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Appraisals of importance and control of thoughts: An experimental analysis

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APPRAISALS OF IMPORTANCE AND CONTROL OF THOUGHTS:

AN EXPERIMENTAL ANALYSIS

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ABSTRACT

Cognitive theory of obsessions hypothesizes that faulty appraisals of intrusive thoughts are paramount in the development and persistence of obsessive-compulsive disorder (OCD). Types of faulty appraisals include interpretations of excessive responsibility for preventing an adverse outcome (responsibility), appraisals of exaggerated personal importance (importance of thoughts), and interpretations that focus on having total control over one's own thoughts (control of thoughts). Previous research suggests that importance and control of thoughts appraisals (Ferguson, Jarry, & Jackson, 2006) and beliefs (Obsessive Compulsive Cognitions Working Group, 2005) are better described as one construct. Although there are numerous experimental studies suggesting that appraisals of excessive responsibility lead to more severe OCD symptoms, only two have demonstrated this effect with importance of thoughts appraisals (Teachman, Woody, & Magee, 2006; Teachman & Clerkin, 2007), and none have experimentally examined the combined effect of importance appraisals and efforts at mental control. The present research investigates the impact of an experimental manipulation of importance appraisals and attempts at mental control on the severity of OCD associated manifestations. Participants had an unwanted mental intrusion provoked through the use of a well-established intrusive thought provocation procedure (Rachman, Shafran, Mitchell, Trant, & Teachman, 1996). Appraisals of importance were experimentally manipulated by systematically varying information given to participants about having an intrusive thought (i.e., whether it is meaningful or not). Attempts at mental control were manipulated using a thought suppression task, as suppression is a common strategy used

by people in response to an intrusive thought in order to regain mental control. Results revealed that participants who were exposed to importance interpretations, and those who were not given any feedback about their intrusive thought (Control group), reported more severe dysfunctional appraisals of importance and mental control, as well as higher levels of OCD associated symptoms than did those who had their intrusive thought normalized. Participants who were instructed to exercise mental control via thought suppression did not report more severe levels of obsessive-compulsive symptoms than did those who were not given such instructions. Finally, the findings clearly suggest that psychoeducational information to normalize mental intrusions is beneficial.

DEDICATION

This research is dedicated to those individuals that experience distressing obsessions and compulsions. It is my sincere hope that research, such as the study presented herein, will facilitate the understanding of obsessive-compulsive symptoms, and in turn, lead to improved treatments for those who suffer from obsessive-compulsive disorder.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter I

INTRODUCTION

Overview

Context of the Problem

Individuals with obsessive-compulsive disorder (OCD) suffer from symptoms that can be extremely tormenting, debilitating, and time consuming. The World Health Organization (WHO) rated OCD as the tenth leading cause of disability in the world (WHO, 1996). OCD was once thought to be a rare mental disorder with initial prevalence ratings of 0.05% (Rudin, 1952, as cited in Antony, Downie, & Swinson, 1998). However, findings of a Canadian epidemiological study suggest that OCD is a relatively common mental disorder, with an estimated lifetime prevalence rate of 3% in the general population (Bland, Orn, & Newman, 1988). Results from the Epidemiological Catchment Area study estimated lifetime prevalence rates to be between 1.9 and 3.3% (Karno, Golding, Sorenson, & Burnam, 1988). A more recent study conducted by Weissman et al. (1994) found the lifetime prevalence of OCD to be within this range at approximately 2.3%. In adult clinical samples, the ratio of males to females is approximately 1 : 1 and males tend to have an earlier age of onset compared to women (American Psychiatric Association, 2000).

Definitional/Conceptual Issues

Obsessions

The most recent edition of the Diagnostic and Statistical Manual of Mental Disorders, text revision (DSM-IV-TR) defines obsessions as "persistent ideas, thoughts,

impulses, or images that are experienced as intrusive and inappropriate and that cause marked anxiety or distress" (American Psychiatric Association, 2000, p. 457). Examples of obsessions include impulses to harm a loved one, thoughts of being contaminated, and repeated doubts that one left an appliance plugged in and consequently that one's house will catch fire. Obsessions are distinguished from worry in that the latter are experienced as ego-syntonic and are usually focussed on real life concerns, such as family, work, or finances, whereas obsessions are experienced as intrusive and are less focussed on normal experiences of everyday life (Turner, Beidel, & Stanley, 1992). Furthermore, worry tends to take the form of ordinary thoughts whereas obsessions may take the form of thoughts, images, or impulses (Turner et al., 1992). For the sake of parsimony, the term "intrusive thoughts" is used throughout this document to refer to all types of cognitive intrusions (i.e., thoughts, impulses, or images).

