The Impact of Mood-State and Emotion Regulation on Negative Appraisal and Neutralising Motivations in Obsessive-Compulsive Disorder

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Statement of Originality

This thesis is submitted to the Australian National University in fulfilment of the requirements for the Doctor of Psychology (Clinical). The work presented in this thesis is, to the best of knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

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Overview

This thesis is comprised of four chapters examining the impact of mood-state and emotion regulation on negative appraisals and neutralising activity in obsessive-compulsive disorder (OCD). Chapter one presents an introduction to OCD, and overviews of cognitive appraisal models, and the cognitive-behavioural conceptualisation, of OCD. The chapter also reviews the literature exploring the relationship between mood and cognition (in general terms), and relationships between particular mood-states and different OCD-relevant belief and appraisal domains (in specific terms). Chapter one concludes by proposing an experimental study aimed at enhancing current understanding of the role of mood in OCD by investigating the impact of different negative mood-states on patterns of negative appraisal and neutralising activity in response to an obsession-like thought.

Chapter two introduces the field of emotion regulation (ER) and reviews the literature assessing the relevance of ER-related constructs (e.g., mindfulness, experiential acceptance, and psychological flexibility) and treatment modalities (e.g., acceptance and commitment therapy, mindfulness-based therapy, and dialectical behaviour therapy) to OCD. Chapter two reports a second experimental study which aimed to replicate (and further explicate) mood-state-dependent patterns in appraisal and neutralising responses observed in chapter one. In addition, the study investigated whether enhanced capacity to regulate emotion translates to attenuation of mood-state-dependent patterns, by examining the impact of emotion regulation skills training (ERST) on responses to an obsession-like thought.

Chapter three reviews the nature and effectiveness of cognitive-behavioural therapy (CBT) for OCD and provides preliminary investigation into the application and integration of ERST in traditional CBT for OCD. Chapter three further reports a clinical (N = 4 case-series analysis) study in which a six-session ERST program was

inserted into traditional CBT for OCD in an attempt to provide preliminary exploration of possible covariation in specific mood-states and negative appraisals among OCD sufferers. The study also explored the potential utility of enhanced emotion regulation skills in contributing to reductions in negative appraisals and symptom severity in OCD.

Chapter four provides general discussion of the results of the three studies comprising the research program, focusing in particular on how findings may be used to enhance and extend current theoretical models and potentially contribute to the development of clinical applications to improve treatment efficacy in obsessive-compulsive disorder.

Abstract

Cognitive appraisal models propose that obsessive-compulsive disorder (OCD) develops as a consequence of dysfunctional beliefs which give rise to distress-provoking, negative appraisals of intrusive thoughts, subsequently promoting compulsive neutralising behaviour. Previous research has established the relevance of numerous dysfunctional belief and appraisal domains in the pathogenesis and maintenance of OCD, including over-estimation of threat (OET), inflated responsibility, and over-importance of thoughts (OIT). Increased awareness of the processes, conditions and contexts under which OCD-relevant beliefs and appraisals may operate differentially is important in enhancing our understanding of the disorder and its treatment. Teasdale's (1983) associative networks model of cognition implies that mood may represent a condition under which different types of dysfunctional beliefs and negative appraisals of intrusive thoughts vary in their salience and function. The current research comprised two empirical studies and one clinical case series analysis designed to investigate the impact of mood-state and emotion regulation skills on negative appraisals, neutralising activity, and symptom severity in obsessive-compulsive contexts.

Study 1 examined the impact of induced anxious, dysphoric, and neutral mood-states on negative appraisals and neutralising motivations in response to an induced obsession-like thought. This analogue study utilised a non-clinical sample (N = 120) and employed an obsession-like thought provocation protocol to generate an obsession-like experience (i.e., an experience modelling the level of obsession-related distress and urge to neutralise that is seen in OCD, for a non-clinical sample). Results revealed mood-state-dependent patterns in participants' appraisals of the obsession-like thought and their neutralising motivations. Specifically, anxious mood-state produced elevated OET appraisals and reduce threat (RT) neutralising motivations, whereas

dysphoric mood-state produced inflated responsibility appraisals and reduce sense of responsibility (RSR) neutralising motivations. In contrast, negative appraisals were equivalent across all domains and diminish importance of the thought (DIT) neutralising motivations were elevated in the context of neutral mood-state. These findings suggest that the prominence of particular types of OCD-relevant dysfunctional appraisals are differentially associated with specific mood-states, and that these mood-state-dependent increases in appraisals appear to subsequently exert unique influences on individuals' motivations for engaging in neutralising behaviour. Results advise a theoretical expansion of prevailing appraisal (and cognitive-behavioural) models of OCD to incorporate consideration of the impact of affective processes in the broader process of negative appraisal. The primary clinical implication of these findings is that enhanced capacity to manage or regulate negative affect may attenuate the impact of mood-state on negative appraisals and neutralising activity in obsessive-compulsive disorder.

Study 2 was a replication and extension of Study 1. Study 2 investigated the impact of emotion regulation skills training (ERST) on mood-state-dependent patterns in 198 adult participants' negative appraisals and neutralising motivations in response to an induced obsession-like thought. Results replicated Study 1 findings of mood-state-dependent patterns in participants' appraisals of an obsession-like thought and their subsequent motivations for neutralising. Study 2 additionally found that enhanced emotion regulation skills translated to an attenuation of mood-state-dependent patterns in negative appraisal and neutralising motivations. Specifically, among participants in the anxiety mood-induction condition, those who received ERST reported significantly lower OET appraisals compared with those who did not receive ERST. Enhanced emotion regulation skills also produced significant reductions in the strength of mood-state-dependent neutralising motivations. Participants in the anxiety mood-induction condition who received ERST reported significantly less reduce threat (RT) motivations

compared with those who did not receive ERST, and participants in the dysphoria mood-induction condition who received ERST reported significantly less reduce sense of responsibility (RSR) motivations compared with those who did not receive ERST. These findings identify mood-state as an important pathogenic process which appears to intersect with cognitive processes in the development and maintenance of OCD. A key clinical implication arising from these findings is that OCD sufferers may benefit from an incorporation of emotion regulation skills training within traditional cognitive-behavioural interventions for the disorder.

Study 3 was a case series analysis assessing the impact of the addition of a six-session emotion regulation skills training (ERST) program into a traditional course of CBT for OCD for four OCD patients. ERST was inserted between different phases of therapy creating a multiple baseline design. Visual analyses revealed that ERST was associated with obsessive-compulsive symptom decline and reductions in OET, inflated responsibility, and OIT appraisals for three of the four participants, suggesting that ERST may represent a valuable augmentation to CBT for some OCD sufferers. There was evidence of generalised covariation in participants' negative mood-states and negative appraisals of their obsessions. However, compared with the specific relationships observed in the analogue studies, the relationships between mood-state, emotion regulation, and negative appraisal were less clearly defined in the case series analysis.

In summary, the current research provided an expanded account of the role of mood in the aetiology and maintenance of OCD. Results supported the hypothesis that mood-state constitutes a condition under which appraisal domains operate differentially in OCD. Implications for existing cognitive-behavioural conceptual and treatment models of OCD were explored.

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Chapter One

Study One: The Impact of Mood-State on Negative Appraisals and Neutralising Motivations

1. Introduction

Obsessive-compulsive disorder (OCD) is a chronic, often disabling, mental illness. Once considered rare (e.g., Black, 1974, cited in Freeston, Ladouceur, Gagnon, & Thibodeau, 1993), epidemiological studies have more recently revealed that OCD is a relatively common disorder, with a lifetime prevalence estimated at 1% to 3% (Kessler, et al., 2005; Ruscio, Stein, Chiu, & Kessler, 2010; Weissman et al., 1994). The essential features of OCD are recurrent, distressing, intrusive thoughts, urges or impulses (obsessions) and repetitive, ritualistic behaviours and mental acts (compulsions). In an early description, which remains very much concordant with modern definitions, Westphal (1872, cited in Neziroglu & Stevens, 2002) indicated that obsessions are parasitic ideas within an intact intellect, intruding, against the will, into the normal thought process or ideation. Typically, OCD sufferers feel driven to perform compulsions and other activities such as avoidance or reassurance-seeking to attenuate (or "neutralise") the distress associated with obsessions, or to prevent the negative event or situation portended by an obsession from occurring (APA, 2013). For example, OCD patients whose obsessions centre on issues of contamination may attempt to reduce their distress and protect against the perceived risk of contamination by washing their hands until their skin is raw (APA, 1994). In summary, obsessions are intrusive and distress provoking, while compulsions are, at least in the short-term, distress reducing (Hollander, 1993).

Until as recently as the early 1970s, OCD was considered a treatment-refractory condition. Neither pharmacological nor psychodynamic therapies that were available at the time produced significant clinical improvement (Emmelkamp, van Oppen, & van Balkom, 2002). However, advances in cognitive-behavioural interventions for OCD during the latter part of the twentieth century promoted dramatic improvements in treatment effectiveness. Evidence has been produced to show that effective use of

cognitive-behavioural therapy (CBT; involving exposure with response prevention therapy) can reduce both functional impairment and symptoms of OCD (Lampe, 2007). Meta-analyses of the treatment literature indicate that CBT is effective for 60-80% of OCD patients, with 50-80% symptom reduction commonly observed (e.g., Abramowitz, 1996, 1997; Abramowitz, Brigidi, & Roche, 2001; Fisher & Wells, 2005). Indeed, CBT for OCD is currently regarded as the only empirically-validated psychological treatment for the disorder (Abramowitz, 2006a; Abramowitz, Taylor, & Mackay, 2009).

Despite recent gains, the treatment outcome picture for CBT for OCD may not be quite as positive as the meta-analyses suggest. CBT for OCD drop-out rates are approximately 25% (Abramowitz et al., 2009; Franklin, Abramowitz, Kozak, Levitt, & Foa, 2000) and exposure with response prevention (E/RP) overt refusal rates represent an additional 5–22% of participants (Foa et al., 2005; McLean et al., 2001). These considerations have led some authors to estimate that the actual percentage of treatment *non-responders* to CBT for OCD oscillates between 50 and 60% (Cottraux, Bouvard, & Millinery, 2005; Fisher & Wells, 2005). Lasting remission or recovery (i.e., complete absence of symptoms) is rarer still, being observed in less than 20% of patients (Skoog & Skoog, 1999), revealing that even when improvement is achieved, the majority of CBT for OCD patients are left with significant symptoms at the end of treatment (Wilhelm, 2000).

These findings indicate that CBT for OCD is lagging behind CBT for other psychological disorders in terms of treatment effectiveness and suggests that there remains considerable scope for improvements in OCD treatment efficacy (Fisher & Wells, 2005). The sub-optimal effectiveness of CBT for OCD contributed to a surge in OCD-related research in recent years (Smith, Wetterneck, Hart, Short, & Bjorgvinsson, 2012). Investigation has sought to provide better understanding of the heterogeneous processes underlying the pathogenesis and maintenance of OCD. Among the processes

identified, cognitive appraisal processes received the most interest and attention in modern OCD theory, research and practice (Clark, 2004). In comparison, investigation of the impact of affective processes, especially the potential impact of anxious and dysphoric mood-states on appraisal processes, has been meagre. In the quest for increasingly effective OCD treatment, deeper investigation of the cognitive-affective-behavioural nexus of OCD appears overdue.

1.1 Cognitive Appraisal Models of OCD

1.1.1 Overview of Appraisal Models and the Cognitive-Behavioural Conceptualisation of OCD

The prevailing cognitive models of OCD assume that obsessions have their origins in normal intrusive thoughts (Rachman, 1997, 1998; Salkovskis, 1985). These cognitive "appraisal" models propose that certain dysfunctional beliefs give rise to negative appraisals of intrusive thoughts (ITs) and that these appraisals are crucial in the development of clinical obsessions and the pathogenesis and maintenance of the disorder more generally (Clark & Purdon, 1993; Teachman, Woody, & Magee, 2006). This proposition is supported by research evidence demonstrating that negative appraisals are important in predicting OCD symptoms (Barrera & Norton, 2011). The term 'negative appraisal' refers to the process of appraising or evaluating the occurrence and/or content of obsessions in a manner that is unrealistic or illogical (Sochting & March, 2002). According to appraisal models, when intrusions are negatively appraised, ignoring them becomes more difficult, emotional distress typically ensues, and attempts to remove or neutralise the intrusions are more likely to be initiated (Freeston, Rheaume, & Ladouceur, 1996; Rachman, 1993; Salkovskis, 1985, 1989). Figure 1 provides graphic illustration of the conceptual pathway from dysfunctional beliefs to negative appraisals, distress, and subsequent neutralising activity envisaged

within the cognitive-behavioural conceptualisation of OCD, to which cognitive appraisal models contributed significantly.

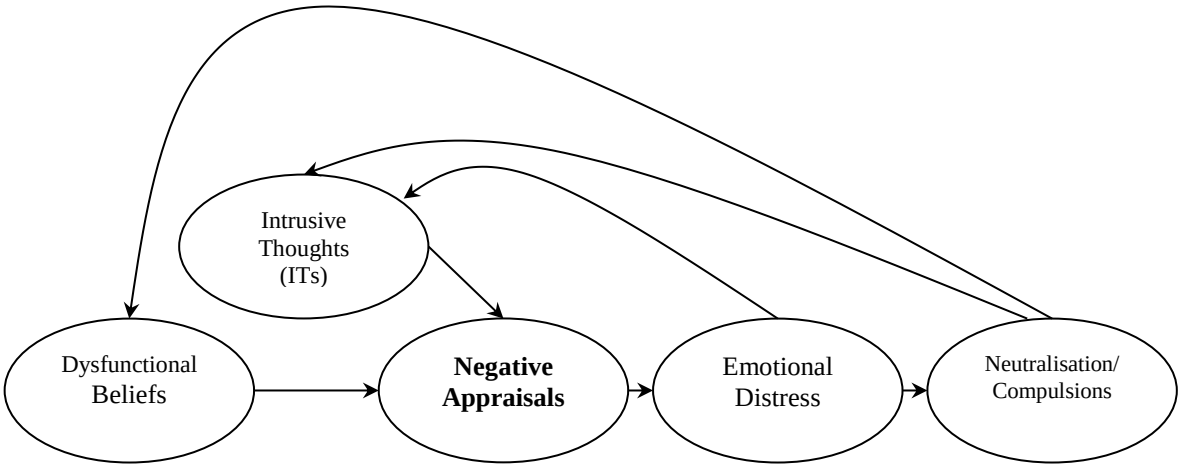

Figure 1. The cognitive-behavioural conceptualisation of OCD in which cognitive appraisal models highlighted the role of negative appraisal of intrusive thoughts

Neutralisation includes both overt behaviours (such as washing and checking – typically referred to as compulsions; Rachman, 1976) and covert behaviours (such as mental checking and restitution activity), which may include "putting right" by saying prayers, thinking good thoughts in response to bad thoughts, and repeatedly running over details of events in memory (Salkovskis & Westbrook, 1989). Neutralising activities are performed in order to "put right" the thought, prevent or mitigate the anticipated consequences of the thought, and/or relieve the subjective experience of distress associated with it (Clark, 2002; Freeston & Ladouceur, 1997). For instance, a patient who experiences an intrusive thought (IT) of harming another person (e.g., "I will swerve into oncoming traffic") and negatively appraises the IT as being important or indicating that the event is likely to happen may experience acute distress and a sense of personal responsibility to do something about the thought. The patient might consequently try to neutralise or "put right" the thought by repeatedly re-thinking it but with "not" strategically inserted to reverse the thought's meaning. Like overt

compulsive behaviours, covert neutralisation is often successful in the short-term, as evinced by studies which have found that acts of covert neutralisation are followed by significant reductions in distress (Ahern, Kyrios, & Meyer, 2015; van den Hout, Kindt, Weiland, & Peters, 2002; van den Hout, van Pol, & Peters, 2001).

The short-term anxiolytic property of neutralisation serves to negatively reinforce its use (Rachman & Hodgson, 1980; Ahern et al., 2015), which is unfortunate, because in the long-term neutralisation is considered a maladaptive means of dealing with negatively appraised ITs for two main reasons. First, neutralisation shields dysfunctional beliefs and negative appraisals from dis-confirmatory, threat-incompatible evidence, which helps maintain the patient's belief that the IT was indeed "dangerous" and that the act of neutralising was responsible for preventing the feared consequence of the thought from occurring (Rachman, 1998; see Figure 1). Thus the act of neutralising leads to an increased likelihood of future neutralising in the face of an IT, image or impulse (Zucker, Craske, Barrios, & Holguin, 2002). In a rare experimental study, Salkovskis and colleagues (1997) demonstrated this phenomenon in a non-clinical sample of individuals who were prone to experiencing ITs and neutralising. In comparison to participants who were instructed to distract themselves upon the presentation of an IT, participants who were instructed to neutralise reported more discomfort and greater urge to neutralise when later presented with an IT and asked not to neutralise. The second maladaptive aspect of neutralisation is that the very performance of such activity may elicit a paradoxical increase in the occurrence of the ITs that the neutralisation is employed to attenuate (Tolin, Abramowitz, Przeworski, & Foa, 2002; see Figure 1). In particular, neutralising in the form of thought suppression may, according to Wegner's (1994) "ironic process" theory, increase the accessibility to consciousness of the "to be suppressed" thought, resulting in a paradoxical "rebound effect" wherein the IT recurs with increased frequency. In sum, rather than diminishing

ITs, neutralisation appears to exacerbate both the occurrence of intrusions and the distress they cause.

1.1.2 OCD-Related Belief and Appraisal Domains

While the behavioural principles underlying the negative reinforcement of neutralisation in OCD have a long history (e.g., Meyer, 1966; Mowrer, 1939, 1960), cognitive appraisal processes implicated in the disorder have only more recently been identified and empirically investigated. All appraisal models share the same essential configuration (see Figure 1); however, individual authors highlight different belief and appraisal domains. In an early progenitor to the appraisal models, Carr (1971, 1974) emphasised the importance of unrealistic threat appraisals in OCD, with rituals (i.e., neutralisation/compulsions) viewed as attempts to reduce perceived danger. Carr proposed that OCD patients over-estimate both the probability and the cost of negative events associated with ITs (Carr, 1974).

Salkovskis (1985) highlighted responsibility appraisals, suggesting that intrusive thoughts (ITs) develop into obsessions only when they are appraised as posing a threat for which the individual is personally responsible. A responsibility appraisal of an IT involving stabbing a loved one, might take the following form: "Thinking about stabbing a loved one means that I really want to – that means I'm a dangerous person who must take extra precautions to make sure that I don't lose control and bring these thoughts to fruition". According to Salkovskis' (1989) model, neutralising can increase the person's sense of responsibility because they believe that their neutralisation stopped the intrusion from coming true.

Rachman's (1997, 1998) appraisal model of OCD described similar mechanisms to those elucidated by Salkovskis (1985), but additionally emphasised the role of catastrophic appraisals made by the subject about the personal meaning and importance of ITs. From this point of view, OCD sufferers mistakenly believe that ITs reveal their

"hidden nature" which has negative moral characteristics (Belloch, Morillo, Lucero, Cabedo, & Carrio, 2004). If a person appraises her unwanted ITs about harming other people as signifying that she is inherently dangerous, then an array of formerly neutral stimuli are transformed into potential threats (e.g., sharp objects are turned into potential weapons) (Rachman, 1998). As a result, intrusions are provoked by an increased number of feared external stimuli, and negative appraisals of personal meaning transform these intrusions from a mere nuisance into an egregious torment (Rachman, 1997; Sookman & Pinard, 2002).

Other authors emphasised different domains of belief and appraisal. For instance, Purdon and Clark (1999, 2001, and 2002) postulated that appraisals about the need for and importance of controlling and/or suppressing undesirable thoughts are critical in OCD. Indeed the past two decades has seen a proliferation in the number of belief and appraisal domains implicated in OCD. The Obsessive Compulsive Cognitions Working Group (OCCWG; an international consortium of clinical researchers dedicated to the study of the cognitive aspects of OCD) highlighted this trend when they identified, within the many already existing self-report and laboratory instruments pertinent to cognition in OCD, 19 different belief domains hypothesised to be important in OCD (OCCWG, 1997; Taylor, Kyrios, Thordarson, Steketee, & Frost, 2002). The OCCWG condensed and reduced these 19 domains to a set of six based on the extent to which each domain was considered a vulnerability factor for the development of OCD, specific to OCD in contrast to other disorders, and also on the basis of the aetiological significance of the domain, regardless of its association with other disorders (Taylor et al., 2002).

The six domains identified by the OCCWG were: over-estimation of threat (OET), inflated responsibility, over-importance of thoughts (OIT), controllability of thoughts, perfectionism, and intolerance of uncertainty (OCCWG, 1997, 2001). Strong

interrelationships have been identified between these domains (OCCWG, 2003). Indeed, recent analyses have proposed a four-factor structure of obsessional beliefs, with the original six domains being condensed to four; OET, inflated responsibility, OIT/need to control thoughts, and perfectionism/intolerance of uncertainty (Moulding et al., 2011; Myers, Fisher, & Wells, 2008). OET, inflated responsibility, and OIT have assumed particular prominence in conceptual models of OCD and have been important in informing models of cognitive therapy for OCD (Abramowitz, 2006b; Rachman, 1997, 1998; Salkovskis, 1985). These three domains are of particular interest in the present study because they represent three distinct and unique aspects of the provision of meaning to intrusive thoughts. OET appraisals are inherently future- and danger-oriented, whereas inflated responsibility appraisals are, by their nature, self-focused and self-evaluative. Both OET and inflated responsibility are distinct from OIT appraisals which are concerned with the significance of thoughts and the fundamental relationship between thoughts and actions. As will be explored below, this differential provision of meaning likely translates to different emotional responses associated with specific obsessional beliefs and appraisals. Given their centrality in the present thesis, these three domains require operational definition.

1.1.3 Defining OET, Inflated Responsibility, and OIT Beliefs and Appraisals

The over-estimation of threat (OET) construct encompasses beliefs and appraisals indicating an exaggerated estimation of the probability and/or severity of harm. Examples of such beliefs and appraisals include; “terrible things are more likely to happen to me than anyone else”, “when anything goes wrong in my life, it is likely to have terrible effects”, and “any harm that comes about because of this thought will be severe” (OCCWG, 2001). OET beliefs engender appraisals that intrusions portend catastrophe.

The definition of inflated responsibility, as it relates to OCD, has undergone several refinements since Salkovskis' (1985) seminal formulation. The currently accepted definition is: "The belief that one is especially powerful in producing and preventing personally important negative outcomes. These outcomes are perceived as essential to prevent. Such beliefs may pertain to responsibility for doing something to prevent or undo harm, and responsibility for errors of omission and commission" (p.7, Taylor, 2002). For example, "if I imagine something bad happening, then I am responsible for making sure that it doesn't happen" (OCCWG, 2001). In some instances, inflated responsibility in OCD reaches extraordinary extremes in which the affected person "confesses" to crimes or accidents of which they actually have little or no knowledge (Rachman & Shafran, 1999).

The over-importance of thoughts (OIT) domain of cognition in OCD refers to beliefs and appraisals that the mere occurrence of negative intrusive thoughts (ITs) implies something very important and likely to be, or to come, true. Specifically, OIT refers to general beliefs and specific appraisals in any of three themes (Thordarson & Shafran, 2002): (a) Negative ITs must be important because they have occurred, (b) Moral thought-action fusion – Having negative ITs is morally equivalent to actually performing the action contained in the thought, (c) Likelihood thought-action fusion – Negative ITs increase the likelihood that bad things will happen (i.e., having the thought makes it more likely to come true).

1.1.4 The Relationships of OET, Inflated Responsibility, and OIT, to OCD

Early research that arose in the wake of the cognitive appraisal models centred on attempts to establish the relevance, specificity, or primacy of particular dysfunctional belief and appraisal domains to OCD. In the literature that emerged, OCD-relevance was established for numerous domains however specificity was rarely demonstrated and the issue of primacy remained inconclusive (Frost & Steketee, 2002).

Extant research specifically examining perceived probability and severity of harm in OCD provides some support for the role of over-estimation of threat (OET) in predicting OCD symptoms (e.g., Freeston, Ladouceur, Thibodeau, & Gagnon, 1992; Frost & Sher, 1989; Steketee, Frost, & Cohen, 1998; Tolin, Woods, & Abramowitz, 2003; and Woods, Frost, & Steketee, 1998, cited in Farrell, 2003). The most pressing limitation of studies investigating the relationship between OET and OCD is that they generally fail to address causality or directionality of the relationship (Riskind, Williams, & Kyrios, 2002). In a rare experimental study, Jones and Menzies (1997) successfully manipulated the perceived degree of danger during a behavioural avoidance task. Results indicated that individuals with higher perceptions of danger report higher mean ratings of distress and the urge to engage in compulsive behaviour than individuals with lower perceptions of danger. Taylor and colleagues (2002), the OCCWG (2003), and Tolin, Worhunsky, and Maltby (2006) all failed to significantly discriminate OCD patients from anxious controls on measures of OET beliefs and appraisals. In summary, these findings suggest OET is not exclusive to OCD, but also pertains to other psychological disorders. That is, OET is likely to be OCD-relevant rather than OCD-specific.

Clinical observation and numerous empirical studies have provided moderate to strong support for inflated responsibility as an important component in understanding OCD. Rachman (1993) reported clinical observations of OCD patients in a hospital setting where patients' compulsions abated during the first days in the new environment, and then returned after a few more days. Rachman attributed the decrease in compulsions to the decrease in the patients' sense of responsibility when they first entered the hospital setting. As their sense of affiliation to the new environment increased, patients began to feel more responsibility for their surroundings, and their compulsions subsequently returned. Psychometric studies have consistently found

significant associations between inflated responsibility and obsessions/ITs (e.g., Freeston, Ladouceur, Thibodeau, & Gagnon, 1992) and discomfort and obsessive-compulsive symptoms (e.g., Mancini, D'Olimpio, & D'Ercole, 2001; Pleva & Wade, 2006; Wilson & Chambles, 1999; Yorulmaz, Karanci, & Tekok-Kilic, 2006). Additionally, numerous studies have found responsibility beliefs and appraisals are more prominent in obsessional patients than both clinically anxious and non-anxious controls (Cougle, Lee, & Salkovskis, 2007; OCCWG, 2003; Salkovskis et al., 2000; Steketee, Frost, & Cohen 1998).

Evidence consistent with a causal role for responsibility beliefs and appraisals in OCD is provided by experimental studies investigating the manipulation of responsibility. Lopatka and Rachman (1995) successfully manipulated perceived responsibility among a sample of OCD patients. To decrease subjects' perceived responsibility the authors assumed entire responsibility for all potential negative consequences during a fixed time-period. During the control period, patients assumed the entire responsibility. The result showed that in the decreased responsibility condition, discomfort and urge to check compulsively were significantly reduced. Shafran (1997) used a more ecologically valid approach to manipulating responsibility: patients were exposed to threatening stimuli either in the presence (low responsibility condition) or in the absence (high responsibility condition) of their therapist. The high responsibility situation led to significant increases in discomfort, anxiety and the urge to neutralise. The results of these experimental studies have been replicated (e.g., Bouchard, Rheaume, & Ladouceur, 1999; Mancini, D'Olimpio, & Cieri, 2004; Ladouceur et al., 1995; Ladouceur, Rheaume, & Aublet, 1997). Together, these findings suggest that a linear relationship may exist between inflated responsibility appraisals and both discomfort and the frequency of neutralising activities. In summary, a case for the specificity of inflated responsibility beliefs to OCD is

mounting, although more evidence is required before any conclusive assertions can be made.

The majority of research conducted within the OIT domain has focused on moral- and likelihood-thought-action fusion (TAF). Psychometric studies have consistently found that TAF is strongly associated with measures of obsessionality (Amir, Freshman, Ramsey, Neary, & Brigidi, 2001; Rachman, Thordarson, Shafran, & Woody, 1995) and exacerbation of ITs (Rassin, Merckelbach, Muris, & Spaan, 1999). In an experimental study, Rassin and colleagues (1999) provided evidence for the possible causal contribution of OIT appraisals in the transformation of normal ITs into clinical obsessions. Naïve participants in the experimental condition were told that an EEG recording device to which they were attached could detect their thoughts of a usually innocuous word ("apple") and that if they thought "apple" another person would receive an electric shock. In the control condition, participants were told that the EEG device could detect their thoughts, but they were given no instruction about real-world negative consequences for other people of any specific thoughts. The researchers found that participants in the experimental group reported over three times as many intrusions and more than three times the discomfort reported by the control group. Furthermore, the participants in the experimental condition engaged in neutralising behaviour in about half of the intrusions. Elsewhere, psychometric studies have failed to significantly discriminate OCD patients from anxious controls on measures of TAF (e.g., Rassin, Diepstraten, Merckelbach, & Muris 2001; Rassin, Merckelbach, Muris, & Schmidt, 2001) and OIT beliefs and appraisals (OCCWG, 2003). Together, these results suggest that OIT is likely to be OCD-relevant rather than OCD-specific. Muris, Meesters, Rassin, Merckelbach, and Campbell (2001) have provided some preliminary evidence that TAF may nevertheless be more relevant for OCD than for any of the anxiety disorders.

1.1.5 The Relationship between Inflated Responsibility and OET Beliefs

The Obsessive Compulsive Cognitions Working Group (OCCWG; Frost & Steketee, 2002), developed the only extant measure of dysfunctional beliefs relevant to OCD. This measure, the obsessive beliefs questionnaire (OBQ; OCCWG, 1997, 2001), provides assessment of six OCD-relevant cognitive domains (including OET, inflated responsibility, and OIT) presented as putatively separate constructs (OCCWG, 1997). Psychometric validation of the OBQ (OCCWG, 2001, 2003) however, revealed high correlations among the six OBQ subscales, raising doubts about whether the cognitive domains are in fact distinct. The OCCWG (2005) subsequently submitted items from the six subscales of the OBQ to exploratory factor analysis in a clinical sample of OCD patients (N = 410). The analysis yielded three factors (and a subsequent three-factor scale, the OBQ-44), one of which consisted of the OET and inflated responsibility constructs. This analysis of the OBQ validation data suggested that OET and inflated responsibility beliefs might be better understood as a single construct. In accordance with this psychometric union of the two domains, contemporary cognitive-behavioural conceptualisations of OCD typically join OET and inflated responsibility in a single category of beliefs (Abramowitz, 2006b). More recently however, Myers, Fisher, and Wells (2008) proposed a four-factor solution (including separate OET and inflated responsibility dimensions) following a principle components analysis of the OBQ-44, and Moulding and colleagues (2011) proposed a similar four-factor solution (again involving separate OET and inflated responsibility dimensions) using multiple exploratory methods including exploratory and confirmatory factor analysis.

Research in relation to these cognitive domains in the field of OCD remains nascent. For example, the question of whether further distinctions between OET and inflated responsibility cognitions in OCD may become more evident and measurable in contexts alternative to those under which they have been examined using the OBQ has

yet to be explored. Sub-optimal CBT for OCD efficacy, in combination with limited evidence of specificity for particular belief/appraisal domains to OCD and the lack of firm evidence of links between specific appraisal domains and specific OCD symptoms (e.g., types of compulsive behaviours) in clinical settings (e.g., Julien, O'Connor, Aardema, & Todorov, 2006), suggests that appraisal in OCD may be dependent not only on the content of ITs, but also the *context* of IT occurrence. With a substantial body of evidence implicating OET, inflated responsibility, and OIT cognitive domains in OCD accumulated, increased awareness of the processes, conditions or contexts under which these beliefs and appraisals may operate differentially is now important in moving forward our understanding, and crucially our treatment, of the disorder.

1.2 Mood and Cognition

Mood-state appears to constitute one condition or context with the capacity to significantly and differentially impact cognitive processes, including appraisal processes within OCD. Teasdale (1983), in an early "associative networks" model of cognition, hypothesised that depressed mood results in increased accessibility of negatively-valenced cognitions (Teasdale & Bancroft, 1977, cited in Teasdale, 1983). Teasdale's (1983) model explained this enhanced accessibility as the result of strong associations between moods and thoughts, which are linked in memory such that moods tend to trigger mood-related thoughts. In a series of experimental investigations, Miranda and colleagues (1988, 1990, and 1998) and Persons and Miranda (1991) provided support for their mood-state-dependent hypothesis which replicated and extended Teasdale's findings by suggesting that dysfunctional attitudes associated with depression tend to remain dormant until activated by negative mood. Specifically, Miranda and colleagues found that individuals who hold dysfunctional beliefs related to depression fail to report such beliefs when they are in a positive mood, but readily endorse such beliefs when in a dysphoric mood. The authors thus concluded that the ability of individuals to access

and report dysfunctional depression-relevant attitudes is dysphoric mood-state-dependent. Miranda and colleagues (1990) applied the same hypothesis to anxiety, stating, "We expect that reporting of dysfunctional beliefs that predispose persons to anxiety and anxiety disorders is facilitated by the presence of an anxious mood-state" (p.239).

1.2.1 Mood and Appraisal in OCD

Despite these established links between mood-states and enhanced access to mood-state-relevant cognitions, mood has received limited attention in OCD theory and research. The lone existing model of OCD which affords mood a central position in its conceptualisation of the disorder is the mood-as-input theory which views mood as important in determining the perseverance of neutralising activity (MacDonald & Davey, 2005a, 2005b; Martin & Davies, 1998) but doesn't seek to understand how emotion impacts on catastrophic appraisals of intrusive cognitions. Researchers investigating cognitive appraisal models of OCD focused their investigation of the relationship between mood and appraisal in OCD almost exclusively on the emotional distress that arises subsequent to negative appraisals of intrusions. That is, cognitive models focused on mood disturbance as a typically emergent *product* or *output* of negative appraisals of intrusions (e.g., Salkovskis & Forrester, 2002; Rachman, 2003). Meanwhile, the potential impact of different mood-states on the appraisal process itself remained unexplored. The relationship between mood and appraisal received only cursory attention in statements of theory, and suffered from a dearth of empirical examination (Purdon, 2001). This is regrettable as the mood-state-dependent hypothesis implies that negative affective states may also be important *input* factors in *producing* or promoting certain negative appraisals.

1.2.2 OCD-Specific Mood-State-Dependent Hypotheses

The primary implication of the mood-state-dependent hypothesis to OCD is increased likelihood of negative appraisal of ITs (due to enhanced accessibility of negative, mood-congruent beliefs) in the context of negative mood-states. Furthermore, specific negative mood-states can be expected to differentially activate specific types of OCD-relevant belief and appraisal domains. Evidence from experimental studies establishes a firm link, for example, between anxiety and over-estimation of threat (OET) beliefs and appraisals. Butler and Mathews (1987) conducted a study that maximised ecological validity by testing the prediction that state-anxiety, arising from anticipation of a stressful upcoming university exam, would be associated with an inflation of estimates of the occurrence of negative events related to oneself. Consistent with the hypothesis, results indicated that increases in anticipatory anxiety as the exam approached were associated with increased subjective risk of examination failure. Using a sample of non-referred children in a study that employed an ambiguous story paradigm, Muris, Rapee, Meesters, Schouten, & Geers (2003) found that high levels of state-anxiety were associated with increased threat perception. Muris and van der Heiden (2006) replicated this finding. Arntz, Hildebrand, & van den Hout (1994), in a study conducted with anxious patients (N = 37; 8 of whom were OCD patients), found that reported anxiety prior to an exposure task was related to self-reported danger expectations. In a study linking threat appraisals (as opposed to threat beliefs) with anxious mood-state, Eysenck, Mogg, May, Richards, and Mathews (1991) presented clinically anxious, recovered clinically anxious, and normal control subjects with a mixture of ambiguous and unambiguous sentences. The ambiguous sentences could be interpreted in threatening or non-threatening ways. A subsequent recognition memory test indicated that the currently anxious subjects were more likely than normal controls

and recovered anxiety subjects to interpret the ambiguous sentences in a threatening manner.

While these studies do not establish a causal relationship between anxiety and OET, they do suggest that anxious mood-state may represent a condition under which OET beliefs and appraisals become more salient. As such, the following OCD-specific mood-state-dependent hypothesis may reasonably be drawn: In the presence of anxious mood-state, the accessibility of pre-existing dysfunctional OET beliefs will be increased (in accordance with the mood-state-dependent hypothesis) making them a ready source of assumptions upon which OET appraisals of intrusive thoughts may be based (in accordance with the basic premise of the appraisal models of OCD), thus promoting OET appraisals (see Figure 2).

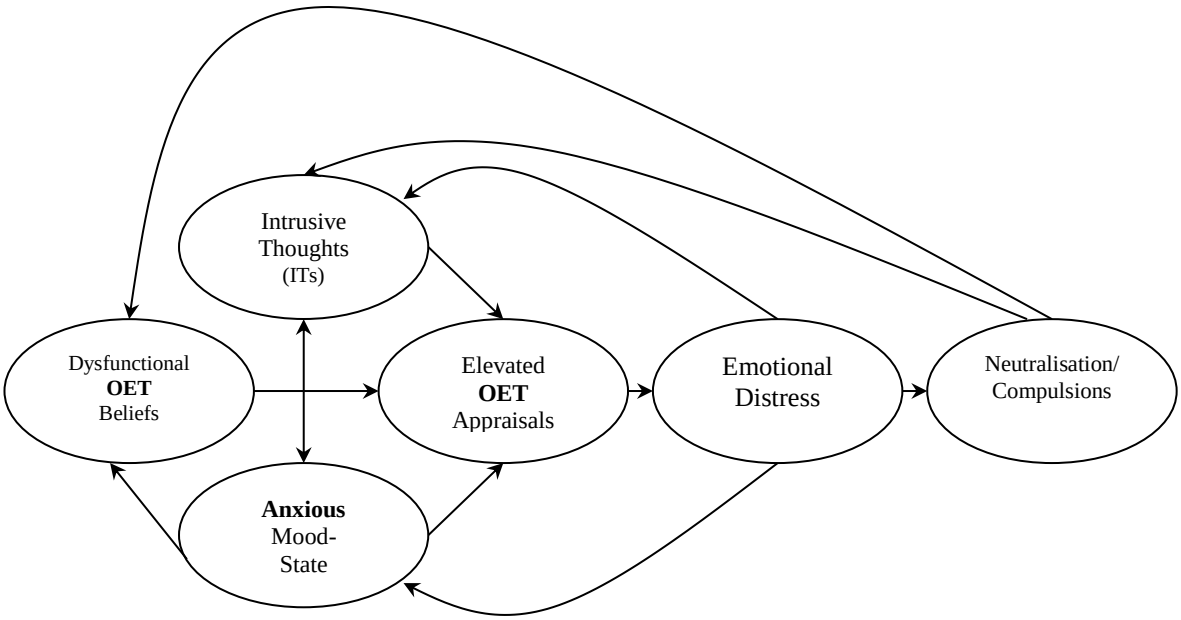

Figure 2. An OCD-specific mood-state-dependent hypothesis in the special case of anxious mood-state concurrent with intrusive thoughts

Numerous authors have suggested a link between dysphoric mood-state and inflated responsibility beliefs and appraisals (see: APA, 2013; Bargh & Tota, 1988; DeSteno & Salovey, 1997; Rachman, 1997) and there is some limited research evidence to support this association in the OCD context. In a study that included OCD patients,

non-OCD anxious, and non-clinical controls, Steketee and colleagues (1998) reported that two self-report responsibility belief measures correlated at 0.39 and 0.44 with a measure of depressive symptoms. Freeston and colleagues (1992) also successfully tested the hypothesis that greater perceived responsibility would be associated with dysphoria. Although again failing to test a causal relationship, these results nevertheless suggest that dysphoric mood-state may represent a condition under which inflated responsibility beliefs and appraisals become more salient. Thus, another OCD-specific mood-state-dependent hypothesis may be drawn: In the presence of dysphoric mood-state, pre-existing dysfunctional inflated responsibility beliefs are likely to be activated and may subsequently promote appraisals of negative ITs in terms of inflated responsibility (see Figure 3).

