured was reappraisal.

5.2.2 Ethical Considerations

As a first step, to begin this study, ethical approval was obtained from the Chair of Psychology Subject Area Ethics Working Group (SAEWG) at Roehampton University. After ethical approval was obtained, each participant, who volunteered for the project and passed the screening questionnaire, completed a consent form. This form explained the primary objectives of the study so that informed consent could be obtained. The consent form assured all participants that the information gathered would be kept confidential and would follow the ethical guidelines outlined by the Roehampton University's code of ethics (see Appendix 1). As a further safeguard of confidentiality, after the intake forms had been completed, all subsequent data was identified through a personal code, which provided anonymity to participants.



Note. SM = state measurements, ERT = Emotion Regulation Training (week 1-4)

Figure 4. Study Design for Training Programme attended by the Intervention Group

Figure 4 illustrates the intervention group study design. As the figure shows, baseline measurements were taken 14 days prior to programme commencement and state measurements were taken during and after each training session (a full list of questionnaires is included as an attached document, see Appendix 2). One month after the programme finished, follow-up measurements were taken from both the intervention and control groups, using an identical questionnaire package.

5.2.3 Research Venue

The emotion regulation workshops were conducted at the College of New Caledonia in Quesnel, British Columbia, Canada under the permission of the Associate Regional Director of the Quesnel Campus.

5.2.4 Location

From a methodological standpoint, convenience sampling was chosen. This research project was conducted in Quesnel, British Columbia; this location provided a unique and facilitative environment for data collection: the population base is approximately 30,000, providing a substantial participant pool. Furthermore, from a geographic standpoint, this location was ideal, as all participants lived roughly within a 15-mile radius, equating to a 15-minute transit time. As there was a high degree of commitment required from individuals involved in this study, proximity to the place of research was an important feature facilitating participant enrolment and compliance.

5.2.5 Liability Insurance

Prior to commencement of this study, the ethics board required external insurance coverage, due to the fact that the project occurred overseas and was considered a therapeutic intervention. Accordingly, malpractice liability insurance (set to a \$1,000,000 limit) was obtained through McFarlan Rowlands Insurance Brokers Ltd., a company that works in conjunction with the Canadian Psychological Association, of which the primary researcher is a student member.

5.2.6 Treatment of Participants

Informed consent was obtained from all participants; they were also advised they could withdraw from the study at any time, if they wished to do so. Confidentiality and anonymity were upheld throughout the study by asking participants to create a secure, alphanumeric identity code (that was saved on their cell phone), which was used for identification on all of the questionnaires completed, during the emotion regulation workshops.

5.2.7 Participants

Based on a power analysis conducted using the statistical programme G-Power (Faul, Erdfelder, Lang & Buchner, 2007), $n = 94$ participants were needed to show a medium effect size of $\eta^2 = 0.6$, establishing a significant difference between the intervention and the control group with a minimum power of 0.90, $\alpha = 0.05$.

Participants were recruited through posters at the local college campus, public message boards, ads on *Facebook* and word of mouth. When prospective participants refused to participate, the primary reason given was an extremely busy schedule; therefore, lack of free time. Recruitment consisted of

75 (N = 38 experimental, N = 37 control) healthy adults over the age of 18 residing in Quesnel, British Columbia, Canada (48 females, 27 males, $M_{\text{age}} = 36.68$, $SD = 14.90$, Range = 18-76 years). This research project utilized a stringent exclusion criteria, eliminating participants if they suffered from any physical, clinical psychosomatic or psychiatric diseases, were taking medication (except contraceptives), drank more than 10 units of alcohol per day or abused illicit drugs (e.g. recreational drugs). After screening occurred, the final sample was homogenous, consisting of 75% Caucasian, 7% mixed, 1% Asian, 1% Latin and 4% Aboriginal. Initially, 101 participants were recruited to participate in the project. However, 26 people were excluded, with 17 people not meeting inclusion criteria and 9 participants dropping out or failing to complete an adequate amount of the programme (to be included in data analysis a participant was required to attend a minimum of 3 of the 4 workshops). For the 9 people failing to complete 75% of the programme, their data was excluded from analysis. This culminated in an attrition rate of 12%. Within this study, attrition rate was taken as an indicator for the acceptance of the ERT intervention programme.

5.2.8 Follow-up Measure

Approximately 1 year after the intervention was conducted, a follow-up measurement was carried out, via email on December 1th 2011. A condensed follow-up, using an electronic questionnaire package, containing the ERQ, SWL and DASS, was distributed to all original participants, from both the intervention and control group. In the intervention group, 61% (23/38) of the sample returned the follow-up questionnaire. In the control group, 59% (22/37) of the sample returned the follow-up questionnaire.

5.2.9 Materials

5.2.10 Emotion Regulation Questionnaire (ERQ, Gross & John, 2003)

The Emotion Regulation Questionnaire (ERQ) is a 10-item psychometric questionnaire measuring two distinct regulatory strategies: emotional suppression (4 items) and reappraisal (6 items). The score for each sub-scale is calculated by adding all items, and then, calculating the mean for each sub-scale. An example question measuring emotional suppression is, “When I am feeling positive emotions, I am careful not to express them.” An example question measuring reappraisal is, “When I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about.” This scale is measured via a Likert scale, anchored at 1 ‘strongly disagree’ and 7 ‘strongly agree’. This scale demonstrated sound psychometric properties manifested through high test-retest reliability ($\alpha = 0.70$), high internal reliability (reappraisal $\alpha = .79$ emotional suppression $\alpha = 0.73$), high discriminant (Big Five Inventory; John & Srivastava, 1999; alphas for all five scales ranged from .76 to .88) and convergent (Negative Mood Regulation scale; Catanzaro & Mearns, 1990, $\alpha = .88$) validity, when used with a large American sample (Gross & John, 2003). In the current study, the following Cronbach's alpha values were obtained for the control group: ERQ-RE pre-intervention 0.90, ERQ-RE post-intervention 0.82 and ERQ-RE follow-up 0.73. For the intervention group, the following Cronbach's alpha values were obtained: ERQ-RE pre-intervention 0.88, ERQ-RE 0.93 post-intervention and ERQ-RE follow-up 0.73 (see Appendix 4).

5.2.11 The Satisfaction with Life Scale (SWL, Diener, Emmons, Larsen & Griffin, 1985)

The Satisfaction With Life Scale (SWL) is a 5-item, psychometric questionnaire measuring one’s overall degree of life fulfilment. This scale is measured via a Likert scale, anchored at 1 ‘strongly disagree’ and 7 ‘strongly agree’; an example question measuring satisfaction with life is, ‘the

conditions of my life are excellent.’ The score is calculated by summing all items in this questionnaire, where higher scores are indicative of greater life satisfaction. This scale has shown strong internal reliability ($\alpha = 0.87$, Diener et al., 1985). In the current study, the following Cronbach's alpha values were obtained for the control group: SWL pre-intervention 0.85, SWL post-intervention 0.89 and SWL follow-up 0.81. For the intervention group, the following Cronbach's alpha values were obtained: SWL pre-intervention 0.91, SWL post-intervention 0.90 and SWL follow-up 0.87.

5.2.12 Depression, Anxiety and Stress Scales (DASS-21, Lovibond & Lovibond 1995)

The Depression, Anxiety and Stress Scales (DASS-21) were used to measure three components of negative affect: anxiety, depressive symptomology and stress (Lovibond & Lovibond 1995). The anxiety scale measures subjective levels of anxiety, autonomic activation and skeletal muscle tension. The depression scale measures lack of interest, anhedonia and hopelessness, while the stress scale measures the level of acute arousal manifested via irritability, nervousness and the inability to relax.

This scale is measured via a 4-point scale, anchored at zero, ‘Did not apply to me at all’ and 3 ‘Applied to me very much, or most of the time’. Each emotional state is measured through 7 questions; an example question measuring the anxiety sub-scale is, “I was aware of dryness of my mouth.” An example question measuring the depressive symptomology sub-scale is, ‘I felt down-hearted and blue.’ An example question measuring the stress sub-scale is, “I find it hard to wind down.” The final score for each component is determined by summing each subscale. Possible scores range from 0 to 21, where higher scores are indicative of higher levels of negative affect.

This scale has demonstrated strong reliability with Cronbach's alpha values of 0.91, 0.84 and 0.90 for depressive symptomology, anxiety and stress respectively, when measured in a normative research sample (Mitchell, Burns & Dorstyn, 2008).

In the current study, the following Cronbach's alpha values were obtained for the control group: DASS-S pre-intervention 0.95, DASS-S post-intervention 0.88 and DASS-S follow-up 0.85; DASS-A pre-intervention 0.85, DASS-A post-intervention 0.81 and DASS-A follow-up 0.82; DASS-D pre-intervention 0.88, DASS-D post-intervention 0.90 and DASS-D follow-up 0.90.

In the current study, the following Cronbach's alpha values were obtained for the intervention group: DASS-S pre-intervention 0.79, DASS-S post-intervention 0.85 and DASS-S follow-up 0.85; DASS-A pre-intervention 0.83, DASS-A post-intervention 0.72 and DASS-A follow-up 0.82; DASS-D pre-intervention 0.90, DASS-D post-intervention 0.89 and DASS-D follow-up 0.90 (see Appendix 4).

5.2.13 Positive and Negative Affect Scale (PANAS, Watson, Clark & Carey, 1988)

The Positive and Negative Affect Scale (PANAS) is a 27-item psychometric questionnaire measuring state levels of positive and negative affect (Watson et al., 1988). This scale asks participants how they are feeling 'right now', with 13 adjectives, such as 'excited' and 'strong' measuring positive affect, and 14 adjectives, such as 'hostile' and 'jittery' measuring negative affect. This questionnaire is measured via a 5-point Likert scale anchored at 1 'very slightly or not at all' and 5 'extremely'. This scale generates two different scores, both positive and negative affect, with higher scores indicating higher levels of that specific emotional state. This is a quickly

administered, highly effective psychometric tool, that has demonstrated strong internal reliability (PA scale ranging from .86 to .90, NA scale ranging from .84 to .87) (Jolly, Dyck, Kramer & Wherry, 1994; Mehrabian, 1998; Roesch, 1998) and is frequently used in both mood and emotion research (Sohl & Moyer, 2009). Within this study, all PANAS data achieved adequate alpha levels (Cronbachs alpha > 0.70) (see Appendix 4).

5.2.14 Procedure

Once ethical approval had been granted, participant recruitment began. Once an appropriate amount of participants had passed the screening phase, the names of all eligible participants were randomly allocated to one of two conditions: the control group (N = 37) and the intervention group (N = 38). The control group was a non-active condition. At both the beginning and the end of the experiment, both groups filled out a questionnaire package. However, due to the fact that it was hypothesized that the training programme would increase mental wellbeing, all control group participants were given the option to receive the training, after the experiment had concluded, for ethical reasons. However, during this experiment, no control group participants chose to partake in this option.

The project began November 4th, 2010 in a classroom at the College of New Caledonia in Quesnel B.C., where participants were provided with light refreshments and were given an overview of what the project would entail. At this point, baseline measurements were taken for all participants attending the meeting. Each was supplied with a questionnaire package containing the following: a letter of intent, a consent form, a demographic questionnaire, the Emotion Regulation Questionnaire (ERQ), the Satisfaction with Life Scale (SWL), the Depression, Anxiety and Stress Scale (DASS-21) and a debrief form (see Appendix 2). Upon completion, all survey results were downloaded onto a private file, accessible only to the primary researcher. Furthermore, all hard copy data was

stored in a locked filing cabinet, owned by the primary researcher. For participants who were unable to attend this initial meeting, the questionnaires were distributed via email or by hand, in a sealed envelope. For participants chosen for the intervention group, but did not attend the informational meeting, they were asked to bring their completed questionnaire package to the first workshop. For those who were in the control group, the completed questionnaire packages were picked up later that week by the primary researcher conducting the study.

Approximately two weeks after baseline measurements were taken, on November 18th, the first set of emotion regulation workshops began. All of the workshops took place at the College of New Caledonia and each workshop ran between 1.5 to 2 hours. Due to the large number of participants (N=5-15), each workshop was offered multiple times (3-6), to account for varying work schedules, prior commitments, etc. The intervention group participants were given the weekly schedule of workshops by the primary researcher, through their preferred form of communication (either by phone or e-mail). In total, the intervention consisted of four workshops, which were conducted throughout the month of December, with the last workshop being held on December 18th, 2010. For both the intervention group and control group, an identical questionnaire package matching the baseline questionnaire package was distributed, completed and collected during the last week of January (January 24th -31st). See Figure 5 for a consort chart that illustrates this schematically.

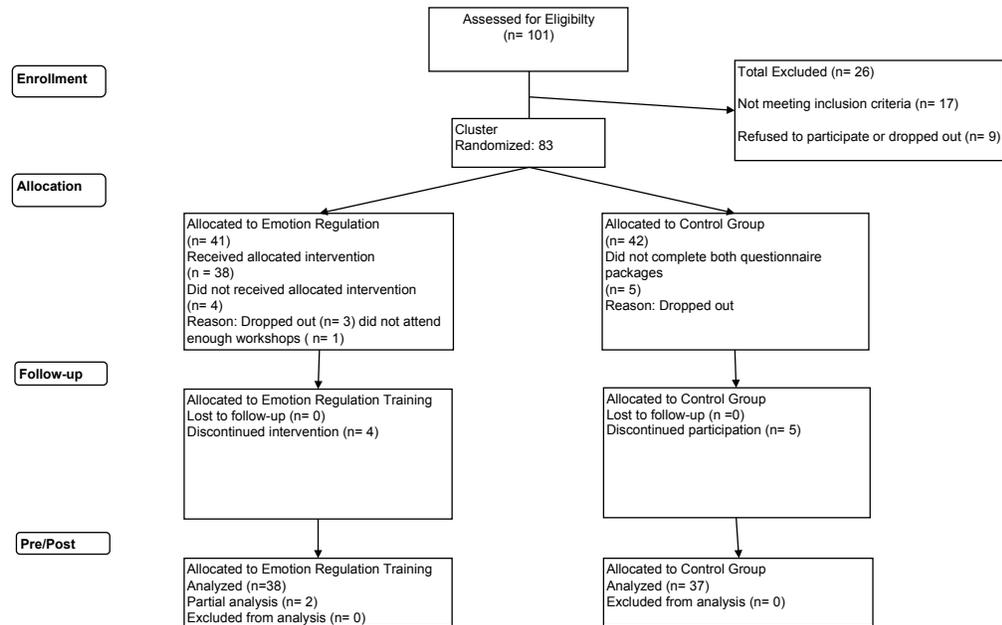


Figure 5. CONSORT flowchart of the Emotion Regulation Training (ERT) intervention study.

5.2.15 Attrition Rate

Attrition rates can be a major issue for intervention research, due to the high degree of commitment required from participants (Howard, Cox & Saunders, 1990). Past intervention research, investigating smoking cessation in populations with a history of depression, had attrition rates ranging from 31% (Hall, Muñoz & Reus 1994) to 61% (Glassman et al., 1988). Similarly, a comprehensive review of 125 studies determined an average attrition rate of 47% for psychological interventions (Wierzbicki & Pekarik, 1993). A study by Wierzbicki and Pekarik (1993) found that drop out rates were higher for samples consisting of participants from ethnic minorities, who had lower levels of education and for those with low socioeconomic status. Based on past methodological limitations and changes in methodology, a more recent meta-analysis of 669 studies, investigating attrition rates in psychological interventions, was conducted by Swift and

Greenberg (2012). This analysis determined a much lower attrition rate than the Wierzbicki and Pekarik (1993) meta-analysis, with an average rate of 20% across all studies. Thus, the attrition rate was recorded in study 1, in order to evaluate the social validity and the acceptance of the proposed ERT training programme.

5.2.16 Intervention

All of the intervention group workshops were carried out by the primary researcher and were overseen by the local supervisor, a registered Clinical Counsellor (BCACC), who was approved by the SAEWG ethics committee. Regular progress report meetings were held with the local supervisor. In addition, to ensure the adherence to the standard of practice for health promotion and to discuss any issues arising from the workshops, email and Skype communication was maintained with the Director of Studies. All workshops combined *PowerPoint* presentations with small and large group work, activities and behavioural experiments. For each workshop, the facilitator followed a detailed outline, in an attempt to standardize seminars and maintain consistency across workshops. In general, the workshops covered a variety of topics, which included identifying emotions, defining emotion regulation and differentiating between cognitive reappraisal and emotional suppression. In addition, the workshops taught relaxation through progressive muscle relaxation, the reduction of rumination through expressive writing, the full engagement with emotions through mindfulness and the regulation of mood through positive self-talk. Table 7 summarizes the key topics covered in all four workshops.

The first workshop consisted of a general introduction to the topic of emotion regulation. It took an in depth look at what an emotion is, and how it can be accurately identified. Building upon this, this workshop investigated how emotions impact a person on a behavioural, cognitive and physiological level. Next, the topic of emotion regulation was covered; it was defined and elaborated upon through the introduction of the process model of emotion regulation (Gross, 1998b), which explains the difference between antecedent and response-focused emotion regulation strategies. At this time, an example of each was given, reappraisal as an antecedent strategy, and emotional suppression as a response-focused strategy. Importantly, the disadvantages of suppression were highlighted, while the advantages of reappraisal were outlined, after which, reappraisal was endorsed as the superior emotion regulation strategy. In support of this recommendation, a worksheet was completed teaching participants the employment of reappraisal in daily life.

In workshop two, expressive writing was explained. In this workshop, a modified version of the writing paradigm (Pennebaker & Beall, 1986) was outlined and participants completed three, consecutive 15-minute writing sessions, punctuated by 20-minutes of instruction, prior to the resumption of the next session.

The goal of the EW sessions was to decrease rumination, in order to decrease depressive symptomology through an adaptation of the writing paradigm, developed by Mohiyeddini (2005). For each writing session, participants were given the following directions: “Over the next few minutes I want you to write about a challenging or emotional event that has been bothering you within the last three weeks. Write down your deepest thoughts and feelings relating to this event. No one will read this, nor will it be read aloud to the group; it is for your personal use only. Focus your mind on this challenging event, as much as you can and in as much detail as possible. When you find yourself ruminating, tell yourself to STOP and write down what is in your thoughts.” At the completion of each writing session, approximately 20 minutes was devoted to discussing the concept of expressive writing, after which, participants would review their last writing exercise, crossing out words they considered irrational, excessive, or unrealistic before continuing with the next session. This pattern was repeated two times, over the course of the workshop.

In workshop three, the topic of mindfulness was covered. Initially, the topic was defined and the importance and benefits of being mindful were outlined. Next, the basic principals of mindfulness (observation, description, awareness and acceptance without judgment) were explained after which a worksheet and various activities were completed, to help participants apply these principals practically. After this, a group discussion followed, allowing participants to brainstorm how they could be mindful in their daily life.

In workshop four, positive self-talk was combined with diaphragmatic breathing and progressive muscle relaxation to elicit cue-controlled relaxation. Again, in this workshop, the concepts of reappraisal and cognitive restructuring were discussed, as was Burn's (1989) list of common cognitive distortions. Participants were asked to examine their own thought processes and to identify cognitive patterns that were unrealistic or distorted. After this, the thought stopping technique was taught and participants completed a relevant worksheet on the topic. The workshop then switched focus to diaphragmatic breathing, progressive muscle relaxation and cue-controlled relaxation. Due to both logistical limitations (training was carried out in a university classroom which was not conducive to PMR training, especially for elderly participants) and time constraints, these last few topics were introduced briefly and a practice CD was provided to all participants as homework. This CD included a didactic, PMR script, which was linked to the earlier work that had been completed on self-talk, as it tied in a relaxation cue word (selected by each participant) at the end of the tape. This was done to condition participants to associate the feelings of relaxation elicited through PMR with their relevant relaxation cue word.