Compulsions

Compulsions are defined in the DSM-IV-TR (American Psychiatric Association, 2000) as "repetitive behaviours (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) the goal of which is to prevent or reduce anxiety or distress, not to provide pleasure or gratification" (p. 457). Examples of common compulsions include excessively cleaning oneself to wash away or prevent perceived contamination, repeatedly checking the stove to ensure the dials are turned off so as to prevent a fire from occurring, and repeating a certain phrase over and over. Compulsions are distinct from impulse control disorders (e.g., pathological gambling, kleptomania, pyromania), which also involve engaging in repetitive behaviours, in that

compulsions are designed to reduce risk and avoid harm or distress whereas impulsive behaviours involve risk taking and are engaged in for more pleasurable purposes, at least in the short term (Veale, 2003).

Obsessive-Compulsive Disorder

OCD is categorized as an anxiety disorder in the DSM-IV-TR (American Psychiatric Association, 2000). The rationale for this classification is that obsessive thoughts engender a feeling of anxiety and discomfort. Compulsions are typically performed in order to neutralize such anxiety and discomfort. The criteria in the DSM-IV-TR require sufferers to experience clinically significant obsessions and/or compulsions in order to be diagnosed with OCD. This means that the obsessions and/or compulsions must cause marked anxiety or distress or have a significantly adverse impact one's social and/or occupational functioning. Typical OCD presentations involve the presence of obsessions and compulsions, although conjoint presentation is not required for a diagnosis of OCD. In rare instances, individuals with OCD may have obsessions without compulsions, or compulsions in the absence of obsessions (de Silva & Rachman, 1998; Mayerovitch, du Fort, Kakuma, Bland, Newman, & Pinard, 2003).

Behavioural Conceptualization of OCD

The behavioural conceptualization of OCD stems from Mowrer's (1960) two-factor theory that describes how classical and operant conditioning combine to facilitate the onset and maintenance of fear. This theory is not specific to OCD but it does help provide an understanding of the manner by which anxiety develops and persists in OCD. Mowrer posits that fear is first acquired through classical conditioning whereby the onset

of a specific fear, referred to as a conditioned response (CR), occurs when a conditioned stimulus (CS) is paired with a naturally aversive stimulus, referred to as an unconditioned stimulus (US). For example, a child may learn to fear (CR) a teddy bear (CS) if the presence of the teddy bear coincides often enough with a loud, unpleasant noise (US). Eventually the presence of the teddy bear will elicit the fear response because it will be associated with the aversive stimulus, in this case, the unpleasant noise. Operant conditioning contributes to the maintenance of the fear response. According to Mowrer, a fear response engenders motivational efforts to reduce the uncomfortable state. Any behaviour that works to reduce the level of fear (e.g., escape or avoidance) is reinforced because of its success in temporarily reducing or eliminating the fear. Despite the short-term effectiveness of escape or avoidance behaviours to reduce fear, such behaviours contribute to the maintenance of the fear in the long term because they prevent the extinction of the CR. That is, these behaviours prevent the opportunity for one to be exposed to his or her feared stimulus for an extended period of time and to habituate to the stimulus. Repeated exposure to the CS without presentation of the US leads to extinction of the CR.

Mowrer's (1960) two-factor theory can be used in a more specific manner to conceptualize the onset and persistence of OCD. Upon occurrence of an intrusive thought, individuals with OCD experience anxiety or distress. They learn to reduce the anxiety initially by escaping and in the future by avoiding fearful stimuli. They may also engage in compulsive rituals in order to reduce their anxiety. The success of the compulsive rituals and avoidance behaviours in mitigating or eliminating the anxiety and

distress is reinforcing and increases the probability that such behaviour will recur in the future. Individuals come to think that they avoided negative consequences (e.g., their feared thought coming true) by engaging in compulsive rituals or escaping/avoiding situations associated with their obsessions. The cycle of fear in response to obsessions, followed by compulsions or escape/avoidance behaviours is maintained because engaging in these behaviours precludes the opportunity to habituate to the anxiety and to disconfirm faulty beliefs.

Because of this pattern, individuals with OCD never have the opportunity to learn that the feared events will not happen and that their anxiety or distress will eventually subside without engaging in compulsive rituals or escaping the situation. For example, a person begins to have intrusive thoughts that he/she will be contaminated and subsequently, will become gravely ill. The individual experiences anxiety and fear when he/she has these repetitive intrusive thoughts of becoming contaminated by germs. Upon feeling contaminated, the individual engages in repetitive and excessive washing rituals to rid him/herself of any possible contamination. The individual also attempts to avoid situations that are perceived to be of elevated risk for contamination. The compulsive rituals and avoidance behaviour prove effective (at least in the short-term) in reducing the anxiety experienced from the intrusive thoughts of contamination. Thus, these behaviours are negatively reinforced because they are successful in reducing anxiety. This negative reinforcement is also implicated in landmark cognitive conceptualizations of OCD as being a key contributor in the persistence of OC symptoms (Rachman, 1998; Salkovskis, 1989). The person's continual avoidance and compulsive rituals prevent the extinction of

the fear because the individual does not have an opportunity to be exposed to their fears in the absence of their anticipated consequences. Repeated exposure to situations in which the individual feels contaminated in the absence of performing any compulsions or escaping the situation would help the individual habituate to the fear and disconfirm any faulty beliefs that he/she will become contaminated in situations in which dirt and germs are present.