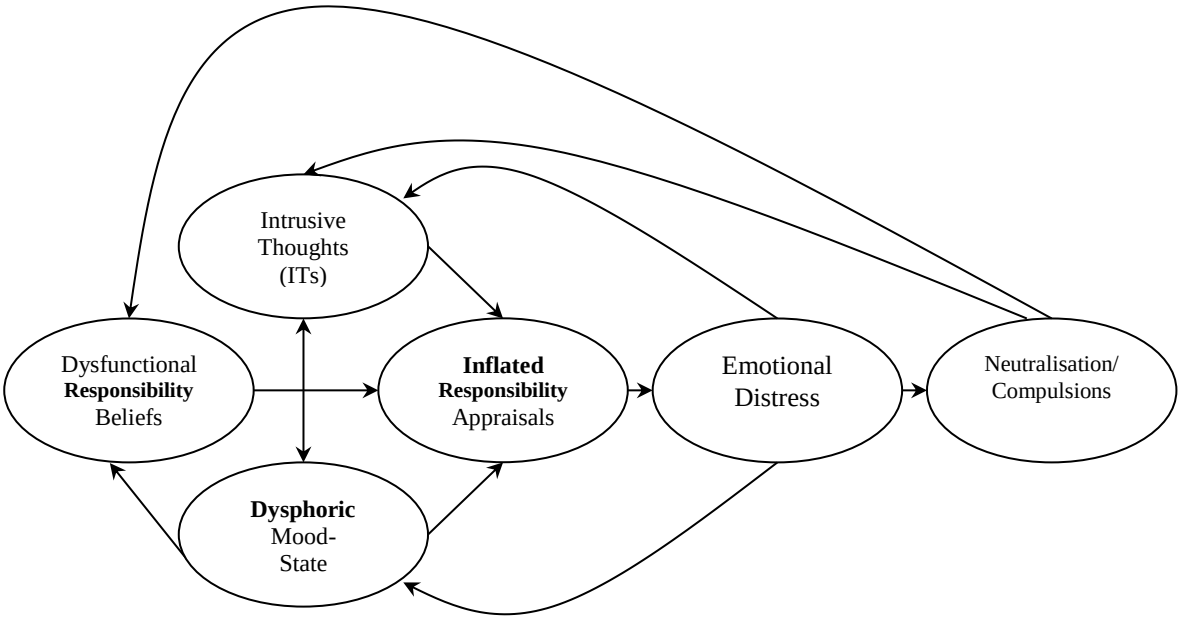

Figure 3. An OCD-specific mood-state-dependent hypothesis in the special case of dysphoric mood-state concurrent with intrusive thoughts

In contrast to OET and inflated responsibility, it is difficult to envisage how the mood-state-dependent hypothesis could be logically applied to the over-importance of thoughts (OIT) belief and appraisal domain. OIT can perhaps most accurately be conceived of as a case of faulty epistemological reasoning. It is grounded in simple

cause-and-effect beliefs about the nature of the relationship between thoughts and actions. OIT is a less future- and danger-oriented domain than OET and a less subjective, self-focused, or self-evaluative domain than inflated responsibility. OIT has no rational link to any specific mood-state, and as such, OIT beliefs are less likely to be prone to activation by affective stimuli. Reinforcing this conceptualisation of OIT is the fact that, to date, no research supports a link between OIT beliefs and appraisals and any particular mood-state (e.g., Lee, Cougle, & Telch, 2005; van den Hout, van Pol, & Peters, 2001), with the exception of a series of studies reporting mild correlations between OIT and measures of dysphoria (e.g., Bhar & Kyrios, 2007). As such, an additional aim of the study is to explore if, in the absence of negative mood-state (i.e., in neutral mood) and the absence of any activation of mood-state-dependent dysfunctional beliefs, relatively mood-independent OIT appraisals become more prominent, perhaps achieving equivalent prominence with OET and inflated responsibility appraisals (see Figure 4).

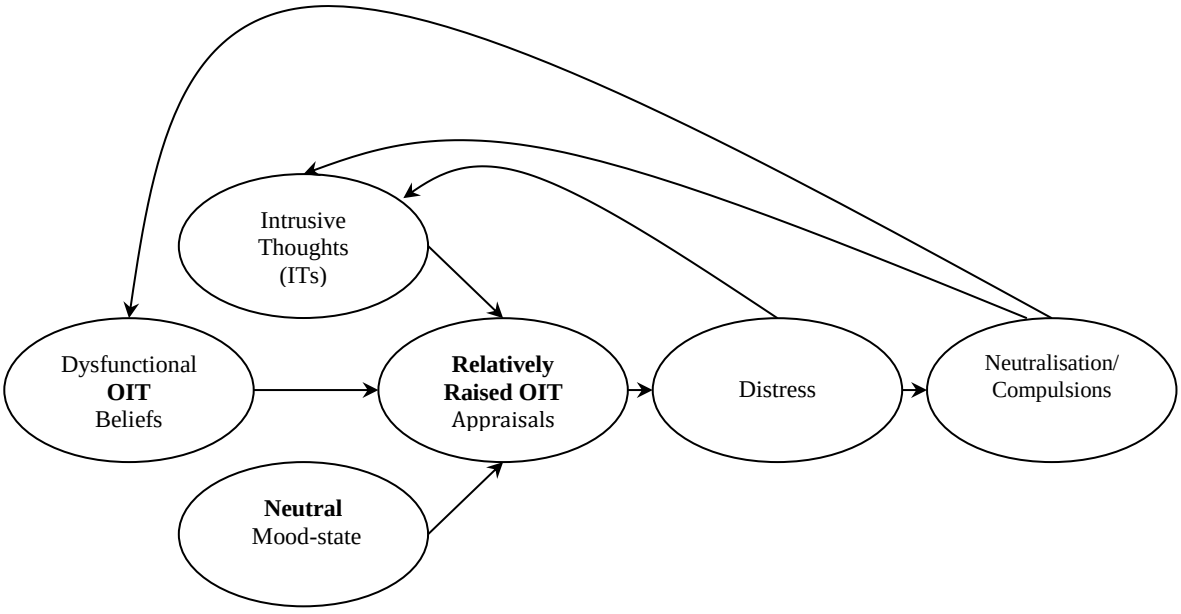

Figure 4. A possible model of negative appraisal in OCD in the special case of neutral mood-state concurrent with intrusive thoughts

1.2.3 Mood and Neutralisation in OCD

"Salkovskis (1985) suggested that the unique feature of obsessional problems lies not in the occurrence of ideas of danger or threat, although such threat perception is a necessary component of the cognitive theory of the way obsessional problems occur..., but rather in the motivation of the compulsive component [i.e., the neutralisation] of the problem" (p.48, Salkovskis & Forrester, 2002). This statement highlights the importance of exploring precisely why individuals with OCD employ the compulsive neutralising strategies that they do. Two major motivations have been identified: neutralising activities are performed in order to "put right" the thought, prevent or mitigate the anticipated consequences of the thought, and/or relieve the subjective experience of distress associated with it (APA, 2013; Clark, 2002; Freeston & Ladouceur, 1997; Freud, 1909). However, a fine-grained analysis of neutralising motivations has yet to be conducted. Little is known about whether certain mood-states or specific types of negative appraisals might be associated with particular neutralising strategies and motivations. Investigation of these issues has the potential to shed new light on the cognitive-affective nexus of OCD.

1.3 Aims and Hypotheses

The current study investigates the impact of different mood-states on individuals' negative appraisals of an obsession-like thought and their motivations for selecting strategies to respond to (i.e., neutralise) that thought. Specifically, the study tests the main effects of experimentally induced mood (i.e., anxious, neutral, and dysphoric mood) on three dependent variables associated with appraisal of an obsession-like thought (over-estimation of threat (OET), inflated responsibility, and over-importance of thoughts (OIT) appraisals) and three dependent variables associated with motivations for neutralising (reduce threat (RT), reduce sense of responsibility (RSR), and diminish importance of the thought (DIT) motivations).

1.3.1 Mood and Appraisal Hypotheses

It was expected that induced anxious mood-state would increase the salience and accessibility of OET beliefs, thus promoting negative appraisal of an obsession-like thought in the OET domain compared with the inflated responsibility and OIT domains. Similarly, it was expected that induced dysphoric mood-state would increase the salience and accessibility of inflated responsibility beliefs, thus promoting negative appraisal of an obsession-like thought in the inflated responsibility domain compared with the OET and OIT domains. In contrast, it was expected that OET, inflated responsibility, and OIT appraisals would be approximately equivalent in the absence of negative mood (i.e., in the context of induced neutral mood-state). In a set of between-groups predictions, it was expected that OET appraisals would be most prominent in the anxious group, inflated responsibility appraisals would be most prominent in the dysphoric group, and OIT appraisals would be equivalent in prominence across the anxious, neutral and dysphoric mood groups.

1.3.2 Mood and Neutralising Strategies and Motivations Hypotheses

Neutralising behaviours are often not connected with what they are intended to reduce or prevent in logical or realistic ways (APA, 2013). It was thus not expected that participants' selection of neutralising strategies would differ as a function of their mood-state. Theoretically, an individual might engage in any kind of neutralising behaviour, in response to any kind of IT - no matter how strange or seemingly disconnected from the IT the behaviour might be. It was expected however, that different mood-states (and associated mood-state-dependent appraisals of an obsession-like thought) would generate different *motivations* for the utilisation of various neutralising strategies. Specifically, it was predicted that neutralising motivations to reduce the perceived threat associated with an obsession-like thought would be more prominent in the context of anxious mood-state (as individuals in the anxious group work to address prominent OET appraisals) than neutral or dysphoric mood-state. It

was also predicted that neutralising motivations to reduce one's sense of responsibility associated with an obsession-like thought would be more prominent in the context of dysphoric mood-state (as individuals in the dysphoric group work to address prominent responsibility appraisals) than neutral or anxious mood-state. Finally, it was predicted that neutralising motivations to diminish the perceived importance associated with an obsession-like thought would be equivalent across the three mood-induced groups.

2. Method

2.1 Participants

The participants were 114 students and 6 employees from the Australian National University. Participants ranged in age from 17 to 68 years (M = 23.08, SD = 9.18) and 72.5% were female. First year psychology students (n = 77) who volunteered received course credit in return for their participation. Subjects were randomly assigned to one of three experimental groups: anxious mood (n = 40), neutral mood (n = 40), and dysphoric mood (n = 40) prior to arriving for the experiment, using sampling without replacement. The final five participants were assigned to specific experimental groups to ensure equivalent numbers of participants in each group.

2.2 Measures

2.2.1 OCD Characteristics

Obsessive-Compulsive Inventory – Revised (OCI-R; Foa et al., 2002). The 18-item OCI-R, a shortened version of the original OCI, was used to measure participants' baseline level of obsessive-compulsive symptoms. Participants were asked to rate the degree to which they were bothered or distressed by common symptoms of OCD in the past month on a five-point Likert-type scale from 0 (*Not at all*) to 4 (*Extremely*). In the present study only the OCI-R total score was calculated. The OCI-R possesses good internal consistency for the total score (Cronbach's alpha coefficients across samples

range from .81 to .93; Foa et al., 2002). Adequate test-retest reliability (.57 to .91 across samples) and construct validity, and good convergent validity with the original OCI and other OCD symptom measures (e.g., Y-BOCS and MOCI) have also been reported for the OCI-R (Abramowitz & Deacon, 2006; Wu & Watson, 2003). In the current study the OCI-R displayed satisfactory internal consistency (Cronbach's alpha = .74).

Obsessive Beliefs Questionnaire (OBQ; OCCWG, 1997, 2001). An abridged version of the OBQ (an 87-item self-report instrument) was used to measure the degree to which participants agreed with various dysfunctional beliefs associated with OCD. OBQ scores were used to establish equivalence of experimental groups on OCD-relevant beliefs prior to experimental manipulation. The 87-item OBQ contains six subscales, however, only the subscales measuring the three belief domains relevant to the current study (i.e., OET, inflated responsibility, and OIT) were surveyed. The three utilised subscales constituted a 44-item instrument. Participants were asked to rate their level of agreement with each of the 44 statements on a seven-point Likert-type scale from 1 (*Disagree very much*) to 7 (*Agree very much*). This abridged version of the OBQ displayed satisfactory internal consistency in the current study (Cronbach's alpha = .85). Initial validation of the full OBQ indicated that it possessed good internal consistency (Cronbach's alpha coefficients for subscales across samples range from .71 to .93) and test-retest reliability (range from .75 to .90 across subscales; OCCWG, 2001). As mentioned above however, a subsequent validation study reported high correlations between the subscales of the OBQ (*r*s > 0.7; OCCWG, 2003). The OBQ nevertheless remained the best available measure of OCD-relevant OET, inflated responsibility, and OIT beliefs at the time the current study was being designed.

The Interpretation of Intrusions Inventory (III; OCCWG, 1997, 2001). The 31-item III was designed to measure individuals' appraisals of their unwanted intrusions

across three appraisal domains (Inflated Responsibility, Control of Thoughts, and OIT). A new subscale, designed to assess OET appraisals, was developed for the present study (see Appendix A). The OET subscale replaced the control of thoughts subscale to create the 30-item III-Modified (III-M). In the current study, the Cronbach's alpha coefficient for the newly developed OET subscale of the III-M was .78, providing preliminary evidence for the internal consistency of the subscale. Participants identified two examples of ITs they had recently experienced and then rated their degree of belief in 30 appraisal statements that related to those ITs. Ratings were recorded using a scale from 0 (*I did not believe this idea at all*) to 100 (*I was completely convinced this idea was true*). Participants also rated the frequency, recency and distress associated with their ITs. The OCCWG (2001, 2003) reported that the III has good internal consistency (Cronbach's alpha for the subscales ranging from .79 to .96 across samples) and adequate test-retest reliability (.64 to .83 across samples). In the current study The III-M showed good overall internal consistency, with Cronbach's alpha of .89. As with the OBQ, high correlations have been reported between the subscales of the III (*r*s approximately 0.7; OCCWG, 2003), however, this is understandable given that appraisal of a specific intrusion is likely to be based on the interaction between numerous beliefs. The III represented the best available measure of OCD-relevant appraisal domains at the time the current study was being designed.

2.2.2 Mood, Appraisal, and Neutralising Urge, Strategies, and Motivations

Two 125mm visual analogue scales (VAS) were utilised to measure participants' short-term mood-state fluctuations on anxious and dysphoric dimensions (Appendix B). The order in which the mood VAS were presented was reversed after the first 60 participants to negate any potential order effect. Six 125mm VAS questions were also developed to tap participants' appraisals of an obsession-like thought in three domains: over-estimation of threat (OET), inflated responsibility, and over-importance

of thoughts (OIT; two questions were dedicated to each domain; see Appendix C). One further VAS question was used to tap participants' urge to neutralise (Appendix D). Participants rated the degree that they endorsed each VAS question by marking the line between the 0- and 100-point "anchors" at either end of the scale. VAS ratings have been shown to provide valid and sensitive estimates of the nature and intensity of experienced mental states (Gift, 1989), and VAS assessing mood-states have been found to correlate with other established mood scales (Lindsay & Powell, 1994). Mean inter-item correlations (appropriate to use in lieu of Cronbach's alpha for scales with less than ten items; Pallant, 2005) for the VAS OET, inflated responsibility, and OIT appraisal subscales in the current study were r = .26, r = .38, and r = .26, respectively. These values fall within the optimal range of .2 to .4 (Briggs & Cheek, 1986), indicating good internal consistency.

Neutralising Strategies Inventory (NSI). Participants endorsed the neutralising strategies they used in responding to an induced obsession-like thought by placing ticks in boxes corresponding to 12 separate strategy options on the NSI (Appendix E). Strategies contained in this novel inventory included items associated with each of three broad categories of neutralising activity (i.e., Change the Thought, Remove the Thought, and Ignore the Thought) identified by Freeston, Ladouceur, Provencher, and Blais (1995). Four items were derived from the Change the Thought category (i.e., 'Reappraised the Thought', 'Tried to "Undo" the Thought', 'Planned an Action', and 'Performed a Ritual'). Four items were derived from the Remove the Thought category (i.e., 'Replaced the Thought', 'Tried to Stop the Thought', 'Physically Altered the Sentence', and 'Punished Yourself'). Three items were derived from the Ignore the Thought category (i.e., 'Reassured Yourself', 'Used Meditation or Relaxation', and 'Did Nothing'). A 'Used another Strategy (please specify)' option was also included. Participants' responses on the 'Used another Strategy (please specify)' item were

analysed by the researcher and recoded as one of the other neutralising strategies where appropriate (i.e., when the strategy described by the participant was not included in the examples describing each strategy but nevertheless conformed to the basic premise of a particular strategy).

Neutralising Motivations Inventory (NMI). Participants endorsed their reasons (i.e., motivations) for utilising each of the neutralising strategies they ticked on the NSI by placing ticks in boxes corresponding to eight specific motivations (grouped into three broad categories of motivation) on the NMI (Appendix F). Two motivation items were included in relation to the (i) Reduce Threat (RT) neutralising motivation category (i.e., 'To Keep the Friend or Family Member That I Imagined Safe from Danger' and 'To Make Myself Feel Safer'). Two motivation items were included in relation to the (ii) Reduce Sense of Responsibility (RSR) neutralising motivation category (i.e., 'To Fulfil My Responsibility to do something about the Thought' and 'To Diminish My Sense of Responsibility for Any Negative Outcomes Associated with Having the Thought'). Two motivation items were included in relation to the (iii) Diminish Importance of the Thought (DIT) neutralising motivation category (i.e., 'To Make the Thought Have No Effect' and 'To Make Me Feel Like I'm a Good Person'). An opt-out, 'I Don't Know Why I Used This Strategy', option was also included, as was an 'Other Reason/s (please specify)' option. As with the NSI (above), participants' responses on the 'Other Reason/s (please specify)' item were analysed by the researcher and recoded as one of the other neutralising motivations where appropriate (i.e., when the motivation described by the participant clearly corresponded with Reduce Threat, Reduce Sense of Responsibility or Diminish Importance of the Thought).

2.3 Procedure

The experimental protocol was ratified by the ANU Human Research Ethics Committee, and was conducted in small groups (range, 1 to 4 participants, mode = 2 participants). A summary of the experimental design is provided in figure 5.

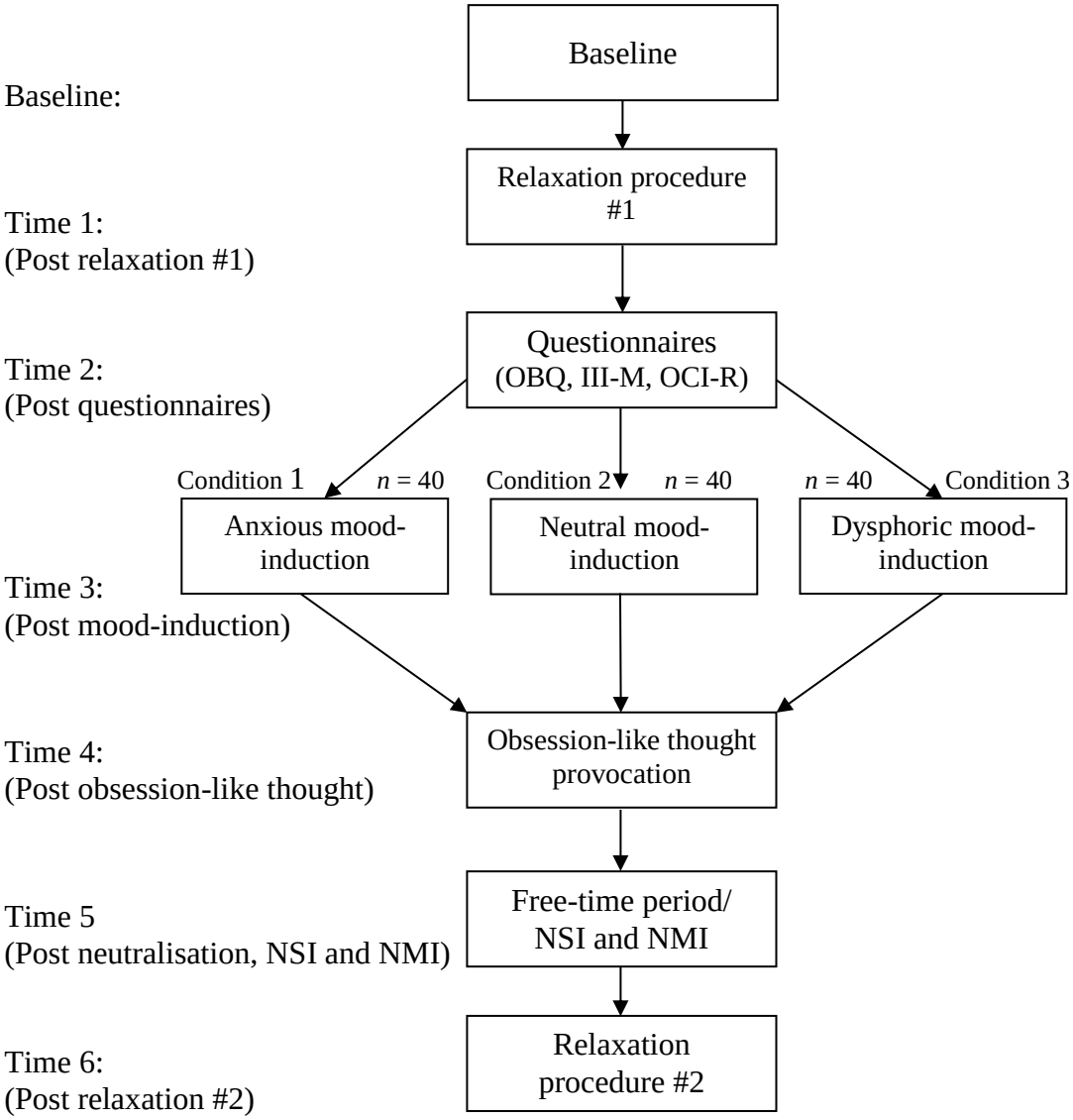

Figure 5. The experimental method (Study 1)

Participants were trained in the use of visual analogue scales, scored the baseline anxiety and dysphoria VAS and answered three demographic questions regarding their age, gender, and number of years studying psychology. Next, participants were guided through a three-minute, imaginal, relaxation procedure before again scoring the anxiety

and dysphoria VAS (Time 1). Three questionnaires were then administered: OCI-R, OBQ, and III-M, and the anxiety and dysphoria VAS were scored again (Time 2).

During the next phase of the experiment participants in each of the three experimental groups underwent different mood-induction procedures. Participants first read a list of instruction points preparing them for what would be expected of them in this phase of the experiment. Participants were then asked to attend to a mood-congruent musical selection. Participants in the dysphoric group heard an eight-minute clip from Albinoni's "Adagio in G Minor" (1981). Previous research has suggested that this piece can induce dysphoric mood-state (Bisson & Sears, 2007). Participants in the anxious group heard an eight-minute clip from "Erwartung (Anticipation)" by Arnold Schoenberg (1909/1996). Previous research has suggested that this piece can induce anxious mood-state in undergraduates (Mennin, Heimberg, Turk, & Fresco, 2005). Participants in the neutral group heard an eight-minute clip from "Summer III - Tempo impettuoso d'Estate" from The Four Seasons (Vivaldi, 1991). This piece has been used to successfully induce neutral mood-state in previous studies (McCabe, Gotlib, & Martin, 2000). After the music had been playing for one minute, participants received a set of 20 cards with mood-congruent self-referential statements typed on them. Self-referential statements are an effective means of inducing various mood-states (Westermann, Spies, Stahl, & Hesse, 1996). The sets of neutral and dysphoric self-referential statements used were adapted from longer sets of statements developed by Seibert and Ellis (1991), whereas the anxious statements were developed specifically for use in the present study (see Appendix G). The mood-induction procedure took approximately eight minutes, following which participants again scored the anxiety and dysphoria VAS (Time 3).

Next, for all three groups, the experimenter began the provocation procedure to generate an obsession-like unacceptable thought/image/impulse. Participants were

asked to call to mind a friend or family member who they are close to, after which they were provided with a written sentence that read 'I hope……is in a car accident'. Participants were asked to write the name of the person they had called to mind into the blank space in the sentence. Participants then wrote out the entire sentence again on a blank page, read it out aloud, and were encouraged to produce a clear and vivid visualisation of the situation depicted in the sentence for 30 seconds. This was in accordance with van den Hout and colleagues' (2001) detailed modifications to Rachman, Shafran, Mitchell, Trant, & Teachman's (1996) original paradigm. The paradigm represents a valid experimental model of obsessions, modelling the level of distress and urge to neutralise that is seen in OCD with non-clinical samples (Bocci & Gordon, 2007; Marcks & Woods, 2007; Rassin, 2001; Zucker, Craske, Barrios, & Holguin, 2002). Following the obsession-like thought provocation, participants scored the obsession-like-thought-related mood, appraisal, and urge to neutralise VAS (Time 4).

Participants were then asked to sit for a two minute free-time (neutralising) period during which they could do whatever they chose. After this free-time period, participants completed the Neutralising Strategies Inventory (NSI) and Neutralising Motivations Inventory (NMI). They then scored the appraisal VAS for a second time and the anxiety and dysphoria VAS again (Time 5). Next, participants were guided through the relaxation procedure for a second time, however on this occasion they heard Mozart's "Sonata for two pianos in D major, K.448" (1985) during the procedure. This piece of music has been found to induce positive moods in students (Thompson, Schellenberg, & Husain, 2001). Finally, participants scored the anxiety and dysphoria VAS once more (Time 6).

2.4 Planned Statistical Analysis

2.4.1 Baseline Equivalence of Groups

A series of univariate analyses of variance (ANOVA) were conducted to assess baseline equivalence of the three experimental groups (Anxious, Neutral, and Dysphoric) in age, number of years studying psychology, anxiety, dysphoria, OCD-relevant beliefs and appraisals, and OCD symptoms (prior to the mood-induction and obsession-like thought induction experimental manipulations). The equivalence of the sex distribution between the groups was assessed using Chi-Square analysis.

2.4.2 Experimental Manipulation Checks

The manipulation effect of the mood-induction procedures was assessed using Time(Time 2, Time 3)×Group(Anxious, Neutral, Dysphoric) ANOVA for mean anxiety and dysphoria ratings. The Tukey HSD test was used for post-hoc comparisons where appropriate. In addition, *t*-tests were used to assess within-group differences on the anxiety and dysphoria dimensions at Time 3 (post-mood induction).

The manipulation effect of the obsession-like thought provocation procedure was checked using two Time(Time 3, Time 4)×Group(Anxious, Neutral, Dysphoric) ANOVA to assess changes in participants' anxiety and dysphoria ratings. The Tukey HSD test was used for post-hoc comparisons where appropriate. In addition, participants' urge to engage in neutralising activity following the obsession-like thought provocation (Time 4) was assessed using a between-groups ANOVA. Finally, the Pearson correlation coefficient was used to investigate the degree of association between participants' ratings of their urge to neutralise and their emotional distress following the obsession-like thought provocation.

The manipulation effect of the free-time (neutralising) period was investigated using two Time(Time 4, Time5)×Group(Anxious, Neutral, Dysphoric) ANOVA to assess the impact of the free-time period on participants' urge to engage in neutralising activity and their overall distress ratings (anxiety and dysphoria ratings combined).

2.4.3 Comparative Analysis of Appraisal Ratings

Means and standard deviations were calculated for the mood groups' appraisal ratings in the three appraisal domains at Time 4 and Time 5. Three repeated measures ANOVA with planned comparisons were conducted to assess expected differences in appraisal ratings across the three domains (i.e., OET, inflated responsibility, and OIT) within each of the mood groups following the obsession-like thought provocation (Time 4). Between-groups ANOVA with planned contrasts were conducted to assess hypothesised group differences on appraisal ratings for each of the domains following the obsession-like thought provocation (Time 4).

2.4.4 Comparative Analysis of Neutralising Strategies and Motivations

A series of Chi-Square tests were used to determine whether the mood groups differed in proportion of participants using Change the Thought, Remove the Thought, and Ignore the Thought neutralising strategies. A series of Mann-Whitney U tests were used to assess predicted differences between the three mood groups in proportion of endorsed neutralising motivations in each of the three neutralisation motivation categories (i.e., Reduce Threat (RT), Reduce Sense of Responsibility (RSR), Diminish Importance of the Thought (DIT)).

Where appropriate, tests of simple main effects were employed to clarify the source of the significant interaction effects. A significance level of .05 was adopted for all tests. No adjustment was made for Type-I error since concerns in this regard needed to be weighed against concerns about Type-II error, relating to the relatively small sample size. All analysis was conducted using SPSS version 22.0.

3. Results

3.1 Preliminary Data Screening

Prior to analysis, data were screened for accuracy of data entry, missing values, normality, univariate and multivariate outliers, linearity, homoscedasticity,

multicollinearity and singularity. Initial data screening revealed plausible means and standard deviations for each variable and no missing or out-of-range values. Distributions of the variables were screened for univariate normality. Most variables' distributions were slightly to moderately (but none were significantly) positively skewed, and none were significantly kurtosed. Linearity, homoscedasticity and multicollinearity were all at acceptable levels and no singularities were detected.

Box plots revealed three univariate outliers with $p < .001$. These outliers were checked for accuracy and a decision was made to include them in analyses as they were deemed to represent normal variation found within the population under measurement. No multivariate outliers were identified using the Mahalanobis distance statistic with critical value for $\chi^2(27) = 55.48$, $p < .001$.

3.2 Baseline Equivalence of Groups

The characteristics of the participants in each of the mood groups are displayed in Table 1.

Table 1. Baseline characteristics of the three mood groups (Study 1)

Variable	**Anxious Group** *n* = 40		**Neutral Group** *n* = 40		**Dysphoric Group** *n* = 40		**Between-Group Differences**
	Mean	(SD)	Mean	(SD)	Mean	(SD)	$F_{(2, 117)}$
Sex ratio (M:F)	13:27		10:30		10:30		
Age	22.7	(8.6)	23.0	(9.1)	23.6	(10.0)	.096
Psych. Years	1.7	(1.2)	1.9	(1.5)	2.0	(1.6)	.297
Baseline anxiety	23.0	(15.4)	24.5	(15.8)	22.9	(16.4)	.132
Baseline dysphoria	17.6	(12.4)	18.7	(14.0)	16.7	(16.5)	.189
OBQ:							
OET	38.4	(9.4)	40.7	(9.7)	40.2	(11.9)	.581
Responsibility	58.4	(12.4)	62.4	(11.7)	58.7	(15.8)	.933
OIT	36.5	(7.5)	36.2	(7.8)	37.4	(7.6)	.235
III-M:							
OET	243.5	(94.8)	243.8	(115.1)	249.8	(80.8)	.052
Responsibility	342.0	(202.6)	330.0	(171.4)	307.8	(169.5)	.366
OIT	261.8	(94.3)	241.3	(110.2)	256.0	(72.1)	.511
OCI-R:							
Total	19.5	(7.3)	19.1	(7.6)	17.7	(6.9)	.623

Note: Psych. years = number of years spent studying psychology in a tertiary institution.
OBQ: OET/Responsibility/OIT = Obsessional-Beliefs Questionnaire over-estimation of threat/ inflated responsibility/over-importance of thoughts subscale scores.
III-M: OET/Responsibility/OIT = Interpretation of Intrusions Inventory-Modified over-estimation of threat/

inflated responsibility/over-importance of thoughts/subscale scores.

The three groups did not differ significantly ($F_{(2, 117)} < 1$ in each instance) on measures of age, number of years studying psychology, anxiety, dysphoria, clinical questionnaires, or sex distribution ($\chi^2(2) = .75$, $p > .05$) prior to the mood-induction experimental manipulations. Mean scores for the groups fell within the non-clinical range for the OCI-R (Foa et al., 2002). The mean subscale scores for the OBQ, and the inflated responsibility and OIT subscale scores for the III-M, were comparable to those previously reported in non-clinical samples (Teachman et al., 2006; Tolin, Woods, & Abramowitz, 2003), and substantially lower than those reported in clinical samples (Purdon, Rowa, & Antony, 2005).

3.3 Experimental Manipulation Checks

An overview of the impact of the various elements of the experimental procedure on participants' ratings of anxiety and dysphoria is provided graphically in figures 6a and 6b.

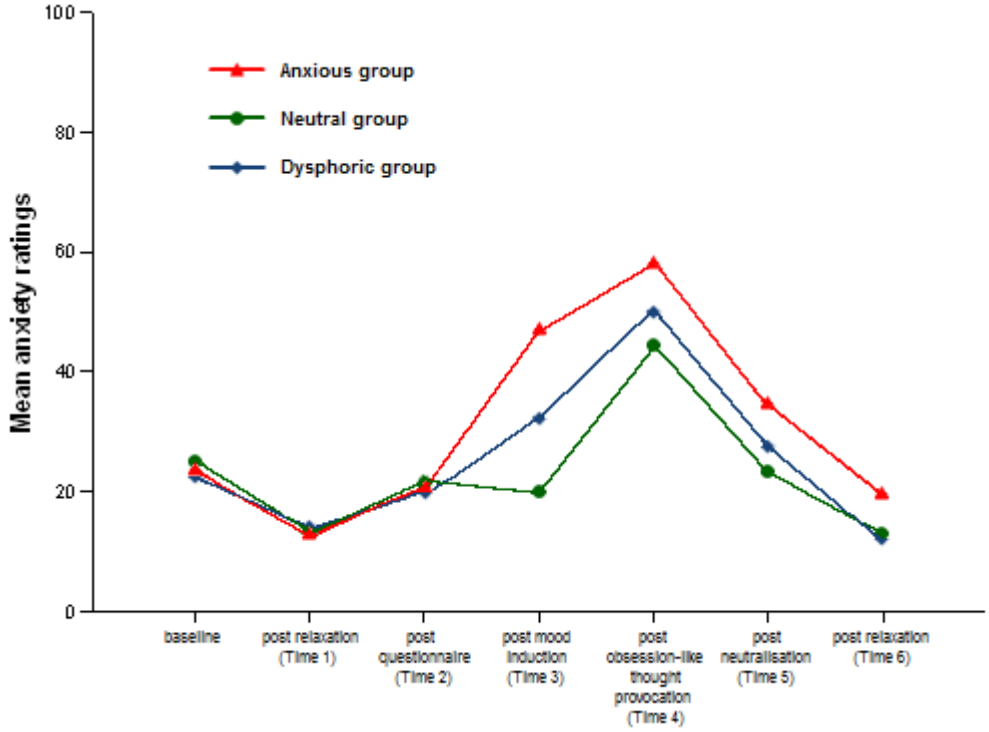

Figure 6a. Group means for VAS anxiety ratings across the seven assessment points

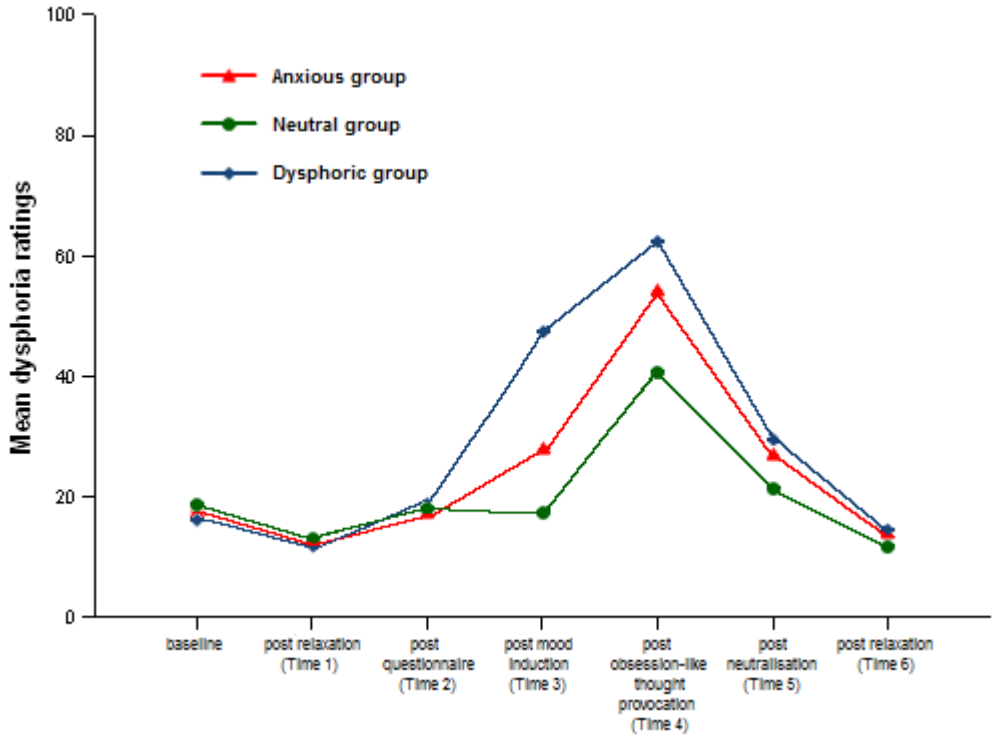

Figure 6b. Group means for VAS dysphoria ratings across the seven assessment points

3.3.1 Mood Induction Effects

The effect of the mood-inductions by group can be seen in Figures 6a (anxiety) and 6b (dysphoria), between Time 2 and Time 3. Participants' self-reported anxiety ($F_{(2,117)} = 68.65$, $p < .001$) and dysphoria ($F_{(2,117)} = 65.71$, $p < .001$) mood ratings increased significantly between Time 2 and Time 3. Significant Time(Time 2, Time 3)×Group(Anxious, Neutral, Dysphoric) interactions were observed for anxiety ($F_{(2,117)} = 28.55$, $p < .001$) and dysphoria ($F_{(2,117)} = 32.17$, $p < .001$), indicating that the increase in participants' mood ratings between Time 2 and Time 3 differed significantly depending on which mood group participants belonged to.