Table 7

Summary of Emotion Regulation Training: Programme Outline

Workshop	Outline
Workshop 1: Introduction to Emotion Regulation: Reappraisal vs. Suppression	<ul style="list-style-type: none"> • Definition of emotions • Worksheet 1: Identifying and labelling emotions • Definition of emotion regulation • Importance and benefits • Basic principals of emotion-regulation • Definition of emotional suppression • Negative consequences of emotional suppression • Definition of reappraisal • Importance and benefits • Worksheet 2: Reappraising a situation
Workshop 2: Expressive Writing	<ul style="list-style-type: none"> • Definition of expressive writing • Definition of rumination • First expressive writing session • Importance and benefits • Expressive writing and psychopathology • Second expressive writing session • Expressive writing and emotion regulation • Third expressive writing session
Workshop 3: Metacognition and Mindfulness	<ul style="list-style-type: none"> • Definition of metacognition • Metacognition and psychopathology • Worksheet 1: Detached mindfulness script • Definition of mindfulness • Importance and benefits • Mindfulness and psychopathology • Mindfulness and emotion regulation • Worksheet 2: Mindfulness training
Workshop 4: Self-talk and Cue-Controlled Progressive Muscle Relaxation	<ul style="list-style-type: none"> • Definition of self-talk • Worksheet 1: Cognitive distortions • Self-talk and psychopathology • Self-talk and emotion regulation • Worksheet 2: Enhancing self-talk • Worksheet 3: Positive self-affirmation • Definition of progressive muscle relaxation • Benefits of PMR • Cue-controlled relaxation • PMR relaxation CD (homework)

5.2.17 Debriefing

After the intervention was completed, participants were debriefed verbally and in writing. Each participant received a debriefing form, discussing the nature of the study, whilst also reiterating that all information gathered during the study would remain confidential. If the participant had any further concerns regarding the study, they were advised to contact the principle investigator, the counselling consultant that served as a local supervisor, the Director of Studies and/or the Dean of the School of Human and Life Sciences. Furthermore, contact details were provided during the study for participants, if they required additional counselling support from external sources (see Appendix 1).

5.2.18 Data Analysis

All of the data analysed within this study, utilized a minimum alpha value of 0.05 to test for significance. Initially, descriptive statistics were calculated for both the control and experimental groups before, during and after the study was conducted. A 2 (intervention and control group) \times 3 (-pre, -post and follow up measurement) ANOVA was run, in order to look for significant differences between the intervention and control group, at the follow-up data collection, which was carried out at a one-year follow-up. Reappraisal was analysed further via a repeated measures ANOVA. This test determined that the intervention group had significantly higher levels of reappraisal, when compared to the control group at the follow-up measurement. In addition, *post-hoc* analysis was conducted to investigate intra- and inter-group differences over time. Hierarchical regression analysis was employed to determine the predictive power of reappraisal, utilizing emotional suppression and satisfaction with life, as the dependent variables.

5.3 Results

Table 8 includes the descriptive statistics for all psychometric questionnaires utilized during pre-, post- and follow-up data collections, for both the intervention and control conditions. In general, all constructs in the control group demonstrated no statistically significant mean shift. However, there were several downward trends. In general, in the treatment group, life satisfaction and reappraisal increased, whereas depressive symptomology, anxiety and stress decreased. In addition, when comparisons are made, across standard deviations, the data within the intervention group shows narrower dispersion.

Table 8

Descriptive Statistics for the Study Variables for both the Intervention and Control Groups (N = 75)

	Pre-intervention		Post-intervention		Follow-up	
	Mean	SD	Mean	SD	Mean	SD
Control Group						
Life satisfaction	25.73	5.59	25.36	5.08	25.22	5.24
ERQ-Suppression	3.43	0.77	3.41	0.82	3.20	1.02
ERQ-Reappraisal	5.09	0.98	4.89	0.93	4.83	0.72
DASS-Stress	10.88	9.32	11.09	8.28	11.04	7.91
DASS-Anxiety	5.13	6.53	3.77	5.55	6.96	7.23
DASS-Depression	6.75	7.07	5.83	6.94	7.65	7.90
Intervention Group						
Life satisfaction	22.76	8.35	23.05	7.50	25.78	6.16
ERQ-Suppression	3.63	1.10	3.44	1.19	3.80	1.17
ERQ-Reappraisal	4.83	1.30	5.20	1.27	5.60	0.91
DASS-Stress	16.25	9.29	11.46	8.51	10.09	8.17
DASS-Anxiety	7.42	7.63	4.95	5.07	2.96	4.55
DASS-Depression	9.33	9.74	6.49	8.20	6.87	6.79

Table 9 includes descriptive statistics for both PANAS measurements taken at the beginning and end of the self-talk workshop. During the emotion regulation workshop, no change in positive affect occurred, whereas, a decrease in negative affect occurred. In addition, minor fluctuations in the variance were observed.

Table 9

Descriptive Statistics for Between Group Comparisons for the Intervention Group Workshops (N = 38)

Workshop=	Subscale	Mean	SD
Emotion Regulation	Positive Affect 1	2.25	0.56
	Negative Affect 1	1.17	0.46
	Positive Affect 2	2.23	0.71
	Negative Affect 2	1.01	0.40
Self-Talk	Positive Affect 1	2.19	0.68
	Negative Affect 1	0.98	0.41
	Positive Affect 2	2.44	0.66
	Negative Affect 2	0.87	0.29

* All 4 workshops were analysed but only the workshops that reached significance were discussed in the results section

The results of the paired samples t-test revealed there was a significant increase in positive affect during the self-talk workshop, from pre-intervention ($M = 2.19, SD = 0.68$) to post-intervention ($M = 2.44, SD = 0.66$); $t(35) = 3.69, p = 0.001$. In addition, negative affect significantly decreased from pre-intervention ($M = 0.98, SD = 0.41$) to post-intervention ($M = 0.87, SD = 0.29$); $t(35) = 2.34, p = 0.02$. Furthermore, in the emotion regulation workshop, the results showed there was a significant decrease in negative affect, from pre-intervention ($M = 1.17, SD = 0.46$) to post-intervention ($M = 1.01, SD = 0.40$); $t(35) = 2.47, p = 0.02$). However, these results should be interpreted with caution, as 2 out of three of these findings would be forfeited with a Bonferroni correction for type 1 error ($p < 0.013$).

A repeated measures ANOVA was run on both the intervention and control group using a Bonferroni adjusted alpha level .017 (.05/3) per test, in order to determine whether there were statistically significant changes in reappraisal over the course of a 1-month intervention and a 1-year follow-up. A 2 (intervention and control group) \times 3 (-pre, -post and follow-up measurement) ANOVA indicated there was a significant interaction between reappraisal and the within subject factor, $F(2,43) = 7.21, p = .002, \eta^2 = 0.25$ (see Figure 6). In the intervention group, reappraisal increased significantly over time, from 4.83 to 5.60, 1-year after the intervention had occurred. In the control group, reappraisal decreased significantly from 5.09 to 4.83.

The results of an independent samples t-test determined there was a significant difference in the mean scores of reappraisal between the intervention and control group at the follow-up measurement ($M = 4.83, SD = 0.72$ for control, $M = 5.60, SD = 0.91$ for intervention) $t(74) = 3.20, p = 0.003$. Furthermore, a repeated measures ANOVA was run on the intervention group using a Bonferroni adjusted alpha level .017 (.05/3) per test, in order to determine whether the changes in reappraisal over time, in the intervention group, were significant. The ANOVA indicated there was a significant interaction between reappraisal and the within subject factor, within the intervention group, $F(2, 21) = 5.12, p = .010, \eta^2 = 0.19$.

The results from three paired samples t-tests, comparing the mean scores of reappraisal in the intervention group at pre-intervention, post-intervention and follow-up, revealed that the mean scores of reappraisal, between the pre-intervention ($M = 4.83, SD = 1.30$) and the follow-up measurement ($M = 5.60, SD = 0.91$) were significantly different ($t(22) = 3.20, p = .003$ (see Appendix 4 for the control group results).

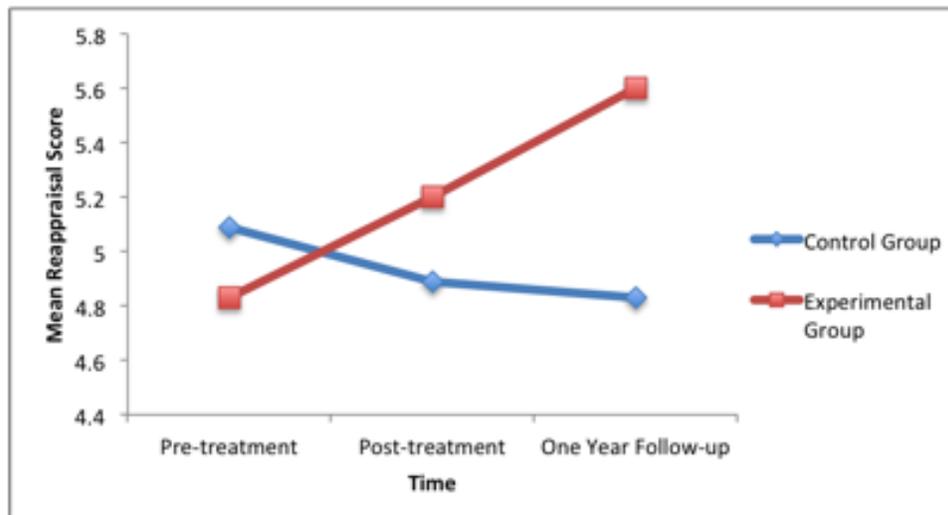


Figure 6. Changes in Reappraisal over Time

Figure 6 depicts changes in reappraisal in both the intervention and control groups, at the pre-, post- and 1-year follow-up. The control group showed a significant decrease in their use of reappraisal, at the 1-year follow-up, whereas, the intervention group saw a significant increase in their use of reappraisal, at the follow-up measurement.

Table 10 shows the correlations between emotion regulation and mental health indicators at the pre-, post- and follow-up measurements. With respect to the correlation matrix, it can be seen from the cluster of two mental health indicators (suppression and life satisfaction), at the pre-intervention measurement, that these two factors were associated with reappraisal in the expected direction at a weak to moderate level. When the same mental health indicators were examined with reappraisal at the follow-up measurement, these associations become stronger in both positive and negative directions, occurring in the expected direction.

Table 10

Bivariate Correlations between Reappraisal and Mental Health Indicators for the Intervention Group over Time

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1																	
2	-.40*																
3	-.06	.37*															
4	.25	-.56**	-.65**														
5	.31	-.14	-.45*	-.63**													
6	.24	-.33	-.65**	-.56*	.47*												
7	.61**	-.09	-.10	.10	.09	.40											
8	-.19	.48**	.31	-.22	.04	-.44*	-.33*										
9	-.13	.23	.88**	-.50*	-.39	-.66**	-.17	.39*									
10	.34*	-.42*	-.37*	.62**	.37	.54**	-.23	-.44**	-.43**								
11	.26	-.28	-.25	.47*	.65**	.46*	.06	-.16	-.26	.66**							
12	.36*	-.22	-.33*	.34	.31	.84**	.42**	-.45**	-.44**	.67**	.57**						
13	.12	.29	.11	-.31	-.15	.37	.61**	-.42*	.009	-.04	-.004	.33					
14	-.09	.31	.30	-.09	.17	-.46	-.29	.67**	.31	-.05	.05	-.33	-.51*				
15	.12	.23	.74**	-.45	-.09	-.50	-.12	.42*	.69**	-.25	-.28	-.24	-.19	.46*			
16	.35	-.43*	-.08	.51	-.18	-.14	.06	-.28	-.07	.36	.55**	.02	-.001	-.09	-.19		
17	.40	-.50*	-.13	.56*	.30	-.09	.05	-.02	-.02	.28	.54**	.05	-.20	-.01	-.18	.84**	
18	.10	-.18	-.22	.19	-.01	.20	.10	-.35	-.35	.31	.42*	.35	.32	-.27	-.44*	.53**	.47*
19	-.03	.40*	.34*	-.49*	-.49*	-.27	.19	-.24	-.38*	-.12	-.01	.25	.51*	-.43	-.53*	-.40	-.12
20	.10	.15	.26	.23	.28	.19	.10	.14	.17	.30	.14	.01	.22	-.10	-.01	.15	.30

* $p < .05$, ** $p < .001$

1= ERQ-S = Emotion Regulation Questionnaire-Suppression at time 1, 2= ERQ-RE = Emotion Regulation Questionnaire-Reappraisal at time 1, 3= SWL = Satisfaction With Life Scale at time 1, 4= DASS-S, 5= DASS-A, 6= DASS-D = Depressive Anxiety and Stress Scale at time 1. 7= ERQ-S2 = Emotion Regulation Questionnaire-Suppression at time 2, 8= ERQ-RE2 = Emotion Regulation Questionnaire-Reappraisal at time 2, 9= SWL2 = Satisfaction With Life Scale at time 2, 10=DASS-S2, 11=DASS-A2, 12=DASS-D2 = Depressive Anxiety and Stress Scale at time 2. 13=ERQ-S3 = Emotion Regulation Questionnaire-Suppression at time 3, 14=ERQ-RE3 = Emotion Regulation Questionnaire-Reappraisal at time 3, 15=SWL-3 = Satisfaction With Life Scale at time 3, 16DASS-S3, 17DASS-A3, 18DASS-D3 = Depressive Anxiety and Stress Scale at time 3., 19=Age, 20=Gender

1

5.3.1 Moderation Analyses

The aim of the moderation analyses was to explore whether the relationship between cognitive reappraisal, satisfaction with life and emotional suppression was moderated by age or gender. The results revealed that the cognitive reappraisal \times gender interaction on satisfaction with life, was not significant $\beta = -0.28$, ($t(42) = -0.38$, ns). Furthermore, the impact of the cognitive reappraisal \times gender interaction on suppression was not significant $\beta = 0.79$, ($t(42) = 1.05$, ns). In addition, the cognitive reappraisal \times age interaction on satisfaction with life was not significant $\beta = 1.20$, ($t(42) = 1.14$, ns), and the impact of the cognitive reappraisal \times age interaction on suppression was also not significant $\beta = -0.51$, ($t(42) = -0.45$, ns).

Table 11 shows the results of two hierarchical multiple regression analyses; during these analyses, satisfaction with life and suppression were regressed on reappraisal. In each analysis, the baseline scores of reappraisal, satisfaction with life and suppression were entered in the first step, followed by reappraisal at time 3. Reappraisal significantly predicted suppression at the follow-up measurement, when baseline levels of each variable were controlled: $\beta = -0.68$ ($t(36) = 4.31$, $p < .0001$). In addition, reappraisal significantly predicted satisfaction with life, at the follow-up measurement, when baseline levels were controlled: $\beta = .30$ ($t(36) = 2.10$, $p < .04$).

Table 11

*Multiple Regression Analysis of Satisfaction With Life and Suppression using Reappraisal as the Predictor Variable (N = 38, * p < 0.05, ** p < 0.001)*

Steps and variables	B	SE B	95% CI	β	R ²	ΔR^2
T3SWL as dependent variable						
Step 1					0.58	0.58
T1Reappraisal	0.63	0.13	-2.52, 0.58	0.86**		
T1Satisfaction with Life	-0.97	0.74	0.37, 0.89	-0.22		
Step 2					0.66	0.08*
T1Satisfaction with Life	0.59	0.12	0.34, 0.84	0.80**		
T1Reappraisal	-1.25	0.70	-2.71, 0.22	-0.29		
T3Reappraisal	2.03	0.97	0.01, 4.05	0.30		
T3ERQS as dependent variable						
Step 1				0.15	0.15*	
T1Suppression	0.28	0.23	-0.19, 0.75	0.28		
T1Reappraisal	0.33	0.19	-0.06, 0.72	0.40		
Step 2					0.57	0.42**
T1Suppression	0.31	0.17	-0.04, 0.65	0.31		
T1Reappraisal	0.52	0.14	0.22, 0.82	0.62**		
T3Reappraisal	-0.88	0.20	-1.31, -0.45	-0.68**		

Note: N = 38, ERQ-RE = Emotion Regulation Questionnaire-Reappraisal at time 1, SWL = Satisfaction With Life Scale at time 1, SWL = Satisfaction With Life Scale at time 3, ERQ-S1 = Emotion Regulation Questionnaire-Suppression at time 1, ERQ-S3 = Emotion Regulation Questionnaire-Suppression at time 3

Table 12 shows the changes in outcome measures, over the course of the study, for both the intervention and the control group. There are marked differences in the mean shift between the control group and the intervention group, at time 1 and time 2. There was shift across all the variables in the intervention group and all shifts were in the expected direction. This shift represents a positive shift in mental wellbeing, accentuated by the use of a cluster of combined positive and negative constructs.

Table 12

Summarizing Intervention Results for Study 1

Subscale	Pre-test	Severity	Follow-Up	Severity
Intervention group				
Stress	16.25	Mild	10.09	Normal
Anxiety	7.42	Mild (borderline)	2.96	Normal
Depression	9.33	Mild (borderline)	6.87	Normal
Satisfaction with life	22.76	Average	25.78	High
Reappraisal	4.83	Normal	5.60	High
Control Group				
Stress	10.88	Normal	11.04	Normal
Anxiety	5.13	Normal	6.96	Normal
Depression	6.75	Normal	7.65	Normal
Satisfaction with life	25.73	High	25.22	High
Reappraisal	5.09	Normal	4.83	Normal

* Note DASS is not a tool used for clinical diagnosis, however at moderate to high levels of anxiety, stress or depression one may require professional help (Bayram & Bilgel, 2008).

5.4 Discussion

Study 1 aimed to address some of the key limitations existing within the current literature, by employing a control group and conducting a one-year follow-up to investigate the impact of intervention effects over time. A further limitation that has been identified in the literature is the lack of theoretically based programmes (Nelis et al., 2011). To address this concern, the current ERT programme was developed on a sound theoretical basis, as the training programme was grounded in the process model of emotion regulation (Gross, 1998b). The process model of emotion regulation states that psychopathology is intimately tied to the timing at which regulatory strategies are employed, such that antecedent strategies (for example, reappraisal) are more psychologically adaptive than strategies that come later in the process, such as suppression (Gross, 2007).

5.4.1 Primary Findings

In support of the primary hypothesis, the results of a 2 (intervention and control group) \times 3 (-pre, -post and follow-up measurement) repeated measures ANOVA, indicated there was a significant interaction between reappraisal and the within subject factor.

In the intervention group, reappraisal increased significantly a year after the intervention had occurred, while, in the control group, reappraisal decreased significantly. ANOVA results of between group differences were not significant. However, *post-hoc* comparisons of reappraisal between the training group and the control group showed a significant difference at the one-year follow-up. It is important to note that part of this difference was accounted for by a significant decrease in the use of reappraisal over time in the control group. Therefore, a repeated measures ANOVA was run on the intervention group independently, in order to investigate whether significant positive changes had occurred, within this group, independent of the control group. The

results of this ANOVA revealed there was a significant interaction between reappraisal and the within subject factor, within the intervention group.