This behavioural conceptualization of OCD proved to be tremendously influential as it led to a type of treatment called exposure and response prevention (ERP) whereby individuals are systematically exposed to the feared situations that provoke their obsessional thoughts while they simultaneously refrain from carrying out their compulsive rituals (Meyer, 1966). The rationale for this method of treatment is to allow OCD sufferers to disconfirm the feared consequences associated with not performing their compulsions. Although ERP has proven to be an effective treatment for many people with OCD, a substantial proportion of sufferers (20-30 percent of individuals) refuse this intense method of treatment and of those who complete ERP treatment, approximately 25 percent fail to improve (see Clark, 2004 for more on the limitations of ERP). Additionally, this conceptualization does not adequately account for the cognitive biases present in OCD (Clark, 2004). For these reasons, gaining further understanding of OCD was necessary to improve treatment methods for the disorder.

Cognitive Conceptualization of OCD

The development of the cognitive theory of OCD largely stems from the seminal work of Rachman and de Silva (1978), who examined obsessional thoughts in a sample

of individuals with OCD and in a non-clinical sample. Findings from their landmark study revealed that 80% of non-clinical participants experienced intrusive thoughts or impulses. Furthermore, the intrusive thoughts reported by the non-clinical participants were indistinguishable in content and form (i.e., thoughts or impulses) from those experienced by the sample of individuals with OCD. However, those with OCD reported greater frequency and intensity of intrusions and heightened difficulties in their ability to successfully dismiss the unwanted thoughts. This was the first study to suggest that intrusive thoughts are not specific to individuals with OCD, but rather are a universal phenomenon. These results were later replicated by Salkovskis and Harrison (1984), who found an even higher prevalence of intrusive thoughts (88%) in non-clinical participants.

The finding that intrusive thoughts are not specific to people with OCD made it clear that the presence of such thoughts was not the central factor in determining whether an individual developed OCD. Rather, cognitive-behavioural theorists suggest that how individuals appraise (interpret) their intrusive thoughts largely influences whether or not they will develop OCD-related problems (Clark & Purdon, 1993; Rachman, 1997, 1998; Salkovskis, 1985, 1989). These theorists believe that individuals prone to developing OCD make maladaptive appraisals of their intrusive thoughts. Although there appears to be agreement on the central role of faulty intrusive thought appraisals in the development and maintenance of OCD, various theorists have implicated different types of faulty appraisals in the development of the disorder. These different types of maladaptive intrusive thought appraisals, and the research that supports them, will be reviewed below. Nevertheless, restructuring faulty appraisals is the central focus in cognitive therapy for

OCD.

Behavioural Versus Cognitive Treatment of OCD

McLean et al. (2001) conducted a treatment study comparing ERP (behaviourally focussed treatment) and cognitive therapy for OCD in group format. The goal of ERP was to help patients extinguish the fears via repeated gradual exposures to their feared situations. The focus of cognitive therapy was to identify and restructure faulty appraisals of intrusive thoughts and obsessional beliefs. Results indicated that both treatments were more effective than a control condition and ERP was marginally more effective than cognitive therapy in reducing the severity of OCD symptoms. This marginal difference persisted at 3-month follow-up. Whittal, Robichaud, Thordarson, and McLean (2008) reported on a two-year follow-up study evaluating the effectiveness of ERP and cognitive therapy for OCD, in both individual and group formats. Findings revealed that both treatments had a similar positive impact on the reduction of OCD symptoms in individualized treatment. However, in group format, those patients who underwent ERP endorsed less severe OCD symptoms at 2-year follow-up compared to those who underwent cognitive therapy. Whittal et al. (2008) report that OCD treatments have not continued to improve over time. Further understanding of the cognitive mechanisms associated with OCD may help to overcome this apparent plateau in treatment outcome.

Cognitive-Behavioural Theory of Obsessions: Responsibility

Salkovskis (1985, 1989) postulates that intrusive thought appraisals that increase one's likelihood of developing OCD symptoms are those in which the individual interprets him or herself as being responsible for the occurrence of the intrusive thought

and/or as being responsible for the perceived harmful consequences (content) associated with the thought. In the context of faulty intrusive thought appraisals, Salkovskis defined responsibility as,

> The belief that one has power which is pivotal to bring about or prevent subjectively crucial negative outcomes. These outcomes are perceived as essential to prevent. They may be actual, that is, having consequences in the real world, and/or at a moral level (cited in Salkovskis et al., 2000, p. 350).