Post-hoc comparisons between the three mood groups revealed that prior to the mood-inductions (Time 2), groups did not differ significantly on ratings of anxiety ($F_{(2,117)} = .01$, $p = .99$) or dysphoria ($F_{(2,117)} = .03$, $p = .98$). Following the mood-inductions however (Time 3), there were significant differences between groups for anxiety ($F_{(2,117)} = 16.29$, $p < .001$) and dysphoria ($F_{(2,117)} = 22.65$, $p < .001$). Further

post-hoc comparisons (using the Tukey HSD test) at Time 3 revealed that mean anxiety ratings were significantly higher for the anxious group than the dysphoric group (*MD* = 14.75, *SE* = 4.75; *p* = .007) or the neutral group (*MD* = 27.08, *SE* = 4.75; *p* < .001). The dysphoric group's mean anxiety ratings were significantly higher than the neutral group's (*MD* = 12.33, *SE* = 4.75; *p* = .03). Mean dysphoria ratings were significantly higher for the dysphoric group than the anxious group (*MD* = 20.25, *SE* = 4.57; *p* < .001) or the neutral group (*MD* = 30.20, *SE* = 4.57; *p* < .001), and the anxious and neutral group's mean dysphoria ratings did not differ significantly (*p* = .08).

Within the anxious group, mean anxiety ratings were significantly higher than mean dysphoria ratings at Time 3 (*t* = 6.65; *p* < .001). Within the dysphoric group, mean dysphoria ratings were significantly higher than mean anxiety ratings at Time 3 (*t* = 3.97, *p* < .001). Within the neutral group, there was no significant difference between mean anxiety and dysphoria ratings at Time 3 (*p* = .31) indicating that the neutral mood-induction procedure was successful in holding mean negative mood ratings constant for the neutral group. Overall, these results suggest that the mood-induction procedures successfully differentiated the groups on anxious, dysphoric, and neutral mood dimensions.

3.3.2 Obsession-Like Thought Provocation Effect

The effect of the obsession-like thought provocation by group can be seen in Figures 6a (anxiety) and 6b (dysphoria), between Time 3 and Time 4. Participants' self-reported anxiety (*F* = 92.86, *p* < .001) mood ratings increased significantly between Time 3 and Time 4. The Time(Time 3, Time 4)×Group(Anxious, Neutral, Dysphoric) interaction for anxiety was significant (*F* = 4.55, *p* = .013), indicating that increases in anxiety ratings between Time 3 and Time 4 differed significantly between the groups. Post-hoc comparisons using the Tukey HSD test to clarify the significant Time by Group interaction indicated that the mean difference between anxiety ratings at Time 3

and Time 4 for the anxious group was significantly different from (i.e., lower than) the dysphoric group (*MD* = 11.46, *SE* = 4.53; p < .05) and the neutral group (*MD* = 20.39, *SE* = 4.53; *p* < .001).

Participants' self-reported dysphoria (*F* = 108.04, *p* < .001) mood ratings also increased significantly between Time 3 and Time 4. The Time(Time 3, Time 4)×Group(Anxious, Neutral, Dysphoric) interaction for dysphoria was not significant (*p* > .05), indicating that the three mood groups experienced approximately equal changes in dysphoria following the obsession-like thought provocation. No other significant differences between groups were present. These results indicate that the anxious group's anxiety increased less than the anxiety ratings for the neutral and dysphoric groups following the obsession-like thought provocation, but that otherwise, group increases in distress were similar.

A significant difference was observed between the three mood groups ($F_{(2,117)}$ = 4.43, *p* = .01) in relation to participants' self-reported urge to engage in neutralising activity following the obsession-like thought provocation. Post-hoc comparisons using the Tukey HSD test indicated that the anxious group reported significantly greater urge to neutralise compared with the neutral group (*p* = .01). No other significant differences among the mood groups were found in relation to urge to neutralise.

Correlational analysis revealed that, across all participants, urge to neutralise was strongly correlated (*r* = .77, *p* < .001) with distress (i.e., anxiety and dysphoria ratings combined) post the obsession-like thought provocation. Overall, these results suggest that the obsession-like thought provocation not only increased participants' distress, but also motivated them to do something about the thought (i.e., neutralise).

3.3.3 Free-Time (Neutralising) Period Effect

Participants' self-reported urge to neutralise was significantly reduced ($F_{(2,117)}$ = 35.15, *p* < .001) following the free-time (neutralising) period (Time 5). There was no

significant main effect of Group, nor a significant Time×Group interaction (both $p >$ .05) indicating that reductions in urge to neutralise were similar across the three groups. Participants' self-reported distress (i.e., anxiety and dysphoria ratings combined) was also significantly reduced ($F_{(2,117)} = 261.76$, $p < .001$) following the neutralising period. There was no significant main effect of Group nor a significant Time×Group interaction (both $p > .05$), indicating that reductions in distress were similar across the groups.

3.4 Comparative Analysis of Appraisal Ratings

Table 2 reports the means and standard deviations for appraisal ratings for the three mood groups at Times 4 and 5.

Table 2. Group means and standard deviations (SDs) for VAS ratings in the three cognitive appraisal domains at Time 4 and Time 5

Appraisal Domain	**Anxious Group** *n* = 40		**Neutral Group** *n* = 40		**Dysphoric Group** *n* = 40	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
OET						
Time 4	95.10	(37.00)	72.67	(37.21)	81.68	(48.26)
Time 5	66.43	(35.17)	58.83	(34.43)	67.85	(45.80)
Responsibility						
Time 4	83.77	(48.14)	66.05	(40.73)	93.02	(46.46)
Time 5	73.95	(46.17)	57.90	(35.30)	67.53	(42.98)
OIT						
Time 4	65.52	(48.11)	80.18	(38.11)	64.83	(35.77)
Time 5	56.62	(44.88)	51.85	(34.91)	57.45	(43.00)

Note: **Appraisal Domain:** OET/Responsibility/ OIT = Visual analogue scale over-estimation of threat/inflated responsibility/ over-importance of thoughts subscale scores.

Within-groups analyses across the three appraisal domains revealed significant differences between appraisal ratings for the anxious group ($F_{(2,117)} = 9.83$, $p < .001$) at Time 4. Planned comparisons showed that for the anxious group, OIT ratings were significantly lower than OET ratings ($MD = 29.58$, $SE = 7.50$; $p = .001$) and inflated responsibility ratings ($MD = 18.25$, $SE = 4.86$; $p = .002$). There were also significant differences between appraisal ratings for the dysphoric group ($F_{(2,117)} = 8.68$, $p = .001$)

at Time 4. Planned comparisons showed that for the dysphoric group, inflated responsibility ratings were significantly higher than OIT ratings (*MD* = 28.20, *SE* = 6.69; $p < .001$). No other significant differences between appraisal domains were present at Time 4, including no significant differences for the neutral group ($p > .05$).

Between-groups analyses assessing each of the appraisal domains revealed statistically significant differences between the three mood groups in relation to OET appraisals ($F_{(2,117)} = 3.20$, $p = .048$) and inflated responsibility appraisals ($F_{(2,117)} = 3.68$, $p = .03$) but not OIT appraisals ($F_{(2,117)} = 1.79$, $p = .17$) at Time 4. Planned contrasts revealed that the anxious group reported significantly more OET appraisals than the other two groups combined ($t = 5.06$, $p = .03$), but not significantly more than the dysphoric group alone ($t = 2.13$, $p = .15$). The dysphoric group reported significantly more inflated responsibility appraisals than the other two groups combined ($t = 4.28$, $p = .04$), but not significantly more than the anxious group alone ($t = 0.84$, $p = .36$).

3.5 Comparative Analysis of Neutralising Strategies and Motivations

Table 3 presents the total number (or frequency) of times that participants in the mood groups reported using particular neutralising strategies and motivations. The table also displays the proportion that endorsement of each strategy or motivation represented relative to the total number of strategies or motivations selected within each group. Results revealed no group differences in proportion of strategy selection across Change the Thought, Remove the Thought, and Ignore the Thought neutralising strategy sub-categories ($\chi^2 = 2.19$, $p = .34$; $\chi^2 = 2.14$, $p = .34$; and $\chi^2 = 3.50$, $p = .17$; respectively). These results indicate that mood did not impact on individuals' selection of strategies to neutralise the obsession-like thought.

Significant differences were observed among the three mood groups in proportion of neutralising motivation endorsement in all three categories (i.e., RT, RSR and DIT). The anxious group reported a significantly larger proportion of reduce threat

(RT) neutralising motivations in response to the obsession-like thought than the combined dysphoric and neutral group ($Z = 3.03$, $p = .002$; anxious group $M = 38.9\%$, $SD = 24.0$, dysphoric/neutral group $M = 23.5\%$, $SD = 18.3$). The dysphoric group reported a significantly larger proportion of reduce sense of responsibility (RSR) neutralising motivations than the combined anxious and neutral group ($Z = 3.03$, $p = .002$; dysphoric group $M = 38.4\%$, $SD = 25.2$, anxious/neutral group $M = 23.3\%$, $SD = 16.5$). The neutral group reported a significantly larger proportion of diminish importance of the thought (DIT) neutralising motivations than the combined anxious and dysphoric group ($Z = 2.73$, $p = .003$; neutral group $M = 52.9\%$, $SD = 31.8$, anxious/dysphoric group $M = 38.2\%$, $SD = 27.4$).

Table 3. Frequency and proportion of endorsed neutralising strategies and motivations across the three experimental groups

	Anxious Group *n* = 40		**Neutral Group** *n* = 40		**Dysphoric Group** *n* = 40	
	Frequency	Proportion	Frequency	Proportion	Frequency	Proportion
Neutralising Strategy						
Change	37	(27.2%)	42	(32.3%)	43	(33.9%)
Remove	56	(41.2%)	58	(44.6%)	56	(44.1%)
Ignore	43	(31.6%)	30	(23.1%)	28	(22.0%)
Neutralising Motivation						
RT	75	(38.9%)	38	(24.8%)	38	(22.1%)
RSR	47	(24.4%)	34	(22.2%)	66	(38.4%)
DIT	71	(36.8%)	81	(52.9%)	68	(39.5%)

Note: **Neutralising Strategy:** Change/Remove/Ignore = Neutralising Strategies Inventory (NSI) Change the Thought/Remove the Thought/Ignore the Thought scores.
Neutralising Motivation: RT/RSR/DIT = Neutralising Motivations Inventory (NMI) Reduce Threat/Reduce Sense of Responsibility/Diminish Importance of the Thought scores.

4. Discussion

Results provided evidence in support of hypotheses regarding the impact of mood-state on appraisal processes and neutralising activity. Mood-state-dependent patterns of responses were evident in relation to participants' negative appraisals of an obsession-like thought and their motivations for neutralising behaviour.

4.1 Mood and Appraisal

Results indicated that different mood-states exerted unique influences on participants' negative appraisals, generating mood-state-dependent appraisal profiles. As predicted, participants who received anxious mood-induction reported significantly more OET than OIT appraisals. However, unexpectedly, their inflated responsibility appraisal ratings were also significantly higher than their OIT ratings, and the difference between their OET ratings and inflated responsibility ratings failed to reach statistical significance (p = .09).

As predicted, participants who received dysphoric mood-induction reported significantly more inflated responsibility appraisals than OIT appraisals. Unexpectedly however, the difference between their inflated responsibility ratings and OET ratings failed to reach statistical significance (p = .08). As predicted, in contrast to the anxious and dysphoric groups, no significant differences were observed among the appraisal domains within the group that received the neutral mood-induction. This finding provides additional evidence for the role of specific negative mood-states in promoting OET and inflated responsibility appraisals.

In relation to between-group comparisons, as expected, OET appraisal endorsement was significantly greater in the group receiving anxious mood-induction compared with the other two groups combined. Anxious mood-state appeared to increase the salience and accessibility of OET beliefs and thus engender increased negative appraisal of the obsession-like thought in the OET domain, relative to inflated responsibility and OIT domains. It is important to note however, that contrary to expectations, OET appraisals in the anxious group were not significantly greater than OET appraisals in the dysphoric group (p = .07).

Similarly, and also in accordance with expectations, inflated responsibility appraisal endorsement was significantly greater in the group receiving dysphoric mood-

induction compared with the other two groups combined. Dysphoric mood-state appeared to increase the salience and accessibility of inflated responsibility beliefs and thus engender increased negative appraisal of the obsession-like thought in the inflated responsibility domain relative to OET and OIT domains. However, contrary to expectations, inflated responsibility appraisals in the dysphoric group were not statistically greater than inflated responsibility appraisals in the anxious group (p = .10). As predicted, in contrast to OET and inflated responsibility, no significant differences were observed among the three groups in relation to OIT appraisal ratings, providing evidence for the hypothesised mood-independent nature of the OIT domain.

Overall, these findings indicated that, among participants who all completed the same obsession-like thought induction task (i.e., thinking about a loved one being in a car accident), differences in mood-state were responsible for substantial differences in the way that people appraised the thought. The findings of anxiety-dependent activation of OET appraisals, dysphoria-dependent activation of inflated responsibility appraisals, and equivalence of appraisals across the three domains in the context of neutral mood-state, are consistent with the theoretical models proposed by Teasdale (1983) and Miranda and colleagues (1988, 1990, and 1998). Results are also consistent with previous research demonstrating links between anxiety and OET beliefs and appraisals (e.g., Muris et al., 2003), dysphoria and inflated responsibility (e.g., Steketee et al., 1998), and the lack of any links between negative affect and OIT (e.g., Lee, Cougle, & Telch, 2005). Crucially, the current findings imply that causal relationships exist between pairs of mood and appraisal variables (i.e., anxiety/OET and dysphoria/inflated responsibility) which were previously linked only by correlation.

4.2 Mood and Neutralising Strategies and Motivations

As predicted, current results demonstrated that participants' selection of strategies to respond to (i.e., neutralise) the obsession-like thought (across the Change

the Thought, Remove the Thought, and Ignore the Thought categories) did not differ as a function of their mood-state. In contrast, there was strong evidence, again in accordance with expectations, that participants were differentially motivated during their neutralising activities dependent upon their mood group membership. As predicted, reduce threat (RT) motivations were most prominent in the context of anxious mood-state and reduce sense of responsibility (RSR) motivations were most prominent in the context of dysphoric mood-state. In an unexpected finding, diminish importance of the thought (DIT) motivations were more prominent than RT or RSR motivations in the context of neutral mood. This interesting result suggested that, in the absence of negative-mood, DIT neutralising motivations appear to become the most prominent in promoting obsessive-compulsive symptoms, hinting at an underlying, perhaps constitutive role for over-importance of thoughts (OIT) appraisals and DIT motivations in OCD. In summary, these results suggest that mood-specific negative appraisal profiles subsequently promote different mood-specific motivational profiles regarding the employment of neutralising activity.

4.3 General Discussion

The current research represents the first experimental study to explicitly investigate mood-state-dependent hypotheses in the OCD context. Results provide preliminary evidence that different mood-states activate specific types of negative appraisals, yielding effects on neutralising motivations. Findings support the hypothesis that mood-state may constitute a condition under which appraisal domains may operate differentially in OCD. This novel hypothesis substantially extends existing conceptualisations of the role of mood in OCD. Beyond the role of emotion in the perseverance of compulsive activity as per MacDonald and Davey's (2005a, 2005b) mood-as-input model, and in contrast to the typical cognitivist view of emotion as only an outcome of cognitive activity, the current results also identify mood as a potentially

important causal agent in negative appraisal and neutralising motivation processes in the OCD context. The current findings hint at a new way forward in our understanding of the cognitive-affective factors contributing to the pathogenesis and maintenance of OCD and advise an expansion of prevailing appraisal (and cognitive-behavioural) models of OCD to incorporate consideration of the impact of affective processes in the broader process of negative appraisal.

4.4 Limitations

A key issue arising from the current results relates to the anxious group/OET appraisal and dysphoric group/inflated responsibility appraisal data at Time 4. Specifically, counter to expectations, anxious and dysphoric group differences in OET and inflated responsibility appraisals failed to reach statistical significance (in both within- and between-group comparisons) post the obsession-like thought provocation. These findings may be attributable to several factors including cross-contamination that was observed in the mood-induction procedures whereby the anxious mood-induction also tended to produce moderate increases in participant dysphoria and the dysphoric mood-induction also tended to produce moderate increases in participant anxiety. Thus, genuine mood-state-dependent differences in appraisal may have been obscured by mood cross-contamination. An alternative explanation is that differences may have been obscured as a consequence of the modest sample size of the current study which inevitably reduced the statistical power available to identify significant results (increasing risk of Type II errors). Alternatively, these results might be understood in terms of being consistent with suggestions of considerable conceptual overlay between the OET and inflated responsibility appraisal constructs. Such an analysis would be accordant with previous research reporting that manipulation of responsibility can also lead to greater subjective reports of threat (e.g., Moulding, Kyrios, & Doron, 2007). It would follow, from this interpretation, that OET and inflated responsibility appraisals

may be associated with negative mood in more generalised as opposed to specific ways. Future research is warranted to investigate these possible explanations.

A methodological limitation of the present experiment is its heavy reliance on self-report both for assessment of the experimental manipulations and for measurement of the appraisal and neutralising motivations variables. Several researchers (e.g., MacLeod, 1999) have highlighted the limitations of studying cognition and emotion solely with self-report measures, which rely on introspection. However, the nature of the phenomena studied in obsessional thinking tends to dictate the use of self-report (Salkovskis, Westbrook, Davis, Jeavons, & Gledhill, 1997) and Abramowitz and colleagues (2014) argue that analogue studies are highly relevant for understanding obsessive-compulsive symptoms. Nevertheless, future research may benefit from the use of non-introspective methodologies such as implicit memory tasks or physiological measures. Investigations could be conducted for example to test if, and to what degree, physiological responding (e.g., electro-dermal or cardiovascular function) to mood-induction procedures including not only anxiety but also dysphoria (see Salomon, Blysma, White, Panaite, & Rottenberg, 2013; Schwerdtfeger & Rosenkaimer, 2011) correlate with subjective, self-report anxiety and depression measures in the context of cognitive-affective appraisal studies. There is however, no a priori reason to expect that physiological measures would reveal between-group differences that were absent on subjective measures.

Limitations of statistical analysis included the lack of evidence for construct validity (e.g., concurrent and convergent validity) of the novel self-report measures utilised (i.e., III-M, VAS, NSI and NMI), and the absence of correlational analyses (between OCD symptom measures and distress-ratings following the obsession-like thought provocation procedure) to assess the OCD-relevance (as opposed to TAF-relevance) of the obsession-like thought procedure.

Additional methodological limitations of the present study include the use of a non-clinical sample, an analogue obsession-like thought (not an actual obsession) that does not take into account the diversity and frequency of obsessions typically experienced by OCD sufferers, and the fact that it is not clear to what degree the mood-inductions utilised simulate the kind of ongoing mood disturbance typically experienced by OCD patients. Hence the generalisability of the current findings to the clinical population is inevitably limited. Consequently, examination of clinical links is necessary before any definitive conclusions about the relationship between clinical OCD symptoms, mood-states, and appraisals of obsessions can be drawn.

4.5 Strengths

A notable strength of the present study was the utilisation of an experimental design which permitted exploration of the temporal relationships between the variables under investigation. Another strength was the demonstrated equivalence of groups on all characteristics measured prior to the mood-inductions. Equivalence suggested that differences observed between the groups in relation to cognitive appraisals and neutralising motivations were the consequence of experimental manipulation as opposed to pre-existing differences in mood-state, obsessive-compulsive symptoms, or OCD-related beliefs and appraisal.

The present experiment was an analogue study in which an obsession-like thought provocation was used to model a clinical obsession (obsessions are characteristically associated with increases in distress and the urge to neutralise). Results indicated that the thought provocation produced substantial, obsession-like increases in distress which were similar across the groups (with the exception that anxiety ratings for the anxious group increased less dramatically than for the neutral and dysphoric groups). This exception is likely to have been the consequence of a ceiling effect whereby the anxious group exhibited the highest mean anxiety ratings post-mood-

induction, with some group members endorsing a maximum anxiety rating of 100, leaving little or no room for meaningful expression of potential increases in anxiety following the obsession-like thought provocation. Participants' urge to neutralise was found to be strongly correlated with their distress following the obsession-like thought provocation. Only one group difference was observed in relation to urge to neutralise following the obsession-like thought provocation: the anxious group reported significantly greater urge to neutralise compared with the neutral group. This finding is likely accounted for by the anxious groups' greater overall distress ratings (especially anxiety) following mood-induction. Overall, these results suggested that the obsession-like thought provocation increased participants' distress, motivated them to neutralise, and was thus analogous to a clinical obsession, constituting a strength of the present research.

4.6 Treatment Implications

Although caution must be taken in any attempt to translate analogue-study findings to clinical populations, there are some basic implications for the treatment of OCD that can nevertheless be outlined. Perhaps the most important implication of the current findings is that the impact of negative mood-states on appraisal might possibly be attenuated by emotion-regulation skills training and that this may potentially contribute to alleviation of OCD symptoms beyond that provided by traditional CBT for OCD. In addition, the current findings highlight the potentially temporal, shifting nature of negative appraisal in OCD as a function of patients' fluctuating mood-states and the need for clinician flexibility to be aware of, and adapt to, these changes. Finally, an interesting and potentially important therapeutic implication arising from the mood-state-dependent hypothesis is that attempts to modify dysfunctional beliefs and appraisals during therapy may be more successful when patients are experiencing the specific negative mood-states that facilitate access to targeted beliefs and appraisals.

4.7 Future Research

A clear direction for future research arising from the present study is investigation of the impact of emotion regulation skills training on appraisal and neutralising motivation profiles. In particular, it is important to assess whether enhanced emotion-regulation capacity offers protection for individuals against negative mood-state-dependent influences on appraisal and neutralising motivation. These questions have potentially important treatment implications for OCD and thus motivated a second study, which is reported in chapter two.

Investigation of mood-state-dependent impacts on the activation of other OCD-relevant appraisal domains (e.g., control of thoughts, intolerance of uncertainty, and perfectionism) also represents a valuable avenue for future research. As does exploration of neutralising strategy endorsement across the two-factor distinction (i.e., 'confront' or 'avoid'; Lee & Kwon, 2003; Lee, Kwon, Kwon, & Telch, 2005) as opposed to the three-factor distinction (i.e., 'change', 'remove', and 'ignore'; Freeston, Ladouceur, Provencher, & Blais, 1995). Additional research could also provide a more thorough investigation of the impact of mood-state on dysfunctional beliefs relevant to OCD. Demonstrating changes in the accessibility of dysfunctional beliefs concurrent with changes in dysfunctional appraisals following negative mood-induction would further explicate the operation of effects consistent with the mood-state-dependent hypothesis in OCD. Finally, longitudinal studies would have the advantage of tracking appraisals across time and naturalistic fluctuations in mood-state.

5. Conclusion

Cognitive appraisal models of OCD ascribe a crucial role for dysfunctional appraisals of intrusive thoughts in the development and maintenance of OCD. Recent research has established the importance in OCD of several dysfunctional appraisal domains, including OET, inflated responsibility, and OIT, which furnish ITs with

meaning and subsequently evoke distress and motivate neutralising. Very little is known however about the conditions under which such appraisal domains operate differentially. The present study provides the first enquiry into the differential mood-state-dependent activation of appraisal domains in OCD. Results indicate that specific negative mood-states have unique, activating influences on particular appraisal domains, and subsequently exert unique influences on obsessive-compulsive symptoms (including neutralising motivation), hinting at a kind of cognitive-*affective*-behavioural conceptualisation of OCD. In particular, anxious mood-state appears to prioritise OET appraisals (over inflated responsibility and OIT appraisals) and motivate neutralising aimed at reducing one's sense of threat (RT; see Figure 7). Dysphoric mood-state, in contrast, appears to prioritise inflated responsibility appraisals (over OET and OIT appraisals) and motivate neutralising aimed at reducing one's sense of responsibility (RSR; see Figure 8). Results also indicate that in the absence of negative mood (i.e., in a neutral mood-state), OIT appraisals become relatively more prominent (i.e., equivalent in prominence with OET and inflated responsibility) and neutralising motivations aimed at diminishing the importance of thoughts (DIT) appear to become prioritised in this context (see Figure 9). The current study thus provides an expanded account of the potential role of mood in the aetiology and maintenance of OCD. Findings support a deeper consideration of the impact of affective processes in the broader mechanisms of "negative appraisal" conceived within contemporary cognitive models of OCD. Results suggest that enhanced capacity to regulate emotional experience may attenuate the negative impact of mood-states on appraisal and neutralising processes and thus confer benefits for OCD sufferers above and beyond those currently available using traditional CBT. Additional analogue investigation utilising larger samples is warranted to further explicate the mood-state-dependent appraisal and neutralising patterns observed in the current study and to explore the

potential for attenuation of such patterns in the context of enhanced emotion regulation skills. Clinical investigation may subsequently be required to test the generalisability of findings to the OCD population.

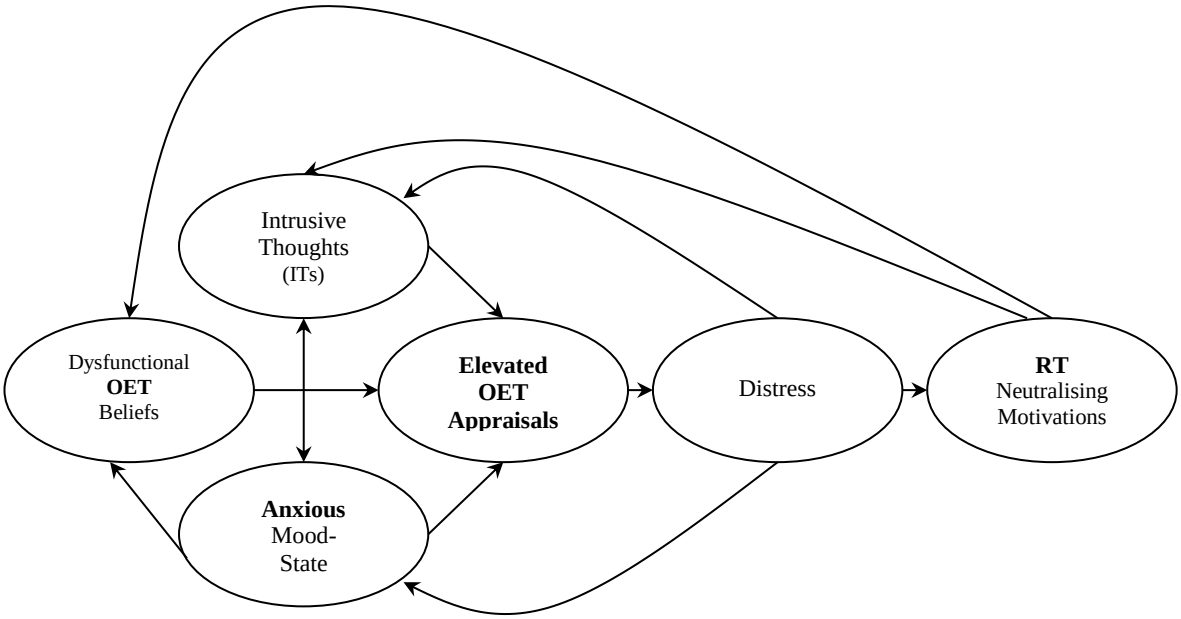

Figure 7. Cognitive-affective-behavioural conceptualisation of OCD in the case of anxious mood-state concurrent with intrusive thoughts

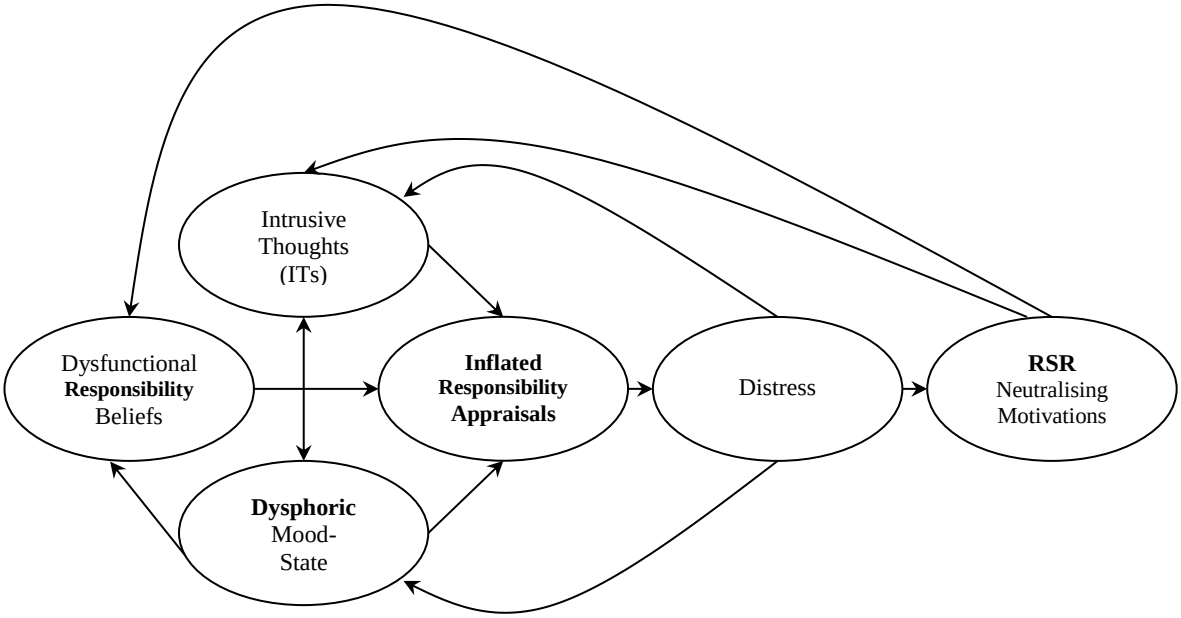

Figure 8. Cognitive-affective-behavioural conceptualisation of OCD in the case of dysphoric mood-state concurrent with intrusive thoughts

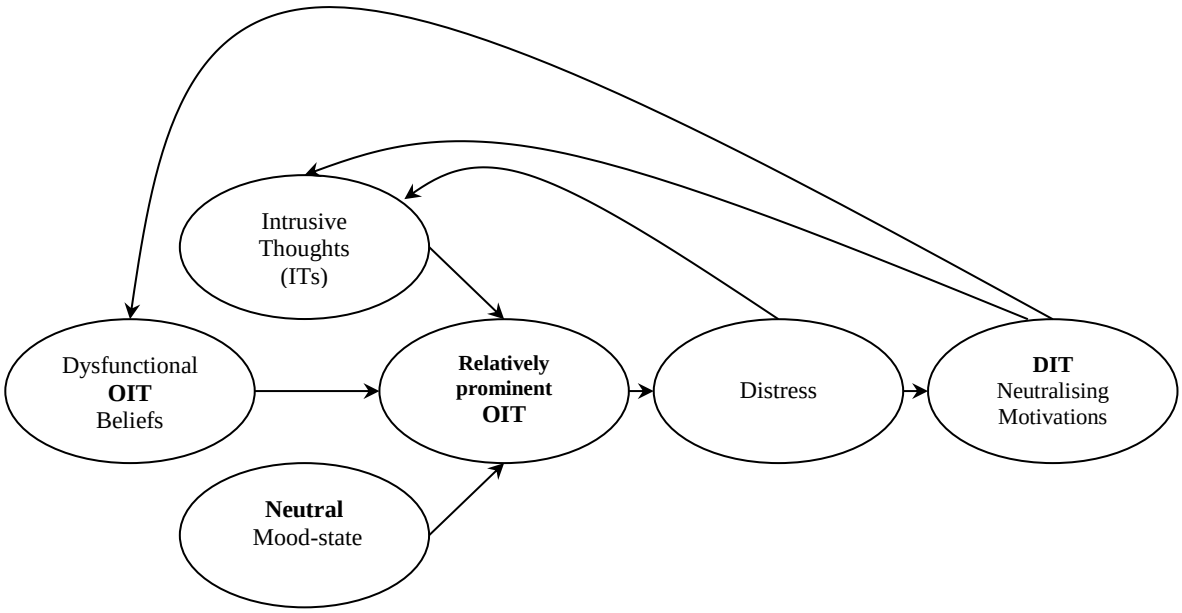

Figure 9. Cognitive-affective-behavioural conceptualisation of OCD in the case of neutral mood-state concurrent with intrusive thoughts

Chapter Two

Study Two: The Impact of Emotion Regulation Skills Training on Mood-State-Dependent Negative Appraisal and Neutralising Motivation Profiles

1. Introduction

Chapter one provided preliminary evidence that anxious and dysphoric mood-states differentially promote certain types of negative appraisals and neutralising motivations in response to an obsession-like thought. An important inference arising from these finding was that enhanced emotion regulation capacity may potentially attenuate the impact of negative mood-states, and thus translate to reductions in mood-state-dependent response patterns. Evidence of attenuation in negative appraisals and neutralising motivations associated with enhanced emotion regulation skills would have obvious treatment implications for OCD, identifying emotion regulation as a possible new pathway by which negative appraisals (and their impact in the pathogenesis and maintenance of the disorder) might be clinically addressed.

1.1 Emotion Regulation

The impact of emotion on cognition and behaviour was historically under-valued within the cognitive-behavioural tradition of psychology (Greenberg & Safran, 1987; Samoilov & Goldfried, 2000). Theorists in the early behaviourist tradition dismissed emotion as a causal entity, viewing it instead as a disruptive biological response, inaccessible to observation and control (Samoilov & Goldfried, 2000). Skinner (1953) for example, stated, "'emotions' are excellent examples of the fictional causes to which we commonly attribute behaviour" (p. 160). Emotion variables were also underplayed in early cognitive science, largely as a consequence of the inherent subtlety and complexity of the fuzzy category of emotion (Gardner, 1985). In the cognitive tradition, emotion was typically regarded as a by-product of cognition, and was often consigned to dependent variable status in cognitive-behavioural research investigating emotion dysregulation (Greenberg & Safran, 1987).

Emotions were historically viewed as passions that come and go, essentially of their own accord (Solomon, 1976). Modern approaches to emotion however, are

characterised by a growing appreciation that individuals do in fact exert considerable influence over their affective experience (Gross, 1998; Gross & John, 2003). The *emotion regulation* (ER) field of study, which emerged in the 1990's and identified ER as a potentially unifying function of diverse symptom presentations and problem behaviours (Gross & Munoz, 1995), explores how individuals experience, influence, control, and express their emotions (Frijda, 1996; Gross, 1998; Richards & Gross, 2000). Early ER literature explored the role of emotion regulation deficits in disorders including substance abuse disorder (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), post-traumatic stress disorder (Cloitre, 1998), generalised anxiety disorder (Mennin, Heimberg, Turk, & Fresco, 2002), and perhaps most notably, borderline personality disorder (Linehan, 1993). The rise of emotion regulation coincided with (and in many cases catalysed) the emergence of "third wave" psychological therapies (Hayes, 2004) including acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999, 2012), mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990), mindfulness-based cognitive therapy (MBCT; Roemer & Orsillo, 2002; Segal, Williams, & Teasdale, 2002), and dialectical behaviour therapy (DBT; Linehan, 1993). Therapeutic enhancement of emotion regulation skills is central in each of these treatment modalities (Mennin, 2005).

Despite increased interest in emotion regulation around the turn of the millennium, researchers nevertheless continued to identify a general paucity of investigation regarding the role of emotion regulation deficits in the pathogenesis and maintenance of adult clinical problems (e.g., Gratz & Roemer, 2004). Likely contributing to this lack of research was a bifurcation in theoretical conceptualisations of emotion regulation (Gratz & Roemer, 2004). Some conceptualisations focused on the reduction of emotional arousal, and control of emotional experience and expression, in emotion regulation (e.g., Cortez & Bugental, 1994; Garner & Spears, 2000; Kopp,

1989; Zeman & Garber, 1996). In contrast, other conceptualisations focused on the functional nature of emotions, proposing that emotional control and immediately diminishing negative affect are not essential components of emotion regulation (e.g., Cole, Michel, & Teti, 1994; Thompson, 1994). A key proposition of this second model is that deficits in individuals' capacity to experience, differentiate, and respond spontaneously to the full breadth of human emotions may be equally as dysfunctional as deficits in individuals' capacity to attenuate and modulate intense negative affect (Cole et al., 1994; Gross & Munoz, 1995; Paivio & Greenberg, 1998).

It was this second model of emotion regulation, the model emphasising the function of emotions (highlighting the importance of accepting and valuing emotional experience) as opposed to the control of emotions, which received support in the research literature. Stewart, Zvolensky, and Eifert (2002), for example, provided empirical support for Hayes and colleagues' (1996) theory that avoidance of unwanted thoughts and feelings underlies many psychological disorders. Further, tendency to constrict emotional expression and experimental instructions to conceal emotional expression were both associated with increased physiological arousal (Notarius & Levenson, 1979; Gross & Levenson, 1997). This suggested that efforts to control emotional expression may in fact increase the likelihood of emotion dysregulation given that higher levels of arousal are generally more difficult to regulate (e.g., Eisenberg, Cumberland, & Spinrad, 1998; Flett, Blankstein, & Obertynski, 1996). Consistent with these results, researchers demonstrated that the tendency to experience negative affect in response to one's own emotional experiences (indicating lack of emotional acceptance) is dysfunctional and associated with increased difficulties with emotion regulation (Cole et al., 1994; Hayes et al., 1999; Paivio & Greenberg, 1998). Together, this literature suggested that there may be paradoxical, dysregulating effects associated with attempts to control, rather than accept, emotional experience and expression.