Within the intervention group, the effect size for reappraisal was calculated by finding η^2 , which was determined to be 0.19. According to Cohen's conversion table (Cohen, 1988, see pp. 283: (η^2) = 0.0099 is equivalent to a small effect, 0.0588 a medium effect and 0.1379 is equivalent to a large effect), the intervention was shown to have a large effect on the intervention groups' reappraisal capacities. Within the intervention group, the fact that a significant increase in reappraisal was not observed until a one year follow-up, is in line with the current literature, which indicates that knowledge gleaned from group training programmes can take up to 6 months to be internalized and effectively translated into applied skills used in daily life (Kirkpatrick, 1998; Rae, 2002). Similarly, an emotion training intervention by Nelis and colleagues (2011) showed a progressive increase in adaptive personality traits (i.e. an increase in agreeableness and a decrease in neuroticism) within the training group that did not reach significance until 6 months after programme completion.

5.4.2 Unexpected Findings

Although the findings of the current research offered support for the primary hypothesis, the results also delivered further findings, which must be critically discussed in the context of ER literature. Accordingly, it is important to note that the significant decrease in reappraisal over time, within the control group, was an unexpected finding. However, there are a number of social (English & John, 2013), individual (Troy et al., 2010) and situational (Kashdan & Rotterberg, 2010) factors that may explain this result. For example, it is possible that situational factors, such as economic decline, may have influenced this result. When baseline measures were taken, within British Columbia, 11.5% of people were living in poverty (Statistics Canada, 2010). The following year, when the

follow-up measurement was conducted, this rate had climbed to 12%, matching the poverty rates that peaked during the 2009 recession (Statistics Canada, 2011). Concordantly, 1 in 25 people, within the province, were living on welfare at this time, making this the highest poverty rate of any province in the entire country (Ministry of Social Development, 2011). Thus, it is possible that the intervention may have increased the training group's resiliency, as this group saw an increase in reappraisal and other positive mental health indicators. Therefore, the ERT training programme may have served as a protective factor against excessive stress and depressive symptoms brought on by economic decline.

Within the current study, between group effects were non-significant, which could mean that it may have take more time for individual's to translate the impact of the intervention into actual behaviour. There is an opposing trend in each group: the control group's use of reappraisal was gradually worsening, while the intervention group's use of reappraisal was significantly increasing (see Figure 6). Thus, an additional follow-up, at a later date, is warranted to determine if this trend would reach significance, allowing clear distinctions to be made between the intervention and the control group, relative to their use of reappraisal. In mental health research, it is common to do long-term follow-ups, 10 to 15 years later, in order to see if the intervention's effects were lasting (Jonsson et al., 2011; Munoz & Beardslee & Leykin 2012).

5.4.3 Reappraisal and Suppression: An Unexpected Relationship

Previous literature had indicated that reappraisal and suppression are independent constructs. The examination of the control group's longitudinal data, in the current study, supported the assumptions postulated by the literature. However, this was not the case in the intervention group. Arguably, the most unexpected finding, when considered in the context of the formative literature,

is the link between reappraisal and suppression. However, the findings of this study suggest this relationship should be revisited. During the current study, in the intervention group, significant correlations were observed between reappraisal and suppression at the pre-, post- and follow-up measurements. This was an unexpected result that challenges current findings in the literature.

To date, two studies have demonstrated the independence of these two constructs through factor analysis. In the original study, which led to the validation of the Emotion Regulation Questionnaire (ERQ)'s psychometric properties and factor structure, Gross and John (2003) determined, through both exploratory and confirmatory factor analysis, that reappraisal and suppression were independent constructs, that were not significantly correlated with each other. In other words, a person's relative use of reappraisal was un-associated with their use of suppression. Thus, in theory, a person could utilize both suppression and reappraisal frequently and concurrently. However, it is important to note, that within this study, Gross and John (2003) carried out both their exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) on the same sample. It is imperative, during statistical analysis, if EFA and CFA are employed together, that they are carried out on independent samples (DeCoster, 1998). This is due to the very nature of what each of these analyses is investigating. EFA is used to generate theory regarding how different constructs relate to each other; whereas, CFA is used to test these theoretical predictions. Therefore, if the same data set is used for both analyses, the researcher is fitting the data set, rather than testing the predictions that were made in the EFA regarding the theoretical constructs (DeCoster, 1998). Based on this statistical limitation, definitive conclusions cannot be drawn from this study, thus further investigation is needed.

In a more recent study, Moore, Zoellner and Mollenholt (2008), re-evaluated the independence of these constructs. These researchers noted that the Gross and John (2003) study was the only published study that had addressed this issue; thus, replication was necessary. In the rationale for their study, Moore, Zoellner and Mollenholt (2008) stated that from a theoretical standpoint, the independence of these constructs is counterintuitive. This is due to the positive health outcomes associated with using reappraisal opposed to suppression (See for example: Bebko et al., 2011; John & Gross, 2004; Kashdan & Steger, 2006). Thus, the discerning reader would reasonably assume that positive reinforcement would influence people scoring high in both domains, (reappraisal and suppression) to use reappraisal more frequently than suppression, due to the benefits associated with reappraisal. Furthermore, it is illogical to think that people scoring high in reappraisal would switch to suppression, sacrificing the positive benefits associated with reappraisal in order to adopt a less effective strategy, associated with negative health outcomes. However, in spite of this theoretical rationalization, the results of the Moore, Zoellner and Mollenholt (2008) study were in line with the findings of Gross and John's (2003) research, as they also demonstrated the independence of the reappraisal and suppression constructs, suggesting the two are not directly linked to each other. However, it is critical to note that homogenous sample sizes limit the generalizability of both aforementioned studies (Melka, Lancaster, Bryant & Rodriguez, 2011). In particular, the Gross and John (2003) study was composed exclusively of undergraduates, whilst Moore, Zoellner and Mollenholt (2008) predominately used females, the majority of which were also undergraduates.

To address this concern, a recent study by Wiltink and colleagues (2011) attempted to replicate the finding of these studies in a large community sample. In contrast to the previous studies, Wiltink

and colleagues (2011) did not demonstrate the independence of the reappraisal and suppression constructs, as suppression and reappraisal were modestly correlated. The researchers of this study posited that these discrepant finding may be due to the population sampled, as the Wiltink and colleagues (2011) study employed an adult community sample, whereas, the latter studies were primarily composed of undergraduate students. The findings of Wiltink and colleagues (2011) lend support to the current study, where an adult community sample was also utilized and similar findings were obtained.

Given the significance assigned to reappraisal in the findings of this study, it is vitally important to assess whether this technique also facilitates benefits in the context of individual wellbeing. The findings indicated, that although the mean level of suppression did not drop significantly in the intervention group, reappraisal predicted 42% of the variance in the use of suppression, at the follow-up measurement. This relationship was in the expected direction, such that an increase in reappraisal corresponded to a decrease in suppression; support for this finding was provided by Wiltink and colleagues' recent work (2011) that demonstrated that a relationship between reappraisal and suppression exists in an adult community sample. This finding can be further explained by the concept of psychological flexibility (Kashdan & Rottenberg, 2010), more specifically, the ability to effectively adapt to situational demands in the most effective and efficient way.

Kashdan and Rottenberg (2010) explain, that, although there has been a large body of research conducted on the relative worth of various strategies (Aldao & Nolen-Hoeksema, 2012; Hofmann & Asmundson, 2008; Shurick et al., 2012), past research, has not touched upon the more important

skill, which is the ability to adjust emotional and behavioural responses in order to meet situational demands (Bonanno et al., 2004). One could argue that life is too dynamic for an ideal, all-encapsulating emotion regulation strategy representing the best choice for every situation. In contrast, different strategies are more likely to be effective in different situations, contingent on a variety of factors, such as long-term goals, personal values and situational factors (Cheng, 2001).

This contention is supported by the work of Bonanno and colleagues (2004), who investigated the psychological wellbeing of American college students following the September 11 attacks. In this study, Bonanno and researchers (2004) determined that managing emotions and behaviour, in a situation-specific manner, contributed to psychological adjustment above and beyond the use of any particular strategy. Similar results were elicited by the work of Cheng (2001), who determined that people manifesting coping flexibility (i.e. those who employed a variety of different emotion regulation strategies) had a reduction in depressive and anxious symptoms, over a 1-week time frame, compared with people who had a more inflexible pattern of coping, even when positive strategies were employed. In addition, within this study, participants who employed psychological flexibility were also more welladjusted than participants who adhered to a rigid pattern of coping.

A healthy, optimally functioning person is one who can manage their emotions in a changing environment, where diversity and novelty is a normal occurrence rather than a notable exception (Kashdan & Rotterberg, 2010). Accordingly, there is ample evidence to show that flexibility is adaptive and can be trained through intervention in non-clinical samples (See for example: Berking, Neacsiu, Comtois & Linehan, 2009; Masuda et al., 2007; Rüsçh et al., 2008). Similarly, psychological flexibility may begin to explain the findings in the current study. In summary,

although the mean score of suppression was not reduced, participant's scoring high in reappraisal significantly reduced their use of suppression. This shows that the emergent recommendation given within the ERT intervention, to reduce the use of suppression and increase the use of reappraisal was adopted by this subset of participants, at the 1-year follow-up.

5.4.4 Reappraisal Predicts Wellbeing

The current study provides evidence that the gains in reappraisal, after a targeted, emotion regulation intervention, was a significant predictor of satisfaction of life, after baseline levels of reappraisal and satisfaction with life were controlled. Reappraisal was associated with an 8% increase in a person's satisfaction with life, at the follow-up measurement. Accordingly, it was shown that a brief, ERT intervention enables individuals to apply emotion regulation techniques in daily life to increase their overall wellbeing. This is a key finding, as rates of mental illness are on the rise (Stansfeld et al., 1995) and aforementioned researched has revealed that even at non-clinical levels, the vast majority of people report feeling dissatisfied with their lives and are left 'wanting more', even in the absence of mental illness (Fredrickson & Cohn, 2008). The fact that a brief intervention could cultivate adaptive emotion regulation competences, leading to an increase in satisfaction with life that was maintained at a one-year follow-up has broad implications, as it is a cost-effective way to promote optimal human functioning.

Numerous studies have shown that reappraisal is associated with various positive health outcomes, such as increased optimism, positive affect, satisfaction with life as well as a reduction in depressive symptoms (Gross 2007; Moore, Zoellner & Mollenholt 2008; Troy et al., 2010). Therefore, the findings of study one are novel and acquiescent with current research concerns.

Although the discussion has addressed both the nature and significance of the findings, it is important to consider the practical benefit the created intervention had, from an applied perspective. With the concept of active practice, a direct goal of this research, it is vital that its effectiveness be measured both empirically and objectively. To this end, Table 19 (see “Results” Section) shows the efficacy of the intervention, demonstrating which constructs had lasting effects at the one-year follow-up.

At baseline, the intervention group showed signs of mild stress, anxiety and depressive symptoms, average satisfaction with life and normal use of reappraisal as an emotion regulatory strategy. At the follow-up measurement, stress, anxiety and depressive symptomology all fell within the normal range (Lovibond & Lovibond, 1995), while reappraisal (Gross & John, 2003) and satisfaction with life improved to the point that they were both at a high level (Diener, Lucas & Scollon, 2006). At baseline, the control group was manifesting normal levels of stress, anxiety, depressive symptomology and reappraisal. In addition, this group was demonstrating high levels of satisfaction with life. All of these factors remained stable at the follow-up measurement.

The positive shift in mental health indicators, occurring in the intervention group at follow-up, a trend that was not observed in the control group, is a key finding, significant on a variety of levels. Numerous studies have shown that reappraisal is associated with various positive health outcomes (Gross 2007; Troy et al., 2010); however, the majority of research has, thus far, been theoretical in nature. Consequently, the intention of the current research was to apply theoretical concepts through directed intervention. To date, surprisingly few researchers have attempted to test reappraisal theory in a practical setting. Thus, the current research provides a novel contribution to the literature, by bridging the gap between theory and application. This was accomplished by

utilizing the theoretical knowledge of reappraisal in an innovative way, to effectively train individuals in the employment of reappraisal in daily life, thereby promoting optimal human functioning.

The current research makes an important contribution to the literature, as it is one of the few studies to show that emotion regulation can be positively influenced in adulthood with lasting effects. In support, the results from the current study are corroborated by recent empirical work by Kotsou and colleagues (2011) and Niels and colleagues (2011). Similarly, the increase of reappraisal observed, following the current ERT intervention, corresponds with the findings of a recent study by Gelkopf, Ryan, Cotton and Berger (2008) that demonstrated an increase in reappraisal following an ERT intervention. However, Gelkopf, Ryan, Cotton and Berger's study was limited by its sample population, as it was conducted exclusively for psychologists, who may have possessed advanced knowledge of reappraisal and related cognitive techniques. In contrast, the current research employed a diverse, community sample ranging from highly educated participants, such as doctors and nurses, to participants who had dropped out of high school. Thus, the results of the current study may be more broadly generalizable than the aforementioned research.

Similarly, a recent study by Halperin and colleagues (2013) conducted an intervention study centred on reappraisal. This study demonstrated the efficacy of reappraisal in terms of ameliorating conflict related-attitudes in response to the on-going dispute existing between Turkish and Greek Cypriots. Although these results are auspicious, within this study, no long-term follow-up was conducted. A follow-up measurement is critical to this particular study, as reappraisal has been shown to be an ineffective technique, when emotions run high (Sheppes, Scheibe, Suri & Gross, 2011). A further

limitation of this research was that it was conducted in a laboratory setting, where inauthentic emotions and hypothetical scenarios were generated, thus the ecological validity was low. In contrast, within a naturalistic setting, it is logical to hypothesize that high emotional sensitivity would manifest within this group, specifically surrounding this contentious issue. Therefore, it is imperative that a long-term follow-up be conducted, ideally one that assesses the use of reappraisal during actual emotional situations, in order to truly assess the intervention's efficacy. Although the current research project was not dealing with a population facing such strong levels of diversity and emotional turmoil, a key methodological focus of the current research was to conduct a one-year follow-up, in order to test the enduring effects of the ERT intervention.

An increasing trend in the contemporary literature is to define psychological wellbeing as a multi-dimensional construct, representing both the absence of psychopathology and the presence of positive psychological characteristics. This may include factors such as subjective wellbeing, which consists of a person's life satisfaction, happiness, optimism and positive affect to name a few key components (Sin & Lyubomirsky, 2009).

Satisfaction with life is a key mental health marker that has been negatively correlated with depressive symptomology (Beutel, Glaesmer, Decker, Fischbeck & Brahler, 2009; Nes et al., 2012) and suicidal thoughts (Swami, Furnham, Georgiades & Pang, 2007). Importantly, longitudinal studies have demonstrated the predictive capabilities of low satisfaction with life in determining those who are at high risk for developing depression (Koivumaa-Honkanen, et al., 2004). These studies highlight the importance of achieving high levels of life satisfaction, due to the strong impact it has on mental health. However, research has shown this goal is unachievable for the

majority of North Americans, as 80% currently report being dissatisfied with their lives, even though they are below the threshold of a diagnosable mental illness (Keyes, 2002). Thus, in light of its significance and the unmet need, a major success of the current intervention was its ability to significantly increase life satisfaction to a high level, within the training group. It is reasonable to hypothesize that this positive increase may have a knock on effect in other life domains, effectively increasing an individual's resilience when faced with major life stressors, such as the economic decline. In addition, increased life satisfaction may serve as a protective factor against mental illness and may improve interpersonal relationships and enhance work performance (Koivumaa-Honkanen et al., 2004).

The findings of the current investigation are encouraging, particularly when viewed in terms of the efficacy of previous, practice-based research focusing on anxiety. In particular, in a study by Cameron and colleagues (2007), an emotion regulation-training programme was designed to foster adaptive coping skills for women struggling with the emotional and physical adjustments associated with breast cancer. This study, showed a significant increase in emotional wellbeing and a reduction in both worry and anxiety, within the intervention group. In addition, within this study at a one-year follow-up, intervention participants showed a significant reduction in emotional suppression. These findings are important, as emotional suppression has been linked to a myriad of negative cognitive, social and affective outcomes (Gross, 2007). Strengths of this study were the use of an active control group that received standard care and the conduction of multiple follow-ups at 4-months, 6-months and 12-months, post intervention. Considering the positive findings and methodological rigour that can be attributed to this study, it is highly encouraging that the findings

of the current investigation also had a demonstrable impact on anxiety, which corresponds with the aforementioned research.

In a related vein, a recent study by Suveg and colleagues (2009) showed a significant reduction in anxiety following a CBT intervention; however, a weakness of this study was the lack of a control group. This was not a methodological issue within the current study, which employed a control group in order to safeguard against the placebo effect and to provide an accurate benchmark, against which to measure the impact, the training programme had on the intervention group.

Setting the findings of study 1 in the wider theoretical and practical perspective, the shift from mild anxiety and depressive symptomology to a normal level, in the intervention group, is an important finding on a number of levels, due to the debilitating nature of these constructs (Bubier, Drabick, 2009; Deyo et al., 2009; Monroe & Harkness, 2005). In summary, it is both valuable and encouraging that the benefits of this intervention were demonstrated both empirically and from an applied perspective. The very nature of emotion regulation practice requires both strong methodological rigor and demonstrable results. Therefore, considering the applied intervention had a measurable impact on established psychometric scales (with adequate specificity and sensitivity), suggests the intervention should be both championed, when applied theoretically, and viewed as economically viable, when utilized as an applied intervention to enhance wellbeing.

5.4.5 Attrition Rate of the Current Study

One of the most important concepts to address in emotional regulation, and intervention research in general, from a holistic standpoint, is whether the intervention is viewed as practically useful to the

individual with whom the practitioner is trying to intervene. In the absence of time consuming, expensive, qualitative, subjective research (actively measuring an individual's perception of the intervention), the best way of measuring this objectively is through research attrition rates. Research has shown participants, finding interventions ineffective, tend to leave the process prior to course completion (Swift, Greenberg, Whipple & Kominiak, 2012); therefore, attrition can be considered an indirect, objective measure of programme acceptance. Thus, in the current ERT intervention, a 12% attrition rate may be seen as positive participant's reception, indicating programme acceptance, especially when considering the degree of commitment required from participants. In further support of this contention, all pre- to post- workshop measurements showed a trend towards an increase in positive affect and a decrease in negative affect from pre- to post-workshop, with the strongest effects manifested in the introduction to emotion regulation and the self-talk workshops, which both reached statistical significance (see "Results" Section Table 14).

Maintaining low attrition rates is imperative for success when conducting longitudinal research in order to accurately access the long-term aims of the research. Confounding variables, such as selective attrition, resulting from participants who are unhappy with the training, may lead to unrepresentative groups, which may bias the findings. In addition, large dropout rates can lead to excessive amounts of missing data that can negatively impact data analysis (Prinz et al., 2001). Therefore, high attrition is a significant issue that threatens both the external and internal validity of research findings (Cotter, Burke, Loeber & Navratil, 2002). However, from a practical standpoint, when conducting highly involved, lengthy studies, high attrition rates are common. For example, an intervention study by Farvolden Denisoff, Selby, Bagby and Rudy (2005) investigating the efficacy of a 12-week, internet-based self-help programme for panic disorder had an attrition rate of almost

99%, as only 12 out of 1161 participants completed the programme in its entirety. Similarly, a study by Christensen, Griffiths, Korten, Brittliffe and Groves (2004), investigating the effectiveness of a 5-week programme, aiming to decrease depressive symptomology, had a comparable attrition rate, as only 97 out of 19,607 (0.5%) participants completed the programme. Concordantly, a large internet-based study by Etter (2005) also accrued a substantial number of dropouts, as only 35% of participants completed the programme. Thus, in light of the aforementioned studies, the attrition rate of 12%, occurring within the current study, was deemed acceptable. However, although 12% is an acceptable attrition rate, future research should work to decrease attrition rates even further, as attrition is a major methodological issue in intervention research.