Upon the occurrence of an intrusive thought, individuals with OCD experience an inflated perception of responsibility to prevent some perceived negative outcome. Neutralizing rituals, whether overt (e.g., checking) or covert (e.g., praying), are performed in order to prevent harm or negative consequences from befalling the self or others and/or to reduce one's sense of responsibility (Salkovskis, 1989; Salkovskis & Wahl, 2003). These neutralizing behaviours contribute to the persistence of the disorder because they prevent the opportunity for rigid responsibility-related beliefs to be disconfirmed. That is, by engaging in neutralizing behaviour, one will not see that his or her feared thought will not actually happen. Instead, failure of the feared thought to come to fruition is attributed to having performed the neutralizing rituals, which are subsequently reinforced. Individuals with OCD typically feel that if their feared thought (impulse, image) actually occurs in the real world, it will be their fault because they failed to prevent it (e.g., by not checking enough, or cleaning enough, etc.). This superstitious type of thinking often precedes compulsive behaviours. In fact, individuals who never present for treatment often engage in superstitious behaviour that is similar to that of persons with OCD, the

difference being that the latter group finds it to be significantly more distressing (Rachman & Hodgson, 1980). Finally, Salkovskis (1985) theorizes that thoughts about intrusions in which a perceived feeling of personal responsibility is absent are unlikely to be followed by compulsive rituals because there would be no reason to perform such rituals (i.e., no anxiety/distress would be present if the intrusive thought was appraised adaptively).

Empirical Support for the Cognitive-Behavioural Theory of Obsessions. The concept of inflated responsibility has received extensive empirical support. Rachman (1993) acknowledged the importance of the relationship between responsibility appraisals and OCD symptoms and stated that a sense of inflated responsibility is particularly common in individuals who compulsively engage in checking rituals. In an experimental study, Lopatka and Rachman (1995) examined whether changes in perceived level of responsibility are causally related to compulsive checking. Individuals with OCD were randomly assigned to a high or low responsibility condition, or to one of two control conditions. Perceived level of responsibility was manipulated through instructions provided by the experimenter. These instructions were presented to participants prior to exposure to a situation in which they would typically engage in excessive checking behaviour. Participants in the low responsibility condition were informed that the experimenter would take full responsibility for anything that would happen during the task, whereas participants in the high responsibility condition were told that they were fully responsible for anything that might happen during the task as a result of them not checking. The control groups were not provided with any responsibility-related

information. The results demonstrated support for Salkovskis' (1985, 1989) theory in that individuals in the low responsibility group (who had their perceived level of responsibility decreased) reported significantly lower levels of distress and urges to engage in checking behaviours compared to the control groups. Furthermore, a trend towards significance was present as inflating participants' perceived level of responsibility appeared to increase their distress ($p = .10$) and desire to engage in checking behaviours ($p = .10$) compared to those that were not exposed to a responsibility manipulation. Lopatka and Rachman (1995) argue that this lack of significant finding may be attributable to participants' (i.e., individuals with OCD) already elevated levels of responsibility, thus resulting in a ceiling effect.

In a study conducted to assess the role of perfectionism and responsibility in obsessive-compulsive symptoms, a sample of undergraduate students completed measures of perfectionism, responsibility, and obsessive-compulsive (OC) symptoms. Responsibility was a better predictor of OC symptoms than was perfectionism, although the latter accounted for a significant proportion of unique variance (Rheaume, Freeston, Dugas, Letarte, & Ladouceur, 1995).

Ladouceur et al. (1995) conducted an experimental study in which responsibility in a non-clinical sample was manipulated. Participants were randomly assigned to a high responsibility or low responsibility condition. In the high responsibility condition, participants were falsely told that the research lab was mandated by a pharmaceutical company to improve classification of medicinal capsules to facilitate distribution to individuals suffering from a serious virus in another country. They were specifically

informed that their accurate classification of various coloured capsules could directly affect the production of the capsules. Alternatively, participants in the low responsibility condition were informed only that the researchers were interested in the perception of colours and that their performance was a practice trial before the real study began. Overall, participants in the high responsibility group were found to exhibit significantly more hesitations, overt checking behaviours, anxiety, and reported a higher level of perceived responsibility than did those in the low responsibility group.

Bouchard, Rheaume, and Ladouceur (1999) conducted another experimental study investigating the impact of varying levels of responsibility appraisals on OC symptoms in individuals with varying levels of perfectionism. Participants were assigned to either the highly perfectionistic or moderately perfectionistic group based on their scores on a measure of perfectionism. Participants were then randomly assigned to a either a low responsibility condition, in which they were asked to complete a task and told that the results were of no importance, or a high responsibility condition in which participants were instructed to complete an important task that would have a significant impact on many people. Findings indicated that those in the high responsibility group showed a greater frequency of checking behaviour than did those in the low responsibility group. Additional results indicated that in the high responsibility condition, those who were highly perfectionistic reported higher levels of perceived personal responsibility for negative outcomes than did the moderately perfectionistic group. These findings suggest that responsibility appraisals are related to OCD symptoms and that highly perfectionistic individuals are more likely than others to make such appraisals.

Findings of a treatment study revealed that cognitive therapy aimed at reducing one's perceived level of responsibility significantly reduced OCD symptoms in a clinical sample high on compulsive checking (Ladouceur, Leger, Rheaume, & Dube, 1996). This finding was particularly impressive in light of the fact that the therapy focussed solely on changing maladaptive appraisals of inflated responsibility, without any exposure and response prevention. Nevertheless, these individuals experienced clinically significant reductions in their level of perceived responsibility and the severity of their OCD symptoms.