From this research platform, modern conceptualisations of emotion regulation developed to encompass numerous elements of the regulatory process, including awareness and understanding of emotions, acceptance of emotional experience, consistency between behaviour, goals, and values in the face of emotional distress, and impulse control (Gratz & Roemer, 2004; Thompson and Calkins, 1996). Modern ER conceptualisations thus incorporate three inter-related concepts; mindfulness, experiential acceptance, and psychological flexibility. Mindfulness is an inherently difficult concept to define (Bishop et al., 2004). It is fundamentally experiential in nature and thus evades comprehensive definition by language alone (Fairfax, 2008). It is therefore perhaps not surprising that substantial differences exist among various definitions of mindfulness (Grossman, 2008). In a frequently cited early definition, Kabat-Zinn (1994) referred to mindfulness as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (p. 4). After reviewing definitions provided by numerous prominent authors, Baer (2003) concluded that "mindfulness is nonjudgmental observation of the ongoing stream of internal and external stimuli as they arise" (p.125). Experiential acceptance is a related but distinct concept, defined as "the developed capacity to fully embrace whatever is in the present moment" (p. 200, Sanderson & Linehan, 1999). Mikulas (2011) argues that acceptance is an attitude that is brought to mindfulness but is not an inherent aspect of mindfulness. Finally, psychological flexibility is a higher order emotion regulation concept which encompasses aspects of mindfulness and acceptance and is defined as the ability to fully contact the present moment (and the thoughts and feelings it contains) without needless defences, and, depending on what the situation affords, persisting in or changing behaviour in the pursuit of goals and values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Psychological flexibility is considered the core process of change in acceptance

and commitment therapy (Bluett, Homan, Morrison, Levin, & Twohig, 2014; Hayes et al., 2006, Hayes et al., 2012).

In summary, in modern conceptualisations of adaptive emotion regulation, the modulation of one's experience of emotions is emphasised instead of the eradication of certain "negative" emotions. Modulation is seen as pivotal in reducing the urgency associated with the emotion such that the person can control their behaviour, as opposed to controlling (or attempting to control) their emotion itself (Gratz & Roemer, 2004). This approach to emotion regulation therefore focuses on the capacity to inhibit inappropriate, impulsive (or compulsive) behaviours, and act in accordance with one's goals, even in the presence of strong negative mood-states (e.g., Linehan, 1993; Melnick & Hinshaw, 2000). This focus appears particularly pertinent in the OCD context, where developing sufferers' capacities to identify and choose new sets of responses to obsessions (and associated emotional distress) and resist engaging in compulsive neutralising behaviour (even in the face of intense fear, discomfort and anxiety), are among the principle goals of CBT for OCD.

1.2 Emotion Regulation and Obsessive-Compulsive Disorder

The relevance of emotion regulation to OCD is supported by numerous theoretical statements and an increasingly large and varied body of research evidence. The first, indirect suggestions that OCD sufferers experience difficulties with adaptive emotion regulation were provided by Rachman and de Silva (1978), McFall and Wollersheim (1979), and Rachman and Hodgson (1980) in the proposition that compulsive behaviour is the consequence of a lack of confidence in one's ability to tolerate and modulate the anxiety and uncertainty generated by obsessions (i.e., poor emotion regulation skills). In an experiment involving the presentation of emotion-eliciting films to individuals with significant obsessive-compulsive (OC) symptoms and non-anxious controls, Oltmanns and Gibbs (1995) found that individuals with OC

symptoms were more likely to attempt to control emotional reactions (e.g., suppress feelings of fear by laughing). In addition, significant positive relationships were reported between initial negative mood-state and smiling/laughing during the films. The authors concluded that poor emotion regulation skills (e.g., dysfunctional attempts at controlling emotional reactions) may be an essential component in the development of obsessions. More recently, Holoway & Heimberg (2003) found that individuals with OC symptoms reported significantly more fear of negative emotions and significantly less clarity about their emotions, compared with non-anxious controls. Additionally, poor psychological flexibility has been associated with increased OCD symptoms among adults and children (Abramowitz, Lackey, & Wheaton, 2009; Briggs & Price, 2009). Although not definitive, these findings are suggestive of the presence of deficits in the ability to manage and regulate emotional experience among OCD sufferers. Furthermore, Allen and Barlow (2009) provide evidence of positive associations between acquisition of enhanced emotion regulation skills and decreases in OC symptoms among OCD sufferers, underlining the potential utility of emotion regulation skills training in OCD treatment.

1.3 Emotion Regulation-Focused Psychological Therapies in the Treatment of OCD

1.3.1 Acceptance and Commitment Therapy

Further evidence for the relevance of emotion regulation to OCD arises from literature investigating the clinical utility of ER-focused psychological therapies in the treatment of OCD. A small but growing body of research literature has explored the effectiveness of acceptance and commitment therapy (ACT) for obsessive-compulsive and related disorders (e.g., trichotillomania and chronic skin picking). Results suggest that ACT can successfully reduce OCD symptoms (Twohig, 2009; Twohig, Hayes, & Masuda, 2006a; Twohig et al., 2010). ACT has also been shown to be effective in the

treatment of trichotillomania (Twohig & Woods, 2004; Woods, Wetterneck, &Flessner, 2006) and chronic skin picking (Twohig, Hayes, & Masuda, 2006b). In a recent meta-analysis of the effectiveness of ACT for anxiety and OCD spectrum disorders, Bluett and colleagues (2014) concluded that there is modest support for a unified ACT protocol with OCD and suggested that ACT should be considered a "viable second option" (p.620) in cases where CBT is refused or ineffective. However Ost (2014), in a systematic review and meta-analysis of ACT efficacy, evaluated the current status of the treatment as no more than "possibly efficacious" for OCD.

1.3.2 Mindfulness-Based Therapy

Mindfulness, as a treatment component in clinical medicine and psychology, first emerged in Kabat-Zinn's mindfulness-based stress reduction (MBSR) program developed in the contexts of stress and pain management (Kabat-Zinn, 1982, 1990; Kabat-Zinn & Chapman-Waldrop, 1988; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Lipworth, Burney, & Sellers, 1986; Kabat-Zinn et al., 1992). Mindfulness has since been incorporated within numerous third generation therapies including ACT (Hayes et al., 1999), dialectical behaviour therapy for borderline personality disorder (Linehan, 1993), and mindfulness-based cognitive therapy (MBCT) for depression (Segal et al., 2002) and generalized anxiety disorder (Roemer & Orsillo, 2002).

The incorporation of mindfulness into CBT for OCD met with some initial concerns related to the potential for mindfulness to become a neutralising behaviour and thus prevent successful exposure with response prevention therapy (e.g., Freeston, 2006). A recent exploration of the application and integration of mindfulness to existing OCD treatment suggested however, that "far from undermining the process [of CBT for OCD], mindfulness compliments or even enhances it" (p. 57, Fairfax, 2008). Nevertheless, meta-analyses investigating the effectiveness of mindfulness-based therapy reveal that, while it is supported as a treatment for anxiety, depression, and

stress (Chiesa & Serretti, 2011; Hofmann, Sawyer, Witt, & Oh, 2010; Khoury et al., 2013; Piet & Hougaard, 2011) its effectiveness as a treatment for OCD has yet to be empirically tested. Clinical integration of mindfulness-based therapy and CBT in the OCD context has however, already commenced (e.g., Hershfield & Corboy, 2013), portending that empirical testing may be imminent. Among other clinical applications, mindfulness-based interventions show potential for curbing the high treatment attrition rates observed in CBT for OCD. Recent meta-analytic findings demonstrate consistently lower attrition rates in mindfulness-based therapy studies (16.25%) compared with cognitive and behavioural studies (22.5%; Khoury et al, 2013). Overall, the aforementioned literature provides growing support for the relevance and effectiveness of emotion regulation-based approaches to the treatment of OCD. Nevertheless, in the limited empirical testing that has been conducted, ER-based interventions have thus far failed to demonstrate superior effectiveness to existing cognitive-behavioural treatment (e.g., Ruiz, 2012). Further investigation and development of ER-based approaches to OCD appears warranted.

1.4 The Relationship between Emotion Regulation and Negative Appraisal in OCD

Improvements in the effectiveness of ER-based interventions for OCD are likely to be associated with further advances in our understanding of the underlying mechanisms of change in ER and crucially, how such mechanisms function in relation to specific OCD symptoms. Results reported in the previous chapter provide preliminary evidence that mood-states differentially impact key OC symptoms including negative appraisal and neutralising activity. These findings imply that one ER-related mechanism of symptom change (particularly in the OCD context) may be through the potential impact of enhanced emotion regulation on mood-state-dependent patterns in negative appraisals and neutralising motivations. Essentially, enhanced

regulation and modulation of negative mood-states may help to regulate and modulate negative appraisal and neutralising motivation processes. This proposition is supported by numerous authors who identify an inter-connection between regulatory processes across response domains. Dodge and Garber (1991) for example, propose that regulatory activity in one response domain (e.g., emotion regulation) may serve to modulate activation in another response domain (e.g., cognition). From this perspective, Mennin (2005) argues that "emotion regulation is both regulated by and is a regulator of other process such as cognition" (p. 41). Similarly, Cicchetti, Ackerman, and Izard (1995) identify the inter-coordination of the emotions and cognitive systems as a central component of emotion regulation, and Gross (1998), citing Solomon (1976), likens emotion regulation to a harmonious association between reason and the passions. This inter-relationship has also received support from investigations of the biological underpinnings of emotion which reveal multiple connections between the limbic system and the neocortex, suggesting a relational interdependence between emotion and cognition (e.g., Damasio, 1994, 2004; Davidson, Jackson & Kalin, 2000; LeDoux, 1998).

As a consequence of this inter-connection, coming into new, mindfully accepting relationships with one's emotions during emotion regulation skills training (ERST) may also translate to a transformed relationship with one's cognitions. Block-Lerner, Salters-Pedneault, & Tull (2005), for example, suggest that "bringing mindfulness and/or acceptance to our private experiences [e.g., thoughts and mood-states] may fundamentally alter our relationship to these phenomena" (p. 72). In the OCD context, this may translate to an attenuation of the impact of negative mood-states on appraisals and subsequent neutralising motivations. Essentially, enhanced capacity for awareness, acceptance, openness and flexibility in interpretations of, and responses to, unwanted mood-states and cognitions, may attenuate rigid, mood-state-dependent

processes and help break the links between negative mood-states, automatic (or intrusive) thoughts, and conditioned behavioural responses (Fairfax, 2008). In sum, ERST appears to display potential for attenuating pathogenic mood-state-dependent processes in the OCD context. While traditional CBT includes relaxation strategies, potentially a mode of emotion regulation, evidence of ER-related attenuation in mood-state-dependent appraisals and neutralising motivations would hint at the possibility of new treatment gains for OCD sufferers, beyond those of traditional CBT. To date, no research has conducted a fine-grained analysis of the impact of augmented emotion regulation skills training on negative appraisals and neutralising motivations.

1.5 Aims and Hypotheses

In an effort to enhance current understanding of the cognitive-affective nexus of OCD, the current study re-tests the mood-state-dependent appraisal and neutralising motivation hypotheses and patterns of results reported in chapter one via assessment of the replicability of those findings with a new, larger sample. In addition, the current study extends the initial study by investigating the utility of augmented emotion regulation skills training (ERST) as a means of attenuating the impact of negative mood-states on appraisal and neutralising motivations in relation to a provoked obsession-like thought. The current study thus attempts to provide a link between ER-based approaches to psychological treatment and the cognitive processes that have dominated contemporary cognitive-behavioural conceptualisations of OCD.

1.5.1 Mood and Appraisal Hypotheses

It was expected that enhanced emotion regulation skills would result in reduced OET appraisals among anxious mood-induced participants receiving emotion regulation skills training (ERST) compared with anxious mood-induced participants receiving no ERST. It was expected that this attenuation would be specific to anxious participants (i.e., it would not be observed in relation to OET appraisals for the ERST and no ERST

groups of neutral and dysphoric participants). It was expected that enhanced emotion regulation skills would result in reduced inflated responsibility appraisals among dysphoric mood-induced participants receiving ERST compared with dysphoric mood-induced participants receiving no ERST. It was expected that this attenuation would be specific to dysphoric participants. In contrast, it was expected that OIT appraisal endorsement would be equivalent between ERST and no ERST participants in each of the mood-induction conditions.

1.5.2 Mood and Neutralising Strategies and Motivations Hypotheses

It was expected that enhanced emotion regulation skills would result in a smaller proportion of total endorsed neutralising motivations in relation to the reduce threat (RT) motivation among anxious mood-induced participants receiving ERST compared with anxious mood-induced participants receiving no ERST. It was expected that this attenuation would be specific to the anxious participants (i.e., it would not be observed in relation to RT motivations for the ERST and no ERST groups of neutral and dysphoric participants). It was expected that enhanced emotion regulation skills would result in a smaller proportion of neutralising motivations in relation to the reduce sense of responsibility (RSR) motivation among dysphoric mood-induced participants receiving ERST compared with dysphoric mood-induced participants receiving no ERST. It was expected that this attenuation would be specific to dysphoric participants. In contrast, it was expected that endorsement of diminish importance of the thought (DIT) motivations would be equivalent between ERST and no ERST participants in each of the mood-induction conditions. Finally, it was expected that there would be equivalence in endorsement of neutralising strategies across the three strategy sub-categories (Change the Thought, Remove the Thought, and Ignore the Thought) between the ERST and no ERST groups, and between the anxious, neutral, and dysphoric mood-induced groups of participants.

2. Method

2.1 Participants

The participants were 154 students and 44 staff members from the Australian National University (N = 198). Participants ranged in age from 17 to 69 years (M = 25.04, SD = 11.11) and 73.7% were female. First year psychology students (n = 111) who volunteered received course credit in return for their participation. Participants arriving to Session 1 were randomly assigned to either the emotion regulation skills training (ERST; n = 99) or no training (No-ERST; n = 99) condition. When scheduling participation for Session 2, participants were randomly assigned to the anxious, neutral, or dysphoric mood-induction conditions (n = 66 for each condition). The final seven participants were assigned to specific conditions at Session 2 to ensure equivalent numbers in each group.

2.2 Materials

A brief (45-minute), single session (with additional home-based training), emotion regulation skills training (ERST) program was developed for the current study (the ERST booklet participants received during training is attached as Appendix H). The program was designed to promote emotion regulation and psychological flexibility skills and contained a mixture of psychoeducation and practical exercises derived from empirically validated "third-wave therapies" including dialectical behaviour therapy (DBT; Linehan, 1993), acceptance and commitment therapy (ACT; Hayes et al., 1999) and mindfulness-based therapies (i.e., MBSR; Kabat-Zinn, 1990, MBCT; Segal et al., 2002). Previous research demonstrates that brief ERST promotes emotion regulation skills, mental health, and positive treatment outcome (Berking et al., 2008).

The first elements of the ERST program were three exercises (i.e., "hooked and unhooked", "bad news radio", and "passengers on the bus") designed to promote mindfulness and acceptance of thoughts and emotions. These well-established exercises

were derived and adapted from within ACT (see Forsyth & Eifert, 2007; Hayes & Smith, 2005; Hayes et al., 1999). The next component of the ERST program was The Guest House poem by 13th Century Sufi mystic, Rumi (translated in Barks, Moyne, Arberry, & Nicholson, 1997). This poem crystallises the essence of mindfulness and experiential acceptance and stands in sharp contrast to the approach that many people take towards internal experiences, particularly those that are labelled "unwanted" (Block-Lerner et al., 2005). The Guest House has previously been incorporated in mindfulness-based therapeutic interventions (e.g., Roemer & Orsillo, 2002; Segal et al., 2002). Subsequent elements of the program were psychoeducation regarding the nature of emotions (adapted from McKay, Wood, & Brantley, 2007) followed by a psychological flexibility enhancement exercise involving the popular vase/lovers figure/ground illusion (based on a paradigm developed by Martin, 1997). The final components of the ERST program were psychoeducation regarding the nature of mindfulness and practical tips for meditation practice (adapted from Forsyth and Eifert, 2007) followed by a 20-minute guided mindfulness of thoughts and emotions meditation (adapted from Forsyth & Eifert, 2007; Kabat-Zinn, 1990; Williams, Teasdale, Segal, & Kabat-Zinn, 2007; see Appendix I). The mindfulness instructions were recorded to Compact Disc and provided to participants receiving ERST to facilitate ongoing diarized mindfulness practice during the 7-14 day intervening period between sessions 1 and 2.

2.3 Measures

2.3.1 Emotion Regulation and Cognitive Flexibility

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The 36-item DERS is a self-report measure designed to assess deficits in emotion regulation skills in six subscales. Only two of the subscales (i.e., "lack of emotional awareness" and "non-acceptance of emotional response") were surveyed in the current study. The

two utilised subscales constituted a 12-item instrument. Participants were asked to rate how often 12 statements regarding different cognitive, affective and behavioural responses to emotions applied to them using a five-point Likert-type scale from 1 (*Almost never/0-10%*) to 5 (*Almost always/91-100%*). Higher DERS scores indicate greater difficulties in emotion regulation. The DERS demonstrates good internal consistency in clinical (e.g., Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Gratz, Tull, Baruch, Bornovalova, & Lejuez, 2008) and non-clinical populations (e.g., Johnson et al., 2008; Neumann, van Lier, Gratz, & Koot, 2010) and good test-retest reliability (.88; Gratz & Roemer, 2004). Positive correlations reported between the DERS and measures of negative affect (Johnson et al., 2008; Roemer et al., 2009) and negative correlations with positive psychological constructs (e.g., Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Roemer et al., 2009) indicate that the DERS also has adequate convergent and discriminant validity. In addition, support for the utility of the DERS subscales is provided by studies showing that particular subscales are differentially associated with specific forms of psychopathology (e.g., Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; Tull, Barrett, McMillan, & Roemer, 2007).

Acceptance and Action Questionnaire – II (AAQ-II; Bond et al., 2011). The AAQ-II is a 7-item self-report measure designed to assess the construct of psychological inflexibility (i.e., rigid dominance of psychological responses over chosen values which occurs when individuals' attempt to avoid aversive internal experiences such as distressing thoughts or feelings; Bond et al., 2011). Participants were asked to rate the truth of 7 statements relating to psychological inflexibility, as they applied to them, on a seven-point Likert-type scale from 1 (*Never true*) to 7 (*Always true*). Higher AAQ-II scores reflect greater psychological inflexibility. The AAQ-II possesses good internal consistency (Cronbach's coefficient alphas ranging

from .78 to .88 across multiple studies and samples; Bond et al., 2011; Pennato, Berrocal, Bernini, & Rivas, 2013) and satisfactory 3-month (.81; Bond et al., 2011) and 12-month (.79; Bond et al., 2011, and .61; Pennato et al., 2013) test-retest reliability. Adequate concurrent, predictive, convergent and discriminant validity have also been reported for the AAQ-II (Bond et al., 2011; Pennato et al., 2013).

Cognitive Affective Mindfulness Scale – Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). The 10-item CAMS-R is a self-report measure designed to assess awareness, attention, present-focus and acceptance/non-judgement aspects of the mindfulness construct. Participants were asked to rate how much each of 10 statements regarding ways in which people relate to their thoughts and feelings applied to them on a four-point Likert-type scale from 1 (*Rarely/Not at all*) to 4 (*Almost always*). The CAMS-R has demonstrated acceptable internal consistency across samples (α = .81; Baer et al., 2006, α = .74 - .77; Feldman et al., 2007, α = .74; Siegling & Petrides, 2014) and evidence of convergent validity with other mindfulness measures (Feldman et al., 2007; Siegling & Petrides, 2014).

Cognitive Flexibility Scale (CFS; Martin & Rubin, 1995). The 12-item CFS is a self-report measure designed to assess cognitive flexibility (i.e., awareness of alternative ways of thinking and flexibility in cognitive responses; Martin & Rubin, 1995). Participants were asked to rate how much they agreed with 12 statements dealing with beliefs and feelings about behaviours on a six-point Likert-type scale from 1 (*Strongly disagree*) to 6 (*Strongly agree*). The CFS possesses adequate internal consistency (α = .81 - .86 across three samples; Johnco, Wuthrich, & Rapee, 2014, α = .72; Martin & Anderson, 1998, α = .76 - .77 across two samples; Martin & Rubin, 1995) and high test-retest reliability for 1-week (.83; Martin & Rubin, 1995). Studies have also provided evidence of construct, concurrent, and criterion-related validity (Martin and Anderson, 1998), and convergent validity (Johnco et al., 2014) for the CFS.

2.3.2 OCD Characteristics, Mood, Appraisal, and Neutralising Strategies and Motivations Measures

One of the main aims of the current study was to attempt to replicate the results observed in chapter one. As such, the same battery of assessment measures utilised in the study reported in chapter one was again employed in the Session 2 protocol of the current study. Specifically, baseline assessment of participants' OCD characteristics was facilitated using the Obsessive-Compulsive Inventory–Revised (OCI-R; Foa et al., 2002), an abridged version of the Obsessive Beliefs Questionnaire (OBQ; OCCWG, 1997, 2001) and a modified version of the Interpretation of Intrusions Inventory (III; OCCWG, 1997, 2001). Similarly, the same visual analogue scales utilised in the previous study to track changes in participants' mood-state (on anxious and dysphoric dimensions) and appraisals of an obsession-like thought in three domains (OET, inflated responsibility, and OIT) and the neutralising strategies inventory (NSI) and neutralising motivations inventory (NMI) were again utilised in the current study (refer to chapter one for detailed information regarding each of the measures listed above).

2.4 Procedure

The experimental protocol was ratified by the ANU Human Research Ethics Committee, and was conducted in small groups (range, 1 to 4 participants, mode = 3 participants). A summary of the experimental design is provided in figure 10. The protocol was divided into two one-hour sessions; a training/control protocol (Session 1) and an experimental protocol (Session 2). Participants encountered a 7 to 14 day intervening period between Session 1 and Session 2 protocols (mean = 11.8 days).

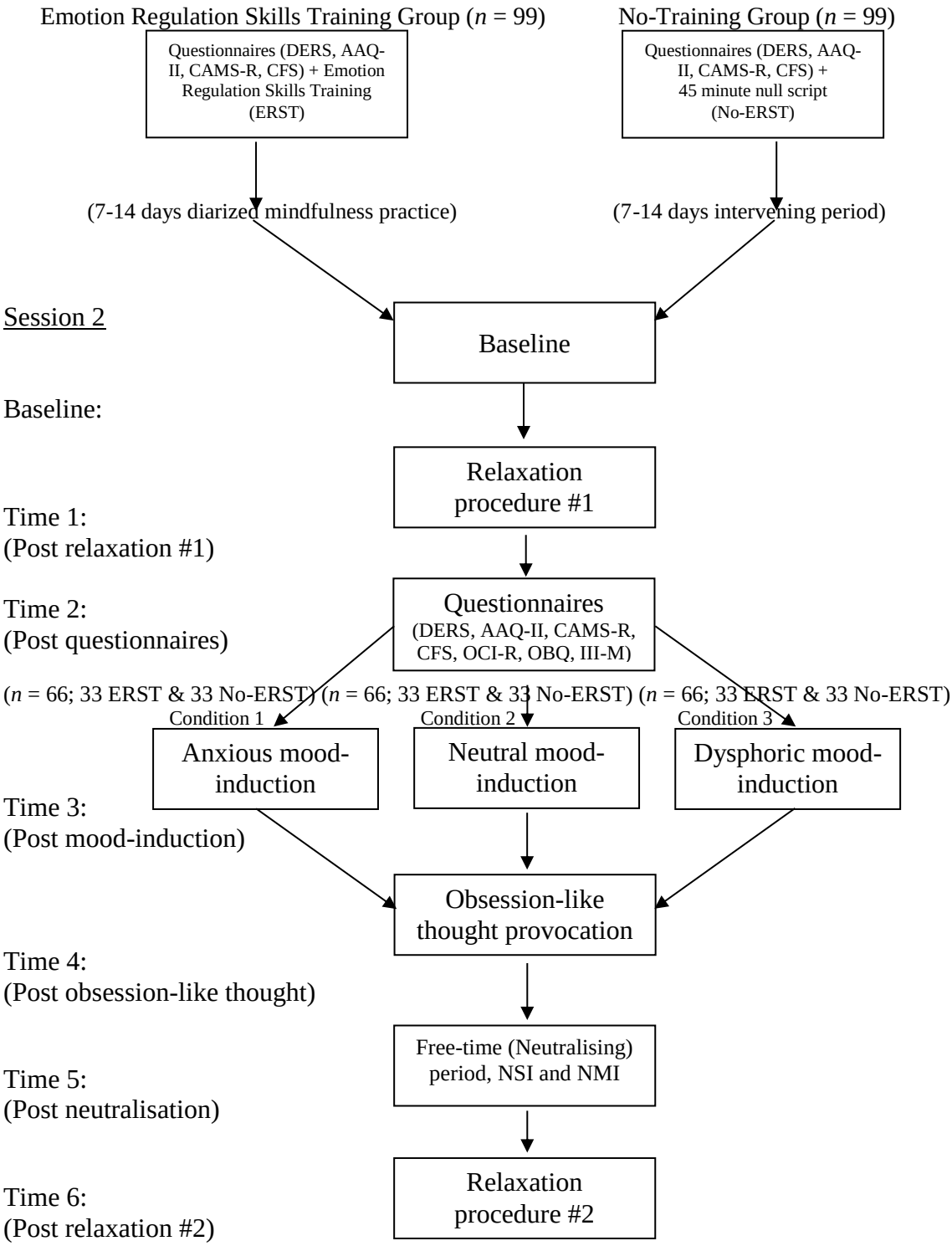

Figure 10. The experimental method (Study 2)

Participants commenced the Session 1 protocol by completing the emotion regulation questionnaires (i.e., DERS, AAQ-II, CAMS-R, and CFS) and answering two demographic questions regarding their age and gender. Next, participants assigned to

the emotion regulation skills training (ERST) condition, commenced the ERST program. The researcher guided the ERST participants through the psychoeducation and practical exercises contained in the ERST booklet (approximately 25 minutes). After completing the booklet, the ERST participants were guided through a 20-minute mindfulness of thoughts and emotions meditation. They subsequently received instructions and encouragement for diarised mindfulness practice (including provision of an instructional meditation Compact Disc) during the 1-2 week intervening period before undertaking the Session 2 protocol. Participants assigned to the No-ERST condition did not engage in the ERST program after completing the questionnaires but instead heard a 45-minute null script on the aerodynamic properties of Frisbees. The No-ERST group did not receive the meditation CD or instructions for mindfulness homework.

The Session 2 experimental protocol represented a replication of the protocol utilised in the study reported in chapter one (for details see chapter one). The only difference was the addition of the four emotion regulation measures in the questionnaire package between Time 1 and Time 2.

2.5 Planned Statistical analysis

2.5.1 Baseline Equivalence of Groups

A series of univariate analyses of variance (ANOVA) were conducted to assess Session 1 baseline equivalence for participants receiving emotion regulation skills training (ERST) and participants not receiving emotion regulation skills training (No-ERST) on measures of emotion regulation and psychological flexibility (i.e., DERS, AAQ-II, CAMS-R, CFS). A series of univariate ANOVA were also conducted to assess Session 2 baseline equivalence of participants assigned to the three mood groups (i.e., anxious, neutral and dysphoric, collapsed across the ERST and No-ERST conditions) in age, number of years studying psychology, anxiety, dysphoria, OCD-

relevant beliefs and appraisals, and OCD symptoms (prior to the mood-induction experimental manipulation). The equivalence of the sex distribution between the groups was assessed using Chi-Square analysis.

2.5.2 Experimental Manipulation Checks

The effect of the emotion regulation skills training (ERST) program was assessed using a series of four Time(pre-ERST/pre-No-ERST, post-ERST/post-No-ERST)×Group(ERST, No-ERST) ANOVA with planned paired-samples *t*-tests to assess changes in self-reported emotion regulation skills on the four ER measures (i.e., DERS, AAQ-II, CAMS-R, CFS). Additional Time(pre-ERST, post-ERST)×Mood (Anxious, Neutral, Dysphoric) ANOVA were used to assess engagement with mindfulness meditation homework among participants receiving the ERST.

The manipulation effect of the mood-induction procedures was assessed using three-way Time(Time 2, Time 3)×Group(ERST, No-ERST)×Mood(Anxious, Neutral, Dysphoric) ANOVA for mean anxiety and dysphoria ratings. The Tukey HSD test was used for post-hoc comparisons where appropriate. In addition, *t*-tests were used to assess within-group differences on the anxiety and dysphoria dimensions at Time 3 (post-mood-induction).

The manipulation effect of the obsession-like thought provocation procedure was checked using two three-way Time(Time 3, Time 4)×Group(ERST, No-ERST) ×Mood(Anxious, Neutral, Dysphoric) ANOVA to assess changes in participants' anxiety and dysphoria ratings. The Tukey HSD test was used for post-hoc comparisons where appropriate.

2.5.3 Comparative Analysis of Appraisal Ratings

Means and standard deviations were calculated for appraisal ratings in the three domains (i.e., OET, inflated responsibility, and OIT) for the three mood groups

(collapsed across ERST/No-ERST conditions) at Time 4. Three repeated measures ANOVA with planned comparisons were conducted to assess expected differences in appraisal ratings within each of the mood groups (collapsed across ERST conditions) following the obsession-like thought provocation procedure (Time 4). Between-groups ANOVA with planned comparisons were conducted to assess hypothesised mood group differences (collapsed across ERST conditions) on appraisal ratings for each of the three domains (i.e., OET, inflated responsibility, and OIT) following the obsession-like thought provocation (Time 4). Mean OET, inflated responsibility, and OIT appraisal ratings were also compared between ERST and No-ERST mood groups at Time 4 using a series of 9 one-tailed *t*-tests to directly test hypotheses predicting attenuation of mood-state-dependent appraisal patterns in the context of enhanced emotion regulation skills (i.e., in the ERST condition).

2.5.4 Comparative Analysis of Neutralising Strategies

A series of Chi-Square tests were used to determine whether the three mood groups (collapsed across ERST/No-ERST conditions) differed in participants' proportion of endorsement of Change the Thought, Remove the Thought, and Ignore the Thought neutralising strategies to respond to the obsession-like thought. Additional Chi-Square analyses tested differences between the two ERST groups (i.e., ERST and No-ERST, collapsed across mood conditions) in proportion of neutralising strategies used.

2.5.5 Comparative Analysis of Neutralising Motivations

A series of Mann-Whitney U tests were used to assess predicted differences between the three mood groups (collapsed across ERST/No-ERST conditions) in proportion of endorsed neutralising motivations in each of three neutralisation motivation categories (i.e., Reduce Threat, Reduce Sense of Responsibility, Diminish Importance of the Thought). Proportion of neutralising motivations endorsed in the

three categories was also compared between ERST and No-ERST mood groups using a series of nine one-tailed Mann-Whitney U tests to directly test hypotheses predicting attenuation of mood-state-dependent neutralising motivation patterns in the context of enhanced emotion regulation skills (i.e., in the ERST condition).

Where appropriate, tests of simple main effects were employed to clarify the source of significant interaction effects. A significance level of .05 was adopted for all tests. No adjustment was made for Type-I error since concerns in this regard needed to be weighed against concerns about Type-II error, relating to the moderate sample size. All analysis was conducted using SPSS version 22.0.

3. Results

3.1 Baseline Equivalence of Groups

The ERST and No-ERST groups did not differ significantly ($F_{(1, 97)} < 1$ in each instance) on baseline measures of emotion regulation skills (i.e., DERS, AAQ-II, CAMS-R, and CFS; see Table 5, below, for group means and standard deviations).

The Session 2 characteristics of the participants in the three mood groups (collapsed across ERST and No-ERST conditions) are displayed in Table 4. The three groups did not differ significantly ($F_{(2, 195)} < 1$ in each instance, see Table 4) on measures of age, number of years studying psychology, anxiety, dysphoria, clinical questionnaires, or sex distribution ($\chi^2 = .21$, $p = .90$) prior to the mood-induction experimental manipulations.

3.2 Experimental Manipulation Checks

3.2.1 Emotion Regulation Skills Training Effect

Table 5 displays group means and standard deviations on measures of emotion regulation skills (i.e., DERS, AAQ-II, CAMS-R, CFS) for the ERST and No-ERST groups at pre- and post-training time points. Participants' self-reported emotion

Table 4. Baseline characteristics of the three mood groups (Study 2)

Variable	Anxious Group *n* = 66 Mean	(SD)	Neutral Group *n* = 66 Mean	(SD)	Dysphoric Group *n* = 66 Mean	(SD)	Between-Group Differences $F_{(2,195)}$
Sex ratio (M:F)	16:50		18:48		18:48		
Age	26.3	(12.5)	24.9	(11.1)	24.0	(9.6)	.70
Psych. years	1.4	(1.5)	1.3	(1.4)	1.3	(1.3)	.07
Baseline anxiety	29.4	(19.7)	32.9	(21.1)	33.8	(22.1)	.80
Baseline dysphoria	17.9	(18.3)	20.4	(19.5)	20.4	(14.8)	.45
OBQ:							
OET	39.9	(15.3)	41.0	(19.0)	42.1	(16.1)	.28
Responsibility	62.1	(12.5)	61.6	(14.7)	60.4	(15.9)	.24
OIT	36.6	(12.5)	37.4	(15.2)	38.4	(14.7)	.26
III-M:							
OET	251.5	(167.0)	254.4	(216.7)	255.5	(173.9)	.01
Responsibility	337.0	(198.7)	336.7	(225.3)	349.6	(219.0)	.08
OIT	232.9	(178.7)	243.5	(194.4)	225.9	(156.6)	.17
OCI-R:							
Total	18.6	(12.0)	18.6	(11.4)	19.1	(12.0)	.04

Note: Psych. years = number of years spent studying psychology in a tertiary institution.
OBQ: OET/Responsibility/OIT = Obsessional-Beliefs Questionnaire /over-estimation of threat/ inflated responsibility/over-importance of thoughts subscale scores.
III-M: OET/Responsibility/OIT = Interpretation of Intrusions Inventory-Modified over-estimation of threat/ inflated responsibility/over-importance of thoughts/subscale scores.

Table 5. Pre- to post-emotion regulation skills training (ERST) manipulation check

Time×Group Measure	ERST Group *n* = 99 Pre-ERST Mean	(SD)	Post-ERST Mean	(SD)	No-ERST Group *n* = 99 Pre-No-ERST Mean	(SD)	Post-No-ERST Mean	(SD)	Interaction Effect $F_{(1,196)}$
DERS	30.9	(6.6)	26.5	(7.3)	30.6	(7.5)	30.9	(7.7)	54.27*
AAQ-II	34.5	(9.6)	30.0	(9.2)	33.3	(9.9)	33.2	(9.2)	36.77*
CAMS-R	30.9	(5.0)	33.8	(5.0)	31.2	(6.9)	31.6	(6.2)	32.70*
CFS	52.0	(7.5)	54.3	(6.8)	51.9	(9.8)	52.0	(8.6)	13.95*

Note: DERS = Difficulties in Emotion Regulation Scale total scores (higher scores indicate greater difficulties with emotion regulation).
AAQ-II = Acceptance and Action Questionnaire-II total scores (lower scores indicate greater experiential acceptance).
CAMS-R = Cognitive Affective Mindfulness Scale-Revised total scores (higher scores indicate greater cognitive and affective mindfulness)
CFS = Cognitive Flexibility Scale total scores (higher scores indicate greater cognitive flexibility)
*p<.001

regulation skills increased significantly from pre- to post-training (DERS: $F_{(1,196)}$ = 41.12, p < .001; AAQ-II: $F_{(1,196)}$ =39.88, p < .001; CAMS-R: $F_{(1,196)}$ = 48.79, p < .001; CFS: $F_{(1,196)}$ = 15.79, p < .001). Significant Time×Group interaction effects (p < .001 in all instances, F values displayed in Table 5) showed that the pre- to post-training

change was moderated by group membership (ERST versus No-ERST). Planned comparisons revealed that significant pre- to post-training improvement occurred in the ERST group (DERS: $t_{(1,98)} = 8.05$, $p < .001$; AAQ: $t_{(1,98)} = 7.69$, $p < .001$; CAMS: $t_{(1,98)} = 7.46$, $p < .001$; CFS: $t_{(1,98)} = 5.29$, $p < .001$), but not the No-ERST group (DERS: $t_{(1,98)} = .92$, $p = .36$; AAQ: $t_{(1,98)} = .21$, $p = .83$; CAMS: $t_{(1,98)} = 1.20$, $p = .23$; CFS: $t_{(1,98)} = .17$, $p = .86$) across all four emotion regulation measures.

For ERST participants, there was no mood group effect on reported engagement with mindfulness meditation homework ($F_{(2,96)} = 0.36$, $p = .70$), including use of an instructional mindfulness CD ($F_{(2,96)} = 0.27$, $p = .76$), during the 7-14 day diarised mindfulness practice period.

An overview of the impact of the various elements of the Session 2 experimental protocol on participants' ratings of anxiety and dysphoria is provided graphically in figures 11a and 11b.

3.2.2 Mood Induction Effects

The effect of the mood-inductions across the six groups (i.e., ERST anxious, No-ERST anxious, ERST neutral, No-ERST neutral, ERST dysphoric, and No-ERST dysphoric) can be seen in Figures11a (anxiety) and11b (dysphoria), between Time 2 and Time 3. Participants' self-reported anxiety ($F_{(5,192)} = 156.02$, $p < .001$) and dysphoria ($F_{(5,192)} = 256.01$, $p < .001$) mood ratings increased significantly between Time 2 and Time 3. Non-significant Time(Time 2, Time 3)×Group(ERST, No-ERST) interactions for anxiety ($F_{(5,192)} = .20$, $p = .65$) and dysphoria ($F_{(5,192)} = 0.68$, $p = .41$) indicated that changes in mood ratings between Time 2 and Time 3 did not differ between the ERST and No-ERST groups. Significant Time(Time 2, Time 3)×Mood(Anxious, Neutral, Dysphoric) interactions for anxiety ($F_{(5,192)} = 108.46$, $p < .001$) and dysphoria ($F_{(5,192)} = 162.33$, $p < .001$) indicated that the increase in participants' mood ratings between Time

2 and Time 3 differed significantly depending on which mood group participants belonged to.