5.4.6 Critical Evaluation of the Current Research

Emotion regulation taught as a practical intervention is a valuable commodity, and interventions with both promising results and strong methodological rigor are in high demand. Therefore, it is important to consider the strengths of the current study.

A key strength of the current research was that it addressed a number of pressing concerns and limitations of previous research, as it was grounded in a sound theoretical framework and utilized a control group. An additional strength of this research was that a community sample aged 18-66 was utilized. This sample may be more accurately representative of emotion regulation in the general population, when compared to previous research. It is often the norm, in emotion research, to employ undergraduate samples, due to their convenience (Gross & John, 2003). However, because emotion regulation changes significantly over the lifespan (Gross, Richards & John, 2006), it is

crucial to avoid making overgeneralizations from data gathered exclusively from undergraduate samples, composed of students aged 18-22.

A further strength of the current study was that a one-year follow up was conducted. This follow-up was performed, as two prior studies indicated that the impact of intervention effects can take up to six months to be utilized effectively in daily life (Niels et al., 2011; Rae, 2002). This follow-up measurement was instrumental in the current research. Specifically, when investigating the use of reappraisal, significant changes were not observed until the one-year follow-up, at which point, the control group was showing a significant decline in the use of reappraisal, whereas, the intervention group was showing a significant increase in the use of this strategy. The broad implications of these findings are auspicious, as they provide supporting evidence that the positive changes elicited through the current intervention had sustaining effects. However, the aim of future research will be to determine precisely how long these changes last.

Although the current study had its strengths, failure to consider limitations of this research hinders the future evolution of the intervention programme. Recent research supports the efficacy of emotion regulation interventions in a variety of environments, in both a clinical and non-clinical setting (Smyth & Arigo, 2009). However, intervention research, within the field, has been plagued with methodological inconsistencies, such as high attrition rates, lack of controlled studies and the lack of a long-term follow-up (Matthews, Zeidner & Roberts 2007). In addition, a predominant weakness, within this field, has been the heavy reliance on self-report measures (Hall & Long, 2009). This was a limitation within the current study, as all data was collected through self-report measures; thus, response bias may have been an issue. Initially, in the planning phase of this study, cortisol measurements were to be taken from a subset of both the intervention and the control group

at pre- and post- testing, in order to diversify the measurements taken within this study. However, at a later stage of project planning, this idea was rejected by the ethics board; consequently, the project proceeded solely with self-report measures. Nevertheless, it is important to recognize that, even though self-report has inherent limitations, such as response bias, social desirability and low levels of participant self-awareness (Paulhus, 1991), research supports the validity of the self-report method, as it is the most widely used technique for data collection in health psychology, as it provides multi-variant assessment (Myers & Smith, 2000). Concordantly, Watson Hubbard and Wiese, (2000) posit that when engaging in emotion research, self-report is the superior mode of data collection, when evaluating subjective emotional experience. Further support is garnered from the work of Guerrero and Jones (2005), who state that self-report provides crucial insight into subjective attitudes, cognitions and experiences that cannot be garnered through external investigation.

Additional strengths of this method are that it provides a rapid means of data collection, that is relatively inexpensive and allows for the quick evaluation of emotions, which are transient in nature (Aldao, Nolen-Hoeksema & Schweizer, 2010; Spokas, Luterek & Heimberg 2009). Moreover, recent research has argued that self-report is comparable to certain types of objective data, such as hospital records (Kotsou et al., 2011). Correspondingly, self-ratings of health have demonstrated predicted validity in mortality over a 23-year span (Heistaro, Jousilahti, Lahelma, Vartiainen & Puska, 2001) and have been shown to have greater predictive power than medical records, when predicting functional disability over a 15-year time period (Ferraro & Su, 2000). However, within the current research, the issue of self-report was addressed in study 2, by pairing an objective measure with the subjective data, in an attempt to corroborate the subjective findings.

A further weakness of the current study was that the control group was significantly older than the intervention group. This is problematic, as past research has shown that emotion regulation is influenced by age, such that it naturally improves over the lifespan with a shift towards an increased use of healthier emotion regulation strategies, for example, reappraisal or mindfulness acceptance (Gross, Richards & John, 2006). This issue was also addressed in study 2, by employing a matched pairs design, where the effects of age and gender were controlled.

An additional limitation worth noting in the current study was the use of a non-active (untreated comparison), control group. It is possible that the increase in reappraisal and satisfaction with life, coupled with a reduction in suppression (based on the relative use of reappraisal), occurred due to a placebo effect arising from group participation in general, rather than from the specific techniques taught during the intervention itself. This limitation can be addressed in future research by employing an active control group trained in an unrelated activity, such as academic motivation. However, it is important to note, that two studies conducted by Kotsou and colleagues (2011) and Niels and colleagues (2011) addressed this issue. In their first study, a non-active control group was utilized, whereas, in their second study, an active control group was employed. The results from both studies garnered comparable results. In conclusion, in spite of the aforementioned limitations within this current research, the levels of variance are substantial, thereby making a strong case for the predictive capabilities of the reappraisal construct.

5.4.7 Conclusion

To conclude, the findings of this study demonstrate that a brief ERT training programme can increase adults' subjective wellbeing and significantly increase their use of reappraisal. In addition, the findings highlight, that the application of this strategy decreased participants' use of suppression

and enhanced their satisfaction with life. Further increases with reappraisal were found within the intervention group at a one-year follow up.

From an applied perspective, the findings from this study, deliver both significant and positive implications for both the literature and emotion regulation practice. The findings demonstrate that reappraisal has links to positive wellbeing in a number of forms. It is difficult, given this information, to comprehend how reappraisal can be continually omitted from both future theoretical study and, perhaps more crucially, interventions with the direct remit of improving wellbeing. These findings have implications in the health sector due to the brevity and positive outcome of this low-cost, preventative ERT intervention; therefore, further exploration is warranted.

Chapter 6.0 Study Two

6.1 Objectives and Overview

The aims of study 2 were twofold; firstly, the goal was to replicate the main outcome of study 1 in a larger sample; secondly; in addition to the outcome variables utilized in study 1, the impact enhanced cognitive reappraisal had on cognitive performance was investigated as an objective outcome measure. Specifically, cognitive performance was evaluated, by having a subset of participants, from the treatment and control group complete a computer performance test (See section 6.3.7 for details of the test) targeting attention and memory at both the pre- and post-intervention measurements. This study employed a longitudinal, repeat measures design (4 week training programme), which was carried out on a large, Canadian community sample. In addition, this study utilized a matched-pairs design, where participants were matched according to age and gender.

6.1.1 Rationale for the Cognitive Performance Test

Empirical research has shown that suppression is associated with a decrease in memory (Richards & Gross, 1999; Richards & Gross, 2000) and is associated with a decrease in cognitive performance (Baumeister, Vohs & Tice, 2007). In contrast, reappraisal has been associated with memory improvements (see Jamieson, Mendes, Blackstock & Schmader, 2010 for example). The intervention utilized, within the current research, aimed to significantly increase the use of reappraisal and decrease the use of suppression, within the intervention group when compared with the control condition. In line with this aim, a performance test was designed and implemented, that measured the cognitive performance of both the treatment and control group at pre- and post-intervention. This was done to determine if a significant increase in reappraisal would occur in the

intervention group and if this increase in reappraisal would be associated with a significant increase in cognitive performance, when compared with the control condition.

6.2 Hypothesis: It was expected that an increase in an individual's cognitive reappraisal competencies would be associated with enhanced levels of satisfaction with life and enhanced cognitive performance. In addition, it was hypothesized that the increase in reappraisal would be associated with a reduction in anxiety, stress and depressive symptoms.

6.3 Methodology

Based on a power analysis, with G-Power (Faul et al., 2007), $n = 122$ participants were needed to show a medium effect size of $\eta^2 = 0.6$ to establish a significant difference between the intervention and the control group, with a minimum power of 0.95 and an alpha value = 0.05.

6.3.1 Study Design

This controlled study used a non-random, matched-pairs, 2 (intervention vs. wait-list control group) \times 2 (baseline, post-intervention) study design, yielding a between-groups comparison condition. Participant recruitment of 104 ($n = 51$ experimental, $n = 53$ control) adults between the ages of 17 and 59 years, from Quesnel B.C., or surrounding areas, served as participants in this study (52 females, 52 males $M_{\text{age}} = 34.43$, $SD = 13.41$, Range = 17-59 years). As in study 1, a stringent exclusion criterion was utilized (see "Methods" section 5.9, pp. 142). After screening, the final sample consisted of participants that were 97% Caucasian, 2% Mixed and 1% Aboriginal. Initially, 156 participants were recruited for this research project. However, 51 people were excluded, with 29 excluded for not meeting all of the inclusion criteria and 22 dropping out of the project or failing to complete the minimum requirements of the programme.

Initially, informed consent was gathered from all participants prior to study commencement. In addition, participants were told they could withdraw from the study at any point during the project. Participants used a code name that was placed on all their work pertaining to the study, rather than their name, in order to maintain anonymity and confidentiality.

6.3.2 Materials

In the framework of study 1, the same battery of questionnaires was utilized for study 2. Specifically, study 2 utilized the Emotion Regulation Questionnaire (ERQ), Depression, Anxiety and Stress Scales (DASS-21) and the Satisfaction With Life Scale (SWL). Additionally, the Schwartz Outcome Scale (SOS) and the Penn State Worry Questionnaire (PSWQ) were added to the questionnaire package, in order to increase the variance of assessment.

6.3.3 The Schwartz Outcome Scale-10 (SOS-10, Blais et al., 1999)

The Schwartz Outcome Scale-10 (SOS-10) (Blais et al., 1999) is a brief, questionnaire used to measure overall psychological wellbeing. This scale is a 10-item questionnaire measured via a 7-point Likert scale, anchored at 0 ‘never’ and 6 ‘all of the time or nearly all of the time’. An example item from the SOS-10 is, “I feel hopeful about my future.” This measure has demonstrated excellent internal reliability, with a Cronbach’s alpha value of 0.96 and has shown strong test, re-test reliability (0.87) in non-clinical populations (Blais et al., 1999). A more recent study, by Young, Waehler, Laux, McDaniel and Hilsenroth, (2003), extended these findings, demonstrating strong psychometric properties in the SOS-10 in a large, undergraduate population. In the current study, Cronbach's alpha values for SOS, for the control group, were 0.93 at pre-intervention and 0.93 at post-intervention. In the intervention group, Cronbach’s alpha at pre-intervention was 0.87 and 0.93 at post-intervention.

6.3.4 Penn State Worry Questionnaire (PSWQ, Meyer, Miller, Metzger & Borkovec, 1990)

The Penn State Worry Questionnaire (PSWQ) is a psychometric questionnaire used to measure pathological worry (PSWQ; Meyer, Miller, Metzger & Borkovec, 1990). It is a global measure, as it measures the uncontrollability, immoderation and generality of maladaptive worry, without breaking it down into its component parts. The PSWQ is a 16-item questionnaire rated on a 5-point Likert scale, anchored at 1 'not at all typical of me' and 5 'very typical of me'. An example question from the PSWQ is, "When I am under pressure I worry a lot." Embedded within this questionnaire are 5 questions that are reverse scored. An example question that is reversed scored is, "If I do not have enough time to do everything, I do not worry about it." The PSWQ is the most common measure of generalized worry used within the extant literature. It has demonstrated strong test, re-test reliability ($r = .92$) and has shown sound internal consistency ($\alpha = .93$) (Meyer et al., 1990). In the current study, Cronbach's alpha for the PSWQ control group was 0.94 at pre-intervention and 0.95 at post-intervention. In the intervention group, Cronbach's alpha at pre-intervention was 0.94 and 0.95 at post-intervention.

As highlighted in study 1 and again in study 2, attrition rate was recorded in order to evaluate the external validity and the acceptance of the ERT training programme.

6.3.5 Procedure

The intervention workshops were carried out at the college of New Caledonia, in Quesnel B.C., Canada, with the permission of the Associate Regional Director of the Quesnel Campus. Initially, baseline measurements were taken for both groups, utilizing self-referenced questionnaires. The baseline measurements were taken roughly one week prior to the first workshop and one month

following the last workshop. At each measurement, each participant filled out a questionnaire measuring the following constructs: satisfaction with life, mental wellbeing, worry, stress, depressive symptomology, anxiety, reappraisal and suppression. In addition, a subset of 19 people, from each group (both intervention and control), completed an objective performance test at pre-intervention and post-intervention, when the baseline questionnaire packages were filled out.

The main dependent variables measured within this study were satisfaction with life, stress, worry, overall mental wellbeing, anxiety, depressive symptomology and suppression. The independent variable was reappraisal.

Participants were gathered via newspaper ads, public message boards, word of mouth and an advertisement placed on *Facebook*. After an acceptable number of participants had passed the screening phase, these participants were matched according to age and gender, in order to create an equivalent control group, after which workshops began.

The project began on April 12th, 2012 at the College of New Caledonia, in Quesnel B.C. At this time, participants attended an informational session explaining the project in detail. Initially, baseline measurements were taken from both the intervention and the control group. The baseline questionnaire package contained the following material: a letter of intent, a consent form, a demographic questionnaire, the Emotion Regulation Questionnaire (ERQ), the Satisfaction with Life Scale (SWL), the Depression, Anxiety and Stress Scales (DASS-21), the Schwartz Outcome Scale-10 (SOS-10), the Kentucky Inventory of Mindfulness Skills (KIMS), the Penn State Worry Questionnaire (PSWQ) and a debriefing form.

After the baseline questionnaire was completed, the control group remained inactive, until the second baseline measurement was taken, after the training programme had been completed, at which time, they completed the questionnaire package for the second time. As in study 1, all control participants were offered an opportunity to receive the training programme after the study had ended; however, no participants accepted this offer.

On April 18th, roughly one week after the baseline measurements were taken, the emotion regulation workshops commenced. The workshops were each 1.5-2 hours long and were held at the College of New Caledonia. Due to the fact that there were such a large number of participants (N= 5-15), each workshop was offered multiple times (4-8), in order to accommodate participants' varying schedules. In total, participants attended four different workshops. They were recruited and trained during the summer months, until a minimum target of 100 participants was reached. At the end of the experiment, an identical questionnaire package was handed out to both the intervention and control group, matching the initial questionnaire package completed prior to the commencement of the programme. The final group of participants filled out this questionnaire package the first week of September (Sept 1st-7th), at which point data collection was complete, as data from all 104 participants was collected.

6.3.6 Performance Test Procedure

A subset of 38 participants was selected to participate in a computer performance test (19 control, 19 intervention), so objective data could be gathered. Again, these pairs were matched according to age and gender. The performance test was carried out after participants, as a group, had viewed an emotionally upsetting, 3-min film clip, which evoked sadness. This film clip was adapted from

Gross and Levenson (1995). The emotion, sadness, was chosen because the film was watched in a group setting and people are more likely to suppress their emotions in front of others. Therefore, if the film brought them to tears and they were prone to suppression, it is likely that they would try to hold back their tears, due to social desirability, based on the fact that they were surrounded by others and would want to be accepted by the group and would fear ridicule (Gross & John, 2003).

The performance test involved playing a computer game designed to impact attention and memory centres of the brain. It involved looking at an initial image on a card, in order to memorize it. When the participant felt they had memorized the card, they pressed the spacebar, after which, they had to decide if the next card displayed on the screen matched the card they had previously viewed. In this computer game, the cards were presented randomly, with participants deciding the amount of time required to memorize each card. It has been shown that suppression (Gross & John, 2003) and rumination (Hertel, Benbow & Geraert, 2012) impair both memory and attention processes, whereas, the frequent use of reappraisal has been linked to memory improvements and enhanced performance (Jamieson et al., 2010).

At the baseline measurement (pre-intervention), 19 people from each group (both intervention and control) completed the performance test. They were first educated about the game, after which, participants moved to a computer lab and were given two practice rounds to acclimatize to the game. After this they were taken into another room and shown a video clip. This clip was called 'The Champ'; it was about an aged boxer, dying in the ring, while his young son looks on. After watching the film, participants returned to the computer lab, where they played the computer game two more times (each round lasted for 45 seconds).

At the end of the study (post-intervention), an identical procedure was followed; however, a different video clip was utilized, so participants would not habituate to the clip, as this would decrease its emotional impact. At the second data collection, the video clip “Never Give Up” was chosen. This clip portrayed an Olympic athlete who, after tearing his hamstring early in a race he was favoured to win, perseveres and limps to the finish line with the aid of his father. For the performance test, both the intervention and the control group followed an identical procedure. However, the groups were processed at different times, due to computer lab availability, participants varying schedules and space constraints.

6.3.7 Intervention

The primary researcher facilitated all of the workshops held for the intervention group. The workshops were modified based on the results from study 1. In short, the baseline questionnaire package was shortened in order to avoid fatigue affects. Further modifications included the addition of more worksheets to make the programme more interactive, more group discussions and less academic terminology, as participants from study 1 found some of the terms and phrases difficult to understand.

6.3.8 Data Analysis

Initially, descriptive statistics were calculated for the entire sample, before and after the study was carried out. Independent samples t-tests were conducted to look for significant differences between the intervention and control groups. Significant test results were further analysed via correlational analysis and hierarchical regression analysis. Results were considered significant at a minimum 0.05 alpha level.

6.3.9 Debriefing

Participant debriefing occurred after the intervention was completed. Debriefing was done in both written and oral format, as each participant was given a debrief form, explaining the nature of the study and the assurance that participant's information would remain confidential and anonymous was reiterated. If the participant had any further questions or concerns, they were provided with full contact information for the entire academic team: the principle investigator, the Director of Studies, the Dean of the School of Human and Life Sciences and the local counselling consultant, who had overseen the project for both studies 1 and 2.

6.4 Results

Table 13 shows the descriptive statistics for all psychometric questionnaires utilized during both data collections for the intervention and control groups. Within the control group, all variables demonstrated adequate reliability, as estimated by Cronbach's alpha, with values ranging from 0.70 to 0.95. Within the intervention group, all questionnaires demonstrated adequate reliability, with values ranging from 0.79 to 0.95, with the exception of ERQ-S (pre-intervention $\alpha = 0.64$, post-intervention $\alpha = 0.68$) (see Appendix 5). In the intervention group, the mean shift was invariably in the expected directions (both negative and positive) and the variances predominantly (6 out of 8) clustered around the mean, in comparison with the pre-intervention measurement. These shifts are indicative of a positive change in mental health indicators. In the control group, the descriptive statistics tended to remain stable at both pre- and post-test; however, there were some minor fluctuations in the variances.

Table 13

Descriptive Statistics Summarizing all Study Variables used to Measure Mental Health Indicators in the Intervention and Control Groups in Study 2 (N = 104)

	Pre-intervention		Post-intervention	
	Mean	<i>SD</i>	Mean	<i>SD</i>
Control Group				
Life satisfaction	26.21	5.56	26.08	6.25
ERQ-Suppression	3.49	1.20	3.50	1.00
ERQ-Reappraisal	4.77	0.91	4.78	0.96
Mental wellbeing (SOS)	45.98	9.72	45.80	10.70
Worry (PSWQ)	42.58	13.80	41.63	14.45
DASS-Stress	5.36	4.31	5.23	4.59
DASS-Anxiety	2.66	3.52	2.53	3.77
DASS-Depression	3.00	3.87	3.23	4.44
Intervention Group				
Life satisfaction	20.84	7.31	24.84	6.47
ERQ-Suppression	3.68	1.09	3.45	1.00
ERQ-Reappraisal	4.54	0.96	4.92	0.92
Mental wellbeing (SOS)	38.73	10.03	41.01	11.91
Worry (PSWQ)	51.14	14.28	47.31	15.17
DASS-Stress	8.43	4.64	6.53	4.13
DASS-Anxiety	5.57	5.29	3.98	4.32
DASS-Depression	6.04	5.61	5.03	4.84

Table 14 shows descriptive statistics for all PANAS measurements taken at the pre- and post-measurements during the workshops. The observed pattern presented within the table, is clearly indicative of upward mean shift in the positive measure and downward mean shift in the negative measure. These are accompanied by slight variations in the standard deviations.