In a controlled study by Foa, Amir, Bogert, Molnar, and Prezworski (2001) that examined responsibility, individuals with OCD were compared with social phobia sufferers and non-clinical controls. Participants completed the Obsessive Compulsive Responsibility Scale, a self-report scale designed to measure the perceived level of responsibility in individuals in low- and high-risk situations as well as in situations that are specifically relevant to OCD. The OCD group demonstrated inflated responsibility compared to the non-clinical and social phobia groups in low-risk and OC-relevant situations. Alternatively, no group differences emerged in high-risk situations. This finding may be a result of non-clinical individuals reporting increased levels of responsibility for high-risk situations while individuals with OCD were already high, possibly resulting in a ceiling effect.

Foa, Sacks, Tolin, Prezworski, and Amir (2002) conducted further research on perceived levels of responsibility and checking behaviours. Participants consisted of a group of individuals with OCD who engaged in checking compulsions (OC checkers),

individuals with an OCD diagnosis but who did not engage in checking rituals (OC non-checkers), and a non-clinical group. Results indicated that the group of OC checkers reported greater urges to rectify situations, greater feelings of relief upon doing so, and higher perceived responsibility for preventing harm than did the non-clinical group in situations that were deemed to be of low- and moderate-risk. OC checkers endorsed greater urges to rectify situations, greater relief when doing so in low- and moderate-risk situations and higher perceived inflated responsibility in moderate-risk situations compared to OC non-checkers. OC non-checkers did not score significantly different from the non-clinical group on any of the dependent variables. These findings suggest that responsibility is useful in conceptualizing the development and maintenance of OC checking behaviour. Foa, Sacks et al., (2002) suggest that responsibility may have less explanatory power for the broad scope of OCD presentations (e.g., washers, orderers, hoarders, etc.). However, there is empirical evidence to suggest that faulty interpretations of inflated responsibility are as relevant to OC washers as they are to OC checkers. For example, Wilson and Chambless (1999) failed to find any significant difference between correlations of OC checking and OC washing measures with measures of responsibility, using a sample of non-clinical individuals. Such findings contradict the assertions of Foa, Sacks et al. and suggest that appraisals of responsibility are also present in washers.

Providing further support for the influence of responsibility appraisals on symptoms of OCD, Salkovskis et al. (2000) found that patients with OCD (unspecified subtypes) experienced more responsibility interpretations than did anxious and non-clinical control groups and they were more likely to endorse general responsibility beliefs.

Furthermore, Williams, Salkovskis, Forrester, and Allsopp (2002) conducted a pilot study in which six adolescents with various OCD subtypes (e.g., washers, checkers, etc.) received cognitive-behavioural therapy whereby faulty appraisals of inflated responsibility were targeted. Results indicated that reductions in perceived level of responsibility coincided with a less severe levels of OC symptoms.

Breakdown of Mental Control Theory of Obsessions: Control of Thoughts

Clark and Purdon (1993) emphasize the prominent role of intrusive thought appraisals in the onset and maintenance of OCD and suggest that less emphasis should be placed on appraisals of responsibility. Instead, they believe that obsessions arise when an individual perceives him or herself as no longer having mental control. Clark and Purdon (1993) postulate that individuals prone to developing OCD have dysfunctional thought control beliefs whereby they exaggerate the extent to which they should be in control of their own thoughts. These dysfunctional thought control beliefs are hypothesized to be quite stringent in that individuals with these beliefs think that they should be in control of their thoughts at all times. According to this theory of obsessions, those who have these faulty thought control beliefs appraise the occurrence of intrusive thoughts as unacceptable and they attempt to suppress them. Research has demonstrated that attempts at thought suppression actually have a paradoxical effect resulting in an increase in the occurrence of the intrusion (Lavy & van den Hout, 1990; Wegner, Schneider, Carter III, & White, 1987). Therefore, attempts at suppressing intrusive thoughts are liable to fail with a resulting increase in thought occurrence. According to Clark and Purdon (1993), individuals prone to obsessions perceive these failed attempts at thought suppression as

indicating that they have lost mental control. Although this theory of obsessions puts little focus on the development of compulsions, Clark and Purdon (1993) do posit that compulsive rituals arise as a final attempt to gain control over cognitive intrusions.

A case example will be used to demonstrate how obsessions might develop according to the theory proposed by Clark and Purdon (1993). An individual who holds the belief that it is extremely important to be in control of one's own thoughts experiences an intrusive impulse to drive his/her car into oncoming traffic. The person interprets this thought as being unacceptable, and as an indicator that he/she is not in control of his/her mind. This leads to attempts to suppress this impulse, however, this makes the thought more salient which results in the person experiencing this intrusive impulse more often. Repeated failed attempts at thought suppression suggest to the individual that he/she has lost control of his/her thought processes. As a final attempt to gain more control over the unwanted impulse he/she compulsively repeats the phrase "I am not losing my mind." This example demonstrates how maladaptive appraisals involving the excessive need to always be in control of one's own mind contribute to the onset of OC symptoms.