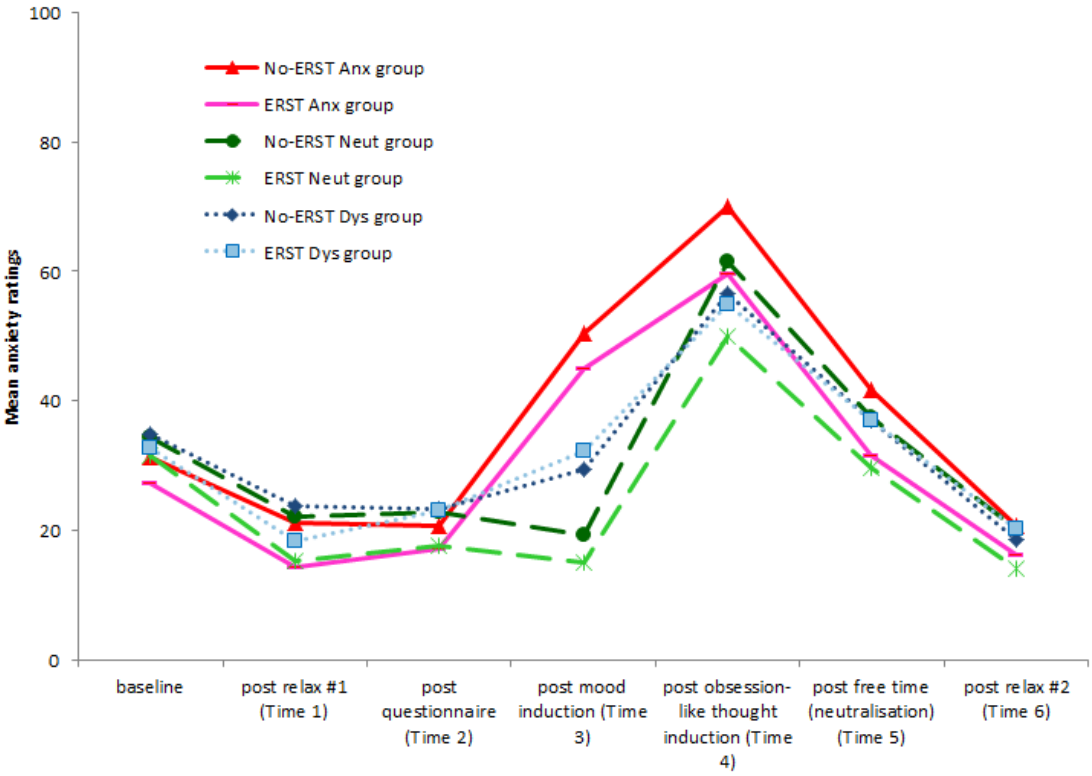

Figure 11a: Group means for VAS anxiety ratings across the seven assessment points

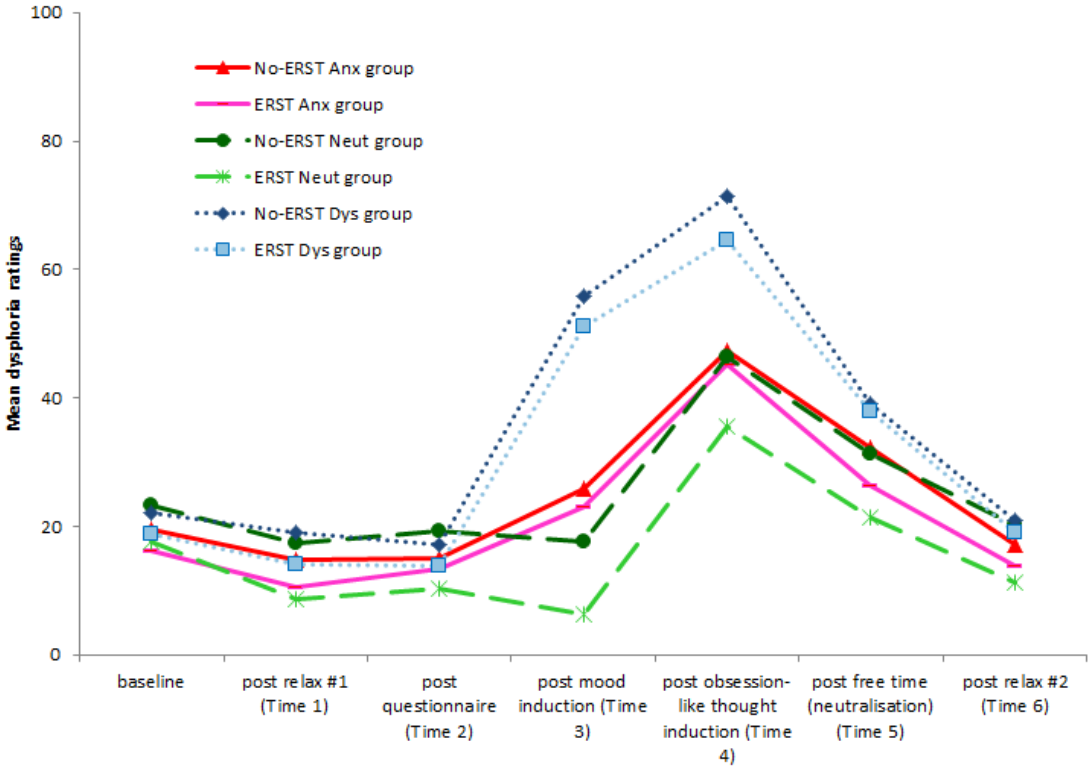

Figure 11b: Group means for VAS dysphoria ratings across seven assessment points

Post-hoc comparisons between the three mood groups (i.e., anxious, neutral, dysphoric, collapsed across ERST conditions) revealed that, prior to mood inductions (Time 2), groups did not differ significantly on ratings of anxiety ($F_{(2,195)} = .97$, $p = .38$) or dysphoria ($F_{(2,195)} = .11$, $p = .89$). Following the mood-inductions (Time 3), there were significant differences between the three groups for anxiety ($F_{(2,195)} = 42.22$, $p < .001$) and dysphoria ($F_{(2,195)} = 88.66$, $p < .001$). Further post-hoc comparisons (using the Tukey HSD test) at Time 3 revealed that mean anxiety ratings were significantly higher for the anxious group than the dysphoric group (*MD* = 16.85, *SE* = 3.33; $p < .001$) or the neutral group (*MD* = 30.52, *SE* = 3.33; $p < .001$). The dysphoric group's mean anxiety ratings were significantly higher than the neutral group's (*MD* = 13.67, *SE* = 3.33; $p < .001$). Mean dysphoria ratings were significantly higher for the dysphoric group than the anxious group (*MD* = 29.09, *SE* = 3.21; $p < .001$) or the neutral group (*MD* = 41.65, *SE* = 3.21; $p < .001$). The anxious group's mean dysphoria ratings were significantly higher than the neutral group's (*MD* = 12.56, *SE* = 3.21; $p < .001$). Non-significant three-way interactions were observed for anxiety ($F_{(5,192)} = 0.68$, $p = .51$) and dysphoria ($F_{(5,192)} = .05$, $p = .95$).

Within the anxious group, mean anxiety ratings were significantly higher than mean dysphoria ratings at Time 3 ($t = 10.95$, $p < .001$). Within the dysphoric group, mean dysphoria ratings were significantly higher than mean anxiety ratings at Time 3 ($t = 9.73$, $p < .001$). Within the neutral group, mean anxiety ratings were significantly higher than mean dysphoria ratings at Time 3 ($t = 3.20$, $p <. 005$). Overall, these results suggest that the mood-induction procedures successfully differentiated the groups on anxious, dysphoric, and neutral mood dimensions.

3.2.3 Obsession-Like Thought Provocation Effect

The effect of the obsession-like thought provocation across the six groups (i.e., ERST anxious, No-ERST anxious, ERST neutral, No-ERST neutral, ERST dysphoric,

and No-ERST dysphoric) can be seen in Figures11a (anxiety) and11b (dysphoria), between Time 3 and Time 4. Participants' self-reported anxiety ($F_{(5,192)} = 556.36$, $p < .001$) and dysphoria ($F_{(5,192)} = 297.81$, $p < .001$) mood ratings increased significantly between Time 3 and Time 4.

The Time(Time 3, Time 4)×Group(ERST, No-ERST) interaction was significant for anxiety ($F_{(5,192)} = 6.16$, $p = .01$), indicating that increases in anxiety ratings between Time 3 and Time 4 differed significantly between the ERST and No-ERST groups. Post hoc *t*-tests revealed there were no significant differences for anxiety ratings between the ERST and No-ERST groups at Time 3 ($t = .69$, $p = .49$), but there were significant differences at Time 4 ($t = 2.29$, $p = .02$), with the No-ERST group ($M = 62.73$, $SD = 26.62$) endorsing higher anxiety ratings than the ERST group ($M = 54.86$, $SD = 21.47$). The Time(Time 3, Time 4)×Group(ERST, No-ERST) interaction was not significant for dysphoria ($F_{(5,192)} = .02$, $p = .90$), indicating that increases in dysphoria ratings between Time 3 and Time 4 did not differ significantly between the ERST and No-ERST groups.

Significant Time(Time 3, Time 4)×Mood(Anxious, Neutral, Dysphoric) interactions were observed for anxiety ($F_{(5,192)} = 30.40$, $p < .001$) and dysphoria ($F_{(5,192)} = 11.06$, $p < .001$), indicating that increases in participants' negative mood ratings between Time 3 and Time 4 differed significantly depending on which mood group they belonged to. Post-hoc comparisons to clarify the significant interaction on the anxiety dimension indicated that the mean difference between anxiety ratings at Time 3 and Time 4 for the anxious group was significantly different from (i.e., lower than) the dysphoric group ($MD = 12.99$, $SE = 3.52$; $p < .005$) and the neutral group ($MD = 19.80$, $SE = 3.52$; $p < .001$). Increases in the neutral and dysphoric groups' anxiety ratings did not differ significantly ($p = .13$). Post-hoc comparisons to clarify the significant interaction on the dysphoria dimension indicated that the mean difference between

dysphoria ratings at Time 3 and Time 4 for the dysphoric group was significantly lower than the anxious group (*MD* = 25.42, *SE* = 3.61; $p < .001$) and the neutral group (*MD* = 34.38, *SE* = 3.61; $p < .001$). The mean difference between dysphoria ratings was significantly lower for the neutral group than the anxious groups (*MD* = 8.95, *SE* = 3.61; $p = .04$). Non-significant three-way interactions were observed for anxiety ($F_{(5,192)} = .17$, $p = .85$) and dysphoria ($F_{(5,192)} = .11$, $p = .89$).

3.3 Comparative Analysis of Appraisal Ratings

Table 6 reports the means and standard deviations for appraisal ratings for the three mood groups (collapsed across ERST/No-ERST conditions) at Time 4 (i.e., post-obsession-like thought provocation). Within-groups analyses across the three appraisal domains revealed significant differences between appraisal ratings for the anxious group ($F_{(1,65)} = 36.16$, $p < .001$) at Time 4. Planned comparisons showed that for the anxious group, OET ratings were significantly higher than inflated responsibility ratings (*MD* = 17.14, *SE* = 4.79; $p = .002$) and OIT ratings (*MD* = 37.29, *SE* = 4.38; $p < .001$). For the anxious group, inflated responsibility ratings were also significantly higher than OIT ratings (*MD* = 20.15, *SE* = 4.50; $p < .001$). There were significant differences between appraisal ratings for the dysphoric group ($F_{(1,65)} = 17.07$, $p < .001$) at Time 4. Planned comparisons showed that for the dysphoric group, inflated responsibility ratings were significantly higher than OET ratings (*MD* = 25.52, *SE* = 8.32; $p = .009$) and OIT ratings (*MD* = 36.09, *SE* = 6.77; $p < .001$). There were no significant differences between appraisal ratings at Time 4 for the neutral group ($p > .05$).

Between-groups analyses assessing each of the appraisal domains revealed statistically significant differences between the mood groups (collapsed across ERST/No-ERST conditions) in relation to OET appraisals ($F_{(2,195)} = 6.99$, $p = .001$) and inflated responsibility appraisals ($F_{(2,195)} = 4.39$, $p = .01$) but not OIT appraisals ($F_{(2,195)} = 1.81$, $p = .17$) at Time 4. Planned contrasts revealed that the anxious group reported

significantly more OET appraisals than the dysphoric group (t = 2.69, p = .008) and the dysphoric and neutral groups combined (t = 3.63, p < .001). Whereas the dysphoric group reported significantly more inflated responsibility appraisals than the anxious group (t = 2.45, p = .02) and the anxious and neutral groups combined (t = 2.95, p = .004).

Table 6. Group means and standard deviations (SDs) for VAS ratings in the three appraisal domains at Time 4

Appraisal Domain	**Anxious Group** n = 66 Mean	(SD)	**Neutral Group** n = 66 Mean	(SD)	**Dysphoric Group** n = 66 Mean	(SD)
OET	93.79	(41.21)	67.68	(40.43)	74.24	(43.47)
Responsibility	76.65	(52.33)	74.67	(56.25)	99.76	(53.69)
OIT	56.50	(40.68)	71.86	(51.45)	63.67	(46.66)

Note: **Appraisal Domain:** OET/Responsibility/ OIT = Visual analogue scale over-estimation of threat/inflated responsibility/ over-importance of thoughts subscale scores.

Analyses of ERST versus No-ERST mood group differences (i.e., ERST anxious vs. No-ERST anxious, ERST neutral vs. No-ERST neutral, ERST dysphoric vs. No-ERST dysphoric) in negative appraisals at Time 4 showed that appraisals were less strong in the ERST anxious group compared with the No-ERST anxious group in relation to OET appraisals (t = 1.99, p = .03; ERST anxious group M = 83.94, SD = 39.65, No-ERST anxious group M = 103.64, SD = 40.97) but not inflated responsibility appraisals (t = 1.46, p = .08; ERST anxious group M = 67.33, SD = 51.69, No-ERST anxious group M = 85.97, SD = 52.07) or OIT appraisals (t = 1.42, p = .09; ERST anxious group M = 52.52, SD = 39.24, No-ERST anxious group M = 60.48, SD = 40.68). No significant differences were observed in negative appraisals between the dysphoric groups for OET appraisals (t = .32, p = .38; ERST dysphoric group M = 72.55, SD = 29.10, No-ERST dysphoric group M = 75.94, SD = 54.64), inflated responsibility appraisals (t = 1.76, p = .09; ERST dysphoric group M = 91.30, SD = 24.79, No-ERST dysphoric group M = 108.21, SD = 71.80) or OIT appraisals (t = .55, p

= .29; ERST dysphoric group *M* = 60.48, *SD* = 44.92, No-ERST dysphoric group *M* = 66.85, *SD* = 48.83). There were no significant differences in negative appraisals between the neutral groups (OET appraisals: $t = 1.39$, $p = .09$; ERST neutral group *M* = 60.82, *SD* = 40.95, No-ERST neutral group *M* = 74.55, *SD* = 39.31; inflated responsibility appraisals: $t = .05$, $p = .48$; ERST neutral group *M* = 74.30, *SD* = 57.25, No-ERST neutral group *M* = 75.03, *SD* = 56.13; OIT appraisals: $t = 1.40$, $p = .08$; ERST neutral group *M* = 63.09, *SD* = 52.77, No-ERST neutral group *M* = 80.64, *SD* = 49.33).

3.4 Comparative Analysis of Neutralising Strategies

Table 7 presents the total number (or frequency) of times that participants in the three mood groups (collapsed across ERST/No-ERST conditions) reported using neutralising strategies in the three sub-categories (i.e., Change the Thought, Remove the Thought, and Ignore the Thought). The table also displays the proportion of endorsement of each strategy sub-category relative to the total number of strategies selected within each group. Results revealed no mood group differences in proportion of strategy selection across the Change the Thought, Remove the Thought, and Ignore the Thought neutralising strategy sub-categories ($\chi^2 = 10.12$, $p = .26$; $\chi^2 = 3.40$, $p = .91$; and $\chi^2 = 1.9$, $p = .75$; respectively).

Table 7. Frequency and proportion of endorsed neutralising strategies in the three mood groups (collapsed across ERST/No-ERST conditions)

	Anxious Group *n* = 66		**Neutral Group** *n* = 66		**Dysphoric Group** *n* = 66	
	Frequency	Proportion	Frequency	Proportion	Frequency	Proportion
Neutralising Strategy						
Change	52	(38.2%)	45	(36.0%)	47	(35.3%)
Remove	50	(36.8%)	42	(33.6%)	48	(36.1%)
Ignore	34	(25.0%)	38	(30.4%)	38	(28.6%)

Note: **Neutralising Strategy:** Change/Remove/Ignore = Neutralising Strategies Inventory (NSI) Change the Thought/Remove the Thought/Ignore the Thought neutralising strategy subcategories.

Table 8 presents the frequency and proportion of neutralising strategy selection for participants in the two ERST groups (i.e., ERST and No-ERST, collapsed across mood conditions) in the three neutralising strategy sub-categories (i.e., Change the Thought, Remove the Thought, and Ignore the Thought). No significant ERST versus No-ERST group differences were observed in proportion of neutralising strategies selected in the Change the Thought ($\chi^2 = .41$, $p = .52$) or Remove the Thought ($\chi^2 = .88$, $p = .35$) subcategories. A significant group difference was observed however in relation to the Ignore the Thought ($\chi^2 = 16.04$, $p < .001$) neutralising strategy subcategory, with 69.7% of the ERST group endorsing the Ignore the Thought strategy, compared with 41.4% of the No-ERST group.

Table 8. Frequency and proportion of endorsed neutralising strategies in the ERST and No-ERST groups (collapsed across mood conditions)

	ERST Group *n* = 99		**No-ERST Group** *n* = 99	
	Frequency	Proportion	Frequency	Proportion
Neutralising Strategy				
Change	70	(34.0%)	74	(39.4%)
Remove	67	(32.5%)	73	(38.8%)
Ignore	69	(33.5%)	41	(21.8%)

Note: **Neutralising Strategy:** Change/Remove/Ignore = Neutralising Strategies Inventory (NSI) Change the Thought/Remove the Thought/Ignore the Thought neutralising strategy subcategories.

3.5 Comparative Analysis of Neutralising Motivations

Table 9 presents the total number (or frequency) of times that participants in the three mood groups (collapsed across ERST/No-ERST conditions) reported using particular neutralising motivations across the three motivation categories (i.e., Reduce Threat, Reduce Sense of Responsibility, Diminish Importance of the Thought). The table also displays the proportion of endorsement of each motivation category relative to the total number of motivations selected within each group.

Table 9. Frequency and proportion of endorsed neutralising motivations in the three mood groups (collapsed across ERST/No-ERST conditions)

	Anxious Group *n* = 66		**Neutral Group** *n* = 66		**Dysphoric Group** *n* = 66	
	Frequency	Proportion	Frequency	Proportion	Frequency	Proportion
Neutralising Motivation						
RT	106	(43.5%)	76	(32.5%)	90	(33.1%)
RSR	54	(22.1%)	66	(28.2%)	104	(38.2%)
DIT	84	(34.4%)	92	(39.3%)	78	(28.7%)

Note: **Neutralising Motivation:** RSR/RT/DIT/RA/RD = Neutralising Motivations Inventory (NMI) Reduce Sense of Responsibility/Reduce Threat/Diminish Importance of the Thought/Reduce Anxiety/Reduce Dysphoria neutralising motivation categories.

Significant differences were observed among the three mood groups in proportion of neutralising motivation endorsement for all three motivation categories. The anxious group reported a significantly larger proportion of reduce threat (RT) neutralising motivations in response to the obsession-like thought than the combined dysphoric and neutral group ($Z = 4.79$, $p < .001$; anxious group $M = 43.5\%$, $SD = 27.3$, dysphoric/neutral group $M = 32.8\%$, $SD = 21.4$). The dysphoric group reported a significantly larger proportion of reduce sense of responsibility (RSR) neutralising motivations than the combined anxious and neutral group ($Z = 5.58$, $p < .001$; dysphoric group $M = 38.2\%$, $SD = 23.7$, anxious/neutral group $M = 25.2\%$, $SD = 23.4$). The neutral group reported a significantly larger proportion of Diminish Importance of the Thought (DIT) neutralising motivations than the combined anxious and dysphoric group ($Z = 3.71$, $p < .001$; neutral group $M = 39.3\%$, $SD = 28.9$, anxious/dysphoric group $M = 31.6\%$, $SD = 22.4$).

Table 10 presents the total number (or frequency) of times that participants in the six mood groups (i.e., ERST anxious, ERST neutral, ERST dysphoric, No-ERST anxious, No-ERST neutral, No-ERST dysphoric) reported using particular neutralising motivations across the three motivation categories (i.e., Reduce Threat, Reduce Sense of Responsibility, Diminish Importance of the Thought). The table also displays the

proportion of endorsement of each motivation category relative to the total number of motivations selected within each group.

Table 10. Frequency (*F.*), proportion (*P.*), and standard deviation (SD) of endorsed neutralising motivations in the six mood groups

	ERST Anxious *n* = 33			**ERST Neutral** *n* = 33			**ERST Dysphoric** *n* = 33		
	F.	*P.*	(SD)	*F.*	*P.*	(SD)	*F.*	*P.*	(SD)
Neutralising Motivation									
RT	45	38.3%	(26.8)	39	31.7%	(20.8)	46	35.7%	(19.2)
RSR	28	23.9%	(19.5)	32	26.0%	(22.9)	41	31.8%	(24.8)
DIT	44	37.6%	(22.4)	52	42.3%	(31.1)	42	32.5%	(19.0)
	No-ERST Anxious *n* = 33			**No-ERST Neutral** *n* = 33			**No-ERST Dysphoric** *n* = 33		
	F.	*P.*	(SD)	*F.*	*P.*	(SD)	*F.*	*P.*	(SD)
Neutralising Motivation									
RT	62	48.8%	(27.6)	37	33.3%	(20.2)	41	30.8%	(24.2)
RSR	26	20.5%	(18.9)	33	29.8%	(24.4)	59	44.4%	(21.9)
DIT	39	30.7%	(19.3)	41	36.9%	(26.5)	33	24.8%	(24.8)

Note: **Neutralising Motivation:** RSR/RT/DIT/RA/RD = Neutralising Motivations Inventory (NMI) Reduce Sense of Responsibility/Reduce Threat/Diminish Importance of the Thought/Reduce Anxiety/Reduce Dysphoria scores.

Analysis of the impact of ERST on motivations to neutralise revealed significant reductions in the strength of mood-state-dependent neutralising motivations in the ERST anxious and dysphoric groups. The ERST anxious group (M = 38.3%, SD = 26.8) reported a significantly smaller proportion of reduce threat (RT) neutralising motivations (Z = 1.74, p = .04) compared with the No-ERST anxious group (M = 48.8%, SD = 27.6). There were no significant differences between the neutral groups (Z = .50, p = .31) or dysphoric groups (Z = 1.53, p = .06) in proportion of RT motivations. The ERST dysphoric group (M = 31.8%, SD = 24.8) reported a significantly smaller proportion of Reduce Sense of Responsibility (RSR) neutralising motivations (Z = 1.94, p = .03) compared with the No-ERST dysphoric group (M = 44.4%, SD = 21.9). There were no significant differences between the anxious groups (Z = .34, p = .37) or neutral

groups (Z = .62, p = .27) in proportion of RSR motivations. There were no significant differences between the ERST and No-ERST anxious groups (Z = 1.27, p = .10), neutral groups (Z = .40, p = .35), or dysphoric groups (Z = .59, p = .26) in proportion of Diminish Importance of the Thought (DIT) motivations.

4. Discussion

Results provided further evidence in support of hypotheses regarding the differential impact of specific mood-states on appraisal processes and neutralising activity. As in chapter one, mood-state-dependent patterns of responses were evident in relation to participants' negative appraisals of an obsession-like thought and their motivations for neutralising behaviour. In addition, investigation of the impact of emotion regulation skills training yielded results suggestive of ERST-related attenuation in mood-state-dependent appraisal and neutralising processes.

4.1 Comparative Analysis of Appraisal Ratings

4.1.1 Replication of Mood and Appraisal Findings

Utilising a larger sample, the current results replicated the findings reported in chapter one in relation to the differential impact of specific mood-states on negative appraisals in response to an obsession-like thought. Results reiterated that different mood-states appear to impact on the availability and salience of specific types of negative appraisals, engendering mood-state-dependent appraisal profiles. Specifically, as expected, among participants who underwent anxious mood-induction (collapsed across ERST conditions), endorsement of OET appraisals was significantly higher than endorsement of inflated responsibility or OIT appraisals. The finding of a significant difference between OET and inflated responsibility appraisals for the anxious participants was particularly noteworthy as this comparison had failed to reach statistical significance (p = .09) in the study reported in chapter one.

Significant differences were also observed between appraisal ratings for the dysphoric mood-induced group (collapsed across ERST conditions). As expected, among the dysphoric participants, endorsement of inflated responsibility appraisals was significantly higher than endorsement of OET and OIT appraisals. The finding of a significant difference between inflated responsibility and OET appraisals for the dysphoric participants was again noteworthy as this comparison failed to reach statistical significance ($p = .08$) in the study reported in chapter one. As predicted, among the neutral mood-induced participants (collapsed across ERST conditions), no significant differences were observed among the three appraisal domains. Together, these findings provide additional evidence for the mood-state-dependent activation of OET and inflated responsibility appraisals and the relatively mood-independent nature of OIT appraisals. OET appraisals were promoted in anxious mood-state, inflated responsibility appraisals were promoted in dysphoric mood-state, and OIT appraisals remained relatively constant, regardless of mood-state.

In relation to between-group comparisons, as expected, OET appraisal endorsement was significantly greater among anxious mood-induced participants (collapsed across ERST conditions) than among dysphoric and neutral mood-induced participants combined. OET appraisals in the anxious group were also significantly greater than OET appraisals in the dysphoric group, which was again noteworthy as this comparison had failed to reach statistical significance ($p = .07$) in the study reported in chapter one, which demonstrated a lack of power.

Also in accordance with expectations, inflated responsibility appraisal endorsement was significantly greater in the group receiving dysphoric mood-induction (collapsed across ERST conditions) compared with the other two groups combined. Inflated responsibility appraisals in the dysphoric group were also significantly greater than inflated responsibility appraisals in the anxious group. This comparison had also

failed to reach statistical significance (p = .10) in the study reported in chapter one. As predicted, in contrast to OET and inflated responsibility, no significant differences were observed among the three mood groups in relation to OIT appraisal ratings.

Findings of significant differentiation between OET and inflated responsibility appraisal endorsement in the contexts of anxious and dysphoric mood-states (in both within- and between-group comparisons) suggest that the failure to observe significant differences in these comparisons in chapter one (despite trends in the expected directions) may have been due to Type II error (associated with modest sample size and low statistical power) as opposed to being the consequence of mood-induction contamination effects or conceptual overlap between the OET and inflated responsibility constructs.

In summary, these findings indicate that anxious mood-state increases the salience and accessibility of OET beliefs and thus engenders increased negative appraisal of an obsession-like thought in the OET domain relative to inflated responsibility and OIT domains. Dysphoric mood-state, in contrast, increases the salience and accessibility of inflated responsibility beliefs and thus engenders increased negative appraisal of the obsession-like thought in the inflated responsibility domain relative to the OET and OIT domains.

4.1.2 ERST-Related Attenuation in Mood-State-Dependent Appraisal Patterns

Results showed significant reductions in the strength of mood-state-dependent patterns in negative appraisals among the participants who received emotion regulation skills training. As expected, analyses revealed that participants who received ERST and underwent an anxious mood-induction procedure reported significantly less OET appraisals (but not less inflated responsibility or OIT appraisals) in response to an obsession-like thought than anxious mood-induced participants who did not receive ERST. As predicted, this pattern of OET appraisal attenuation appeared specific to

anxious mood-induced participants (i.e., it was not observed in comparisons of OET appraisals for the ERST and no ERST groups of neutral and dysphoric mood-induced participants).

Unexpectedly, analyses failed to detect a significant reduction in inflated responsibility appraisal ratings among dysphoric mood-induced participants who received ERST, compared with dysphoric participants who did not receive ERST. There was however a trend in the expected direction in this comparison which, although not statistically significant, nevertheless provided some evidence of specificity in ERST-related attenuation of inflated responsibility appraisals in the context of dysphoric mood-state. That is, results demonstrated that for dysphoric mood-induced participants, ERST-related attenuation of inflated responsibility appraisals (t = 1.76, p = .09) was larger and clearer than ERST-related attenuation of OET (t = .32, p = .38) or OIT (t = .55, p = .29) appraisals. As expected, for the participants receiving neutral mood-induction, there was no evidence of significant ERST-related attenuation of appraisals in any of the three appraisal domains. Overall, results were consistent with hypotheses that enhanced emotion regulation skills would attenuate the impact of mood-state on participants' appraisals of an obsession-like thought and that attenuation effects would be differentiated across specific mood-states (and associated mood-state-dependent appraisal domains).

4.2 Comparative Analysis of Neutralising Strategies

As expected, results indicated that participants' selection of neutralising strategies to respond to the obsession-like thought (across the Change the Thought, Remove the Thought, and Ignore the Thought categories) did not differ as a function of mood-state. Comparisons conducted between the ERST and No-ERST groups (collapsed across mood conditions) revealed that the group receiving ERST endorsed the Ignore the Thought strategy significantly more than the group that did not receive

ERST. Items contributing to the Ignore the Thought neutralising strategy sub-category on the NSI include Used Meditation, Reassured Yourself (that the thought is not important and normal), and Did Nothing (used no strategies to respond to the obsession-like thought). Possible explanations for the ERST group endorsing the Ignore the Thought strategy at higher rates than the No-ERST group include potential demand and priming effects whereby receiving mindfulness training as a part of the ERST program subsequently resulted in increased use of meditation as a strategy for dealing with the obsession-like thought.

4.3 Comparative Analysis of Neutralising Motivations

4.3.1 Replication of Mood and Neutralising Motivation Findings

The current results replicated the findings reported in chapter one in relation to the differential impact of specific mood-states on neutralising motivations in response to an obsession-like thought. Results provided evidence of mood-state-dependent response patterns among the three mood-induced groups (collapsed across ERST conditions) in relation to endorsement of Reduce Threat (RT), Reduce Sense of Responsibility (RSR), and Diminish Importance of the Thought (DIT) neutralising motivations. The anxious group reported a significantly larger proportion of RT neutralising motivations than the combined dysphoric and neutral group. The dysphoric group reported a significantly larger proportion of Reduce Sense of Responsibility (RSR) neutralising motivations than the combined anxious and neutral group. And repeating an unexpected finding from chapter one, the neutral group reported a significantly larger proportion of Diminish Importance of the Thought (DIT) neutralising motivations than the combined anxious and dysphoric group. This repeated unexpected finding provides support for the notion that DIT motivations may become the most prominent in the promotion of OCD symptoms in the absence of negative mood-state, reinforcing the proposed underlying, constitutive role for OIT appraisals

and DIT neutralising motivations in OCD. Overall, these results provide further evidence that mood-specific negative appraisal profiles subsequently promote different mood-specific motivational profiles regarding the employment of neutralising activity.

4.3.2 ERST-Related Attenuation in Mood-State-Dependent Neutralising Motivation Patterns

In accordance with expectations, analyses revealed significant reductions in the strength of mood-state-dependent patterns in neutralising motivations among the groups that received emotion regulation skills training. Participants who received ERST and underwent an anxious mood-induction procedure reported a significantly smaller proportion of Reduce Threat (RT; but not RSR or DIT) neutralising motivations compared with anxious mood-induced participants who did not receive ERST. As predicted, this pattern of RT motivation attenuation appeared specific to the anxious mood-induced participants (i.e., it was not observed in comparisons of RT motivations for the ERST and no ERST groups of neutral and dysphoric mood-induced participants) although the comparison between the dysphoric groups was trending towards significance (p = .06, one-tailed).

Participants who received ERST and underwent a dysphoric mood-induction procedure reported a significantly smaller proportion of Reduce Sense of Responsibility (RSR; but not RT or DIT) neutralising motivations compared with dysphoric mood-induced participants who did not receive ERST. As predicted, this pattern of RSR motivation attenuation appeared specific to the dysphoric mood-induced participants (i.e., it was not observed in comparisons of RSR motivations for the ERST and no ERST groups of neutral and anxious mood-induced participants). As expected, for the participants receiving neutral mood-induction, there was no evidence of significant ERST-related attenuation in neutralising motivations in any of the three domains

assessed, providing further evidence for the relatively mood-independent nature of OIT appraisals/DIT neutralising motivations and their contribution to OCD.

Overall, results were consistent with hypotheses that enhanced emotion regulation skills would contribute to an attenuation of the impact of mood-state on participants' neutralising motivations in response to an obsession-like thought and further, that attenuation effects would be differentiated across specific mood-states and associated mood-state-dependent neutralising motivation domains.

4.4 General Discussion

The current findings provide additional evidence of mood-state-dependent patterns in negative appraisals and neutralising motivations in response to an obsession-like thought. Among participants who all experienced the same obsession-like thought provocation, differences in mood-state were responsible for substantial differences in the way that people appraised the thought and were motivated to neutralise it. Replicating the findings reported in chapter one, anxious mood-state was associated with increased prominence of OET appraisals and Reduce Threat (RT) neutralising motivations, dysphoric mood-state was associated with increased prominence of inflated responsibility appraisals and Reduce Sense of Responsibility (RSR) neutralising motivations, and in the absence of negative affect (i.e., in neutral mood-state), OET, inflated responsibility, and OIT appraisals were all equivalent, but Diminish Importance of the Thought (DIT) neutralising motivations were prioritised over RT and RSR motivations.

Beyond replication of the findings reported in chapter one, the research reported in the current chapter investigated, and provided preliminary evidence in relation to, the attenuation of mood-state-dependent appraisal and neutralising motivation patterns in the context of enhanced emotion regulations skills. Results suggested that enhanced emotion regulation skills may contribute specifically to attenuation of mood-state-

dependent OET appraisals and RT neutralising motivations in the presence of anxious mood-state. Results also suggested that enhanced emotion regulation skills may contribute specifically to attenuation of mood-state-dependent inflated responsibility appraisals and RSR neutralising motivations in the presence of dysphoric mood-state (despite a non-significant, but trending (p = .09), finding in relation to inflated responsibility attenuation among the ERST versus No-ERST dysphoric participants). The findings that ERST and No-ERST neutral mood-induced participants were equivalent in endorsement of negative appraisals (in all three domains) and neutralising motivations (in all three categories) indicated that enhanced emotion regulation skills may only contribute to attenuation in negative appraisals and neutralising motivations when negative mood-states are present. These results suggest that emotion-focused interventions may not be appropriate for use with OIT appraisals and DIT neutralising motivations, and that the contribution of these constructs to OCD may need to be addressed using alternate means (perhaps cognitive therapy).

In summary, the current findings provided additional evidence that different mood-states activate specific types of negative appraisals, yielding effects on neutralising motivations, further supporting the hypothesis that mood-state constitutes a condition under which appraisal processes operate differentially in OCD. Findings reinforce the call, initially made in chapter one, for an expansion of appraisal models to incorporate consideration of the impact of affective processes on negative appraisal and neutralising motivation in OCD. Results suggest that emotion regulation skills training may represent a means of remedying, or at least attenuating, the impact of negative mood-states on dysfunctional appraisal and neutralising activity.

4.5 Limitations

As a partial replication of the study reported in chapter one, the current study inevitably shared many of the same methodological limitations. Self-report measures

were heavily relied on, evidence for the construct validity of the novel self-report measures (i.e., III-M, VAS, NSI and NMI) was absent, a non-clinical sample was used, and a single, analogue "obsession-like" thought (not an actual obsession) was employed. A new limitation in the present study related to sample size. Although the overall sample size was larger (N = 198, compared with N = 120 in the study reported in chapter one), division of the participants into groups of six (n = 33) to facilitate ERST versus No-ERST mood group comparisons resulted in a reduction in statistical power, increasing the likelihood of Type II errors. This may have contributed to the failure to find a significant difference in the comparison between the ERST and No-ERST dysphoric groups on inflated responsibility appraisals, despite a trend in the expected direction (p=.09).

Finally, it is not clear to what extent the enhancement in emotion regulation skills among participants who received ERST in the current study accurately reflects the capacities of individuals receiving longer-term emotion regulation skills training, or otherwise exhibiting superior emotion regulation skills in naturalistic settings. Hence, the generalisability of the current findings to the clinical OCD population and naturalistic settings is limited, and examination of clinical links is necessary before conclusions can be drawn about the relationship between mood-states, emotion regulation, and clinical OCD symptoms.

4.6 Strengths

The current study enjoyed the same set of methodological strengths as the study reported in chapter one. That is, it utilised an experimental design to explore the temporal relationships between the variables under investigation, and thus permitted causal inference. It also demonstrated equivalence of the ERST and No-ERST groups, and the mood groups, on pertinent variables prior to experimental manipulation, and the obsession-like thought employed in the study represented a good analogue to a clinical

obsession. A new strength in the present study was the larger overall sample size (N = 198) which provided greater statistical power to detect significant differences in comparisons between the larger groups (i.e., ERST and No-ERST groups, n = 99; Anxious, Neutral, and Dysphoric groups, n = 66). This power increase likely contributed to several significant findings in comparisons that had failed to reach significance in the study reported in chapter one (e.g., OET versus inflated responsibility appraisal comparisons within and between the anxious and dysphoric groups). A final strength was the demonstrated effectiveness of the ERST program which successfully enhanced participants' reported emotion regulation capacity in all variables under assessment (e.g., mindfulness, experiential acceptance, and cognitive flexibility).

4.7 Treatment implications

The key treatment implication arising from the current findings is that OCD sufferers may benefit from incorporation of emotion regulation skills training within traditional cognitive-behavioural therapy for the disorder. Results showed that enhanced emotion regulation skills were associated with attenuation in mood-state-dependent appraisal and neutralising motivation patterns. Abramowitz (2006b) suggests that cognitive therapy in CBT for OCD helps to "set the table" for E/RP, "tenderizing" dysfunctional beliefs and appraisals to the extent that patients can more easily engage with, and benefit from, E/RP. The current findings indicate that ERST may represent a valid alternative or adjunct to cognitive therapy, helping to further "tenderize" obsessions and "set the table" for E/RP. In particular, ERST appears to display potential for helping OCD sufferers to more effectively resist engaging in compulsive behaviours and maladaptive appraisal of obsessions (and to thus reduce the impact of mood-state-dependent appraisals and neutralising activity in the maintenance of the disorder), even in the presence of strong negative mood-states.

4.8 Future Research

An obvious direction for future research emerging from the current findings is investigation of mood-state-dependent hypotheses in the clinical OCD context. Clinical investigation would facilitate exploration of the generalisability of findings regarding mood-state-dependent appraisal and neutralising patterns and the attenuation of such patterns (in the context of enhanced emotion regulation skills) from non-clinical samples to OCD sufferers. Research in this area has the potential to contribute to improvements in OCD treatment efficaciousness through the promotion of our understanding of the role of mood in the pathogenesis and maintenance of the disorder.

Further analogue research, with larger samples (capable of producing greater statistical power in the six-group analyses), is required to provide additional testing and replication of the current hypotheses and results. Such research would help ascertain whether non-significant trends in the current data (e.g., trending but non-significant findings in relation to attenuation in inflated responsibility appraisals between the ERST and No-ERST dysphoric groups) are merely noise in the data, or are in fact indicative of specificity.