Table 14

Descriptive Statistics for the Intervention Group Across Workshops (N = 42)

Workshop	Subscale	Mean	SD
Self-Talk	Positive Affect 1	2.63	0.77
	Negative Affect 1	1.30	0.33
	Positive Affect 2	3.00	0.94
	Negative Affect 2	1.14	0.22

All workshops were analysed; however, only workshops that reached significance ($p < 0.05$) were discussed further in the results section

A paired-samples t-test showed there was a significant increase in the mean scores of positive affect from pre-intervention ($M = 2.63$, $SD = 0.77$) to post-intervention ($M = 3.00$, $SD = 0.94$) for the self-talk workshop ($t(41) = 3.06$, $p = 0.004$). Furthermore, following the workshop intervention, there was a significant decrease in the mean scores of negative affect, from pre-intervention ($M = 1.30$, $SD = 0.33$) to post-intervention ($M = 1.14$, $SD = 0.22$), $t(41) = 3.40$, $p = 0.002$.

The results of an independent samples t-test, for both the intervention ($n = 51$) and the control group, ($n = 53$) at time 1 (pre-test), showed a significant difference in the mean scores for satisfaction with life ($M = 26.08$, $SD = 6.25$ **for control**, $M = 24.84$, $SD = 6.47$ **for intervention**) between the intervention and control groups, $t(103) = 4.20$, $p = 0.001$. In addition, the results showed a significant difference in the scores for stress ($M = 5.23$, $SD = 4.59$ **for control**, $M = 6.53$, $SD = 4.13$ **for intervention**) between these two groups.

Further differences were shown for anxiety ($M = 2.53$, $SD = 3.76$ **for control**, $M = 3.98$, $SD = 4.32$ **for intervention**), $t(103) = 2.91$, $p = 0.001$, for depressive symptomology ($M = 3.00$, $SD = 3.87$ **for control**, $M = 6.04$, $SD = 5.61$ **for intervention**), $t(103) = 3.04$, $p = .002$ and for worry ($M = 42.58$, $SD = 13.80$ **for control**, $M = 51.14$, $SD = 14.28$ **for intervention**), $t(103) = 3.11$, $p = .002$. Finally, a significant difference was shown for mental wellbeing ($M = 45.98$, $SD = 9.72$ **for control**, $M = 38.73$, $SD = 10.03$ **for intervention**), $t(103) = 3.45$, $p = .001$.

The results of an independent samples t-test, for both the intervention ($n = 51$) and the control group, ($n = 53$) at time 2 (post-test), showed there was no significant difference in any of the mental health indicators between the intervention and the control group, at the follow-up measurement, with the exception of mental wellbeing. The results showed there was a significant difference in the mean scores for mental well-being ($M = 45.80$, $SD = 10.70$ **for control**, $M = 41.01$, $SD = 11.91$ **for intervention**) $t(103) = 2.16$, $p = 0.03$.

Furthermore, a paired-samples t-test for the intervention group showed a significant increase in the mean scores for reappraisal, from pre-intervention ($M = 4.54$, $SD = 0.96$) to post-intervention ($M = 4.92$, $SD = 0.92$), $t(50) = 2.55$, $p = 0.01$. In addition, the results showed a significant increase in the scores for satisfaction with life, from pre-intervention ($M = 20.84$, $SD = 7.31$) to post-intervention ($M = 24.84$, $SD = 6.47$); $t(50) = 5.83$, $p = 0.001$. Further reductions were found for stress from pre-intervention ($M = 8.43$, $SD = 4.64$) to post-intervention ($M = 6.53$, $SD = 4.13$), $t(50) = 3.26$, $p = .002$ and for anxiety from pre-intervention ($M = 5.57$, $SD = 5.29$) to post intervention ($M = 3.98$, $SD = 4.32$), $t(50) = 3.36$, $p = .002$. Furthermore, a significant decrease was found in the mean scores for worry, from pre-intervention ($M = 51.14$, $SD = 14.28$) to post-intervention ($M = 47.31$, $SD = 15.17$),

$t(50) = 2.37, p = .02$. No significant changes were found in any mental health indicators for the control group (see Appendix 5 for the control group results).

Seven hierarchical, multiple regression analyses were run using a Bonferroni adjusted alpha level .0071 (.05/7) per test, which used reappraisal as the predictor variable for suppression, worry, overall mental wellbeing (SOS), satisfaction with life and depressive symptomology. Reappraisal had the following impact on each variable: reappraisal significantly predicted suppression at the post measurement, when baseline levels were accounted for: $\beta = -0.36$ ($t(49) = 2.87, p < .006$). In addition, reappraisal significantly predicted worry at the post measurement, when baseline levels were controlled: $\beta = -.41$ ($t(49) = 4.41, p < .0001$). Furthermore, reappraisal significantly predicted satisfaction with life, when baseline levels were controlled: $\beta = .28$ ($t(49) = 2.90, p < .006$). Reappraisal also significantly predicted depressive symptomology controlling for baseline levels: $\beta = -.42$ ($t(49) = 4.21, p < .0001$). In addition, reappraisal significantly predicted overall mental wellbeing (SOS), $\beta = .33$ ($t(49) = 3.29, p < .002$) (see Appendix 5).

With reference to the correlation matrix, it can be seen, from the cluster of the three mental health-related variables (mental wellbeing (SOS), depression and worry) at time 1 that they associate with reappraisal in the expected direction at a weak to moderate level. Moreover, when the same clusters are examined with reappraisal at time 2, these associations become more accentuated, and both positive and negative correlations occur in the expected direction (see table 15 below)

Table 15

Bivariate Correlations between Reappraisal and Mental Health Indicators for the Intervention Group Over Time (N = 51)

	0	1	2	3	4	5	6	7	8	9	10
0 Reappraisal 1	1										
1 Life satisfaction 1	.38**										
2 Depression 1	-.35*	-.69**									
3 Mental well-being 1	.47**	.58**	-.75**								
4 Worry 1	-.36*	-.16	.29**	-.42**							
5 Suppression 1	-.05	-.43**	-.47**	-.32*	.005						
6 Reappraisal 2	.37**	-.04	-.06**	.28**	-.03	.09					
7 Life satisfaction 2	.28	.75**	-.51**	.50**	-.30*	-.25	.20				
8 Depression 2	-.29*	-.34*	.66**	-.60**	.34*	.42**	-.42**	-.49**			
9 Mental wellbeing 2	.36*	.41**	-.58**	.72**	-.39**	-.27	.48**	.59**	-.82**		
10 Worry 2	-.39**	-.14	.28*	-.39**	.70**	-.01	-.43**	-.42**	.61**	-.67**	
11 Suppression 2	.15	-.03	.20	-.17	.20	.49**	-.20	-.21	.47**	-.49**	.43**
12 Age	-.01	.28	-.31	-.21	.04	.09	-.08	.21	.10	-.20	.08
13 Gender	-.23	-.02	-.09	-.01	.27	.06	.20	.11	-.22	.13	.07

p<.05, ***p*<.01

6.4.1 Moderation Analyses

The aim of this moderation analysis was to explore whether the impact of cognitive reappraisal on satisfaction with life, emotional suppression, worry, overall mental wellbeing (SOS), stress, anxiety and depressive symptomology was moderated by age or gender. The results revealed that the cognitive reappraisal \times gender and age interaction on satisfaction with life, suppression, worry, mental wellbeing, stress, anxiety and depressive symptomology was not significant ($t(100) < 1.60$, ns).

6.4.2 Impact of Enhanced Cognitive Reappraisal on Cognitive Performance

The results of two independent samples t-tests, comparing the intervention vs. control group ($n = 38$), showed significant differences between these two groups on the number of correct responses ($t(37) = 5.41$, $p < 0.001$) and the reaction time at the post-measurement ($t(37) = 3.11$, $p < 0.004$). Furthermore, paired sample t-tests for the intervention group ($n = 19$) showed significant improvements in the number of correct responses ($M = 47.63$, $SD = 9.04$, pre-intervention, $M = 53.21$, $SD = 11.36$ post-intervention), ($t(18) = 4.82$, $p = 0.0001$) and the reaction time (ms), from pre-test to post-test ($M = 710.42$, $SD = 231.67$, $M = 630.95$, $SD = 240.88$), $t(18) = 3.79$, $p < 0.001$ (see Appendix 5 for the control group results).

Table 16 shows the result of changes in psychometric questionnaires, in both the intervention and the control group, across the study. Having reviewed the findings from the standpoint of statistical significance, these are now further explored, with reference to applied and conceptual significance, and in relation to the word descriptors related to scale boundary parameters. The upward and downward mean shifts, described in earlier tables, can now be seen as movement from mild to normal stress, moderate to mild anxiety and average to high satisfaction with life. The effects of these results are further accentuated when compared with the control group, where there where no statistical (previous tables) and conceptual changes in mental health indicators.

Table 16

Summarizing Study 2 Results

Subscale	Pre-test	Severity	Post-test	Severity
Intervention group				
Stress	8.43	Mild	6.53	Normal
Anxiety	5.57	Moderate	3.98	Mild (low end of spectrum)
Depression	6.04	Mild	5.03	Mild (low end of spectrum)
Satisfaction with life	20.84	Average	24.84	High
Mental wellbeing (SOS)	38.73	Mild Distress	41.01	Normal
Reappraisal	4.54	Normal	4.92	Normal
Control Group				
Stress	5.36	Normal	4.59	Normal
Anxiety	2.66	Normal	2.53	Normal
Depression	3.00	Normal	3.23	Normal
Satisfaction with life	26.21	High	26.08	High
Mental wellbeing (SOS)	45.98	Normal	45.80	Normal
Reappraisal	4.77	Normal	4.78	Normal

6.5 Discussion

The findings of study 1 highlighted that a brief, ERT intervention could effectively increase participants' subjective wellbeing and their use of reappraisal, which in turn decreased their use of suppression and increased their satisfaction with life. Although these initial findings were promising, study 1 utilized a relatively small sample size and was heavily reliant on subjective measurement. Therefore, study 2 attempted to validate the findings of study 1, with a larger sample, utilizing a matched-pairs design, controlling for age and gender. Furthermore, study 2 employed a computer performance test targeting memory (Dillon, Ritchey, Johnson & LaBar, 2007) and attention (Goldin & Gross, 2010), as emotion regulation processes have been shown to influence both memory and attention. This test was conducted in order to gather objective data (i.e. performance scores for both the intervention and control group) in conjunction with the subjective questionnaire data, in order to determine if both data sets corroborated each other, and to determine if the findings could be replicated under these conditions.

For study 2, a number of theoretical and practical questions required further exploration. Could a short, multi-method ERT training programme offer sufficient positive emotional increase to be considered economically and theoretically viable for use, within the general population? Could emotion regulation have a positive impact on performance? It is from these research questions, that the objective aims of study 2 were created.

6.5.1 Primary Findings of Study 2

In terms of evaluating study 2, it is important to consider the primary findings and situate them within the context of the wider literature. At baseline, the control group differed significantly from the intervention group in life satisfaction and overall mental wellbeing, such that the control group had significantly higher levels of these two variables. In addition, these two groups differed significantly in levels of stress, anxiety, depressive symptomology and worry, such that the intervention group had significantly higher levels of each of these variables. It is possible that the group discrepancy observed was due to a moderate floor effect (Lammers & Badia, 2005). In part, this finding may have emerged due to the employment of a non-random, matched pairs design, which may indicate that people who sought out the ERT training programme were currently under stress or experiencing low life satisfaction.

Importantly, within the current study, at the post-intervention measurement, the intervention and control group had no significant difference in any of the mental health indicators, except for overall mental wellbeing, in which the control group still had a significantly higher level. However, the gap between these two groups had been narrowed and the intervention group had increased, falling into the normal range for this factor, at the post-intervention measurement; whereas, at baseline, this group was below the clinical cut-off level, showing elevated levels of distress (see Table 29). Therefore, at the post-intervention measurement, on 5 out of 6 measures of mental health, the intervention group did not differ significantly from the control group, which fell within the normal to high range on all of the mental health indicators. In conclusion, it was shown that the intervention provided an appropriate toolkit to address daily life stressors and improve overall life satisfaction. Thus, this ERT

training programme reduced the intervention group's negative affect, imparting them with effective emotion regulation skills to help them cope with adversity in a flexible and effective way, which is a major success of this study.

6.5.2 The Association Between Reappraisal and Mental Wellbeing

Beyond the preliminary findings, perhaps the most important finding, in the current study, is the predictive power of reappraisal. In the current research, hierarchical regression determined that reappraisal predicted a significant amount of the variance in worry, depressive symptomology, overall mental wellbeing, suppression and life satisfaction, when baseline levels of all variables were controlled. As outlined in the discussion of study 1, the overall findings of this research alluded to the fact that reappraisal should take a larger role in both the theory and intervention practice of emotion regulation. In order to add further evidence for its subsequent inclusion, a constructive discussion and objective demonstration of the health benefits for which it can deliver, is paramount.

In the current research, reappraisal explained 15% of the observed variance in depressive symptomology, at the follow-up measurement. This relationship was in the expected direction, with an increase in reappraisal corresponding with a decrease in depressive symptomology. This dovetails with the findings of a recent intervention study developed for psychology students training to become therapists. The aforementioned study determined that the intervention group had a significant reduction in both rumination and anxiety (Shapiro, Brown & Biegel, 2007). However, a limitation of the Shapiro and colleagues (2007) study was that it employed a small, highly trained sample of therapy students, which may limit the

generalizability of the findings. Similarly, an emotion regulation-training programme, conducted on 82 healthy schoolteachers, by Kemeny and colleagues (2012), led to a reduction in depression, anxiety and rumination, when compared to the control condition. In addition, within this study, the intervention group showed enhanced performance on a battery of behavioural tasks, in comparison with the control group. However, similar to the work of Shapiro, Brown and Biegel (2007), this study was also limited by a homogenous sample size, comprised exclusively of female schoolteachers. Therefore, these results may not be generalizable to men, as significant gender differences in emotion regulation have been established in the extant literature (Gross, 2007). In contrast, the current study employed a large, community-based sample with a diverse age range, comprised of both males and females. This is may be considered a strength of the current research, as it may have increased the generalizability of the findings, making it more applicable to general populations.

In line with the current research, a recent study by Berking and colleagues (2008) determined that adding emotion regulation training to standard CBT, enhanced programme effects, leading to a significant reduction in depression, when compared with the group that received the intervention as usual. A strong point of this study was the multifactorial design, as it tested conventional CBT against a CBT and ERT hybrid programme, in addition to a non-active control condition. However, a limitation of this research was that the control group was composed of a non-clinical community sample, while the intervention group was composed of clinical in-patients. Therefore, comparisons made between the intervention and the control conditions should be made with caution, due to the non-equivalence of these two groups.

Emotion dysregulation has been shown to have a more severe impact on people with mental illness, when compared with non-clinical samples (Garnefski et al., 2002). Conversely, within the current research, a match-pairs design was employed utilizing a community sample to ensure equivalent groups were created, in an attempt to protect the integrity of the findings, by limiting the number of confounding variables (such as age and gender) that could influence the results.

Within the current research, the predictive capabilities of reappraisal, in relation to depressive symptomology, was in line with the current literature, as a link between reappraisal and depression has been well established (Ehring et al., 2010; Garnefski & Kraaij, 2006; Kraaij, Gross & John 2003; Pruymboom & Garnefski, 2002). Gross and Munoz (1995) posit that emotion regulation is a crucial factor in depression. Therefore, the use of adaptive regulatory strategies, such as reappraisal, may serve a protective function against depression (Troy et al., 2010). Specifically, for people who are under high stress conditions, it seems that reappraisal is consistently associated with improved health outcomes. Two recent review articles have demonstrated this empirically. The first showed that the increased use of reappraisal was associated with health improvements in a highly stressed, HIV sample (Moskowitz, Hult, Bussolari & Acree, 2009). The second showed that reappraisal was an effective coping strategy, as it served as a buffer, minimizing the deleterious impacts of stress and depression in patients suffering from multiple sclerosis, facilitating better illness adjustment (Dennison, Moss-Morris & Chalder, 2009). These findings correspond with the work of Carrico, Antoni, Weaver, Lechner and Schneiderman (2005), who implemented a CBT stress management intervention for highly stressed men living with HIV. This study determined that, within the

intervention group, a significant increase in reappraisal occurred, which was associated with a subsequent reduction in depressive symptomology, similar to the findings in the current study. When the aforementioned research is placed in the context of the current findings, it re-affirms the powerfulness of reappraisal as a crucial emotion regulation technique. This research illustrates both the generalizability and the effectiveness of reappraisal, as it is efficacious in reducing depressive symptomology in both a non-clinical community sample (as was seen in the current research) and a highly stressed population, living with a debilitating chronic illness.

In light of the aforementioned studies, this further highlights the need for intervention programmes, such as the current ERT intervention, that enhance the use of reappraisal, as recent research has shown that emotion competences can be increased in adult samples (Kotsou et al., 2011; Niels et al., 2011). Furthermore, contemporary research has determined that depressed individuals, who have recovered, and are no longer suffering from depression, are just as effective at using reappraisal as a control condition, when instructed to do so in an experimental setting (Ehring et al., 2010). This shows that a broader range of people, who are in a high-risk group, may benefit from the ERT intervention used within the current research, as it may increase resiliency to depression in these populations.

Within the current study, reappraisal accounted for 15% of the variance in worry behaviour at the post-intervention measurement. The reduction in worry that resulted from the intervention is a key finding, as chronic worry can lead to rumination, which is characterized by repetitively focusing on the causes and consequence of one's

depressed mood state (Nolen-Hoeksema, 1991). In general, rumination has been associated with negative health outcomes (Kirkegaard, 2006), as it has been consistently linked to the onset and propagation of depression (Lo, Ho & Hollon, 2008; Aldao, Nolen-Hoeksema & Schweizer, 2010) and is a risk factor for the development of an anxiety disorder (Nolen-Hoeksema, 2000). The findings of the current study correspond to the findings of a recent emotion regulation-training programme, focused on the reduction of rumination in an adult community sample (Deyo et al., 2009). This study by Deyo and colleagues (2009), determined that the training group showed a significant increase in overall wellbeing and a subsequent reduction in both depression and rumination (Deyo et al., 2009). However, this study was riddled with methodological limitations, as it employed a small sample size of 22 participants, did not utilize a control group and was one-dimensional, as it was exclusively reliant on mindfulness techniques, which may not be effective for all participants.

Recent research supports the use of cognitive behavioural techniques in preventing depression, as meta-analytic research has revealed that 22% to 38% of major depressive events are preventable through intervention (Cuijpers, van Straten, Smit, Mihalopoulos, & Beekman, 2008; Cuijpers, Munoz, Clarke, & Lewinsohn, 2009; Munoz & Beardslee & Leykin, 2012). Within the current research, adhering to a sound methodological framework was a key goal. Consequently, a large sample was recruited and a control group utilized in order to increase the validity of the research findings. In addition, within the current intervention, a multi-dimensional approach was utilized, as the intervention combined a variety of cognitive behavioural and mindfulness techniques, in order to offer a variety of strategies to participants over the

course of the training. This approach has been endorsed within the extant literature (see for example Berking et al., 2008; Sin & Lyubomirsky, 2009; Smyth & Arigo, 2009). In the past, interventions may have been too reliant on teaching one specific technique to participants, such as mindfulness or expressive writing, rather than teaching a multitude of techniques and endorsing psychological flexibility, which has been shown to predict wellbeing above and beyond the use of any set technique used often and inflexibly, without the consideration of situational factors (Bonanno et al. 2004).