Empirical Support for the Breakdown of Mental Control Theory of Obsessions.

Clark and Purdon's (1993) conceptualization has received empirical support. For instance, non-clinical participants holding the belief that they need to be in control of their thoughts have been shown to exhibit more severe symptoms of OCD compared to individuals who do not hold such a belief (Purdon & Clark, 1994). Furthermore, Clark, Purdon, and Wang (2003) found that beliefs about the negative consequences of being

unable to control one's thoughts were significant predictors of the frequency of obsessions.

Purdon, Rowa, and Antony (2005) examined the effects of thought suppression in a sample of individuals with OCD. Participants initially completed a measure of intrusive thought appraisals and they were subsequently asked to identify their most upsetting mental intrusion. Participants' most distressing intrusive thought was then primed further by instructing them to think of a scene that involved the intrusion for a 30-second period. Then they were exposed to either a thought suppression or a non-suppression condition. Findings indicated an absence of any paradoxical effect of thought suppression. However, recurrences of one's intrusive thought during a second thought monitoring period led to negative appraisals about one's inability to control his or her thoughts. Such control-related appraisals predicted distress caused by thought occurrences, lowered mood, and more intense thought suppression efforts.

Cognitive Theory of Obsessions: Importance of Thoughts

Rachman (1997, 1998) proposed that individuals with OCD catastrophically misinterpret the significance of their intrusive thoughts by attaching excessive personal significance to their intrusions. Attaching undue personal importance to intrusions results in them becoming more salient and meaningful by way of being personally relevant, threatening, and revealing of the person's character (Rachman, 1997). According to Rachman (1997), obsessions will persist as long as the faulty interpretations persist, and will diminish as the perceived importance of such thoughts lessen. Additionally, the tendency to appraise intrusive thoughts in a personally-relevant, catastrophic manner,

increases one's propensity to develop OCD whereas the tendency to make adaptive intrusive thought appraisals, in which intrusions are not interpreted as catastrophic, decreases the likelihood of developing OC symptoms.

A case example is presented here to demonstrate the onset and persistence of OC symptoms according to the theory proposed by Rachman (1997, 1998). An individual who attends church regularly begins to have an intrusive impulse to blurt out an obscene remark in church. He/she interprets this to mean that he/she is a disgusting person. This misinterpretation of the intrusion increases the range of distressing stimuli because certain neutral stimuli now become threatening, as they become associated with both negative appraisals about what his/her intrusive impulse means about him/her as a person and anxiety (Rachman, 1998). For instance, the individual not only experiences fear while at church, but also fears going to social events with members of his/her church or even driving past the church, because these situations trigger the same type of intrusive impulses (and negative personally-relevant appraisals) that the person experiences while at church. With increased stimuli provoking the intrusive thoughts, those thoughts become increasingly salient and occur more often, and ultimately develop into obsessions (Rachman, 1998). According to Rachman (1998), maladaptive interpretations of feared stimuli leads to avoidance of the stimuli. Repeated avoidance prevents the opportunity to disconfirm inaccurate interpretations. That is, the person who continually avoids church because of the intrusive impulses he/she experiences while there, never gives him/herself a chance to learn that were he/she to remain at church for an extended period of time, he/she would not actually blurt out an obscene remark. Additionally, without the

knowledge that intrusive thoughts are a universal phenomenon, the individual may continue to think that his/her intrusions represent some sort of character flaw. Thus, the obsessional thoughts persist. Rachman (1997, 1998) argues that when the misinterpretation is reduced or eliminated, the feared stimuli are converted into neutral stimuli. Thus, the chance of provoking the obsessional thought is drastically reduced thereby lowering or eliminating the occurrence of the obsession.

Empirical Support for the Cognitive Theory of Obsessions. Rachman's (1997, 1998) theory that individuals prone to developing OCD attach excessive personally-related importance to their intrusive thoughts has received empirical support. Findings from Rachman and de Silva's (1978) landmark study demonstrated that almost all people appraise their mental intrusions as having personally significant meaning and most appraise their intrusions as being in contradiction to their normal self. In accordance with this, individuals reporting on their most upsetting intrusive thought have indicated that the thought contradicted valued aspects of the self to a greater extent than did individuals who reported on their least distressing intrusion (Rowa & Purdon, 2003). Additionally, ratings about the personally-relevant meaning attached to intrusive thoughts predict the frequency of obsessional thoughts (Clark & Claybourn, 1997).

Studies by Teachman and colleagues (Teachman & Clerkin, 2007; Teachman, Woody, & Magee, 2006), which attempted to experimentally manipulate importance of thoughts appraisals in a non-clinical sample, have found partial support for the cognitive theory of obsessions proposed by Rachman (1997, 1998). Teachman et al.'s (2006) study was the first to attempt to experimentally manipulate importance of thoughts appraisals.