5. Conclusion

The present study provides additional support (subsequent to the study reported in chapter one) for hypotheses regarding differential mood-state-dependent activation of negative appraisal domains in response to an obsession-like thought. Results reiterate that specific negative mood-states have unique, activating influences on particular appraisal domains, and subsequently exert unique influences on obsessive-compulsive symptoms (including neutralising motivation). Results provide support for the cognitive-*affective*-behavioural conceptualisations of OCD provided in Figures 7, 8, and 9 in chapter one, and additionally suggest that the unique impacts of different negative mood-states on appraisal and neutralising processes in response to an obsession-like

thought may be attenuated in the context of enhanced emotion regulation skills. Assessment of the generalisability of the current results to the OCD clinical context is warranted. Evidence of attenuation in negative appraisals associated with enhanced emotion regulation skills among OCD sufferers would suggest that emotion regulation may represent a new pathway to improved treatment effectiveness in OCD. The following chapter reports a pilot study where ERST was administered in a treatment context with OCD participants.

Chapter Three

Study Three: The Impact of Emotion Regulation Skills Training on Negative Appraisal and Symptom Severity in OCD: An *N* = 4 Multiple-Baseline Case-Series Analysis

1. Introduction

The cognitive-behavioural therapies are the most consistently empirically-validated psychological treatment for obsessive-compulsive disorder (Abramowitz, 2006a; Abramowitz, Taylor, & Mackay, 2009; McKay et al., 2015). Traditional cognitive-behavioural therapy (CBT) for OCD is comprised of four basic (somewhat overlapping) treatment phases; psychoeducation and relaxation, cognitive therapy (CT), exposure with response prevention therapy (E/RP), and relapse prevention (Abramowitz, 2006b). E/RP and CT are considered the principle active components (Abramowitz, 2006b) however, despite their front-line status, research literature has identified problems in relation to their acceptability and effectiveness, respectively. More recently, Twohig et al. (2010) evaluated an effective Acceptance and Commitment Therapy (ACT) manualised program for OCD. In the pursuit of increasingly acceptable and efficacious treatment the current study provides preliminary exploration of potential covariation in the relationship between negative mood-states and negative appraisals among OCD sufferers. The study also explores the potential utility of emotion regulation skills training as an augmentation to CBT for OCD by testing whether enhancing individuals' capacity to regulate emotions impacts on negative appraisals and obsessive-compulsive symptom severity.

1.1 Exposure with Response Prevention Therapy in OCD

The behavioural component of CBT for OCD takes the form of exposure with response prevention therapy (E/RP). E/RP was first developed by British psychologist Victor Meyer (1966), building on Mowrer's influential Two-Factor theory of avoidance (1960). The goal of E/RP is to provide patients with experiences in which obsessional stimuli are present, but compulsive (neutralising/safety-seeking) behaviour is resisted. When feared outcomes do not materialise in these contexts, patients learn that the obsessional stimuli are not as dangerous as they thought and that they are capable of

coping with and not being overwhelmed by intense fear and anxiety (see Abramowitz, 2006b). E/RP is essentially a counter-conditioning, involving the development of new, more adaptive associations.

The effectiveness of E/RP as a treatment for OCD has consistently been demonstrated (Franklin et al., 2000; Deacon & Abramowitz, 2004) and many consider it the core treatment component in CBT for OCD (e.g., Kozak, & Coles, 2005). However, it is an inherently aversive therapy, involving exposure to feared obsessions and situations, and as such has been associated with high overt refusal rates and treatment dropout (Foa et al., 2005; McLean et al., 2001). Additionally, for those who do undertake E/RP, approximately 20% do not respond and another 20% relapse after treatment (Riggs & Foa, 1993).

1.2 Cognitive Therapy in OCD

The utilisation of cognitive therapy (CT) in the treatment of OCD emerged following the rise of the cognitive appraisal models (e.g., Salkovskis, 1985, 1989; Rachman, 1993, 1997). Cognitive therapy is conducted in relation to the most prominent OCD-relevant dysfunctional belief and appraisal domains (as identified by the OCCWG; Clark, 2002) following assessment of each patient's unique cognitive profile. The main goals of CT for OCD are: to teach patients to identify negative appraisals and underlying dysfunctional beliefs in relation to their anxiety and obsessions, to consider the evidence (or lack thereof) in relation to, and helpfulness of, such cognitions, and to challenge unhelpful, unrealistic, illogical, or exaggerated appraisals, beliefs, and predictions and replace them with more helpful and realistic alternatives. Techniques employed in CT for OCD include: cognitive restructuring (learning to appraise obsessions in more realistic and helpful ways), behavioural experiments (designing and executing experiments to see if a particular appraisal or belief is valid), perspective shifting (taking the perspective of someone who is not

obsessional, and thinking about obsession-related appraisals and beliefs from this viewpoint), and coping statements (developing realistic appraisals of obsessions that can be used to guide one's response to obsessions when they occur).

Early meta-analyses of the research investigating the effectiveness of cognitive and behavioural treatments for OCD yielded larger effect sizes for behavioural therapy (Cohen's d = 1.47) than cognitive therapy (Cohen's d = 1.04; van Balkom et al., 1994), leading to suggestions that CT was less effective than E/RP (e.g., Abramowitz, 1997). In the decade that followed, authors cautioned that the clinical utility of the more cognitive (post-appraisal model) approach to OCD treatment had not been consistently demonstrated (e.g., Clark, 2005) and that research showed cognitive techniques alone had limited efficacy in reducing obsessive-compulsive symptoms (Abramowitz, 2006b). Contrary to these assertions, van Oppen & Arntz (1994) provided early evidence of the efficacy of CT in the treatment of OCD and more recently a growing body of evidence has emerged supporting CT as a moderately effective stand-alone treatment for OCD (e.g., Wilhelm et al., 2005; Wilhelm, Berman, Keshaviah, Schwartz, & Steketee, 2015; Wilhelm & Steketee, 2006; Wilhelm et al., 2009). Moreover, there is evidence that OCD sufferers find CT a more acceptable treatment than E/RP (Wilhelm et al., 2005; Wilhelm et al., 2009) and that CT may play a role in preventing treatment drop-out and maximizing adherence to exposure with response prevention therapy (Kozak & Coles. 2005; Wilhelm et al., 2005; Wilhelm et al, 2009). Furthermore, CT may be more effective than E/RP in ameliorating depressive symptoms in OCD patients (Emmelkamp, Visser, & Hoekstra, 1988).

An important caveat to highlight regarding research assessing the relative efficacy of cognitive versus behavioural treatments is that both types of treatment employ similar techniques (i.e., behavioural experiments versus exposure) to achieve clinical benefits – although through different proposed mechanisms of change (i.e.,

belief change versus extinction; Olatunji, Cisler, & Deacon, 2010). An additional complication relates to confusion between therapeutic technique (e.g., cognitive restructuring versus exposure) and mechanisms of change (e.g., belief and appraisal modification versus extinction). As such, findings indicating reduced efficacy of CT compared with E/RP in OCD treatment do not discount the possibility that changes in cognitive processes may be an important mechanism through which behavioural interventions work (Olatunji et al., 2010).

In modern practice, the relative effectiveness of CT and E/RP has become something of a moot point given that both techniques are typically combined in the delivery of CBT for OCD. However, even in combination, these treatments are neither universally nor completely helpful for OCD sufferers (Abramowitz, Franklin, Zoellner, & DiBernardo, 2002). Indeed, CBT for OCD is less effective than CBT for many other psychological disorders (Fisher & Wells, 2005) with high refusal rates, treatment dropout, and partial treatment response (even after successful treatment, the majority of patients continue to experience residual symptoms; Abramowitz, 1998) identified as prominent short-comings. These observations suggest that there remains considerable scope for improvements in OCD treatment efficacy. Findings from the study reported in chapter two indicated that enhanced emotion regulation skills may potentially attenuate mood-state-dependent appraisal and neutralising processes in OCD. The implication of these results is that emotion regulation skills training (ERST) may confer clinical benefits (in relation to mood-state-dependent negative appraisal and neutralising motivation patterns) above and beyond benefits currently available for OCD sufferers using CBT alone.

The present study is an attempt to provide initial, preliminary exploration of the relationship between negative mood-states and negative appraisals among OCD sufferers. The study investigates whether the specific patterns in mood-state-dependent

negative appraisals observed in the analogue studies reported in chapters one and two are generalizable to the clinical OCD population. The current study also explores the potential utility of ERST in reducing negative appraisals and contributing to obsessive-compulsive symptom improvement. Four adults diagnosed with OCD were treated using traditional cognitive-behavioural therapy (CBT) with the addition of a six-session emotion regulation skills training (ERST) program.

2. Method

2.1 Participants

All participants attended the Australian National University (ANU) Psychology Clinic seeking psychological treatment. Following assessment, individuals whose primary diagnosis was OCD were invited to participate in the current study. Patients who chose not to participate were seen as part of normal therapist case-loads within the clinic. Participants were not in treatment elsewhere and no participants were excluded from this investigation. Participants received treatment free of charge and were under no obligation to participate, or continue participation, throughout. Diagnosis of OCD and severity of symptoms were established using the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (SCID; First, Spitzer, Gibbon, & Williams, 2002), the OCI-R (Foa et al., 2002) and clinical interview. Participants were randomly assigned pairs of alphabetized initials in order to aid de-identification. Details of the four patients are provided in Table 11.

2.2 Materials

Emotion Regulation Skills Training (ERST) program. A six-session ERST program was developed for the current study. The program was designed to promote emotion regulation and psychological flexibility skills and contained the same basic structure as the 60-minute ERST program devised for the study reported in chapter two.

Table 11. Participant Characteristics

Participant	A.B.	C.D.	E.F.	G.H.
Sex	F	M	M	F
Age	45	42	18	28
Marital Status	M	M	S	S
Primary Obsessions	Contamination	Sexual and Illness	Contamination and Symmetry	Harm and Contamination
Years with OCD	4	17	2	10
Primary Compulsions	Washing and Cleaning	Checking	Washing and Ordering	Checking and Washing
Compulsive Style	Overt	Covert	Mixed	Overt
Co-Morbid Diagnoses	–	–	GAD	MDD and SP
Medication	–	–	–	Zoloft
Baseline OCI-R	25	24	23	39
Post-Treatment OCI-R	12	16	8	19

Note: Sex, F=female, M=male. Marital Status, M=married, S=single. Diagnoses, GAD=generalised anxiety disorder, MDD=major depressive disorder, SP=specific phobia.

The six-session ERST program encouraged considerably deeper and more regular engagement with psychoeducation and practical exercises than was possible using the 60-minute program. Specific components (all derived from empirically-validated third-wave therapies) included: 1) Psychoeducation regarding the nature of mindfulness, emotions, experiential acceptance, and maladaptive outcomes typically associated with experiential avoidance; 2) Practical mindfulness- and acceptance-based exercises; 3) Psychoeducation and practical exercises designed to promote psychological flexibility; and 4) Regular, guided, in-session and homework-based mindfulness meditation practice. Components of the ERST program were modified and adapted to suit the OCD context as required. For an overview of the ERST phase of therapy see Appendix J. For detailed accounts of the components contained within the ERST program see Appendices H and I.

2.3 Measures

Depression Anxiety Stress Scales – 21 (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item self-report inventory designed to assess the severity of

symptoms of depression, anxiety, and stress. The measure usually takes around five minutes to complete, is easy to administer and score, and is appropriate for use with adults (Antony, Bieling, Cox, Enns, & Swinson, 1998). The DASS-21 possesses good internal consistency (subscale Cronbach's alpha coefficients range from 0.81 to 0.84; Frazier et al., 2009) and validity has been established by substantial correlation of each subscale with similar constructs (Crawford & Henry, 2003; Henry & Crawford, 2005).

The DASS-21 was used in combination with a modified version of the Interpretation of Intrusions Inventory (III; OCCWG, 1997, 2001), the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) and the Obsessive-Compulsive Inventory – Revised (OCI-R; Foa et al., 2002) to create a package providing assessment of patient's mood-states, negative appraisals, emotion regulation skills, and obsessive-compulsive symptoms. Reviews of the psychometric properties of the III, DERS, and OCI-R are provided in chapters one and two. The full (i.e., six subscale) OBQ was utilised at the beginning of the cognitive therapy phase of treatment to help delineate each patient's unique profile of obsessional beliefs prior to targeted intervention (see chapter one for psychometric review of the OBQ).

A novel, jointly patient- and therapist-rated, in-session obsessive-compulsive symptom assessment measure was developed for the current study. The measure assessed patients' average time spent experiencing obsessions and engaging in compulsions each day over the past week on a continuum with anchors of 16 (all waking hours each day) and 0 (no time at all each day). The measure also provided assessment of average overall obsessive-compulsive symptom severity over the past week on a ten-point Likert-type scale with 10 representing the worst obsessive-compulsive symptom severity the patient has ever experienced and 0 representing complete absence of symptoms. This measure was completed during every session that patients attended and required less than five minutes to complete on each occasion.

2.4 Procedure

The experimental protocol was ratified by the ANU Human Research Ethics Committee. Prior to participation all patients completed a standardised intake assessment session involving the SCID, the OCI-R, and clinical interview including questions regarding background and functioning. A questionnaire booklet containing the DASS-21, the III-M, the DERS, and the OCI-R was completed at baseline and again prior to the first session of each new treatment phase (and at the mid-point of E/RP), thus creating a series of eight assessment points.

2.5 Treatment

The CBT for OCD program utilised in the current study was structured in accordance with standard contemporary models (see Abramowitz, 2006b; Franklin & Foa, 2007). The current study adopted a multiple-baseline design by inserting emotion regulation skills training (ERST) into the CBT program at a different phase during treatment (on the basis of random assignment) for each patient. The multiple-baseline design permitted investigation of the impact of enhanced emotion regulation skills at different phases of the cognitive-behavioural program. Patient G.H. received ERST before phase 1 (psychoeducation and relaxation), patient E.F. received ERST before phase 2 (cognitive therapy), patient C.D. received ERST before phase 3 (exposure with response prevention therapy), and patient A.B. received ERST at the mid-point of phase 3 (see Appendix J for a detailed overview of the phases of therapy).

CBT for OCD typically requires approximately 20 sessions (Abramowitz, 2006b; Andrews et al., 2003) however, with the addition of the six-session ERST program and a 2-3 month follow-up session, the "cognitive-affective-behavioural" treatment utilised in the current study required between 29 and 32 sessions for each of the participants to complete. All treatment sessions were conducted between 22 October, 2013, and 12 January, 2015, at the ANU Psychology Clinic. The longest total

time span to complete the treatment program (including the 2-3 month follow-up session) for any patient was 63 weeks, the mean was 51 weeks (limited clinic access during university holidays contributed to treatment length). Patients' diagnostic status was re-assessed using the SCID at the 2-3 month follow-up session.

2.6 Therapist Competency and Treatment Supervision

All assessment and treatment was conducted by the researcher (Andrew Nicholls) who is a registered psychologist (with the Psychology Board of Australia) with over four years of experience and demonstrated competency in the delivery of CBT for OCD. Assessment and treatment was delivered under regular supervision from Associate Professor Richard O'Kearney (who is a registered psychologist with approximately 25 years of experience in OCD treatment and research) at the Australian National University.

3. Results

Consistent with single subject research, visual inspection of scores was used to determine the effects of intervention (Barlow, Nock, & Hersen, 2008).

3.1 Ratings of Obsessive-Compulsive Symptom Severity across Treatment Phases

Results indicated that all four patients achieved clinically significant change in relation to their obsessive-compulsive symptoms throughout the course of treatment. An overview of changes in session-by-session joint patient/therapist-rated overall obsessive-compulsive symptom severity for each patient is provided graphically in Figures 12, 13, 14, and 15. All four patients' OCI-R scores moved from the clinical to the sub-clinical range during therapy (see Table 11; OCI-R clinical range > 20), and at the 2-3 month follow-up session, none of the patients met diagnostic criteria for OCD using the SCID.

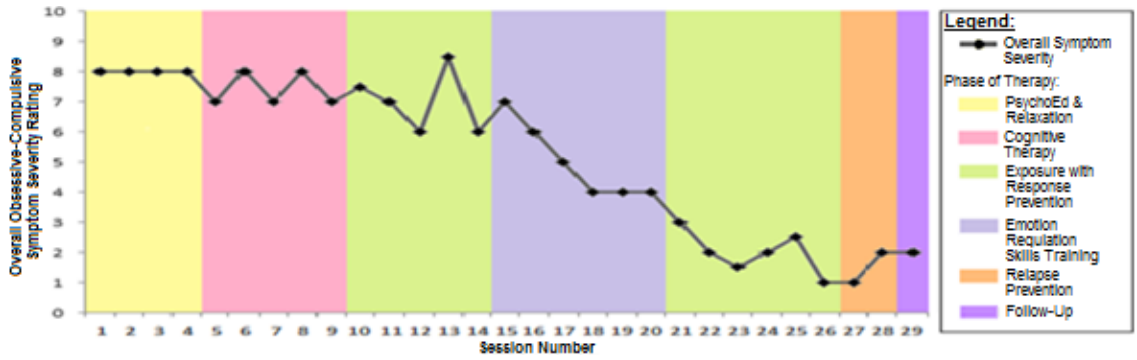

Figure 12. Patient A.B.'s session-by-session ratings of overall symptom severity

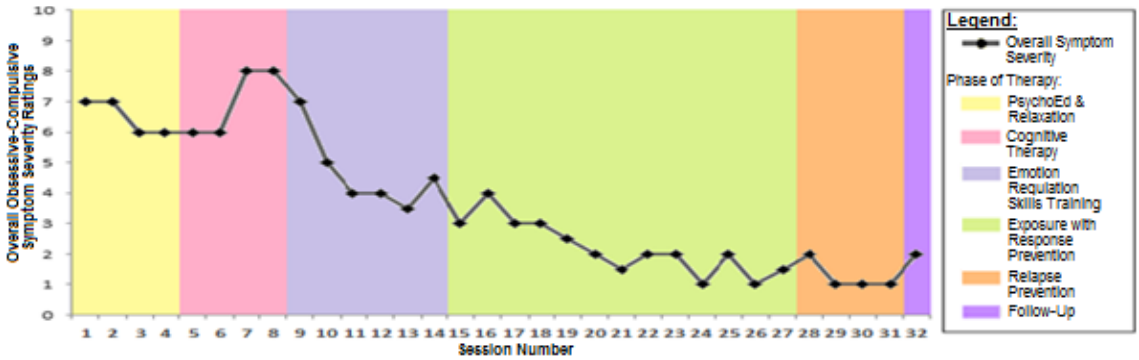

Figure 13. Patient C.D.'s session-by-session ratings of overall symptom severity

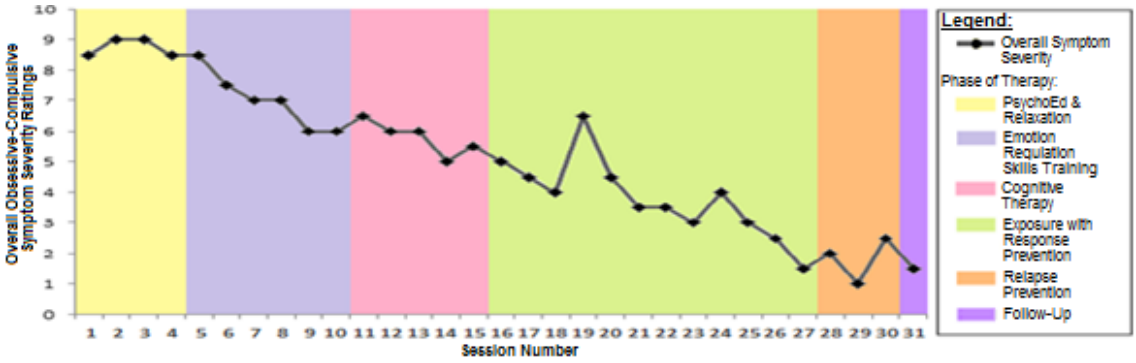

Figure 14. Patient E.F.'s session-by-session ratings of overall symptom severity

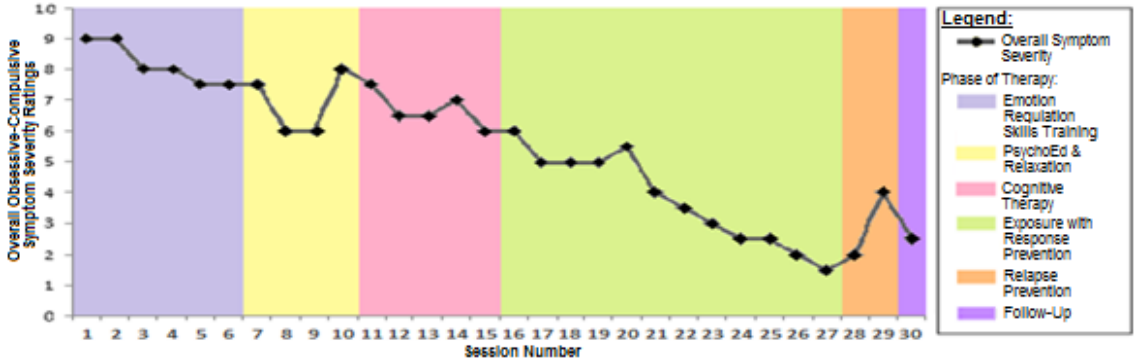

Figure 15. Patient G.H.'s session-by-session ratings of overall symptom severity

3.2 Ratings of Obsessions and Compulsions across Treatment Phases

Joint patient/therapist-ratings of the average time spent experiencing obsessions and engaging in compulsions (daily) showed that all four patients reduced their symptoms to sub-clinical levels (i.e., less than an hour per day) by the end of the active phases of treatment, and that gains were largely maintained at 2-3 month follow-up (See Figures 16, 17, 18, and 19). Overall, patients primarily achieved reductions in compulsive activity during the exposure with response prevention (E/RP) phase of treatment (which is understandable given the behavioural nature of both E/RP and compulsions). Whereas, substantial reductions in time spent experiencing obsessions were observed during the cognitive therapy (CT) and emotion regulation skills training (ERST) treatment phases, in addition to the E/RP phase.

Patient A.B. achieved reductions in obsessions primarily during CT and E/RP, and reductions in compulsions primarily during E/RP (See Figure 16). These results coincided with the largest reductions in A.B.'s OCI-R scores, which were observed during the CT and E/RP phases of treatment. Overall, A.B. reduced her obsessions from 10 hours a day at presentation to 10 minutes or less a day at 2-3 month follow-up, and her compulsive activity from 4 hours a day at presentation, to 20 minutes a day or less at 2-3 month follow-up.

In contrast to A.B., patient C.D. achieved the majority of his reduction in time spent experiencing obsessions during the ERST phase of treatment (with obsessional improvement continuing during E/RP), whereas an increase in obsessional activity was observed during the CT phase (See Figure 17). This pattern of results was repeated in C.D.'s OCI-R scores which increased substantially during CT (moving further into the clinical range), and decreased substantially (moving, for the first time, into the sub-clinical range) during ERST. Similar to A.B., the majority of reduction in compulsive activity for patient C.D. occurred during E/RP.

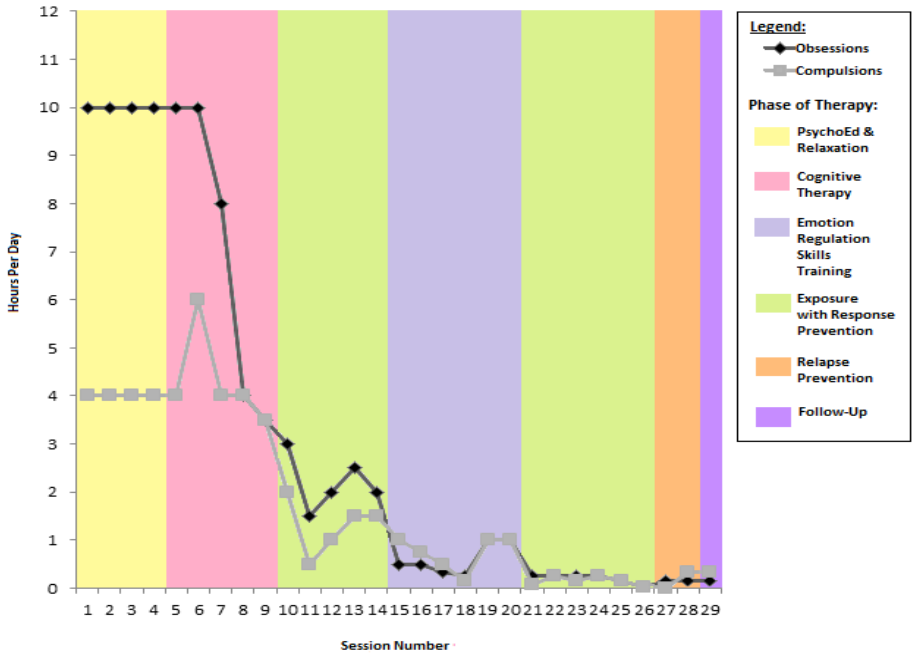

Figure 16: Patient A.B.'s session-by-session ratings of the number of hours per day spent experiencing obsessions and engaging in compulsions

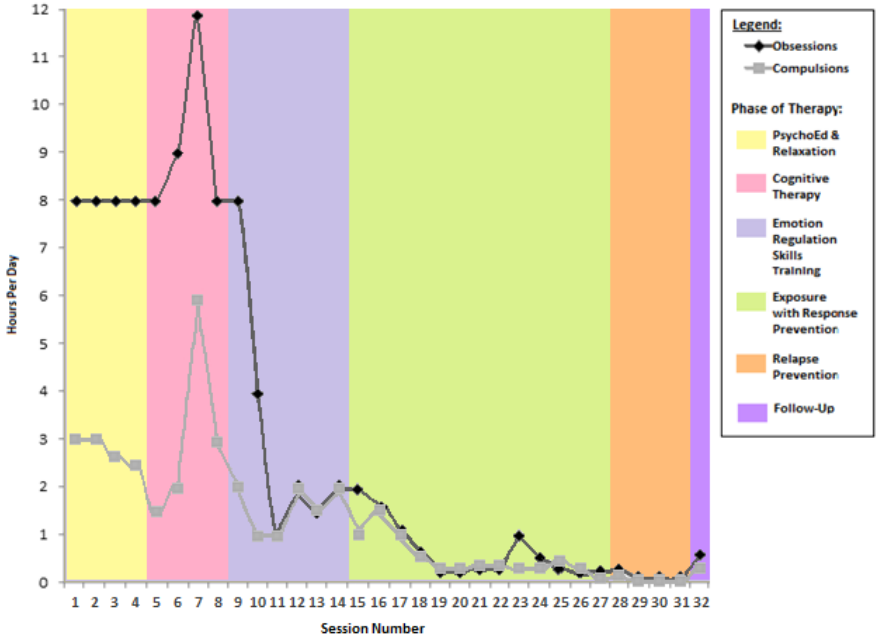

Figure 17: Patient C.D.'s session-by-session ratings of the number of hours per day spent experiencing obsessions and engaging in compulsions

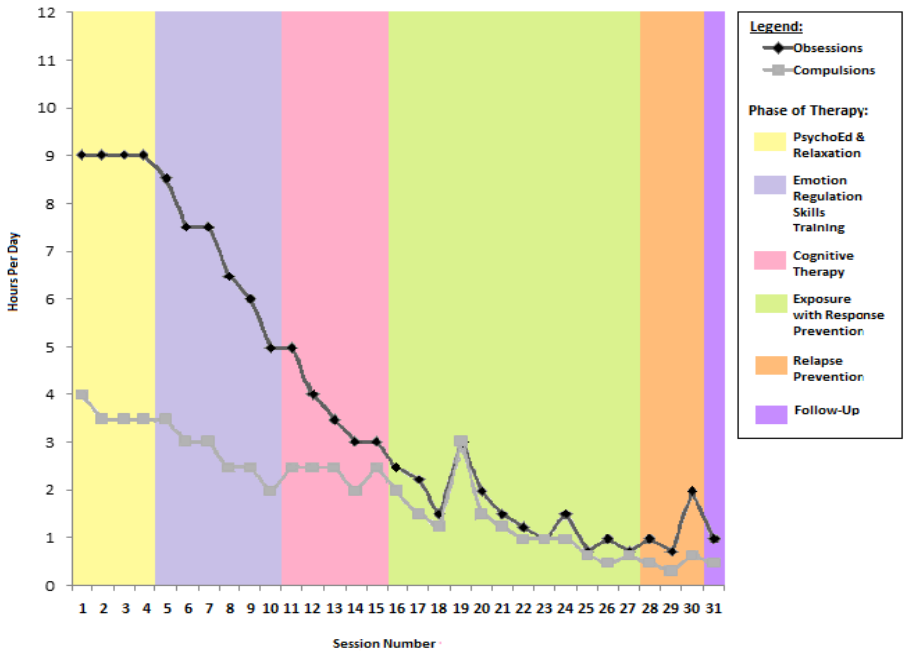

Figure 18: Patient E.F.'s session-by-session ratings of the number of hours per day spent experiencing obsessions and engaging in compulsions

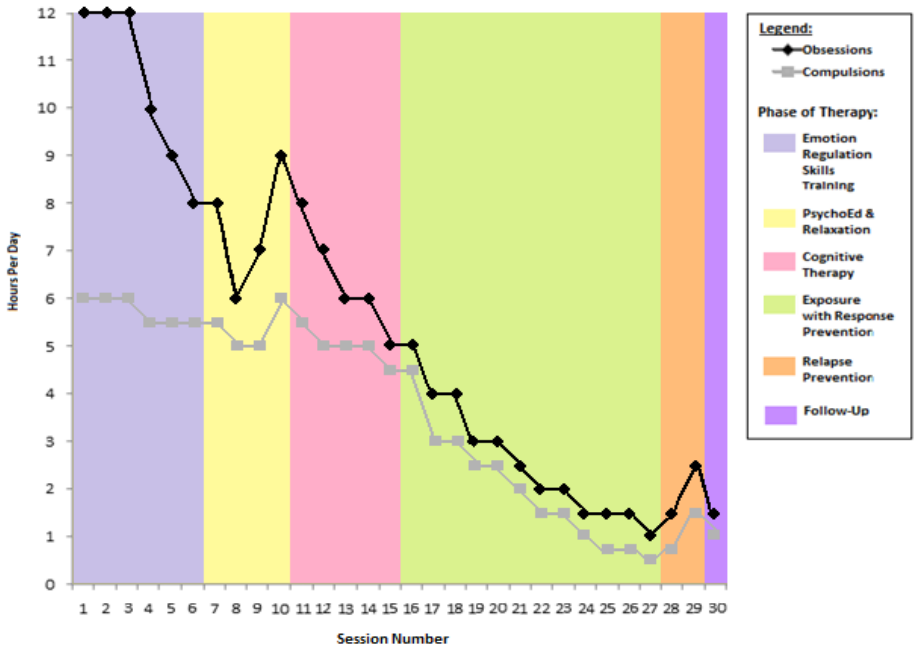

Figure 19: Patient G.H.'s session-by-session ratings of the number of hours per day spent experiencing obsessions and engaging in compulsions.

Patient E.F. achieved substantial reductions in time spent experiencing obsessions during the ERST, CT, and E/RP phases of treatment, and reductions in

compulsions during ERST and E/RP (See Figure 18). These results were consistent with E.F.'s OCI-R scores which decreased substantially during ERST (moving, for the first time, into the sub-clinical range) and E/RP (moving further into the sub-clinical range).

Patient G.H. achieved reductions in time spent experiencing obsessions during the ERST, CT, and E/RP phases of treatment, and the majority of reduction in her compulsive activity occurred during E/RP (See Figure 19). OCI-R scores for patient G.H. indicated substantial drops in level of obsessive-compulsive symptoms during CT and E/RP (moving into the sub-clinical range for the first time during E/RP).

3.3 Tracking Mood-State and Negative Appraisals across Treatment Phases

Figures 20a/b, 21a/b, 22a/b, and 23a/b provide an overview of changes in patients' anxious and depressive symptoms, plotted against changes in negative appraisals in three domains (i.e., OET, inflated responsibility, and OIT), across the seven phases of treatment. Visual analyses investigating potential covariation between negative affect and mood-congruent negative appraisals yielded limited evidence of specificity. For example, a close association was evident in the covariance of DASS-21 depression scores and inflated responsibility appraisals for patient C.D, especially from the post-CT time point onwards (see Figure 21b), and patient G.H. appeared to display some specific covariation between DASS-21 anxiety scores and OET appraisals, particularly from the post-psychoeducation time point onwards (see Figure 23a). However, evidence of mood-*in*congruent variation was also present. For example, patient A.B. reported increases in DASS-21 anxiety contemporaneous with *decreases* in OET appraisals (at the mid- and post-E/RP time points; see Figure 20a), and increases in depressive symptoms contemporaneous with *decreases* in inflated responsibility appraisals (at the post-CT and post-E/RP time points; see Figure 20b).

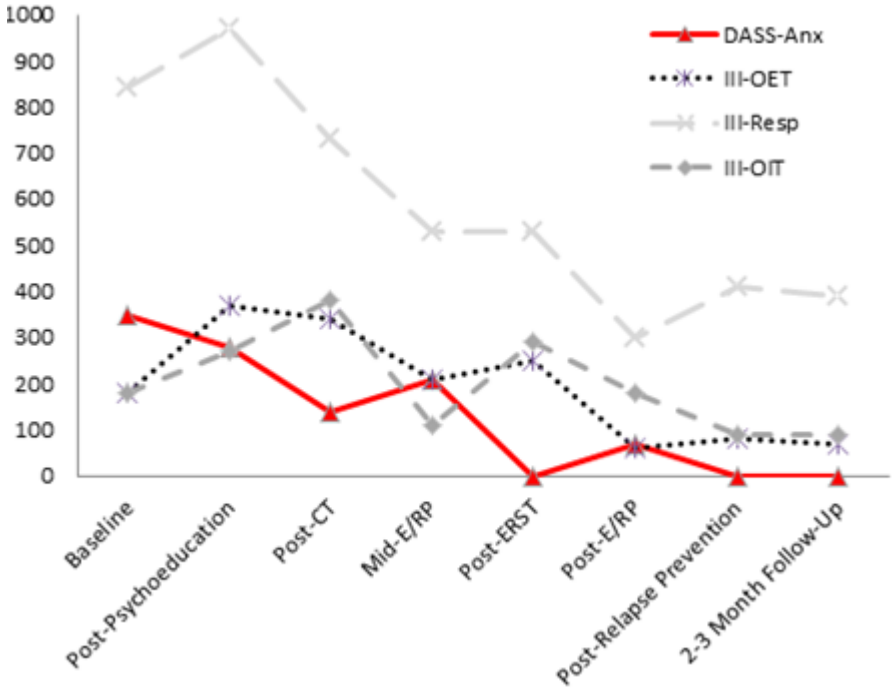

Figure 20a. Patient A.B.'s DASS-21 anxiety scores mapped across her appraisal ratings throughout the phases of therapy

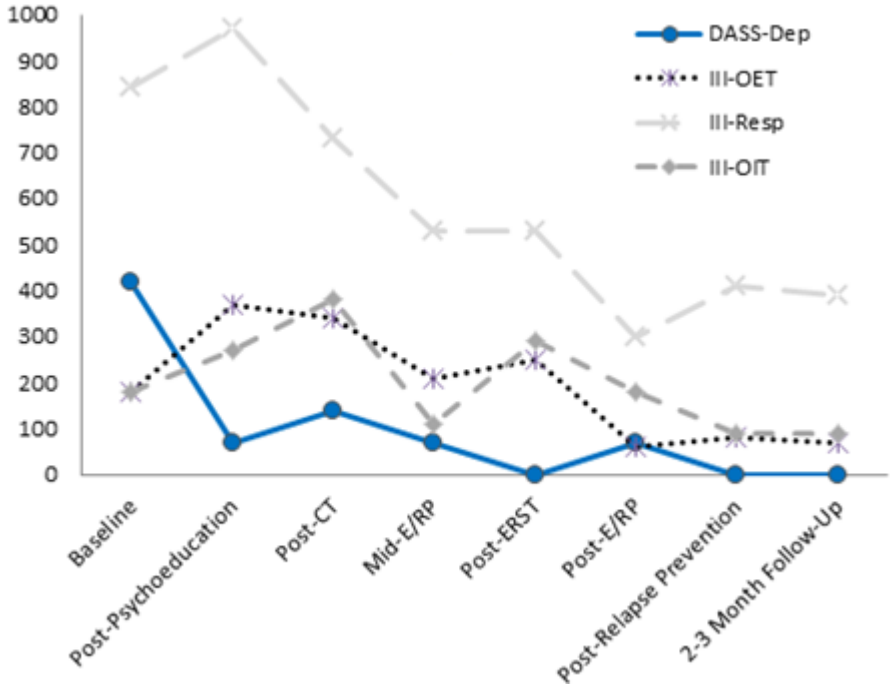

Figure 20b. Patient A.B.'s DASS-21 depression scores mapped across her appraisal ratings throughout the phases of therapy

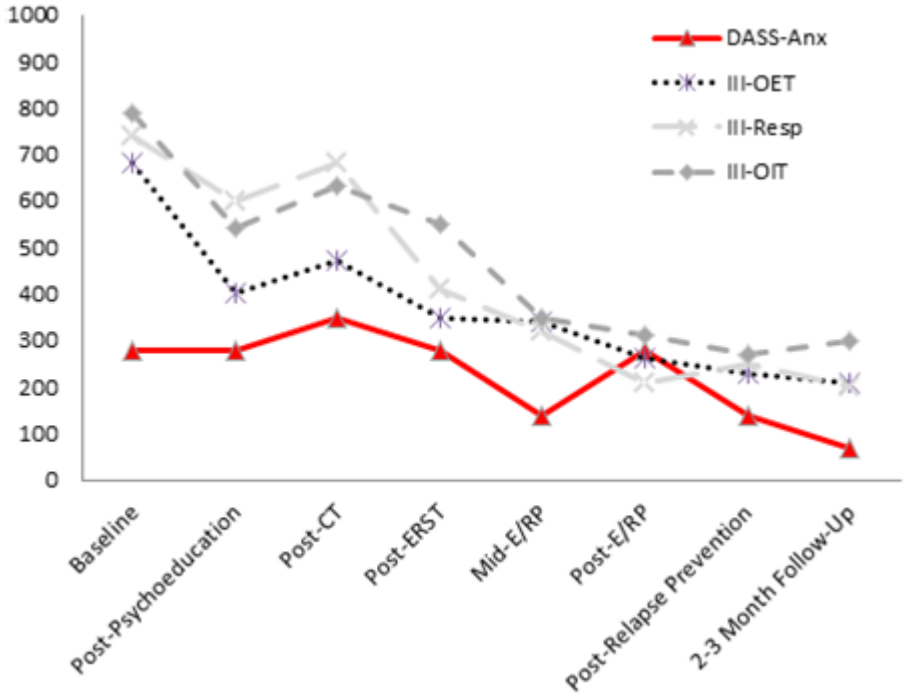

Figure 21a. Patient C.D.'s DASS-21 anxiety scores mapped across his appraisal ratings throughout the phases of therapy