Using healthy emotion regulatory techniques is critical, due to the strong link between emotion regulation and mental health. Over half of the American adult population is classified as having moderate to poor mental health (Keyes, 2005). This is a troubling statistic, as even those who are classified as possessing moderate mental health, exhibit considerable impairment such as reduced work productivity, impaired psychosocial functioning and an increased rate of chronic disease, when compared with those with intact mental health (Keyes, 2007). When considering the findings of the current research, in tandem with those from contemporary research, within affiliated health and psychological domains, the finding that a brief, ERT intervention represents a suitable, effective and low cost way to improve mental health is both encouraging for theorists and practitioners alike. In the context of this thesis, it is both theoretically and practically reassuring that reappraisal and the subsequent health benefits associated with it can be outlined and evaluated in the same manner in study 2 as they have been in study 1. One of the most respected attributes of a proactive and effective ERT programme is consistency. Therefore, these findings are crucial in

terms of the future evolution of reappraisal from a theoretically discussed construct to an applied practice-based technique.

6.5.3 Attrition Rate of the Current Study

As outlined in the discussion for study 1, the use of attrition rates represents an objective way of measuring programme acceptance on an individual (participant) level. The attrition rate for study 2 was 21%. This low level of attrition confirms the high acceptance level of the training programme and supports the external validity and feasibility of the intervention.

Recently, funding agencies and national registries have adopted standardized cut-off points for overall attrition rates during intervention research. These guidelines are as follows: effective interventions are those that retain at least 70% of participants by the end of the intervention and promising interventions are those that retain at least 60% of participants at the final data collection. According to these guidelines, the attrition rate of the current study was deemed acceptable (Amico, 2009).

In order to present an objective critique of whether the intervention applied in study 2 represents an economically viable emotion regulation intervention, the findings must be evaluated in terms of the effect elicited through established, widely applied psychometric scales. To this effect, it is imperative that the efficacy and successfulness of the intervention be critically evaluated, indicating which constructs had lasting changes at the post-measurement.

At baseline, the intervention group showed mild levels of stress and depressive symptomology and moderate levels of anxiety. In addition, the intervention group demonstrated average levels of satisfaction with life, normal levels of reappraisal and unhealthy levels of overall mental wellbeing (SOS). At the post-intervention measurement, stress had reduced, falling into the normal category; overall mental wellbeing was at a normal level, while reappraisal remained within the normal range. In addition, anxiety had reduced, falling within the low end of the mild scale, while depressive symptomology remained within the mild range but had reduced to the low end of the spectrum, while satisfaction with life had increased to the high range, based on the measurement scales applied.

At baseline, within the control group, stress, anxiety, depressive symptomology, overall mental wellbeing and reappraisal, all fell within the normal range. In addition, satisfaction with life fell within the high range. All of these constructs remained stable at the post-measurement (see Table 29 in the “Results” section). In the intervention group, the fact that mean shifts in mental health indicators all supported an improvement in mental wellbeing, lends support to the effectiveness of the training programme. This is further accentuated by the stability of mental health constructs within the control group.

Within the intervention group, a significant shift was found, as this group moved from the mild to normal range for perceived stress. This finding is auspicious, specifically in light of recent research by Crum, Salovey and Achor (2013), who demonstrated that the appraisal process (i.e. a stress-is-enhancing mind-set vs. a stress-is-debilitating mind-set) is key to determining both physiological and behavioural

reactions to stress. Accordingly, the participants in the present study may have begun to view their stress with a more adaptive mind-set, similar to the findings in the Crum and colleagues (2013) study. Within the current study, the reduction in stress corresponds with the findings of Flaxman and Bond (2010), who conducted a large scale, CBT stress management work, training programme that significantly decreased employees' distress levels. Although this study was methodologically sound, employing a large sample and a long-term follow-up measurement, this research was limited by its high attrition rate of 62%, and the fact that programme efficacy was measured via a solitary mental health outcome measure (GHQ-12). When self-report is the only measurement utilized, employing a single questionnaire may be too broad of an approach, allowing key information to be missed (for example changes in anxiety, depressive symptomology or stress). In contrast, within the current research, due to the fact that self-report was the primary form of measurement; multiple questionnaires were employed to increase measurement sensitivity. In addition, the current study had a low attrition rate (21%), which in part may be due to the programme design, as it was short in duration and was offered on a flexible schedule, in order to suit the needs of a busy, dynamic population. High attrition rates are common in intervention research due to lengthy, training programmes (for example MBSR) that often set unrealistic demands for participants (Baer, 2003).

In a related vein, recent research by Kotsou and colleagues (2011) and Niels and colleagues (2011), determined that emotion regulation training could increase emotional wellbeing in a community sample. However, an aforementioned weakness of this research was the sampling design. All participants involved in both of these studies had to write a motivational letter in order to be included in the research, which

may have inflated the findings. In contrast, the current study had comparable findings to this research, yet random sampling was employed. Furthermore, during the current study, many participants were working full time during the day and attending workshops in the evening, for which no compensation was offered. This design may have led to more realistic findings, as there were no positive expectancies or rewards offered for programme participation.

At baseline, within the intervention group, participants were below the clinical cut-off point for the SOS scale ($SOS < 41$), manifesting clinical levels of distress (Blais et al., 2012); whereas, after the intervention, they had increased their SOS scores and were within the normal range (at the low end of the spectrum). This is a significant finding as chronic levels of distress are linked with the onset of depression (Deyo et al., 2009), increased mortality rates (Xu & Roberts, 2010) and reduced life satisfaction (Lyubomirsky, Boehm, Kasri & Zehm, 2011). As mentioned earlier, it is particularly encouraging that the findings of study 2 are consistent with those in study 1, particularly with regards to health and mental wellbeing. In order for this intervention to be economically viable and regarded as successful, by both participants and practitioners, it is crucial the intervention delivers empirical and objective health benefits. Thus, the consistency found between study 1 and study 2 is representative of such desired characteristics and is considered to be an impactful finding.

6.5.4 Intervention Group Demonstrates Superior Performance

In the performance-based task, which was used to objectively test if performance could be enhanced through emotion regulation training (see “Methods” Section 6.3.6 pp. 187), the intervention group demonstrated superior performance, when compared

with the control group. This is a key finding, as it offers preliminary evidence suggesting that emotion regulation training can improve performance levels, which may have broader applications in a vocational, academic or athletic setting.

For the performance test, independent t-tests showed significant differences between the intervention and control group on the number of correct questions answered and reaction time. In addition, within the intervention group, significant improvements in the number correct and the reaction time occurred from pre- to post- intervention.

The control group showed no significant change in reaction time; however, there was a significant improvement in the number of questions answered correctly. This was an expected finding, due to the learned affects from completing the test eight times; therefore, it was expected that a certain level of improvement from both groups would be seen (Kantowitz, Roediger & Elmes, 2009). However, the intervention group saw a gain of 1.16 correct answers over the control group and a total mean score that was 4.95 correct answers higher. Thus, from an objective standpoint, it is clear that the intervention group demonstrated a superior performance, when compared with the control group.

One possible explanation for this would be that the intervention group was more successful because they were more adept at regulating their emotions after viewing the emotionally provocative video. It is possible that the intervention group chose adaptive regulation strategies, such as reappraisal, which has been associated with memory improvements and enhanced performance (Jamieson et al., 2010). In contrast, regulating negative emotions through maladaptive strategies, such as

suppression, has been associated with impaired memory (e.g., Richards & Gross, 1999; 2000) and decreased performance (Alberts, Schneider & Martijn, 2012) when cognitive load is substantial. However, this explanation is merely speculative at this point, due to limitations in the methodology, thus further research is needed.

6.5.5 Critical Evaluation of the Current Research

Although the current study has its strengths, there are limitations worth noting. For the performance test, methodological weaknesses limit the generalizability of the findings. For example, this experiment did not use video data and self-reference measures to establish if participants with decreased performance were actually suppressing during the experiment. In addition, this experiment did not do an emotion check to ensure that the video did, in fact, put participants into a sad or negative emotional state. This approach was taken because participants had already been asked to complete numerous surveys during the baseline intake assessment. In the programme feedback form, from study 1, a primary criticism of the training programme was that too many surveys were used. Therefore, it was deemed unreasonable to ask participants to complete another survey package relating to the performance experiment, as fatigue effects (Haslam & McGarty, 2003) were a primary concern, especially in lieu of the fact that some participants became emotionally upset (i.e. had started crying) during the video clips.

An additional limitation, in the overall methodology of this study, was the utilization of a homogenous sample. In the current research, the sample excluded those suffering from clinical mental illness, or those suffering from an alcohol or substance abuse problem; instead choosing, initially, to focus on those in the general population. Thus,

this research did not consider the emotional regulation strategies applied by those above the clinical threshold. Therefore, future studies should seek to explore whether or not an emotional skills programme is effective at improving the quality of life for people in these target groups.

A further weakness of this study was the fact that the majority of data was obtained through self-referenced questionnaires, which have inherent limitations, such as social desirability, response bias or poor memory recall (Prince et al., 2008). Expanding upon this point further, demand characteristics may have played a role in the positive outcome of this study (Rubin, Paolini & Crisp, 2010), as it was clear to participants that this research project was investigating the efficacy of an emotion regulation-training programme. Therefore, participants could have deduced how to answer questions in an appropriate way that would have benefited the outcome of the study. In addition, repeated testing could have impacted the results, as all participants filled out the same questionnaire package twice. Relatedly, the fact that emotion regulation is such a dynamic construct (Gross, 2007), extraneous variables, such as work, life and relationship stressors may have impacted scoring.

A further limitation of this research was the lack of randomization to each condition; thus, selection effects cannot be ruled out as an alternative explanation for the superior performance demonstrated by the intervention group (Berking et al., 2008). Finally, the lack of a follow-up measurement may be seen as a weakness, as psychological interventions can take up to six months to be transformed into applied skills (Rae, 2002).

Despite the aforementioned limitations, the findings of this study are important for both theoretical research and practitioner implementation. Thus, it is important to also acknowledge the strengths of this study in order to lay the foundations for future research into emotional regulation.

Firstly, using the same facilitator for all workshops provided consistency of both the material and the presentation style. Secondly, the concurrent assessment of a variety of emotion regulation skills, in an organized fashion, allowed for statistical analysis to investigate the impact of distinct skills (for example: mindfulness and expressive writing) independently, as there was no overlap between these workshops. Instead, each skill was taught separately in 2.0-hour workshops.

An additional strength of this research was the use of a large sample size, matched to control for age and gender effects, as these factors have been shown to have a significant impact on emotion regulation processes (Gross, 2007; Gross, 1999). Furthermore, the combination of a longitudinal research design, gain score analysis and most importantly, subjective and objective data that coalesces, is a key strength of this research.

6.5.6 Conclusion

The current study replicated the findings of study 1, with a larger sample, matched according to gender and age. This study determined that reappraisal significantly improved in the intervention group, which was predictive of positive shifts in various mental health indicators such as, depressive symptomology, worry, suppression and life satisfaction. In addition, when faced with an emotionally provocative event

(watching a sad video), the intervention group was able to keep their emotions in check, demonstrating superior performance following the ERT intervention, when their results were compared with the control condition. This research demonstrates the feasibility of changing fundamental components of people's lives, such as their subjective wellbeing and perceived stress levels. From a practical standpoint, this brief intervention provided participants with practical tools that facilitated personal growth and emotional wellbeing.

Chapter 7.0

General Discussion

Recent research shows that 20% of Canadians will suffer from a mental illness at some point in their life, with 8% of the population experiencing major depression and 5% experiencing a clinical anxiety disorder (Canadian Mental Health Association, 2013; Stephens Dulberg & Joubert, 2000). This is a major social issue, as suicide is one of the leading causes of death in Canada for both the adolescent and adult demographic, accounting for 16% to 24% of deaths annually (Canadian Mental Health Association, 2013). Financially, the economic ramifications of mental illness are staggering, as the estimated cost is well over \$50 billion Canadian dollars per annum (Smetanin et al., 2011). Furthermore, an additional \$6.3 billion is spent each year in unused resources and absenteeism, due to distress and depression (Health Canada 2002). In 1999, 3.8% of general admissions to all hospitals were actually due to mental health problems, such as anxiety or depression (Stephens & Joubert, 2001).

Due to the debilitating impact mental illness has on society, Gross, Richards and John (2006) have identified a crucial direction for future research in the field of emotion regulation is to apply the existent knowledge already amassed in order to alleviate

human suffering and promote optimal human functioning (Gross & Munoz, 1995). Furthermore, Rottenberg, Gross and Gotlib (2003) state that this knowledge needs to be disseminated through psycho-educational interventions that train people to increase their use of cognitive reappraisal and reduce their use of emotional suppression, in order to mould individual's regulatory propensities in an adaptive way that promotes mental health and wellbeing. Currently, multiple training programmes have been designed to improve emotional competence; however, the primary weakness of current theoretical and practitioner-led programmes is that the majority are not grounded in scientific theory, nor tested empirically within a research setting (Baer et al., 2003) and use numerous techniques with an ambiguous psychological base (Kotsou et al., 2011).

A critical limitation of prior research is the inadequately defined programme objectives, both from a theoretical and practical standpoint. For example, said programmes target the accurate labelling of emotions but do not impart individuals with the skills to manage the identified emotions, or they train participants in skills that do not pertain to adaptive emotion management, such as goal-setting or problem solving (Matthews, Zeidner, & Roberts, 2007). In part, these limitations are due to the development of programmes by consultants and practitioners who work exclusively within an applied setting, without strong ties to the academic field of research (Kotsou et al., 2011). Thus, the majority of these programmes have weak theoretical and empirical foundations and their efficacy is rarely evaluated through rigorous scientific methods. Instead, anecdotal evidence is often used and long-term follow-ups are rarely conducted (Matthews et al., 2006).

A final limitation, inherent to this research area, is the lack of a control group, as few studies have utilized a control condition when measuring programme effects (Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009). Using a control group is crucial because it serves as a bench mark for the population, controlling for confounding variables by ensuring that factors unrelated to the intervention (for example, acclimation to the surveys or group cohesion) are not the driving force behind the differences observed between pre- and post- measurements (Melnik, Fineout-Overholt, Gallagher-Ford & Kaplan, 2012). These limitations illustrate the pressing need for a theory-based intervention, which has been empirically validated and employs a follow-up measurement, in order to determine whether or not the intervention had a lasting effect. These limitations were addressed during the current research, during the development and initial validation of a novel, ERT training programme that aimed to increase emotion regulation competencies.

7.1 Reviewing the Thesis: A Demonstration of Consistency

When critically evaluating the contribution to knowledge this thesis provided, it is important to evaluate the findings of this research, not just within the context of the wider literature, but also to present an objective and reflective assessment between the studies, which form the backbone of this research. In particular, one of the major strengths of this thesis was the level of consistency demonstrated across both the methodology and the findings.

Across all 3 studies, the self-talk workshop was shown to be the most effective workshop, increasing state levels of positive affect, while concurrently decreasing state levels of negative affect.

In the pilot study, expressive writing was also shown to have a positive impact, as it significantly decreased negative affect. In part, this finding may be due to the population sampled, as the pilot study utilized Masters level psychology students, whereas, subsequent studies employed a community sample. Thus, post-graduate students, specifically those studying psychology, may have superior capabilities analysing thoughts and emotions, enabling them to generate a cogent narrative with relative ease. Thus, this may have been a more effective strategy, in the short-term, for this population, rather than for the community sample for whom this exercise may have been a novel experience, both difficult and emotionally taxing (Pennebaker, Mayne & Francis 1997). However, it is important to note that the findings in the post graduate sample contrasts the findings in the current literature, which shows a subsequent increase in negative affect in the short-term, even though long-term health benefits are generally accrued (Pennebaker & Chung, 2012). Consequently, this finding should be interpreted with caution, due to the exploratory nature of the pilot study, which was cross-sectional in nature and utilized a small sample size.

In general, cognitive reappraisal was significantly increased across studies. This was targeted in the expressive writing, self-talk and reappraisal workshops. In addition, reappraisal showed further improvements in the intervention group, at a 1-year follow up. Post-intervention reappraisal was shown to predict emotional suppression (42%), satisfaction with life (8%), worry (15%), depressive symptomology (15%), and overall psychological health and quality of life (9%), when baseline levels were controlled. The effect sizes of these findings were large enough to consider them capable of having a meaningful impact on people's lives (Niels et al, 2011).

The one workshop that did not show direct improvements was the mindfulness workshop. Correspondingly, Deyo and colleagues (2009) explain that, although it has generally been assumed that mindfulness is increasing during mindfulness interventions, which tend to demonstrate a reduction in depression, anxiety, rumination and other mental health indicators, there is actually limited research that supports this conjecture.

In part, this may be due to the lack of clinically validated psychometric tools available to measure the mindfulness construct (Deyo et al., 2009). However, in lieu of this fact, within the current study, there are alternative reasons to explain the absence of change in mindfulness. The primary factor, positively affecting the efficacy of this workshop may have been the limited time allocated to its presentation and its practice. The Mindfulness Based Stress Reduction (MBSR) intervention (Kabat-Zinn, 1982), which was the first and most widely validated mindfulness intervention, requires a substantial time commitment from participants: 30 hours of instruction in conjunction with 45 minutes of participant homework, 6 days a week for the entire 8-week programme. The length of this intervention is an aspect of the MBSR programme that has been widely criticized, as it has resulted in high attrition rates in past studies (Baer, 2003). However, the founder of the programme Kabat-Zinn (1982) has explained that in order to improve mindfulness skills, this amount of time and training is necessary. When one considers combining the intervention and subsequent homework needed, this culminates in nearly 80 hours of mindfulness training. In contrast, in the current study, participants engaged in mindfulness activities for 2 hours and, while encouraged to practise on a daily basis, no formal homework was given.

Secondly, cultural difference may have been a contributing factor to the unsuccessfulness of the mindfulness workshop. Canada is an individualistic culture (Fine & Fincham, 2013); therefore, mindfulness concepts such as non-striving, beginners mind, acceptance and letting go may not have been easily accepted in Canadian culture, which is fast-paced and often values the ability to multi-task between work, family and social responsibilities (Wajcman, Bittman & Brown, 2008). Furthermore, in Western culture there is a dualistic concept of the mind and body. Thus, a different representation of health and illness exists, such that body and mind interactions are eliminated and health is thought to belong to either the mind or the body (Didonna, 2009). Correspondingly, Goleman (2003) states that in Western culture, medication has become the most common way of dealing with destructive emotions. In contrast, from a mindfulness perspective, difficult emotions are dealt with by turning towards, rather than turning away from negative feelings; however, people do so while assuming a decentred perspective, viewing these emotions directly as experienced, but not necessarily attaching any significant meaning or truth to them (Hargus, Crane, Barnhofer & Williams, 2010). Again, this different perspective may not have been widely accepted by participants, due to cultural differences.

As alluded to earlier in this discussion, the consistent pattern of results, which has been demonstrated across these studies, is crucial when situating this research in a wider theoretical, social, and economic context. This consistency satisfies the informal requirement for research to be replicable.