Prior to the manipulation, participants completed measures to assess pre-existing severity of depressive and OC symptoms, as well as beliefs about obsessions. Thereafter, participants were asked to recall previously experienced mental intrusions and then they were randomly assigned to receive an importance or a meaningless manipulation, or were assigned to a control group. Those in the importance condition were told (falsely) that their intrusive thoughts said a lot about them as a person. Individuals in the meaningless condition were informed that their intrusions lack any significance, while those in the control group were simply told to think about their intrusive thoughts. Participants then completed self-report measures to assess explicit appraisals and a computer task used to assess implicit appraisals of their intrusive thoughts. Participants were provided with definitional information about intrusive thoughts and were primed to recollect some of their own previously experienced intrusive thoughts. They were informed that they would not be asked to share their specific intrusive thoughts. Participants were then randomly assigned to one of three conditions: importance, meaningless, or a control condition.

In the importance condition, the experimenter told participants that their intrusive thoughts were important and might reflect their personal values. In contrast, participants in the meaningless condition were informed that their intrusive thoughts were meaningless and unrelated to their personal values. Participants in the control condition were not given any information about their intrusive thoughts. All participants completed an association task on a computer in order to examine implicit (i.e., automatic, involuntary) appraisals of intrusive thoughts. Then participants completed a self-report scale to assess the perceived level of personal significance (i.e., importance appraisals)

they attached to the intrusions.

As expected, the strongest implicit associations of intrusive thoughts and importance were found in participants in the importance condition. Contrary to expectations, no group differences were found on an explicit measure of the personal significance one attaches to intrusive thoughts. That is, according to the self-report information provided, participants in the importance condition did not attach more personal significance to their intrusive thoughts than those in the meaningless or control conditions. No differences were found between the meaningless and control groups on implicit or explicit measures, which is consistent with the cognitive model of obsessions in that healthy individuals are expected to interpret the occurrence of the intrusive thought in a relatively harmless and unimportant fashion (Teachman et al. 2006). It is important to note that the authors indicated that their manipulation check was not significant and, therefore, they concluded that they could not be certain as to whether or not the experimental manipulation caused participants to appraise their intrusive thoughts in a different manner (although the importance manipulation did appear to have an effect on implicit appraisals).

Teachman and Clerkin (2007) employed the same methodology as Teachman et al., (2006) to further investigate the impact of importance-related appraisals on obsessional thought patterns. Participants' explicit appraisals of personal significance and their state self-esteem ratings were predicted by pre-existing beliefs about obsessions, but not by the experimental importance manipulation. Alternatively, participants' scores on the measure of implicit appraisals was predicted by the interaction of certain pre-existing

obsessional beliefs (the need to be certain and the perceived importance of thoughts) and the importance manipulation. The authors indicated that there may be distinct predictors of implicit and explicit appraisals of mental intrusions. However, they also noted that explicit appraisals, which are measured via self-report, could have been controlled by participants. That is, participants may have responded to demand characteristics and voluntarily controlled their responses in a more socially desirable fashion. This explanation would not apply to implicit appraisals, which are deemed to be outside one's level of conscious control. Again, these results partially support the cognitive theory of obsessions proposed by Rachman (1997, 1998) in that the manipulation of interpretations of intrusive thoughts influenced implicit appraisals.

One shortcoming of the studies conducted by Teachman and colleagues (Teachman & Clerkin, 2007; Teachman et al., 2006) may have been that the researchers did not use a measure that has sufficient sensitivity to assess state OC symptoms and appraisals. They used the Obsessive-Compulsive Inventory - Revised (Foa, Huppert et al., 2002) which was not designed to measure state-like OC symptoms. Further, the Personal Significance Scale (Rachman, 2001, as cited in Teachman et al., 2006) used to assess importance appraisals of intrusive thoughts had untested psychometric properties, particularly with respect to whether it is sensitive to state effects (Teachman et al., 2006). Also, it remains to be seen whether individuals exposed to an importance manipulation would experience more severe levels of compulsive behaviour than individuals not exposed to such a manipulation.

Obsessive Compulsive Cognitions Working Group and Importance/Control Appraisals

In 1995 an international group of experts on OCD collaborated to form the Obsessive Compulsive Cognitions Working Group (OCCWG) in order to develop common methods of assessing cognitive aspects of OCD. They developed the Obsessive Beliefs Questionnaire (OBQ) to assess six general belief domains associated with OCD including: inflated responsibility, overimportance of thoughts, excessive desire to control one's own thoughts, perfectionism, overestimation of threat, and intolerance of uncertainty (OCCWG, 1997, 2001). In a psychometric validation study, factor analytic results of the OBQ suggested that the six theoretically-derived subscales were better understood as measuring three constructs: responsibility and threat estimation, perfectionism and intolerance for uncertainty, and importance and control of thoughts (OCCWG, 2005).