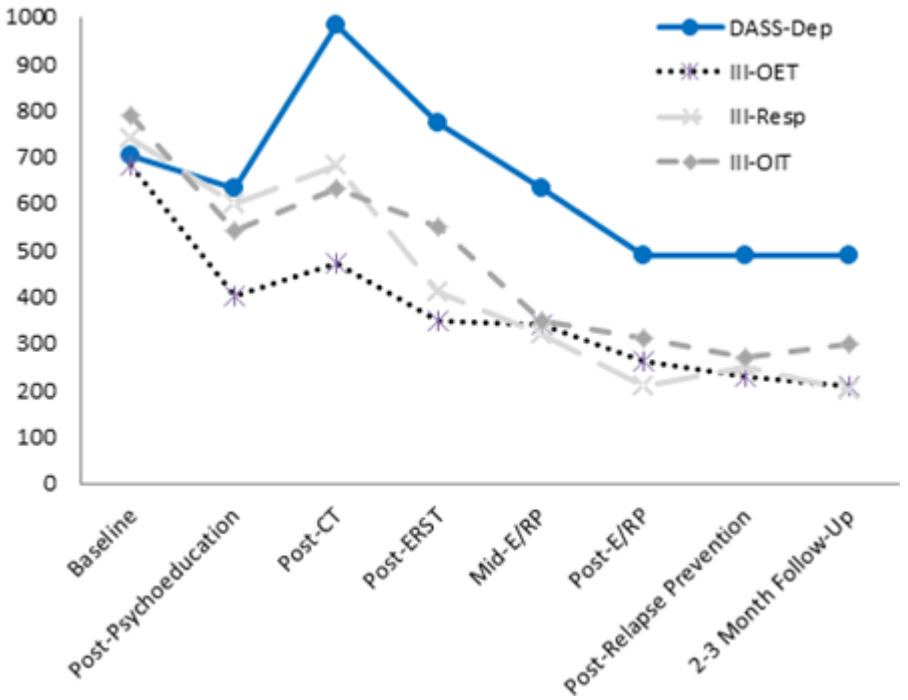

Figure 21b. Patient C.D.'s DASS-21 depression scores mapped across his appraisal ratings throughout the phases of therapy

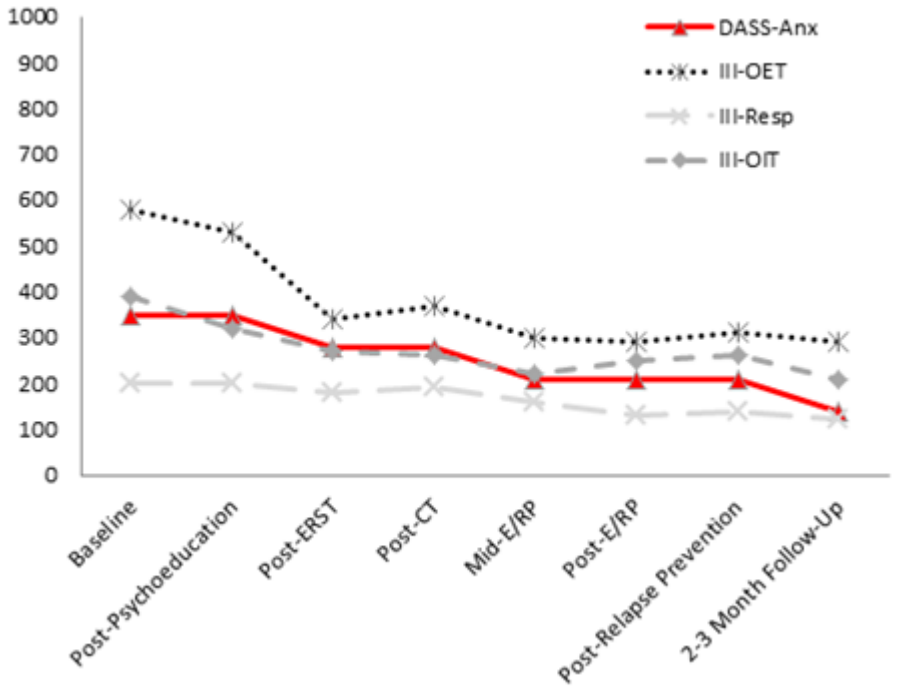

Figure 22a. Patient E.F.'s DASS-21 anxiety scores mapped across his appraisal ratings throughout the phases of therapy

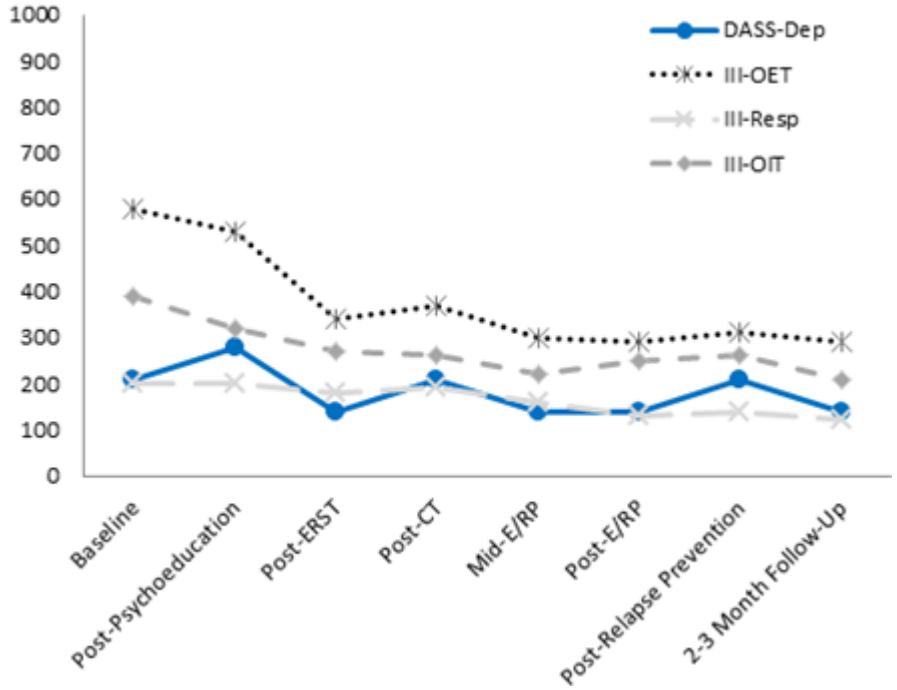

Figure 22b. Patient E.F.'s DASS-21 depression scores mapped across his appraisal ratings throughout the phases of therapy

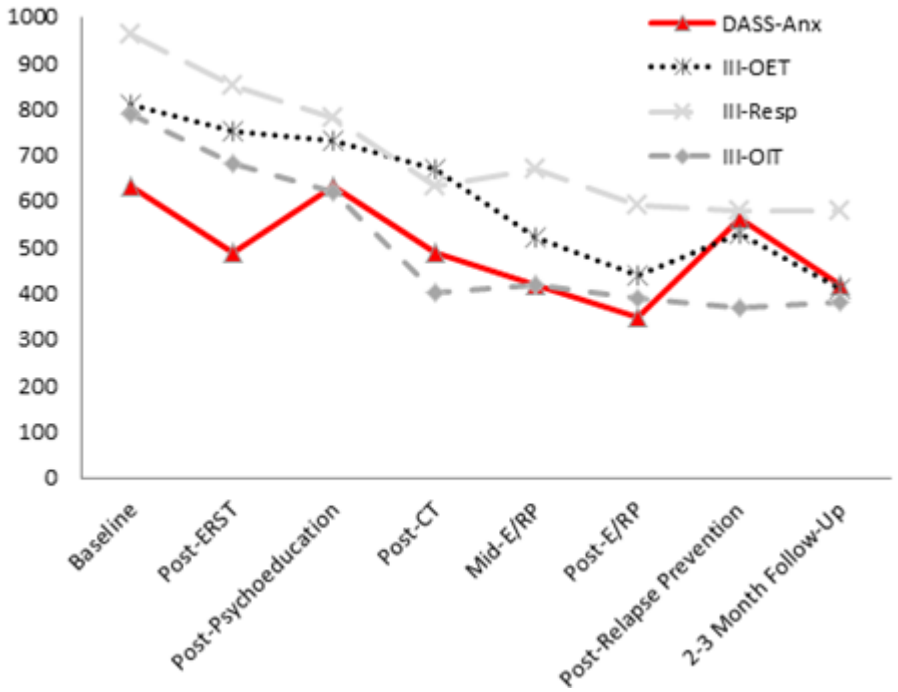

Figure 23a. Patient G.H.'s DASS-21 anxiety scores mapped across her appraisal ratings throughout the phases of therapy

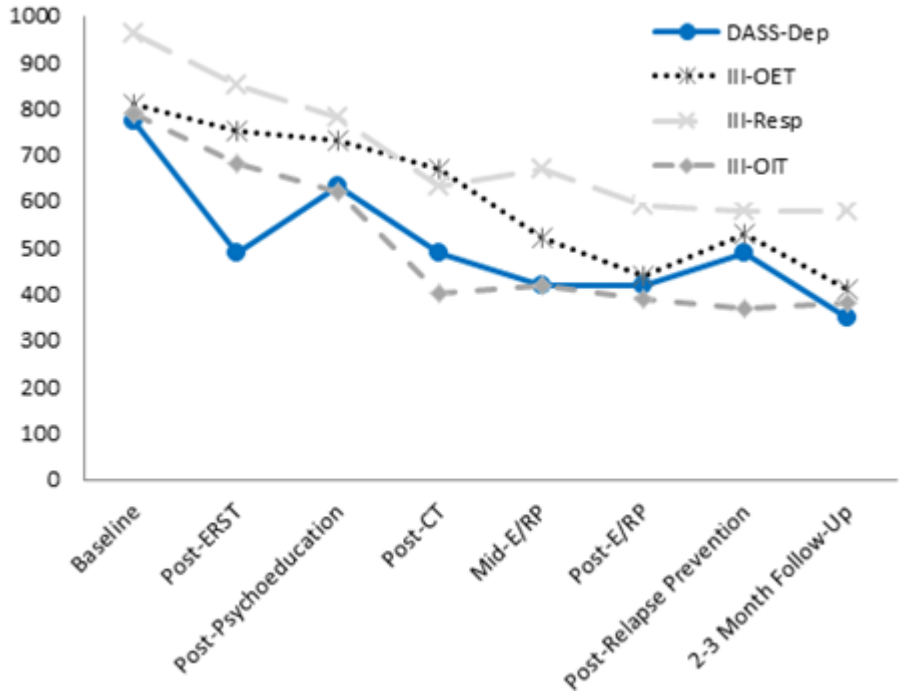

Figure 23b. Patient G.H.'s DASS-21 depression scores mapped across her appraisal ratings throughout the phases of therapy

3.4 The Impact of Treatment Phase on Changes in Negative Appraisals and Symptom Severity

Figures 24, 25, 26, and 27 illustrate pre- to post- changes in patients' negative appraisals (i.e., OET, inflated responsibility, and OIT) and OCD symptom severity across the phases of treatment. In figures 24 to 27 treatment phases are presented in a standardized order for all patients (i.e., not necessarily in the same order encountered in therapy) to facilitate comparisons. Columns rising above the X-axis represent improvement in the variable; columns falling below the X-axis represent deterioration.

Commencing with exploration of the psychoeducation/relaxation phase of treatment, visual analyses suggest that this phase exerted a deleterious effect on patient A.B.'s negative appraisals (she reported becoming more aware of her obsessions than ever before), a positive effect on patient C.D.'s appraisals (he reported experiencing relief at the normalisation of his sexual obsessions) and minimal impact on the other two patients' appraisals. The psychoeducation/relaxation phase was not associated with substantial change in obsessive-compulsive symptom severity for any patient.

The cognitive therapy (CT) treatment phase was associated with positive overall impacts on negative appraisals and obsessive-compulsive symptom severity for patients A.B. and G.H., however it appeared to impact minimally for client E.F., and impacted negatively on patient C.D. both in terms of appraisals and overall symptom severity.

The emotion regulation skills training (ERST) phase of treatment was associated with improvements in negative appraisals in all three domains (i.e., OET, inflated responsibility, and OIT) for three of the four patients. In addition, a substantial improvement in obsessive-compulsive symptom severity was reported by all four patients during the ERST treatment phase. Evidence of successful enhancement of emotion regulation skills during the six-session ERST phase was provided by substantial reductions in deficits in emotion regulation scale (DERS) scores pre- to post-ERST for patients C.D., E.F., and G.H. Patient A.B. reported no improvement in emotion regulation skills following ERST.

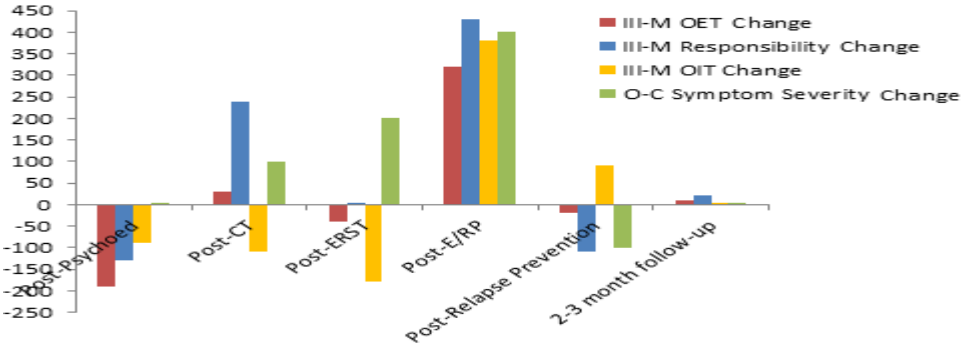

Figure 24. Patient A.B.'s appraisal and O-C symptom severity change by treatment phase

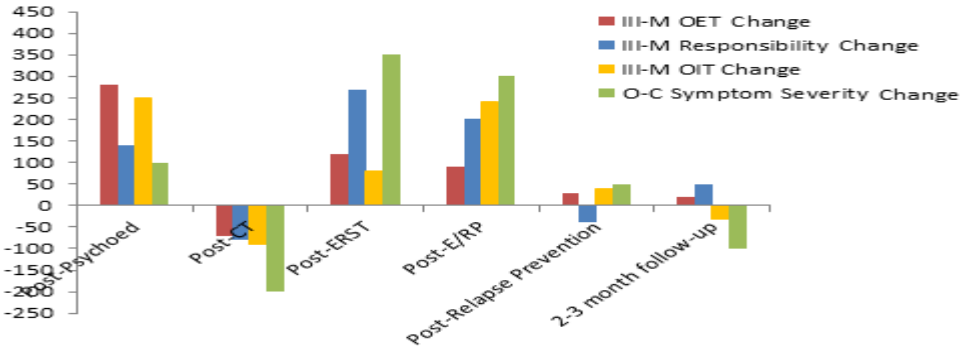

Figure 25. Patient C.D.'s appraisal and O-C symptom severity change by treatment phase

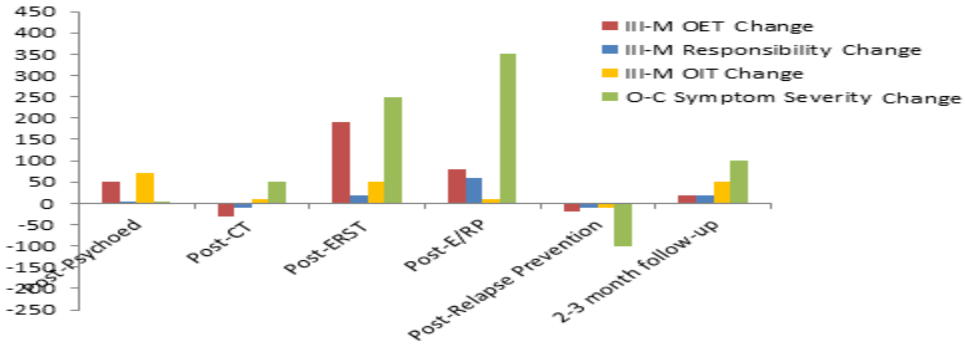

Figure 26. Patient E.F.'s appraisal and O-C symptom severity change by treatment phase

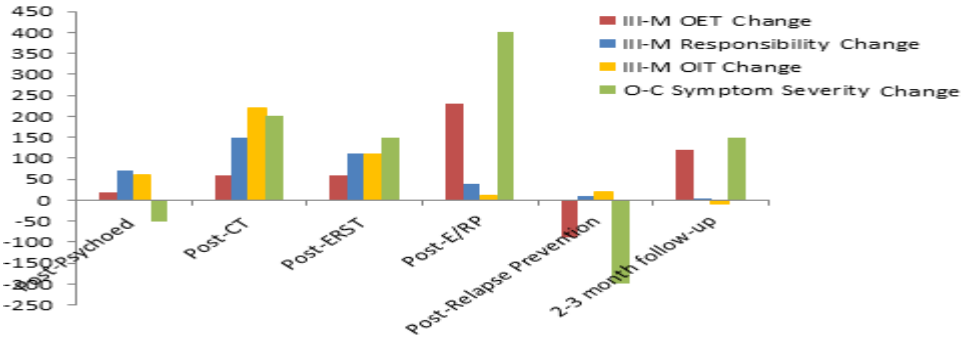

Figure 27. Patient G.H.'s appraisal and O-C symptom severity change by treatment phase

The exposure with response prevention phase of treatment was associated with the largest and most consistent treatment gains overall. All four patients reported improvements in OCD symptom severity and negative appraisals (across all three domains) during this phase.

For all patients, appraisal and symptom severity gains were largely maintained through the relapse prevention and 2-3 month follow-up phases of treatment.

4. Discussion

The present study investigated covariation in negative mood and negative appraisals, and the impact of ERST on negative appraisals and obsessive-compulsive symptom severity, in the OCD context. Results were limited and preliminary, yet nevertheless provided initial clinical data regarding what appear to be generalised impacts of negative mood-states on the cognitive appraisal processes considered so crucial in the pathogenesis and maintenance of OCD. Results additionally highlighted the potential utility of ERST as an augmentation to traditional CBT for OCD.

All four participants in the present study achieved clinically significant change in relation to their obsessive-compulsive symptoms throughout the course of treatment. Findings supported E/RP as the more overtly impactful component in CBT for OCD, and hinted at an approximate equivalence between CT and ERST, particularly in their effectiveness in reducing obsessions and compulsions. Specifically, reductions in the time spent engaging in compulsions were observed during E/RP (4 out of 4 patients) and ERST (1 out of 4 patients) phases of therapy, whereas reductions in the time spent experiencing obsessions were observed during E/RP (4 out of 4 patients), CT (3 out of 4 patients), and ERST (3 out of 4 patients).

In relation to covariation of negative mood symptoms and mood-congruent negative appraisals, current results yielded limited evidence of specificity. Moreover, the current findings suggest that a more generalised pattern of covariation of negative

mood and appraisal may occur in the clinical population, compared with the more specific impacts of mood on appraisal observed in the analogue studies reported in chapters one and two. In the present study, when negative mood-state increased (whether anxious or depressive) there was a trend for negative appraisals to increase as well, across all three domains (i.e., OET, inflated responsibility, and OIT). Similarly, when negative mood-state attenuated, there was a trend for negative appraisals to also attenuate, across all three domains.

Visual comparisons of the impact of each treatment phase on changes in patients' negative appraisals and obsessive-compulsive (OC) symptom severity provided preliminary evidence for the potential utility of ERST as an augmentation to traditional CBT for OCD. E/RP was associated with the largest and most consistent negative appraisal and symptom severity treatment gains (4 out of 4 patients reported improvements in negative appraisals and OC symptom severity). However, ERST also produced substantial gains (3 out of 4 patients reported improvements in negative appraisals, and 4 out of 4 patients reported improvements in OC symptom severity). Interestingly, comparisons showed that CT was associated with less positive outcomes (2 out of 4 patients reported improvements in negative appraisals, and 2 out of 4 patients reported improvements in OC symptom severity) than ERST. Indeed, one patient (A.B.), experienced substantial challenges when engaging with cognitive techniques and exhibited symptomatic deterioration during this phase of therapy. Notably, A.B. was a primarily covert (i.e., cognitive) neutraliser. For him, CT resembled the elaborate sequences of arguments and counterarguments he employed in response to his obsessions and cognitive techniques appeared to quickly become incorporated as a new aspect of his covert compulsive repertoire. This outcome accords with Twohig's (2009) acknowledgment of a subgroup of "verbally entangled" OCD clients "for whom discussions of cognition only fuel OCD" (p.27). Indeed, the current

findings hint at a possible division in CT- versus ERST-based OCD treatment response (with E/RP as the common factor in each) among overtly neutralising (relatively cognitively disentangled) versus covertly neutralising (cognitively entangled) sufferers. The presence of such a division would necessitate flexibility in OCD treatment, with CT and ERST being used as separate or combined options to "set the table" for E/RP, on the basis of each patients degree of cognitive entanglement and covert neutralisation.

Strengths of the present study included regular assessment of the variables under investigation (permitting temporal analysis) and the utilisation of a 2-3 month follow-up session (providing evaluation of the durability of treatment effects).

There were numerous methodological limitations of the current study. It is suggested that results should be considered exploratory and preliminary, and used as guidance for future investigation. The small and relatively homogeneous sample, for instance, cautions that findings may not be fully generalizable. In addition, utilisation of DASS-21 anxiety and depression subscales (which measure severity of anxious and depressive symptomatology, respectively) may not have provided the most sensitive assessment of patients' fluctuating mood-states throughout treatment. Future research may benefit from the use of mood-state visual analogue scales (VAS; as employed in chapters one and two) or non-introspective methodologies (such as implicit memory tasks or physiological measures) to provide additional, and potentially more fine-grained, assessment of the impact of patients mood-states on appraisals across the course of therapy.

A further methodological limitation was the lack of a control patient (receiving a null treatment phase instead of ERST) which prohibited conclusions that patients' ERST-phase improvements were attributable to ERST as opposed to placebo effect, the effect of prior treatment phases, the passage of time, or other unobserved confounding factors. Additionally, the potential for demand and confirmation biases should be

reduced in future studies by utilising an assessor who is blind to the nature of the study (and the treatment received) to undertake the 2-3 month follow up SCID assessments. Moreover, future research should include treatment fidelity assessment to check that the ERST program and the various phases of CBT for OCD are delivered as intended.

An additional caveat regarding interpretation of the present results relates to the inevitable contamination of patients' responses in treatment phases as the consequence of having encountered prior treatment phases. Furthermore, patients' idiosyncratic characteristics and preferences inevitably yield individualistic responses to different treatment phases (irrespective of the specific aims and functions of each phase). As such, generalizability of findings is limited and comprehensive evaluation of the contribution of ERST to CBT for OCD will require clinical investigation on a larger scale.

In conclusion, the current study offered preliminary exploration of the association between negative mood-state, emotion regulation, negative appraisals, and symptom severity in obsessive-compulsive disorder. Results provided some limited evidence of covariation between mood-state and negative appraisal and highlighted the potential utility of ERST as an augmentation to CBT for OCD, particularly for sufferers who are cognitively entangled and in cases where CT exacerbates covert neutralisation. Deeper investigation in this area may contribute to the development of more comprehensive and flexible treatments, with improved therapeutic outcomes, than are currently available.

Chapter Four

General Discussion

1. Recapitulation of Research Aims and Main Findings

In pursuit of treatments with improved effectiveness and acceptability for OCD sufferers, the main aims of the current research project were to investigate the impact of different mood-states and enhanced emotion regulation capacity on patterns of negative appraisals, neutralising activity, and OCD symptom severity. These aims were achieved using two experimental analogue studies and one $N = 4$ OCD clinical case series investigation.

In overview, findings identified mood-state as an important pathogenic process which appears to intersect with cognitive and behavioural processes in the development and maintenance of OCD. Results from the first analogue study yielded evidence of mood-state-dependent patterns in negative appraisals and neutralising motivations in response to an obsession-like thought. Specifically, induced anxious mood-state promoted both appraisals which over-estimated threat and neutralising motivations aimed at reducing threat. Induced dysphoric mood-state specifically promoted both appraisals of inflated sense of responsibility and neutralising motivations aimed at reducing this sense of responsibility. Whereas, negative appraisals were equivalent across all domains and neutralising motivations aimed at diminishing the perceived importance of intrusive thoughts were promoted in the context of neutral mood-state. Crucially, the experimental design of the current research (involving the manipulation of mood) permitted inference of a causal role for anxious and dysphoric mood-states in the availability and likelihood of specific negative appraisals. Further, the patterns of results imply that enhanced capacity to regulate negative affect may be useful in attenuating the impact of mood-state on negative appraisals and neutralising activity.

Results from the second analogue study replicated and extended the findings of the first study. The same specific mood-state-dependent patterns in negative appraisal and neutralising motivation responses were observed, reinforcing the inferences of causal relationships between anxious mood-state, OET appraisals, and neutralising motivations aimed at reducing threat, and between dysphoric mood-state, inflated responsibility appraisals, and neutralising motivations aimed at reducing this sense of responsibility. Overall, these findings show that mood-states differentially colour the experience of intrusive thoughts. Anxious mood-state appears to furnish intrusions with threat-related meaning, whereas dysphoric mood-state furnishes intrusions with self/obligation-based meaning. In addition, results of the second analogue study revealed attenuation of mood-state-dependent patterns of responses (both negative appraisals and neutralising motivations) in the context of enhanced emotion regulation skills. Specifically, anxious mood-induced participants who received emotion regulation skills training (ERST) reported significantly lower OET appraisals and neutralising motivations aimed at reducing threat compared with those not receiving ERST. Reductions in inflated responsibility appraisals among ERST versus No-ERST dysphoric mood-state induced participants failed to reach statistical significance (possibly due to a lack of statistical power in the comparison), however reductions in neutralising motivations aimed at reducing sense of responsibility were significant. Results imply that enhancement of emotion regulation capacity may translate to attenuation of pathogenic mood-state-dependent appraisals and neutralising activity in OCD.

Results from the $N = 4$ clinical case series analysis provided preliminary evidence of ERST-related symptom reduction and attenuation of negative appraisals among OCD sufferers and generalised (rather than specific) covariation

in negative mood and negative appraisals. This generalised as opposed to specific covariation may reflect naturalistic fluctuations in mood-states over time in clinical as opposed to laboratory conditions. The ERST phase of treatment yielded substantial reductions in obsessions for three of the four patients, and reductions in compulsions for one patient. Furthermore, three patients reported substantial reductions in negative appraisals and all four patients reported improvements in obsessive-compulsive symptom severity during ERST. In comparison, three patients reported reductions in obsessions, but no patients reported reduced compulsions, and only two patients reported substantial reductions in negative appraisals and obsessive-compulsive symptom severity during the cognitive therapy phase of treatment. These findings provide preliminary evidence that ERST may represent a valuable augmentation to CBT for some OCD sufferers.

2. Theoretical Implications

Present findings provide basic support for the cognitive appraisal models of OCD, with results supporting a vital role for negative appraisals in obsession-related distress and motivations to neutralise. However, appraisal models exhibit a limited focus on affect – primarily viewing mood disturbance as an outcome of negative appraisal, and overlooking the impact of mood-state on the appraisal process. In repudiation of this view and consistent with Miranda and colleagues' (1988, 1990, and 1998) mood-state-dependent hypothesis, current results suggest that different mood-states exert specific, mood-congruent impacts on negative appraisal processes in the OCD context. Indeed, patterns of mood-state-dependent appraisals and neutralising motivations observed in the current data identify mood-state as a crucial component of the negative appraisal process itself. Results from two analogue studies showed that different mood-states differentially furnish

obsession-like thoughts with mood-congruent meaning and subsequently promote mood-state-specific neutralising activity. These findings were in broad accordance with previous research demonstrating links between anxiety and OET beliefs and appraisals (e.g., Muris et al., 2003), dysphoria and inflated responsibility (e.g., Steketee et al., 1998), and the lack of any links between negative affect and OIT (e.g., Lee, Cougle, & Telch, 2005). Furthermore, attenuation of the impact of negative mood-states on appraisals and neutralising motivations observed in the second and third studies suggested that reduced emotional reactivity in the context of enhanced emotion regulation skills subsequently translated to reduced cognitive reactivity in the form of negative appraisals. These results accorded with previous theory and research identifying an inter-connection between regulatory processes across response domains (e.g., Cicchetti, Ackerman, & Izard, 1995; Damasio, 1994, 2004; Davidson, Jackson & Kalin, 2000; Dodge & Garber, 1991; LeDoux, 1998; Mennin, 2005).

Findings substantially extend existing conceptualisations of the role of mood in OCD (e.g., MacDonald and Davey, 2005a, 2005b) and counsel that contemporary appraisal models of OCD should be expanded to include deeper consideration and recognition of the role of specific mood-states on negative appraisal and neutralising motivation processes. Based on the present results, initial cognitive-affective-behavioural models of OCD in the special cases of anxious, dysphoric, and neutral mood-state are offered in Figures 7, 8, and 9 (see chapter one). Further research is required to investigate the possible existence of additional associations between mood-states and OCD-relevant appraisal domains and to further explicate the links between anxious mood and OET, dysphoric mood and inflated responsibility, and neutral mood state and OIT observed in the present investigation.

Current results also provide a possible explanation for the failure to discriminate OET and inflated responsibility belief and appraisal constructs (despite theoretical distinctions) in the OBQ and III validation studies (OCCWG, 2001, 2003, and 2005). Present findings suggest that differences in the impacts of OET and inflated responsibility beliefs and appraisals on individuals' experience may only become apparent in specific mood contexts which differentially activate particular belief and appraisal domains.

3. Treatment Implications

Despite improvements in treatment outcome in recent decades, problems with the effectiveness and acceptability of psychological treatment for OCD persist. Cognitive appraisal models came to dominate conceptual and therapeutic approaches to OCD, and the role of mood was largely obscured. Current findings provide an expanded account of the role of mood in OCD and imply that emotion regulation skills training may confer new benefits for OCD sufferers, beyond those offered by traditional CBT, particularly in terms of reducing mood-state-dependent negative appraisals of obsessions and subsequent mood-congruent neutralising motivations. Results suggest that the prominence of specific negative appraisals is likely to wax and wane as a function of patients' fluctuating mood-states, thus highlighting the need for OCD therapists to carefully consider, assess, and address mood-state when conducting CT. In addition, the case series results illustrate that enhancing OCD patients' capacity to deal with negative mood-states may be a potentially important and hitherto under-exploited means of attenuating the negative cognitive appraisals considered so crucial in the pathogenesis and maintenance of the disorder.

Moreover, the experiences of patient C.D. suggest that ERST may have utility as an *alternative* to the CT component of treatment for cognitively

entangled and predominantly covertly neutralising OCD sufferers. For patient C.D., who was almost exclusively a covert (i.e., cognitive) neutraliser, CT was associated with a deterioration of symptoms and negative appraisals. Cognitive techniques appeared to readily become incorporated into his covert compulsive rituals. This patient responded considerably more positively to ERST techniques, which helped him come into new relationships with his thoughts and emotions whereby he learned to accept their presence instead of wrestling with them cognitively. Current results thus imply the need for flexibility in OCD treatment, hinting that different means of "tenderizing" beliefs and appraisals may be differentially effective for different types of OCD patients. In particular, findings suggest that ERST may be especially helpful for the cognitively entangled and for predominantly covert neutralisers and that CT may not be appropriate for this sub-population of OCD sufferers.

4. Strengths, Limitations, and Directions for Future Research

Overall strengths of the present research project included the utilisation of experimental designs which provided exploration of the temporal relationships between variables under assessment and thus permitted causal inference. The use of a replication study (see chapter two) delivered opportunities for replication of mood-state-dependent findings observed in study 1 and provided additional support for the hypothesis that mood-state constitutes a condition under which appraisal processes operate differentially in OCD. Manipulation of emotion regulation capacity in the second study permitted exploration of the attenuation of mood-state-dependent impacts on appraisals in the context of enhanced ER skills. The addition of a case-series analysis provided preliminary exploration of the generalisability of analogue findings to the clinical OCD population. Finally, integration of emotion regulation skills training with traditional components of

CBT for OCD in the case-series analysis offered initial exploration of the application and potential utility of ERST as an augmentation to existing treatment.

Several methodological limitations were shared by the two analogue studies including use of a non-clinical sample, a single, analogue "obsession-like" thought (not an actual obsession), and heavy reliance on self-report measures. The exclusive reliance on self-reported emotional responding may have been particularly limiting, as some participants may not have had full awareness of their emotional responses, thereby reducing the extent to which they could accurately report on those responses in the experiments (see Gratz & Roemer, 2004). There was evidence of statistical power issues in both analogue studies, and in the context of various "trends" in the data towards significance in expected directions, larger sample sizes or an examination of effect sizes might be warranted in future research. An additional limitation of the analogue studies was the utilisation of the OBQ for assessment of baseline equivalence in participants' obsessive beliefs. As discussed in chapter one, validation studies have highlighted several limitations of the OBQ, particularly in relation to high correlations among the subscales (OCCWG, 2001, 2003). Recently however, Moulding and colleagues (2011) addressed many of the limitations of the OBQ in the development of the OBQ-TRIP. This short version of the OBQ benefited from a rigorous examination of the factor structure of the original OBQ, with results suggesting a four factor solution in which OET and inflated responsibility constituted separate dimensions (Moulding et al., 2011). The OBQ-TRIP was not yet available when the current research project was being designed, however might be preferable for use in future testing of mood-state-dependent appraisal and neutralising motivations patterns.

The clinical case-series analysis exhibited several methodological limitations including the lack of a control patient (receiving a null treatment phase

instead of ERST), the use of a non-blind researcher/assessor, and the relatively small and homogeneous sample. Moreover, this study was intended as an initial investigation of the association between negative mood-state, emotion regulation, negative appraisals, and symptom severity in OCD and as such, results should be considered preliminary and exploratory and used as guidance for future investigation.

Further investigation regarding the impact of affective processes on appraisal and neutralising in OCD has the potential to contribute to new (more comprehensive and flexible) therapeutic interventions and much-needed improvements in treatment effectiveness. Additional analogue research, with larger samples (capable of producing greater statistical power), is required to provide further testing and replication of the current hypotheses and results. Such research would help ascertain whether non-significant trends in the current data (e.g., trending but non-significant findings in relation to attenuation in inflated responsibility appraisals between the ERST and No-ERST dysphoric groups) are merely noise in the data, or are in fact indicative of specificity. Clinical research on a larger scale is required to provide more comprehensive investigation of the impact of mood-states on appraisal and neutralising processes in OCD and the potential utility of ERST as an augmentation to CBT for OCD. Current results suggest that investigation of the utility of ERST among cognitively entangled and covert neutralising OCD sufferers may be particularly fruitful.

5. Conclusion

Cognitive appraisal models ascribe a crucial role to dysfunctional appraisals of intrusive thoughts in OCD, however little is known about the conditions under which appraisal domains may operate differentially. The current research represented the first experimental investigation of mood-state-dependent

hypotheses in the OCD context. Findings provided an expanded account of the role of mood in the aetiology and maintenance of OCD and supported the hypothesis that mood-state constitutes a condition under which appraisal domains operate differentially in OCD. Specifically, results indicated that anxious and dysphoric mood-states exert unique, activating influences on specific types of negative appraisals, which subsequently yield mood-influenced effects on neutralising motivations. The present research provides a preliminary outline of a theoretical and therapeutic approach to OCD which addresses the interrelationship between emotion and cognition. The current findings counsel that prevailing cognitive-behavioural models of OCD should be expanded in recognition of the moderating role that mood-state appears to play in promoting negative appraisals and OCD symptoms. Results suggest that affective processes should no longer be considered secondary to cognitive appraisal in OCD, but should instead be recognised as a crucial, causal aspect of the broader appraisal process. It is hoped that further research in this field will lead to enhanced understanding of the cognitive-affective-behavioural nexus of OCD and in turn create a foundation for clinical interventions that more flexibly, comprehensively, and effectively treat this debilitating illness.

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Appendices

Appendix A: Interpretation of Intrusions Inventory – Modified (III-M)

Over-estimation of Threat (OET) Appraisal Subscale

1. Having this thought increases the likelihood of me being publicly embarrassed.
2. Having this thought makes the world a more dangerous place.
3. Having this thought threatens the safety of myself and/or others.
4. Having this thought increases the chance that I'll be punished.
5. Any harm that comes about because of this thought will be severe.
6. This thought could lead to a disaster.
7. This thought means that it's more likely that bad things will happen.
8. This thought represents a real threat that someone will be injured.
9. There is a greater chance that I'll encounter serious problems because I've had this thought.
10. Having this thought increases the likelihood that I'll accidentally harm myself or others.

Development of the OET appraisal subscale statements

The questions that constitute the over-estimation of threat (OET) appraisal subscale were developed by adapting the questions from the OET subscale of the OBQ to measure appraisals rather than beliefs. This procedure ensured that a close association remained between the OBQ over-estimation of threat subscale statements and the new III-M over-estimation of threat subscale statements. Such an association was very much evident in the format of the original OBQ and III subscale statements. For example, the OBQ responsibility subscale belief statement "when I see any opportunity to do so, I must act to prevent bad things from happening" clearly corresponds with the III responsibility subscale appraisal statement "because I've thought of bad things that might happen, I must act to prevent them". The crucial difference between the two statements is that the former refers to general responsibility

beliefs while the latter refers to responsibility *appraisals* relating to specific intrusive thoughts identified by the participant. Another example of this distinction is evident in the difference between the OBQ over-importance of thoughts subscale statement "having bad thoughts means I am weird or abnormal" and the III over-importance of thoughts subscale statement "having this thought means I am weird or abnormal". This belief versus appraisal distinction, while preserving the basic form of the statement, was applied in the development of the new OET III-M subscale as well. For example, the OBQ over-estimation of threat subscale statement "I am more likely than other people to accidentally cause harm to myself or to others" was adapted to "having this thought increases the likelihood that I'll accidentally harm myself or others" for the new III-M over-estimation of threat subscale.

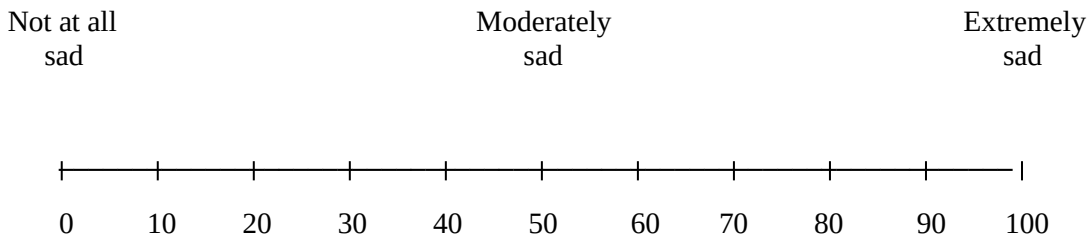
Appendix B: Anxiety and Dysphoria Visual Analogue Scales (VAS)

These questions ask you to rate your current mood state. In making your ratings you should indicate how you are feeling *right now*.