On a social level, the low attrition rates garnered across these studies demonstrates that the ERT intervention was both theoretically appealing and practically viable to

the participants involved. Economically, the consistency highlighted across these two studies provides empirical evidence that a short, ERT programme can be both efficient and cost-effective.

An unexpected finding, consistent across this research, in both studies 1 and 2, was the fact that age and gender did not show any moderating function. This conflicts with the current literature, which has shown that age and gender have a significant impact on emotion regulation (Gross & John, 2003). One possible explanation for these divergent findings is again, cultural differences. The majority of previous research has been conducted on American samples, whereas, the current study was conducted on a Canadian, community sample. In addition, in Gross and John (2003)'s study investigating gender differences, a large sample of nearly 1500 participants were employed, whereas, the current research utilized a modest sample size of 75 and 104 participants respectively, which may not have been an accurate representation of population norms. Thus, these samples sizes may have been too small to detect broad differences in emotion regulation propensities in relation to age and gender. Therefore, further exploration is warranted with larger samples, similar to the Gross and John (2003) study, so that accurate inferences can be made regarding age and gender differences in a normative Canadian population.

7.2 Social Validity of the Research Project

Although the findings of the current research is significant, the discerning reader will appreciate that, for an intervention programme to be considered practically sound, it must demonstrate a high level of social validity. Concordantly, the feedback obtained through the research project suggests participant's acceptance of the programme, as

67% rated the programme as significantly beneficial and 64% saw significant improvement in emotional competency collectively, across all taught skills. Further qualitative support of the programme was gathered from participant's comments, as one participant stated that, "expressive writing gave me better means of self resolve and will serve me to improve my state of mind when clarity is required." Additionally, another participant recognized the generalizability of the training programme to other environments, stating, "this is an education [sic] that should be implemented in every school from K- 12 [sic] as part of a health/well being [sic] programme."

7.3 Future Research: Moving the Field Forward

It is an exciting time for the applied field of emotion regulation (Gross, 2013). Recent intervention research has had auspicious findings (Kotsou et al., 2011; Niels et al., 2011); however, this field is in its infancy and many avenues remain unexplored.

Due to the heavy reliance on self-report within the field, future research should explore alternative measurement techniques, gathering physiological and neurological data to corroborate these findings. For example, cortisol is one of the main stress hormones produced by the body; therefore, a reduction in cortisol secretion would indicate a reduction in physiological stress reactivity (Wirtz, Ehlert, Kottwitz, La Marca & Semmer, 2013); thus, measuring biological markers, such as cortisol at both pre- and post intervention, would provide biological evidence of the efficacy of the intervention. In addition, a recent trend, emerging in the nascent literature, is the employment of fMRI to investigate the neurological impact of emotion regulation interventions on brain activity. Recent work by Goldin and Gross, (2010) and Goldin,

Ramel and Gross, (2009) has shown that MBSR effectively impacts emotion regulation in people with social anxiety disorder. These researchers have shown a concurrent reduction in amygdala activation and increased activation in brain areas associated with attention regulation and deployment, at post-intervention measurements. In light of these findings, future research should couple fMRI with alternative interventions that tap into other adaptive emotion regulation skills, in order to see if the brain is positively impacted. Similarly, further investigation is warranted into findings such as Harmon-Johns and Allen (1997), as these researchers have shown that activation of the left, prefrontal cortex may be associated with a reduced risk of psychopathology.

In addition, future research should compare the current training programme utilized within this research project, with alternative training programmes such as CBT, in order to see which is more effective. In line with this recommendation, future research should investigate whether or not the two programmes compliment each other in an applied setting.

A further consideration for future research is applying this intervention to alternative environments. For example, can this intervention benefit those working in emotionally taxing professions with high burnout rates? Would it be beneficial to offer this programme to soldiers before they face combat for the first time? Would it be complimentary if combined with current therapeutic programmes and offered in conjunction, in a clinical setting? Could it be effective in an athletic context to improve both emotional competence and performance levels? Additionally, it is important to determine if this intervention would be effective in high schools, where

bullying and teen suicide has becoming a major social issue in recent years (Moskos, Achilles & Gray, 2004). A final consideration would be to investigate intervention efficacy in populations that are under chronic stress, such as those suffering from chronic pain, terminal illness, chronic disease or disability.

The discerning reader may argue that, based on practical and theoretical value alone, the number of settings/environments in which ERT would be beneficial is arguably limitless. All of these avenues are worthy of future exploration in order to determine the boundaries of this intervention's benefits. Therefore, research exploring both the ease of application and successfulness of this intervention should be conducted rigorously, to offer further validation.

In addition, a key goal of future research should be to lower attrition rates by providing workshop flexibility and expanding the methods of participant recruitment. It can be a time consuming and arduous task when researchers rely on individuals to volunteer for intervention programmes and attend based on their own recognizance. Research has shown people fall prey to the 'intention behaviour gap', by which only 27% of behaviour is actually predicted by a person's intentions (see for example Hagger, Chatzisarantis & Biddle (2002) meta analysis). Thus, in light of the large discrepancy between desire and action, interventions could be conducted within schools, companies, nursing homes and correctional facilities, using a different model of application. Using this model, the intervention could be brought to participants in their own environment, at a scheduled time (during work hours or class hours) so they are more inclined to attend. A further strength of this design would be the greater

degree of ecological validity, due to the fact that the intervention would be occurring within the participant's microcosm, rather than within a university setting.

On a cautionary note, future research must also investigate if we can 'have too much of a good thing'. This intervention has shown efficacy at enhancing people's reappraisal capacities, but is that always adaptive? Is excessive reappraisal merely another form of cognitive distortion, synonymous with the "Pollyanna principle", a phenomenon whereby individuals accurately remember and process material more efficiently when it is pleasant, as compared to when material is negative or unpleasant (Matlin & Gawron, 1979). Currently, the extant literature does not give us an unequivocal answer to this question. Thus, the negative side of reappraisal needs to be explored in greater depth. For example, for a female living in an abusive relationship, scoring high in reappraisal could prove maladaptive, as it may be one of the reasons she remains in the relationship, when the reality of the situation is that her life is in danger. Similarly, changing all negative feelings and thoughts in an excessive fashion may lead to avoidant behaviour and undermine the importance of acceptance and distress tolerance (Baer, 2003).

7.4 Final Considerations

Both previous literature and the findings of the current research illustrate that adaptive emotion regulation skills are vital to the maintenance of mental health and overall wellbeing. The positive changes in mental health indicators (i.e. a reduction in depression, anxiety and stress and an increase in life satisfaction) and performance that were observed within the current research, may have a ripple effect impacting participants in other aspects of their lives, such as their interpersonal relationships,

work productivity and physical health (Pennebaker & Chung, 2012). This was demonstrated in a recent email from a past participant describing a stressful situation:

“So after 2 hrs [sic] of trying to get the manager to help us.... So as we were arguing with the manager I was using diaphragm breathing, staying calm, and taking 5-10 sec’s [sic] to give her an answer or give the next question which kept me from becoming agitated and angry. Totally blew my wife away as before I would of [sic] blown up, so she let me take over which was good as she was starting to get very upset....”

At this point, the real work is now in the capable hands of the nearly 200 participants who participated in this research. As they move forward, only time will tell if there is a day-to-day application of the training programme and whether or not it has long-term effectiveness. From the perspective of the author, as a theorist and facilitator, it would be of great value, both personally and professionally, to conduct a long-term, 10-15 year follow-up to see what effect the training programme had on participant’s individual and collective development. Broadly speaking, the development and initial validation of this ERT training programme is encouraging, as it illustrates that a brief emotion regulation programme, grounded in scientific theory, can increase emotion regulation competencies, thereby enriching peoples lives, leading to a more fulfilling life experience.

7.5 Conclusion

To paraphrase Albert Einstein, “science and society cannot solve the mental health problems of today by using the same kind of thinking that was used before when ... science and society helped create them.” (Keyes, 2007, pp. 106). Ultimately, a paradigm shift is needed, moving away from a reactive healthcare approach to a more proactive, holistic model. Within the healthcare field, we need to redefine and address the importance of mental wellbeing, viewing it as a multifaceted construct that involves both the absence of psychopathology and the presence of positive psychological assets (Sin & Lyubomirsky, 2009). We need to employ prospective medicine (Snyderman & Williams, 2003) where early signs of distress are detected and acted upon immediately through efficient, cost-effective interventions. The results of this research may provide the first step in this direction, by demonstrating that a brief, theoretically derived ERT intervention can elicit enduring, positive changes in mental health.

Appendix Section

Appendix 1 Ethics Approval

Ethics approval was obtained from the University of Roehampton's Ethics Committee, reference number (PSYC 11/ 004); the date of final approval was (14.03.11) (see a copy of the confirmation email below).

Dear Sara,

Ethics Application

Applicant: Sara LeBlanc
Title: An Emotion Regulation Intervention Programme Focused on the Improvement of Mental & Physical Well-Being Through an Increase in Cognitive Reappraisal
Reference: PSYC 10/ 004 (Old Reference: PSY 10/ 053)
Department: Psychology

On behalf of the Ethics Committee I am pleased to confirm that your Department has approved your above application, subject to confirmation that insurance cover is in place for this project. We are awaiting confirmation from our finance department regarding this and will advise you as soon as possible.

Many thanks,
Jan

Jan Harrison
Ethics Administrator
Research and Business Development Office
208 Grove House, Froebel College
Roehampton University
Roehampton Lane
London SW15 5PJ

Dear Sara,

I am pleased to advise you that our finance department has confirmed that insurance cover is in place for this project. We do not require anything further in relation to this application.

Regards
Jan

Support Numbers

If further psychological support is required the following information was made available to participants:

Local Clinical Supervisor: 209-488 McLean St. Quesnel B.C., V2J 2P2, Tel: 250-983-2344, email qpc09@telus.net.

Quesnel Women's Resource Centre (Free Counselling Services),
690 McLean St. Quesnel, B.C. Canada
250-992-8472

Cariboo Youth and Family Resources
2-345 St. Laurent Ave. Quesnel, B.C. Canada
250-991-2907

Quesnel Addiction Services
543 Front St. Quesnel, B.C. Canada
250-992-5189

Quesnel Professional Counselling
146b Barlow Ave. Quesnel, B.C. Canada
250-983-2344

Youth in BC Crisis Support - 24-Hour Distress Line
Toll Free: 1-866-661-3311
Greater Vancouver: 604-872-3311
youthinbc@crisiscentre.bc.ca
www.youthinbc.com

Appendix 2 Example Questionnaire Package

Information for participants and Participant's consent form

Dear participant

My name is Sara LeBlanc. I am a PhD student at Roehampton University in Southwest London. I am interested in the promotion of mental health and wellbeing. In partial fulfilment of my PhD requirement, I am offering emotion-regulation training workshops that help people deal with stress and emotional reactions in everyday life. Due to space and time constraints not all individuals who complete the screening questionnaire will be offered a place in this programme. If you are placed in the treatment group you will attend 4 workshops that will focus on identifying emotions, mindfulness, self-talk, progressive muscle relaxation and expressive writing (4 weeks, 2 hours a week). During these workshops you will receive questionnaires (measuring emotion expressivity, positive and negative affect, subjective wellbeing etc.) and will take all the materials you fill out home with you. The nature of this project is on managing emotions. In total, 30 participants will be selected for the experimental group and 30 will be chosen for the control group. The time of the workshops will be accommodating to participants. This study is being conducted to further research in the field of emotion regulation.

Purpose and Background of Study

Psychological research has shown that people's emotional reactions to every-day life events have a strong impact on mental and physical health. These training workshops are part of a research project that is designed to investigate the efficacy of emotion regulation strategies that are designed to enhance wellbeing. The goal of this programme is to help participants deepen their level of self-awareness and gain useful life skills.

Attached to this consent form you will find various questionnaires. The questions will relate to different kinds of emotional experiences and thoughts connected to them.

Anonymity

In order to ensure all answers are anonymous you will be asked to write an 8-digit ID code (you can create a combination of letters and numbers as you want i.e. A1B2C3D4) on the questionnaire. Please keep this number safe (i.e. saved in your cell phone) because if you wish to withdraw from the study you will need to refer to this code when contacting the researcher and then your data will be removed from our files. Personal details (name, contact details) will also be kept confidential. Consent forms will be kept separate from research material to further ensure anonymity. In addition, participants will be given a copy of the information sheet and consent form to retain. Please note if there is disclosure of criminal activity or information arises regarding risk of serious harm during the workshops, the researcher may need to take appropriate action and report this.

All the information you give will be treated with complete confidentiality.

Name and status of researchers:

Sara LeBlanc, BSc., MSc., Mphil/PhD candidate Psychology
leblancs@roehampton.ac.uk

Prof. Changiz Mohiyeddinni (Director of studies) habil, Ph.D., MSc.
C.Mohiyeddini@roehampton.ac.uk

Bruce Landon (Clinical Supervisor) M.Ed, RCC
gpc09@telus.net

Thank you for considering participation in this study.

ETHICS BOARD

PARTICIPANT CONSENT FORM

An Emotion Regulation Research Project

Brief Description of Research Project:

A research study will be conducted to test the helpfulness of an emotion regulation-training programme to determine its effectiveness in a Canadian sample (please see information sheet for details).

Investigator Contact Details:

Sara LeBlanc, MSc
Department of Psychology
Whitelands College Holybourne Avenue, London SW15 4JD
leblancs@roehampton.ac.uk
250-992-7537

Consent Statement:

I agree to take part in this research, and am aware that I am free to withdraw at any point. Please realize that you are under no obligation to finish the training programme and can withdraw from participation from the whole programme or any part of it at any point without needing to justify your decision. You can also request for your data to be withdrawn at any time after participation in the programme. In order to do this, please contact the investigator with your ID code, which you will find on the Debrief Form. Please be aware, however, that data may already have been published in a collated form at the time of request. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings.

I have been given a copy of the information sheet and the consent form to retain.

Name

Signature

Date

Please note: if you have any concerns about any aspect of your participation in this study or any other queries please raise this with the investigator. However if you would like to contact an independent party please contact the Dean of School (or if the researcher is a student you can also contact the Director of Studies.)

Director of Studies Contact Details:

Professor Dr. Changiz Mohiyeddini,
Department of Psychology
Roehampton University
Whitelands College
Holybourne Avenue
London SW15 4JD
Tel: +44 (0) 20 8392 3616

Head of Department:

Dr Diane Bray
Department of Psychology
Roehampton University
Whitelands College
Holybourne Avenue
London SW15 4JD
Tel: +44 (0)20 8392 3617

Thank you for deciding to take part in this research. Please complete the following:

Age: _____

Gender: Male Female

Are you a student? Yes No

If yes, year of study: _____

Programme of study: _____

Ethnicity (please tick one from group A **and** one from group B):

- | | | |
|--|---|--------------------------------------|
| A. <input type="checkbox"/> Black | B. <input type="checkbox"/> Canadian | <input type="checkbox"/> Caribbean |
| <input type="checkbox"/> White | <input type="checkbox"/> American | <input type="checkbox"/> African |
| <input type="checkbox"/> Asian | <input type="checkbox"/> British | <input type="checkbox"/> Arab |
| <input type="checkbox"/> Mixed Origin | <input type="checkbox"/> Indian | <input type="checkbox"/> Chinese |
| <input type="checkbox"/> Other _____ | <input type="checkbox"/> Pakistani | <input type="checkbox"/> Other _____ |
| | <input type="checkbox"/> Bangladeshi | |

Please turn over and complete the questionnaires. Please respond to all items.

General Health Questionnaire

	Yes	No	I don't know
1. Do you smoke?			
2. Do you have any clinical psychological or psychiatric diseases?			
3. Are you taking any medication for mental or physical health issues?			
4. Do you drink more than 10 units/day of alcohol?			
5. Do you use any illicit drugs?			
6. Do you have poor sleep pattern (less than 5 hours a night)?			
7. Do you currently have any infectious diseases?			
Only for female participant			
8. Are you taking oral contraceptives?			
9. Are your periods usually regular (+/- 3 days)?			

Please turn over and complete the questionnaires. Please respond to all items.

Emotion Regulation Questionnaire (ERQ)

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. We are interested in two aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1-----2-----3-----4-----5-----6-----7
Strongly disagree **neutral** **strongly agree**

1. ____ When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.
2. ____ I keep my emotions to myself.
3. ____ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
4. ____ When I am feeling *positive* emotions, I am careful not to express them.
5. ____ When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
6. ____ I control my emotions by *not expressing them*.
7. ____ When I want to feel more *positive* emotion, I *change the way I'm thinking about the situation*.
8. ____ I control my emotions by *changing the way I think about the situation I'm in*.
9. ____ When I am feeling *negative* emotions, I make sure not to express them.
10. ____ When I want to feel less *negative* emotion, I *change the way I'm thinking about the situation*.

Please ensure that you have responded to all items. Thank you.
PLEASE PROGRESS TO THE NEXT QUESTIONNAIRE.

Satisfaction with Life Scale (Diener et al., 1985)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

1-----2-----3-----4-----5-----6-----7
strongly disagree slightly disagree neither agree nor disagree slightly agree agree strongly agree

- ___ In most ways my life is close to my ideal.
- ___ The conditions of my life are excellent.
- ___ I am satisfied with my life.
- ___ So far I have gotten the important things I want in life.
- ___ If I could live my life over, I would change almost nothing.

Please ensure that you have responded to all items. Thank you.

PLEASE PROGRESS TO THE NEXT QUESTIONNAIRE.

DASS21		Name:		Date:	
<p>Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you <i>over the past week</i>. There are no right or wrong answers. Do not spend too much time on any statement.</p> <p><i>The rating scale is as follows:</i></p> <p>0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree, or a good part of time 3 Applied to me very much, or most of the time</p>					
1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (ex. sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

Please ensure that you have responded to all items. Thank you.
 PLEASE PROGRESS TO THE NEXT QUESTIONNAIRE.

Positive and Negative Affect Scale (Watson, Clark & Tellegen, 1988)

This scale consists of a number of words that describe different feelings and emotions. Read each item then mark the appropriate answer next to the word. Indicate to what extent you **generally feel this way**, that is, how you feel on average. Use the following scale to record your answers.

1 ----- 2 ----- 3 ----- 4 ----- 5
very slightly a little moderately quite a lot extremely
or not at all

- | | |
|---------------------------------------|-------------------------------------|
| <input type="checkbox"/> Interested | <input type="checkbox"/> Irritable |
| <input type="checkbox"/> Distressed | <input type="checkbox"/> Alert |
| <input type="checkbox"/> Excited | <input type="checkbox"/> Ashamed |
| <input type="checkbox"/> Upset | <input type="checkbox"/> Inspired |
| <input type="checkbox"/> Strong | <input type="checkbox"/> Nervous |
| <input type="checkbox"/> Guilty | <input type="checkbox"/> Determined |
| <input type="checkbox"/> Scared | <input type="checkbox"/> Attentive |
| <input type="checkbox"/> Hostile | <input type="checkbox"/> Jittery |
| <input type="checkbox"/> Enthusiastic | <input type="checkbox"/> Active |
| <input type="checkbox"/> Proud | <input type="checkbox"/> Afraid |

Please ensure that you have responded to all items. Thank you.

PLEASE PROGRESS TO THE NEXT QUESTIONNAIRE.

Research Debriefing

Emotion Regulation Training

Thank you very much for participating in this study.

Brief description of research project

The research objectives of this project are to help people manage their emotions and gain life and coping skills. The training programme is part of a research project that is designed to investigate the efficacy of emotion regulation strategies that are designed to enhance wellbeing. If you require further assistance please contact Bruce Landon, the local clinical supervisor (gpc09@telus.net) or talk to the principal researcher who will provide you with further details of support groups.