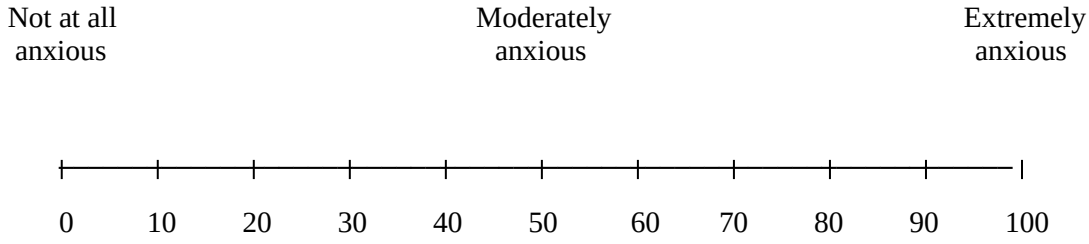
Because people are different, there are no right or wrong answers.

Please read each question carefully and make an assessment of the intensity of your current mood in regard to the mood domain specified by each question (eg sad or anxious). As accurately as you can, indicate the intensity of your current mood in each mood domain by placing an X anywhere along the line below each question.

1. How **sad** do you feel right now?



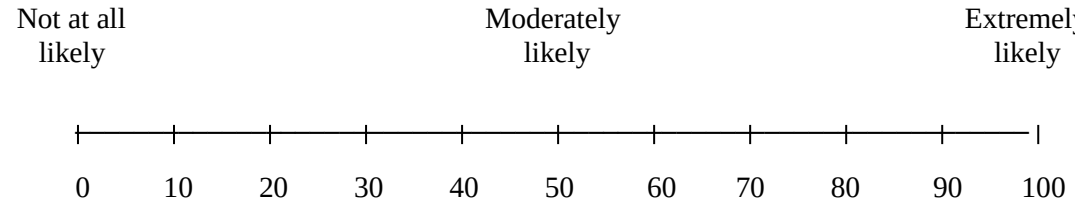
2. How **anxious** do you feel right now?



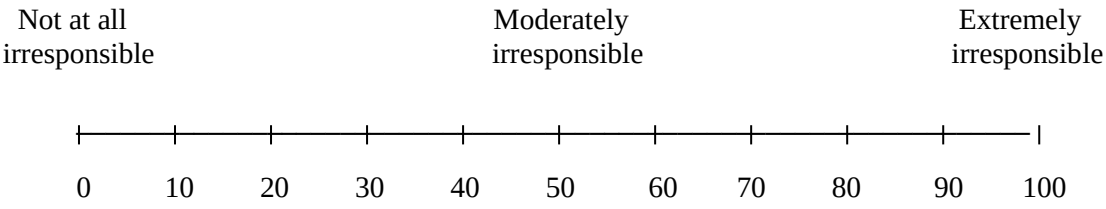
Appendix C: Inflated Responsibility, Over-Estimation of Threat (OET), and Over-Importance of Thoughts (OIT) Appraisal Visual Analogue Scales

The following questions relate to your attitudes and beliefs regarding the car accident thought that you engaged with in the preceding stage of the experiment. People differ naturally in the ways that they think about things. As such there are no right or wrong answers to these questions. Please read each question carefully and then indicate where your attitude lies by placing an X anywhere along the line below each question.

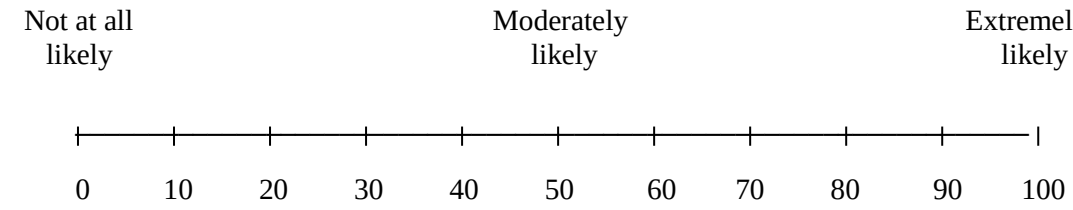
1. How likely is it that the accident will occur *because* you've had the thought about it?



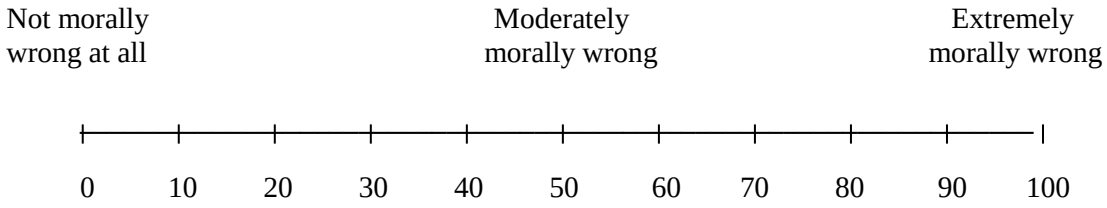
2. How irresponsible would it be to ignore your thoughts about the accident?



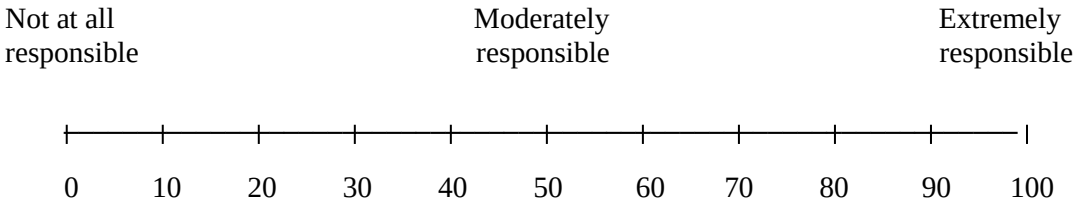
3. If the accident did happen, how likely is it that it would be a serious accident?



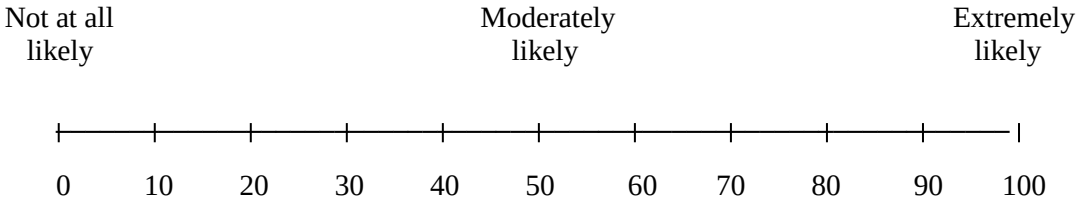
4. How morally wrong was it to think about the accident occurring?



5. How responsible would you feel if the car accident did occur in the next 24 hours?



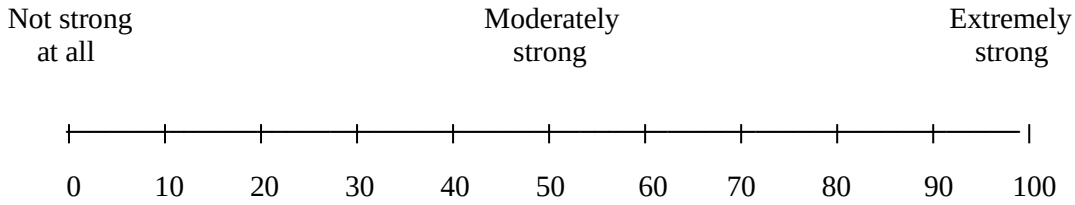
6. How likely is it that the car accident will happen?



Note – Questions 1 and 4 tap OIT appraisals (question 1 taps likelihood-TAF; question 4 taps Moral-TAF). Questions 2 and 5 tap inflated responsibility appraisals (question 2 taps responsibility for the thought; question 5 taps responsibility for the outcome). Questions 3 and 6 tap OET appraisals (question 3 taps threat severity estimation; question 6 taps threat probability estimation).

Appendix D: Urge to Neutralise Visual Analogue Scale

How strong is your urge to reduce or cancel the effects of writing the sentence?



Appendix E: Neutralising Strategies Inventory (NSI)

People are known to use a range of different strategies in responding to negative thoughts (thoughts like the one that you just had about a car accident happening to your friend or family member). We are interested in which strategies (if any) you used during the last two minutes to stop, remove, or reduce in strength the thought about the car accident and any discomfort associated with it.

Please indicate which strategies you used in responding to the thought about the car accident by placing ticks in the boxes next to the relevant strategies in the list below. Choose as many strategies from the list as are relevant.

What did you do to respond to the thought about the car accident?

1. ❑ REPLACED THE THOUGHT (for example – replaced the thoughts of the accident with pleasant thoughts or images, or with other negative thoughts or worries)

2. ❑ REAPPRAISED THE THOUGHT (for example – reinterpreted the thought, tried to analyse the thought rationally, or challenged the thoughts validity)

3. ❑ PLANNED AN ACTION (for example – made a plan to see or call the person imagined in the car accident to check that they're okay or to warn them to be careful)

4. ❑ PUNISHED YOURSELF (for example – got angry at yourself, or pinched, slapped, scratched or otherwise physically punished yourself)

5. ❑ PERFORMED A RITUAL (for example – counted, repeated a meaningless phrase, positioned objects or used some other ritualistic action or gesture)

6. ❑ TRIED TO STOP THE THOUGHT (for example – tried to ignore the thought, tried to force the thought out of mind, tried to suppress the thought)

7. ❑ REASSURED YOURSELF (for example – tried to convince yourself that the thought is not important, evaluated the thought as unimportant, or assessed the normality of the thought)

8. ❑ TRIED TO "UNDO" THE THOUGHT (for example – visualised the accident but with a less serious or a positive outcome, physically or mentally altered the sentence you wrote about the accident to change its meaning, or "put the thought right" by saying prayers)

9. ❑ USED MEDITATION OR RELAXATION (for example – using any kind of relaxation or meditation technique to combat thoughts of the accident)

10. ❑ PHYSICALLY ALTERED THE SENTENCE (for example – tore, scrunched or folded the paper up, or crossed out some or all of the words)

11. ❑ DID NOTHING (endorsing this option indicates that you used no strategies at all to respond to the thought about the car accident)

12. ❑ USED ANOTHER STRATEGY (please specify)

_____

_____

_____

_____

Appendix F: Neutralising Motivations Inventory (NMI)

In this part of the experiment you are asked to indicate *why* you used each of the strategies that you ticked previously. From the list below choose as many reasons for using each strategy as you like. You are free to choose the same reason(s) for more than one strategy.

In the space provided below enter the number associated with one of the coping strategies that you used and then tick as many boxes as are relevant to indicate why you used that strategy. Repeat this process on a separate sheet for each coping strategy that you used.

The reason(s) that I used strategy number _____ for dealing with my thoughts about the accident were:

- ❑ To diminish my sense of responsibility for any negative outcomes associated with my having the thought.
- ❑ To keep the friend or family member that I imagined in the car accident safe from harm.
- ❑ To make the thought have no effect.
- ❑ To fulfil my responsibility to do something about the thought.
- ❑ To make myself feel safer.
- ❑ To make me feel like I'm a good person.
- ❑ I don't know why I used this strategy.
- ❑ Other reason/s (please specify)

_____

_____

_____

_____

Appendix G: Self-Referential Mood-Induction Statements

Anxious Mood-Inducing Statements

1. I am worried about giving a talk in front of my peers later today. (*M* = 3.22, *SD* = 3.11)
2. I'm feeling a little tense. (*M* = 4.67, *SD* = 3.24)
3. Public speaking always makes me nervous. (*M* = 5.11, *SD* = 4.37)
4. I'm finding it hard to relax. (*M* = 5.67, *SD* = 5.27)
5. I have "butterflies" in my stomach. (*M* = 6, *SD* = 5.1)
6. I'm going to feel very nervous when I enter the seminar room. (*M* = 9, *SD* = 5.34)
7. It would be horrible to mess up the talk. (*M* = 9.67, *SD* = 1.8)
8. I have not prepared my talk well enough. (*M* = 10, *SD* = 3.87)
9. I'm concerned that I might feel panicked as I stand in front of my peers. (*M* = 10.11, *SD* = 3.33)
10. I'm going to be embarrassed in front of everyone. (*M* = 10.44, *SD* = 4.53)
11. I feel like I'm running out of time. (*M* = 10.67, *SD* = 5.05)
12. There is a lot of pressure on me to do well. (*M* = 10.78, *SD* = 5.04)
13. If I do poorly in this talk I will fail the unit. (*M* = 12.11, *SD* = 2.89)
14. Failure is not acceptable. (*M* = 13.11, *SD* = 5.93)
15. Everyone is going to laugh at my incompetence. (*M* = 13.55, *SD* = 4)
16. My hands and legs are trembling. (*M* = 14.22, *SD* = 5.65)
17. I feel I am being crushed by the expectations placed on me. (*M* = 14.22, *SD* = 5.65)
18. My mouth has gone dry and I can hardly speak. (*M* = 14.33, *SD* = 4.69)
19. I can't cope. (*M* = 16.33, *SD* = 5.59)
20. I feel I can't control my panic. (*M* = 16.78, *SD* = 3.77)

Note – The order of presentation of the newly developed anxiety-inducing self-referential statements was determined by expert ranking of the statements in terms of anxiety elicited. The expert panel consisted of 10 postgraduate students in the clinical psychology program at the Australian National University. Means and standard deviations of the expert rankings are provided, above.

Dysphoric Mood-Inducing Statements:

1. I feel a little down today.
2. Sometimes I feel so guilty that I can't sleep.
3. I wish I could be myself, but nobody likes me when I am.
4. Today is one of those days when everything I do is wrong.
5. I doubt that I'll ever make a contribution in the world.

6. I feel like my life is in a rut that I'm never going to get out of.
7. My mistakes haunt me, I've made too many.
8. Life is such a heavy burden.
9. I'm tired of trying.
10. Even when I give my best effort, it just doesn't seem to be good enough.
11. Nobody understands me, or even tries to.
12. I don't think things are ever going to get better.
13. I feel worthless.
14. What's the point of trying?
15. When I talk no one really listens.
16. I feel cheated by life.
17. Why should I try when I can't make a difference anyway?
18. Every time I turn around, something else has gone wrong.
19. There is no hope.
20. I feel I am being suffocated by the weight of my past mistakes.

Neutral Mood-Inducing Statements:

1. There are sixty minutes in one hour.
2. A neuron fires rapidly.
3. New Mexico is in the United States.
4. Apples are harvested in the autumn.
5. Basket weaving was invented before pottery making.
6. Some cricket bats are made from the wood of the ash tree.
7. It snows in Thredbo.
8. Perennials bloom every year.
9. You have to take the ferry to get to the island.
10. Sydney is the Capital of New South Wales.
11. Elephants carried the supplies.
12. The Pacific Ocean has fish.
13. Some high schools have a school band.
14. Some think that electricity is the safest form of power.
15. Most oil paintings are done on canvas.
16. Corn is sometimes called maize.
17. An orange is a citrus fruit.
18. Some say that lady bugs are good for the garden.
19. Diamonds really can cut glass.
20. Some chimps have been taught to use sign language.

Appendix H: Emotion Regulation Skills Training (ERST) booklet

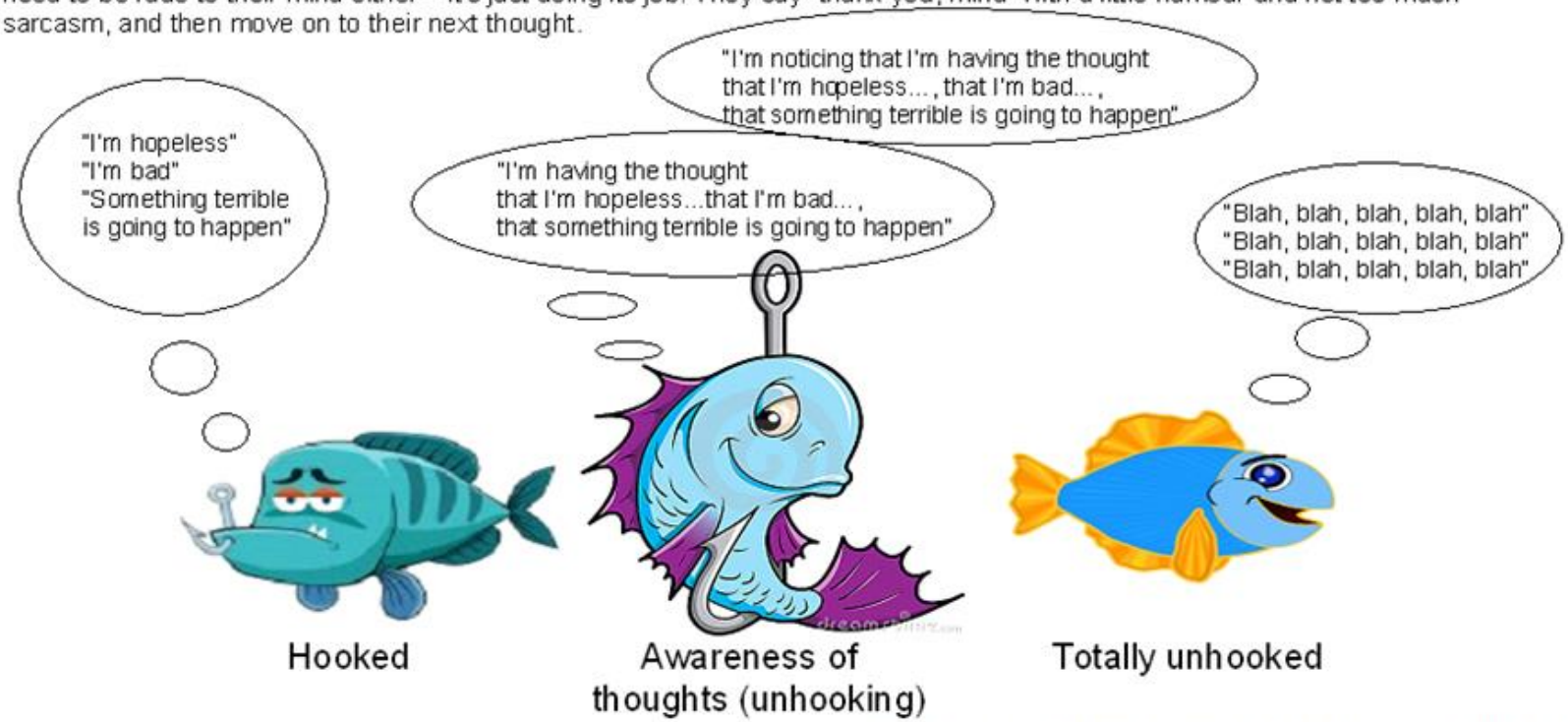
How do you relate to your thoughts and emotions?

Do you ever get "stuck" in unwanted thoughts or feelings?

This booklet provides some information and exercises which may help you to relate to negative thoughts and strong emotions in new, potentially helpful ways. The booklet provides education and training in relation to three unique psychological skills; mindfulness, acceptance, and cognitive flexibility. It is hoped that engagement with the concepts contained in this booklet, in combination with completion of some practical homework exercises, will promote emotion regulation and adaptive thought management.

Hooked and Unhooked: Different ways of relating to thoughts

There are a range of strategies that people employ when relating to their unwanted or unhelpful thoughts. Many people get "hooked" by their unhelpful thoughts. When an unhelpful thought comes to their mind, these people typically think back through their life and focus on memories that make this thought seem really true. Like a film director editing a scary or sad film. An alternative approach, which is enhanced through the practise of mindfulness, is to just try noticing the thoughts. People who use this strategy try thinking "I'm having the thought that..." or try thinking "I'm just noticing that I'm having the thought that...". People who employ this strategy realise that there is no need to pay close attention to everything their mind says. They realise there is no need to be rude to their mind either – it's just doing its job! They say "thank-you, mind" with a little humour and not too much sarcasm, and then move on to their next thought.



(Adapted from: Forsyth & Eifert 2007; Hayes & Smith, 2005; Hayes, Strosahl, & Wilson, 1999)

Bad News Radio

…playing all the bad news, all day, every day!

An analogy that can be helpful when you are just trying to notice your thoughts (instead of getting "hooked" by them) is to think of your unwanted or unhelpful thoughts as a bad news radio station.

Let 'Bad News Radio' play on in the background without trying to suppress it, or ignore it, or fight with it. Instead, just notice that it's playing and get on with your life!

"Blah, blah, blah… You're hopeless. It's a disaster. Something terrible is about to happen. You're a bad person… etc., etc.,"

(Adapted from: Forsyth & Eifert, 2007; Hayes & Smith, 2005; Hayes, Strosahl, & Wilson, 1999)

Passengers on the Bus

Imagine you've been driving a bus called "My Life" and the road you've decided to take is towards a full, rich and meaningful life. As you drive along, you pick up passengers, memories, emotions, thoughts, and so on. Some of the passengers you like – friendly ones, funny ones and supportive ones. You hope they will sit up the front near you. Some passengers you don't like at all. If only these passengers had taken another bus!

Sometimes difficult passengers come up the front of the bus and start trying to get you to go a different way.

"Turn left!"
"You've got to turn right!"
"This way is too hard, go this way"
"Speed up, slow down"

If you do what they say and turn the bus in the direction they want to go, they quieten down and you might feel better for a while - get some peace and quiet. However, giving in to their demands means you are driving your "life bus" in a direction you don't really want to go. You can end up focusing on how to keep these difficult passengers quiet and completely lose your way. After a while, you are likely to feel worse.

Naturally, you would really like the difficult passengers to get off the bus, but because they are your thoughts, feelings and memories, there is no way to get rid of them. Even turning around to argue with them distracts you from driving where you want to go. In the end, to have the life you want, you will need to find ways to take all the passengers – the likeable and difficult ones – along for the ride. You will need to find a way to stop making deals with them, which turn the control of the bus over to them.

Can you find a way to drive your bus in a direction that makes your heart glad?

(Adapted from: Forsyth & Eifert, 2007; Hayes & Smith, 2005; Hayes, Strosahl, & Wilson, 1999)

The Guest House *(by 13th Century poet, Rumi, translated* in *Barks, Moyne, Arberry, & Nicholson, 1997)*

This being human is a guest house.
Every morning a new arrival.

A joy, a depression, a meanness,
Some momentary awareness comes
as an unexpected visitor.

Welcome and entertain them all!
Even if they're a crowd of sorrows,
Who violently sweep your house
Empty of its furniture,

Still treat each guest honourably.
He may be clearing you out
for some new delight.

The dark thought, the shame, the malice.
Meet them at the door laughing,
and invite them in.
Be grateful for whoever comes,
because each has been sent
as a guide from beyond.

The Guest House poem conveys the essence of experiential acceptance. It stands in sharp contrast to the approach that many people take toward their thoughts, feelings, and bodily sensations, particularly those that we label "unwanted". The Guest House reminds us that each one of our internal experiences – even those that may feel unpleasant in the moment – represent important "messengers" for us. If we label experiences as "unwanted" or "bad" and try to suppress, avoid or ignore them, we risk missing important information. The Guest house encourages us to accept *all* internal experiences as welcome guests and to receive *all* their messages.

(Adapted from: Block-Lerner, Salters-Pedneault, & Tull, 2005; Roemer & Orsillo, 2002; Segal, Williams, & Teasdale, 2002)

Emotions – Friend or Foe?

Put simply, emotions are electrical and chemical signals within your body that tell you what is happening. When something pleasurable is happening to you, you feel good; when something distressing is happening, you feel bad. In some ways your emotions are like a TV reporter, giving you constant updates about what you're doing and what you're experiencing.

Experiencing strong emotions can be an intense experience. For this reason, some strong emotions (like fear or sadness) come to be labelled as "bad" or "negative" emotions. However, creating these kinds of distinctions (and therefore preferences for various emotions) can be unhelpful (and even unfair). Let's explore how emotions, even the "bad" ones, can help us live full, rich and meaningful lives.

Emotions contribute to intuition
Sometimes our "gut feelings" of fear can alert us to the presence of danger. Feelings (whether they are "positive" or "negative") can help us work out who to trust and who not to trust.

Emotions motivate us to act on our values
Anger can encourage us to fight for justice. Fear can energise us to run from danger. Love can move us to reach out to others.

Emotions help us to clarify our preferences and values
Our emotional responses guide us to understand what is important to us and what we do and don't like. Without emotions, how could be decide which flavour ice-cream to buy?

Emotions link us to others
Facial expressions of emotion (such as sadness) communicate much faster than words. We link with others via our tendency to "catch" emotions from each other. This is the basis of empathy and the prompt for compassion.

Living in Technicolour
It's tempting to try to hold onto pleasure and avoid pain. Unfortunately, numbing ourselves to pain and sadness also tends to numb our capacity for happiness and love too. ***It's a package deal – you can live life in shades of grey, or embrace the full, rich tapestry of life in a palette of bright, dark and pale colours.***

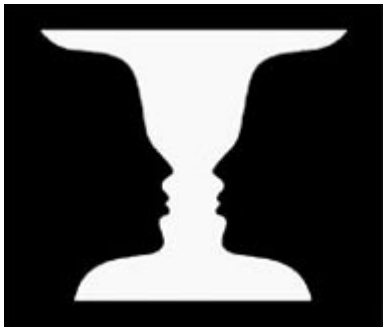
(Adapted from: McKay, Woods, & Brantley, 2007)

Noticing Alternative Perspectives

Take a look at one of the images on this page. What do you see? Some people see a vase. Others see two faces. If you first saw the vase, try now to shift your view and see the faces. If you saw the faces first, look again and seek out the vase.

Neither view is wrong, but nor does either view provide the absolute, comprehensive or only correct perspective on the picture. In fact, each of these pictures can be viewed in two very different and yet equally valid ways.

Having the flexibility to view things from different perspectives can provide us with a more balanced, more thorough impression of those things. This exercise reminds us of the existence of alternative perspectives. It's not that our initial view or thoughts or reactions to things are the final view or the only view, or even necessarily the right view. Often, if we deliberately seek out alternative perspectives on things, we find them. Furthermore, we often find that the alternative perspective is also valid or acceptable and may in fact enhance our understanding.



(Adapted from: Martin, 1997)

What is Mindfulness?

Mindfulness is bringing your awareness to your here-and-now experience with an attitude of openness, gentleness and curiosity.

Mindfulness involves trying to observe your thoughts and feelings and the world around you like a gentle, curious scientist.

(Adapted from: Forsyth and Eifert, 2007)

Five Attitudes to Bring to Mindfulness

Being fully present
Shift the focus of your thinking - let go of thoughts about the past and the future and focus instead only on the present moment.

Having a singular focus
Focus your awareness only on your breath.

Approaching with openness and curiosity
Observe your breath as if for the first time. As if you are an alien who has never experienced breathing before.

Letting go of judging and comparing
Try to observe your breath without engaging in comparison or evaluation. Let go of any labelling of your experience as pleasant or unpleasant.

Being accepting
Try to allow the experience of your breath *as it is*, without attempting to transform it or control it in any way. Mindfulness is not about having pleasant experiences, or distracting ourselves, or even relaxing. In fact, mindfulness can be practiced using unpleasant experiences (e.g., tastes or bodily sensations) just as well as pleasant or neutral experiences.

(Adapted from: Forsyth and Eifert, 2007)

How to Practice Mindfulness

Step 1: Bring your full attention to your breath in the here and now.

Observe the breath with curiosity, as though you have never come across something like this before.

Step 2: When your attention naturally wanders away from the breath, gently, smilingly, return it to the breath once more.

When you find yourself judging, evaluating, categorising or comparing, then patiently and persistently bring your attention back to the breath *as it is*, in the present moment.

Step 3: Practise!
Practise!
Practise!

(Adapted from: Forsyth and Eifert, 2007)

Some tips to help you prepare for your mindfulness practise

1. First, find a comfortable position sitting or lying down in a location where you will not be interrupted.

2. Minimise the distraction to your five senses. Such as turning off the TV and radio, and using soft lighting. Choose a time to practise when you are least likely to be disturbed by others.

3. Wear loose clothing and remove your shoes.

4. Avoid practicing after big, heavy meals, and do not practice after consuming any intoxicants, such as alcohol.

(Adapted from: Forsyth and Eifert, 2007)

Mindfulness Diary

participant code: __ __ __ __ __
1 2 3 4 5

Date:	Did you practise mindfulness? (Yes/No)	Did you listen to the mindfulness CD Provided? (Yes/No)	If you didn't use the CD, please briefly describe your mindfulness practise.	Comments: (optional)

Appendix I: Mindfulness of Thoughts and Emotions Meditation Script

Please relax in your seat, make yourself comfortable, and close your eyes if you like. These instructions are designed to help you relax and calm your mind and body. This exercise can be used at any time, but you may find it particularly helpful during times when unwanted thoughts are present in your mind or when you are feeling strong emotions.

Let's begin now by bringing your attention to a sense of your body, in its entirety, sitting or lying here in this moment. Right now, as you sit or lie here, bring your attention to the awareness of the feelings of contact in all those places where your body is being supported by your chair or bed. *[pause 5 seconds]* Notice the physical sensations at these areas of contact. Perhaps there is pressure, perhaps heat, perhaps itchiness or tingling. It could be anything. Just observe these sensations, as they are, in this moment.

Feel how the air in the room surrounds your body and touches your skin as it moves ever so subtly. See if you can just become aware of the subtle sensations of the air moving across your skin now. *[pause 5 seconds]* Feel how air, in the form of your breath, also moves through your body. Slowly let your attention focus on your breath. Feel the rhythm of your breath as it moves in and out of your lungs. Let your attention ride on the waves of the breath's sensations, perhaps at your stomach which rises and falls with each in and out breath, or perhaps at the nostrils where the air touches the skin at the base of your nostrils and the skin between your nose and upper lip as air moves in and out. Focus your attention wherever the feeling of the breath moving is most accessible and vivid for you. Let each breath come and go, naturally, in its own way. Feel the sensations of the breath moving in and out moment by moment by moment. *[pause 20 seconds]*

Keep your attention in touch, as best you can, with the full duration of each breath coming into the body, and the full duration of each breath leaving the body. Feel the breath's sensations as they change moment by moment by moment. You're doing very well. *[pause 5 seconds]*

Try to just rest in this awareness of your body in its entirety, breathing, moment by moment and breath by breath. Feel your body melt or sink deeper and deeper into the surface of your chair or bed with every out breath as all the muscles in your body relax. And begin to notice now if there are any times when your mind wanders or is carried away with thoughts or feelings. In those moments notice what is on your mind or what emotions you are feeling, and then gently bring your attention back to the breath and to your body as it is, here in this moment. *[pause 20 seconds]*

As you follow these instructions, you may discover that it is not so easy to keep your attention on the breath. It doesn't take long to realise that the mind has a life of its own, and will invariably take off into the past or the future, planning or worrying, liking or disliking, remembering, daydreaming, becoming impatient or bored, or sleepy. This is totally normal and not a problem at all. When you notice that your mind is no longer on your breath then notice what is on your mind in that moment, and then gently let go of whatever it is. This doesn't mean pushing it away, but just recognising it and letting it be, as you guide your attention back to the stomach or to the nostrils. Back to *this* breath, in *this* moment. And once again bring breathing to the centre of your awareness. *[pause 5 seconds]* And if the mind wanders away from the breath a hundred times, as it surely will, each and every time, when you become aware that it is somewhere else, gently and patiently note what is on your mind or what emotion you are experiencing in this moment. And without being harsh or critical or judgemental of yourself, simply recognise what is arising for what it is, and let it be, as you come back to feeling *this* breath in *this* moment as you begin again and again and again. *[pause 40 seconds]*

When you become aware of feelings, of emotions, just notice them. Acknowledge their presence, and see if you can make room for them. Don't try to hold on to them nor make them go away. Just try to make room for the feeling, make room for the sadness or the anxiety or the frustration or the boredom. If they are there, allow them to be there. Welcome and acknowledge each and every feeling. Remember, the purpose is not to feel better, but to get better at feeling and being with all your experience, as it is. So when you become aware of thoughts or emotions, acknowledge them, let them be, and continue returning your attention to the breath. *[pause 40 seconds]*

Since it is in the nature of the mind to wander, it is not that you're failing if your mind doesn't stay on the breath; on the contrary, it's that you are discovering something very important about the nature of the mind itself, and that is, that the mind has waves of thought and emotion, much like the ocean has waves. Just let the waves of thought and emotion come, and let them go. Simply sit on the beach beside your ocean of thoughts and feelings and listen to the sound of the waves as they gently break on the shore and wash away. To be replaced by yet more waves of thought and emotion that also break on the shore and wash away. *[pause 20 seconds]*

Notice that thoughts are just thoughts, emotions just emotions, they come and they go. You are not what those thoughts or feelings say, no matter how persistent or intense they may be. You are the place and the space for these experiences. You are the observer of these experiences. Try to make that observing space a kind space, a gentle space, a welcoming space. Continue working in this way now, patiently and persistently. Observe the sensations of the breath and return your attention to the breath whenever you notice that the mind has wandered. You are bound to succeed. You have done extremely well. *[pause 60 seconds]*

It will soon be time to finish this mediation exercise. In a few seconds I'll ask you to come out of your relaxed, meditative state and to bring yourself back to the environment around you. I'll count backwards from 5 to 1, and when I reach 1 please open your eyes, look around and re-familiarise yourself with your surroundings. 5 - 4 - 3 - 2 - 1.

(Adapted from: Forsyth & Eifert, 2007; Kabat-Zinn, 1990; Williams, Teasdale, Segal, & Kabat-Zinn, 2007)

Appendix J: Overview of the Phases of Therapy (Study 3)

Phase 1 – Relaxation and Psychoeducation (4 Sessions).

During the relaxation and psychoeducation phase of treatment patients were provided with feedback on their assessment results, case conceptualisation, and diagnosis. In addition, they received relaxation training in the form of progressive muscular relaxation (PMR) and psychoeducation regarding the nature of anxiety, normalizing obsessional thinking, the cognitive-behavioural conceptualisation of OCD, and the rationale for CBT for OCD (including exposure with response prevention therapy). Initial suicide risk assessment was conducted. When required, safety contracting was initiated and safety plans were collaboratively created and revisited.

Phase 2 – Cognitive Therapy (5 sessions).

Cognitive therapy included introduction to the six OCD-relevant cognitive domains highlighted by the OCCWG (i.e., over-estimation of threat, inflated responsibility, over-importance of thoughts, excessive need for control, intolerance of uncertainty, and perfectionism; Clark, 2002) and identification of the most prominent belief and appraisal domains in each patients' unique cognitive profile. The origins, consequences and maintenance of each patient's beliefs and appraisals in these OCD-relevant domains were explored. Cognitive challenging and restructuring techniques were employed to help patients identify, evaluate, and modify these dysfunctional thinking patterns underlying their obsessional fears and compulsive urges. When required, ongoing suicide risk assessment and intervention was conducted during this treatment phase. Note that patient C.D. terminated treatment phase 2 earlier than scheduled (after four phase 2 sessions) due to his experience of aversive responses and symptom deterioration during this phase.

Phase 3 – Exposure with Response Prevention (11 - 13 sessions).

The exposure with response prevention (E/RP) treatment phase commenced with collaborative establishment of an exhaustive hierarchy of each patient's feared thoughts and avoided situations. Schedules and deadlines were contracted with each patient for tapering off (and eventually completely ceasing) all compulsive, neutralising activity. Family-based psychoeducation was provided on the role of "accommodators" in enabling compulsions and avoidance and providing reassurance about obsessional fears. A family-accommodation therapy session was conducted in which each patients primary accommodator declared their independence from the patient's OCD and collaboratively agreed upon a three-to-four week schedule (with deadline) for completely tapering off all reassurance provision. Psychoeducation regarding common difficulties experienced by patients during exposure therapy was provided. Individual tailoring of exposure with response prevention exercises was informed by the hierarchy of feared thoughts and avoided situations collaboratively developed with each client. E/RP exercises were systematically approached according to their anxiety-provocation ranking in the hierarchy. Where possible, E/RP exercises were conducted with patients in off-site locations where the ecological validity of exercises was maximised (e.g., shopping malls, public swimming pools, and A-League soccer matches). Ongoing suicide risk assessment and intervention was conducted when required.

Experimental Phase – Emotion Regulation Skills Training (6 sessions).

Individual elements of the ERST program that patients engaged with included theoretical and practical introduction to mindfulness meditation, experiential acceptance psychoeducation and practical exercises including 'Passengers on a Bus' and The Guest House borrowed from acceptance and commitment therapy and mindfulness-based therapy (Hayes et al., 1999; Segal et al., 2002) and exercises designed to promote psychological flexibility. It was expected that patients' engagement with the program

would help them transform and defuse their relationships with unwanted cognitions and emotions and in this way increase their capacity to resist engaging in dysfunctional, emotion-driven appraisals of their obsessions and subsequent neutralising behaviours. Ongoing suicide risk assessment and intervention was conducted when appropriate. On the basis of random assignment, each patient received the ERST treatment phase at a different point in the overall CBT for OCD regime. Patient G.H. received ERST before phase 1, patient E.F. received ERST before phase 2, patient C.D. received ERST before phase 3, and patient A.B. received ERST at the mid-point of phase 3.

Phase 4 – Relapse Prevention (2 - 4 sessions).

Given the well-established proneness of OCD-sufferers to relapse following treatment (Foa et al., 2005; McLean et al., 2001) comprehensive relapse prevention was conducted over two-to-four gradually tapered sessions according to the patients' needs. Relapse prevention involved identification of potential triggers for relapse, re-assessment of patients' social and support networks, and engagement in behavioural activation designed to bolster their support network and resilience. Relapse prevention also encompassed comprehensive review of the various phases of therapy patients completed including the rationale for each, the skills learned, and each patient's personal experiences and reflections upon them. Patients also engaged in a treatment outcomes review exploring the patterns of their results on the various psychometric scales and symptom ratings they completed throughout the course of therapy, and possible explanations for changes in symptoms at various stages. Each patient's treatment progress was celebrated and ways in which they could consolidate gains into the future were explored. Suicide risk assessment was conducted.

Phase 5 – Two to Three Month Post-Treatment Follow-Up (1 session).

The follow-up session was utilised to enhance each patient's sense of security when leaving therapy. It also provided opportunities for patients to formally review

their progress and fine-tune their coping skills. Additionally, the follow-up session allowed the clinician to gather additional research data and identify any areas of slippage in treatment gains that required follow-up intervention. Suicide risk assessment was conducted.