Anonymity

The data that has been gathered from this project will remain anonymous and will be held securely at all times. You may withdraw from the study at any time and should you wish to do so, then please contact the principle investigator Sara LeBlanc (email: leblancs@roehampton.ac.uk) and refer to your 8-digit-ID code. At your request your data will be removed from our files.

If you require advice or information regarding this study or have any concerns regarding your participation, please voice these concerns to the researcher Sara LeBlanc (email: leblancs.ac.uk) or the Director of Studies Professor Changiz Mohiyeddini (email: c.mohiyeddini@roehampton.ac.uk, Telephone: 020-8392 3616) or Diane Bray, Department of Psychology (email: D.Bray@roehampton.ac.uk, Tel: +44 (0)20 8392 3617).

If you feel that you need counselling support after this study, please contact the local crisis centre at 250-992-7321.

Emotion Regulation Training

As partial fulfilment of my PhD requirement at Roehampton University I am conducting an emotion regulation research project. I am currently recruiting healthy individuals over the age of 17. This study involves participating in a training programme that is part of a research project designed to investigate the efficacy of emotion regulation strategies that are designed to enhance well-being.

To take part please contact Sara LeBlanc
(email: leblancs@roehampton.ac.uk) for further
information

JUSTIFICATION OF SURVEYS

Survey 1:

General information questionnaire, Generic Roehampton template

- This survey helps gather general information about participants and will help with exclusion due to age limitations (must be >17)

Survey 2:

General Health Questionnaire

- This questionnaire will help exclude ineligible participants, as the project is to be carried out with a healthy, non-clinical community sample

Survey 3:

Emotion regulation questionnaire (ERQ) (ERQ, Gross & John, 2003)

- Measures two emotion regulation strategies: cognitive reappraisal and expressive suppression

Survey 4:

The Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen & Griffin, 1985)

- Measures global satisfaction with life which will be used to measure participants wellbeing

Survey 5:

Depressive Anxiety and Stress Scale (DASS 21) Depression, Anxiety and Stress Scales (DASS-21, Norton, 2007)

- Measures psychological parameters of anxiety, depression and stress. Suitable for use in both clinical and non-clinical populations

Survey 6:

Positive And Negative Affect Scale (PANAS; Watson et al., 1988)

- The PANAS measures the current affective state, (both positive and negative)

Appendix 3 SPSS Output for the Pilot Study

Cronbach's Alpha Values for all Participants in the Pilot Study and for Study 1

	Pilot Data	Study 1 (Pre-intervention)	Study 1 (Post-intervention)	Study 1 (Follow-up)
	α	α	α	α
Control Group				
SWL		0.91	0.90	0.81
ERQ-S		0.65	0.70	0.78
ERQ-RE		0.90	0.82	0.73
DASS-S		0.95	0.88	0.85
DASS-A		0.85	0.81	0.82
DASS-D		0.88	0.90	0.90
CES-D		0.85	0.92	
PSWQ		0.93	0.93	
Intervention Group				
SWL		0.91	0.90	0.81
ERQ-S	0.85	0.70	0.82	0.78
ERQ-RE	0.87	0.88	0.93	0.73
DASS-S	0.86	0.79	0.85	0.85
DASS-A	0.76	0.83	0.72	0.82
DASS-D	0.93	0.90	0.89	0.90
CES-D		0.90	0.88	
PSWQ		0.94	0.91	

Note SWL= Satisfaction With Life Scale, ERQ-S = Emotion Regulation Questionnaire-Suppression, ERQ-RE, Emotion Regulation Questionnaire-Reappraisal, DASS-S, DASS-A, DASS-D = Depressive Anxiety and Stress Scale, CES-D = Center for Epidemiologic Studies Depression Scale PSWQ = Penn State Worry Questionnaire

This table describes the internal reliability of all data gathered for the pilot study and study 1. All data demonstrated adequate internal reliability with the exception of ERQ-S.

Cronbach's Alpha Table for all Intervention Data for the Pilot Study

Workshop	Subscale	α
#1 Emotion Regulation	PANAS1 - PA	0.91
	PANAS1 - NA	0.80
	PANAS2 - PA	0.91
	PANAS2 - NA	0.97
#2 Expressive Writing	PANAS1 - PA	0.88
	PANAS1 - NA	0.93
	PANAS2 - PA	0.91
	PANAS2 - NA	0.95
#3 Mindfulness	PANAS1 - PA	0.88
	PANAS1 - NA	0.86
	PANAS2 - PA	0.93
	PANAS2 - NA	0.71
#4 Self-Talk	PANAS1 - PA	0.92
	PANAS1 - NA	0.89
	PANAS2 - PA	0.94
	PANAS2 - NA	0.81

This table illustrates the internal reliability of the intervention data gathered from all workshops in the pilot study. All data showed high internal consistency.

Appendix 4 SPSS Output For Study 1

Cronbach's Alpha Table for Intervention Data for Study 1

Workshop	Subscale	α
#1 Emotion Regulation	PANAS1 - PA	0.88
	PANAS1 - NA	0.91
	PANAS2 - PA	0.91
	PANAS2 - NA	0.88
#2 Expressive Writing	PANAS1 - PA	0.90
	PANAS1 - NA	0.93
	PANAS2 - PA	0.94
	PANAS2 - NA	0.95
#3 Mindfulness	PANAS1 - PA	0.93
	PANAS1 - NA	0.90
	PANAS2 - PA	0.94
	PANAS2 - NA	0.90
#4 Self-Talk	PANAS1 - PA	0.92
	PANAS1 - NA	0.81
	PANAS2 - PA	0.96
	PANAS2 - NA	0.82

This table shows the internal reliability of the intervention data gathered from the intervention group during study 1, across all workshops. All data showed high internal reliability.

Reappraisal: Paired Samples T-Test for the Control Group for Study 1

Pair	$t(22)$	p
RE1 & -RE2	1.86	ns
RE2 & RE3	.13	ns
RE1 & RE3	2.49	.02

This table shows the results from 3 paired samples t-tests that compared the mean scores of reappraisal in the control group at pre-intervention, post-intervention and follow-up.

The results showed a significant difference in the mean scores of reappraisal between pre-intervention (M = 5.09, SD = 0.98) and the follow-up measurement (M = 4.83, SD 0.72); $t(22) = 2.49$, $p = .02$ for the control group.

Correlation Table for the Control Group for Study 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 ERQ-S																	
2 ERQ-RE	-.01																
3 SWL	-.17	.14															
4 DASS-S	.004	-.39	-.39														
5 DASS-A	.13	-.35	-.22	.74**													
6 DASS-D	.17	-.31	-.72**	.84**	.58*												
7 ERQ-S2	.61**	-.21	.04	.06	-.19	.15											
8 ERQ-RE2	.15	.76**	.08	-.11	-.20	-.12	-.11										
9 SWL2	-.01	.18	.72**	-.11	.07	-.54*	-.04	.24									
10 DASS-S2	-.19	-.21	-.29	.74**	.68**	.61*	-.18	-.12	-.30								
11 DASS-A2	.19	-.06	.005	.43	.85**	.42	.06	.08	-.05	.50**							
12 DASS-D2	-.01	-.33	-.45**	.62*	.79**	.67**	-.06	-.26	-.60**	.65**	.66**						
13 ERQ-S3	.64**	-.13	.16	-.09	-.17	-.20	.77**	-.16	.06	.04	.14	.11					
14 ERQ-RE3	-.33	.56**	.28	.07	-.13	-.05	-.11	.48*	.17	-.25	.05	-.17	-.28				
15 SWL3	.18	.40	.61**	-.04	-.16	-.19	.22	.28	.60**	-.46*	.04	-.37	.15	.51*			
16 DASS-S3	-.15	-.20	-.38	.31	.38	.31	-.15	-.23	-.39	.70**	.18	.38	.12	-.37	-.62**		
17 DASS-A3	-.34	-.02	-.12	.36	.53	.30	-.36	-.02	-.32	.64**	.27	.39	-.20	.03	-.28	.68**	
18 DASS-D3	-.23	-.10	-.23	-.03	.17	-.03	-.25	-.13	-.42*	.54**	.07	.26	-.03	-.35	-.64**	.87**	.74**

Note: N = 37. * $p < .05$, ** $p < .01$. ERQ-S= Emotion Regulation Questionnaire-Suppression at time 1, ERQ-RE= Emotion Regulation Questionnaire-Reappraisal at time 1, SWL =Satisfaction With Life Scale at time 1, DASS-S, DASS-A, DASS-D = Depressive Anxiety and Stress Scale at time 1. ERQ-S2= Emotion Regulation Questionnaire-Suppression at time 2, ERQ-RE2= Emotion Regulation Questionnaire-Reappraisal at time 2, SWL2 =Satisfaction With Life Scale at time 2, DASS-S2, DASS-A2, DASS-D2 = Depressive Anxiety and Stress Scale at time 2. ERQ-S3= Emotion Regulation Questionnaire-Suppression at time 3, ERQ-RE3= Emotion Regulation Questionnaire-Reappraisal at time 3, SWL3 =Satisfaction With Life Scale at time 3, DASS-S3, DASS-A3, DASS-D3 = Depressive Anxiety and Stress Scale at time 3.

This table describes the observed correlations between emotion regulation and mental health indicators at pre- post- and follow-up measurements. Emotion regulation, as measured via suppression, was strongly correlated with the following dimensions: ERQ-S & ERQ-S2, ERQ-S3 & ERQ-S2, and ERQ-S & ERQ-S3. Emotion regulation, as measured via reappraisal was strongly correlated with the following dimensions: ERQ-RE & ERQ-RE2 & ERQ-RE ERQ-RE3 and moderately correlated with ERQ-ER2 & ERQ-RE3 and ERQ-RE3 & SWL3.

Appendix 5 SPPSS Output for Study 2

Cronbach's Alpha Results for all Surveys used in Study 2

	(Pre-intervention)	(Post-intervention)
	α	α
Control Group		
SWL	0.88	0.90
ERQ-S	0.77	0.70
ERQ-RE	0.77	0.86
SOS	0.93	0.93
PSWQ	0.94	0.95
DASS-S	0.88	0.90
DASS-A	0.83	0.89
DASS-D	0.92	0.93
Intervention Group		
SWL	0.88	0.88
ERQ-S	0.69	0.68
ERQ-RE	0.79	0.79
SOS	0.87	0.93
PSWQ	0.94	0.95
DASS-S	0.83	0.85
DASS-A	0.87	0.80
DASS-D	0.92	0.90

This table describes the internal reliability of all data gathered from study 2. In general, all data demonstrated adequate internal reliability with the exception of ERQ-S.

Cronbach's Alpha Table for all Intervention Data for Study 2

Workshop	Subscale	α
#1 Emotion Regulation	PANAS1 - PA	0.87
	PANAS1 - NA	0.84
	PANAS2 - PA	0.94
	PANAS2 - NA	0.93
#2 Expressive Writing	PANAS1 - PA	0.94
	PANAS1 - NA	0.93
	PANAS2 - PA	0.95
	PANAS2 - NA	0.90
#3 Mindfulness	PANAS1 - PA	0.91
	PANAS1 - NA	0.90
	PANAS2 - PA	0.96
	PANAS2 - NA	0.82
#4 Self-Talk	PANAS1 - PA	0.93
	PANAS1 - NA	0.84
	PANAS2 - PA	0.93
	PANAS2 - NA	0.84

This table illustrates the internal reliability of the intervention data gathered from the intervention group across all workshops carried out during study 2. All data showed high internal consistency.

Table 27. Multiple Regression Analysis of Mental Health Indicators using Reappraisal as the Predictor Variable (N = 38, * p < 0.05, ** p < 0.001)

Steps and variables	B	SE B	95% CI	β	R ²	ΔR^2
SWL as dependent variable						
Step 1					0.57	0.57
T1Reappraisal	0.66	0.09	-1.43, 1.33	0.76		
T1Satisfaction with Life	-0.05	0.69	0.49, 0.85	-0.01		
Step 2					0.63	0.07*
T1Satisfaction with Life	-0.89	0.70	0.54, 0.89	-0.13		
T1Reappraisal	0.72	0.09	-2.30, 0.52	0.82		
T2Reappraisal	1.98	0.68	0.61, 3.35	-0.28		
ERQS as dependent variable						
Step 1					0.27	0.27
T1Suppression	0.46	0.11	0.23, 0.69	0.50		
T1Reappraisal	0.18	0.13	-0.08, 0.44	0.17		
Step 2					0.38	0.11*
T1Suppression	0.49	0.11	0.28, 0.71	0.54		
T1Reappraisal	0.32	0.13	0.06, 0.58	0.30		
T2Reappraisal	-0.39	0.14	-0.67, -0.12	-0.36		

Table 27 (continued) Multiple Regression Analysis of Mental Health Indicators using Reappraisal as the Predictor Variable (N = 38, * p < 0.05, ** p < 0.001)

Steps and variables	B	SE B	95% CI	β	R ²	ΔR^2
Worry as dependent variable						
Step 1					0.50	0.50*
T1Reappraisal	-2.52	1.71	-5.96, 0.91	-0.16		
T1Worry	0.68	0.12	0.45, 0.91	0.64		
Step 2					0.65	0.15**
T1Worry	0.73	0.10	0.53, 0.92	0.68		
T1Reappraisal	0.11	1.57	-3.05, 3.26	0.01		
T2Reappraisal	-6.78	1.54	-9.89, -3.6	-0.41		
SOS as dependent variable						
Step 1					0.52	0.52
T1Mental wellbeing (SOS)	0.84	0.14	0.57, 1.11	0.71		
T1Reappraisal	0.28	1.40	-2.54, 3.09	0.02		
Step 2					0.61	0.07*
T1Mental wellbeing (SOS)	0.79	0.12	0.54, 1.04	0.66		
T1Reappraisal	-3.94	1.33	-3.61, 1.74	-0.08		
T2Reappraisal	4.21	1.28	1.64, 6.79	-0.28		

Table 27 (continued) Multiple Regression Analysis of Mental Health Indicators using Reappraisal as the Predictor Variable (N = 38, * p < 0.05, ** p < 0.001)

Steps and variables	B	SE B	95% CI	β	R ²	ΔR^2
Stress as dependent variable						
Step 1					0.35	0.35*
T1Reappraisal	0.39	0.11	-2.25, -.088	0.44		
T1Stress	-1.17	0.54	0.17, 0.62	-0.27		
Step 2					0.36	0.01 ns
T1Stress	-0.84	0.58	0.19, 0.65	-0.20		
T1Reappraisal	0.42	0.11	-2.01, 0.33	0.47		
T2Reappraisal	-0.78	0.56	-1.90, -0.34	-0.18		
Anxiety as dependent variable						
Step 1					0.62	0.62
T1Anxiety	0.91	0.10	0.45, 0.76	0.79		
T1Reappraisal	-0.09	0.44	-1.31, 0.39	-0.02		
Step 2					0.64	0.02*
T1Anxiety	0.84	0.11	0.49, 0.80	0.74		
T1Reappraisal	0.53	0.54	-0.98, 0.83	0.11		
T2Reappraisal	-1.00	0.54	-1.86, -0.03	-0.22		

Table 27 (continued) Multiple Regression Analysis of Mental Health Indicators using Reappraisal as the Predictor Variable (N = 38, * p < 0.05, ** p < 0.001)

Steps and variables	B	SE B	95% CI	β	R ²	ΔR^2
Depression as dependent variable						
Step 1					0.45	0.45
T1Reappraisal	0.39	0.11	-1.46, 0.86	0.44		
T1Depression	-1.17	0.54	0.36, 0.75	-0.27		
Step 2					0.60	0.15**
T1Depression	-0.84	0.58	0.41, 0.76	-0.20		
T1Reappraisal	0.42	0.11	-0.54, 1.62	0.47		
T2Reappraisal	-0.78	0.56	-3.27, -1.16	-0.18		

Paired Samples T-test for Control Group in Study 2

Questionnaire	<i>t</i> (53)	<i>p</i>
ERQ-S & ERQ-S2	0.10	n.s.
ERQ-RE & ERQRE2	0.21	n.s.
SWL & SWL2	0.28	n.s.
PSWQ & PSWQ2	0.74	n.s.
DASS-S	0.30	n.s.
DASS-A	0.42	n.s.
DASS-D	0.66	n.s.
SOS & SOS2	0.22	n.s.

This table shows the results of 8 paired samples t-tests run on the mental health indicators utilized within this study to determine if any significant changes occurred within the control group. No significant changes were observed across any of the mental health indicators measured.

Bivariate Correlations for Reappraisal and Mental Health Indicators for the Control Group Over Time for Study 2

	ERQRE	SWL	DASSD	SOS	PSWQ	ERQS	2ERQRE	2SWL	2DASSD	2SOS	2PSQ
SWL	.42**										
DASSD	-.26	-.71**									
SOS	.47**	.82**	-.73**								
PSWQ	-.36*	-.51**	.61**	-.62**							
ERQS	-.15	-.14	.18**	-.20*	.42**						
2ERQRE	.65**	.52**	-.40**	.55**	-.31*	-.10					
2SWL	.40**	.88**	-.80**	.82**	-.56**	-.15	.53**				
2DASSD	-.22	-.63*	.79**	-.67**	.60**	.30*	-.44**	-.74**			
2SOS	.48**	.77**	-.69**	.88**	-.60**	-.18	.58**	.85**	-.78**		
2PSWQ	-.32*	-.63**	.68**	-.82**	.83**	.34*	-.48**	-.67**	.65**	-.79**	
2ERQS	-.08	-.29*	.30*	-.29*	.44**	.55**	-.05	-.24	.27*	-.21	.26

Note: N = 51. * $p < .05$, ** $p < .01$. ERQ-RE= Emotion Regulation Questionnaire-Reappraisal at time 1, SWL =Satisfaction With Life Scale at time 1, DASS-S, DASS-A, DASS-D = Depressive Anxiety and Stress Scale at time 1. SOS= SOS-Schwartz Outcome Scale, PSWQ = Penn State Worry Questionnaire, ERQ-RE2= Emotion Regulation Questionnaire-Reappraisal at time 2, SWL2 =Satisfaction With Life Scale at time 2, DASS-S2, DASS-A2, DASS-D2 = Depressive Anxiety and Stress Scale at time 2. SOS= SOS-Schwartz Outcome Scale, PSWQ = Penn State Worry Questionnaire.

This table describes the observed correlations between emotion regulation and mental health indicators at pre- and post- measurements. Emotion regulation, as measured via suppression was moderately correlated with the following dimensions: 2ERQS & SWL, 2ERQS & DASSD, ERQS & 2DASSD, ERQS & 2PSWQ, 2ERQS & 2DASSD. Suppression was strongly correlated with the following dimensions: ERQS & 2ERQS & 2ERQS & PSWQ. Reappraisal was moderately correlated with the following dimensions: ERQRE & PSWQ and ERQRE & 2PSWQ. Reappraisal was strongly correlated with the following dimensions: ERQ-RE & SWL, ERQ-RE & SOS, ERQ-RE & 2ERQ-RE, ERQ-RE & 2SWL, ERQ-RE & 2SOS, 2ERQ-RE & 2SWL, 2ERQ-RE & 2DASS-D, 2ERQ-RE & 2PSWQ and 2ERQRE & 2SOS.

Paired Samples T-test for the Control Group for the Performance Test (N = 19)

Measure	<i>t</i> -value	<i>p</i>
Number correct & Number correct 2	3.03	.01
Reaction time (ms) & Reaction time (ms) 2	1.72	ns
Accuracy & Accuracy 2	1.13	ns

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