The OCCWG (2001) also created the Interpretation of Intrusions Inventory (III), a self-report measure that assesses how individuals interpret their intrusive thoughts. This instrument is designed to measure specific appraisals or interpretations of recently occurring intrusive thoughts, whereas the OBQ was developed to measure more general trait-like beliefs related to OCD. The III contains three subscales: Importance of Thoughts, Control of Thoughts, and Responsibility. All III items were theoretically developed by OCCWG members. Factor analytic results of the III revealed that one factor emerged, described generally as "negative interpretation of intrusive thoughts" (OCCWG, 2005, p. 1537). The result that the theoretically-derived subscales could not be differentiated on an empirical basis was surprising and warranted further research.

Ferguson, Jarry, and Jackson (2006) subjected data from university students to confirmatory factor analyses to test the empirically-derived one-factor model of the III and the theoretically-derived three-factor model of the III. Both models had a poor fit, thus an exploratory analysis was undertaken and produced a 19-item two-factor structure of the III consisting of two factors, a Responsibility factor and an Importance/Control of Thoughts factor. This instrument is referred to as the III-19. The Responsibility factor consists of nine items whereas the latter factor consists of ten items, five from each of the original Importance and Control of Thoughts subscales. The Importance/Control of Thoughts factor reflects intrusive thought appraisals focussing on the excessive personal significance associated with the occurrence of the thought and the perceived need to control one's thoughts.

The finding that the Importance and Control of Thoughts subscales loaded together on one factor was not entirely surprising based on a recent cognitive conceptualization of OCD and empirical findings. Clark's (2004) cognitive control theory of obsessions proposes that individuals with OCD make primary appraisals of the occurrence of intrusive thoughts and secondary appraisals of mental control. Clark posits that primary intrusive thought appraisals may focus on exaggerated importance of the intrusive thought, excessive responsibility, and threat. Secondary appraisals involve interpretations that one should be able to control what enters into their mind, therefore, occurrences and recurrences of an unwanted intrusive thought are perceived as being indicative of personal deficiencies in one's ability to attain mental control. That is, once people make negative faulty appraisals of excessive importance, they tend to think that

they should not be thinking about such thoughts and they try to control them. This theory explains why the Importance of Thoughts and Control of Thoughts items loaded together in the factor analysis conducted by Ferguson et al. (2006). In terms of additional empirical support demonstrating that the Importance and Control of Thoughts appraisals on the III are better described as measuring a single unitary construct, recall that the factor analysis of the OBQ conducted by the OCCWG (2005) found that the Importance and Control of Thoughts items loaded on one factor. Furthermore, in a study examining attributions of failed thought control efforts, individuals with OCD attributed their thought suppression failure to internal character flaws to a greater extent than did the non-clinical group (Tolin, Abramowitz, Hamlin, Foa, & Synodi, 2002), which again suggests that appraisals of excessive personal importance coincide with appraisals of failed thought control in the experience of OCD.

Finally, research from the directed forgetting literature may aid in understanding how one may develop OC problems through maladaptive appraisals of importance and mental control. Wilhelm, McNally, Baer, and Florin (1996) exposed a group of individuals with OCD and a non-clinical group to a directed forgetting paradigm in which participants were instructed to either remember or forget certain words presented sequentially in a randomized order on a computer screen. The words had negative (e.g., violence), neutral (e.g., tables), or positive (e.g., laugh) connotations. Later, participants completed recall and recognition tasks. Interestingly, the OCD group was less successful at forgetting negative words (compared to positive or neutral) that they had been instructed to forget. Tolin, Hamlin, and Foa (2002) partially replicated and extended these

findings by using words that the OCD participants indicated were relevant to their OCD (e.g., "dirty" or "certainty"). Findings revealed that individuals with OCD were able to forget positive, negative, and neutral non-OCD-relevant words. However, the OCD group experienced significant difficulty in their attempts to forget OCD-relevant negative and positive words. The fact that OCD sufferers had little success in forgetting OCD-relevant *words* suggests that such individuals may have difficulty forgetting *thoughts* that are perceived as related to OCD symptoms. In terms of the development of OCD, thoughts perceived to have relevance to OCD (i.e., perceived as important) are likely to result in attempts to forget or suppress such thoughts (Clark, 2004). Perceived difficulties in forgetting or suppressing the thought may result in secondary appraisals of being unable to achieve or maintain mental control (Clark, 2004).

Developing an Experimental Design to Investigate Appraisals of Importance/Control of Thoughts

Although there is ample correlational research suggesting that faulty appraisals of intrusive thoughts are associated with OC symptoms, experimental research capable of demonstrating a cause-and-effect relationship between maladaptive appraisals and OC symptoms is much sparser. The majority of such research has focussed on manipulations of appraisals of inflated responsibility and has found that these appraisals lead to increases in OC symptoms (Bouchard, Rheaume, & Ladouceur, 1999; Foa et al., 2001; Ladouceur et al., 1995; Lopatka & Rachman, 1995). However, to date, importance/control of thoughts appraisals have not been experimentally manipulated. Two recent studies described earlier (Teachman & Clerkin, 2007; Teachman et al., 2006)

experimentally manipulated importance of thoughts appraisals but did not assess the mental control aspect of importance/control of thoughts appraisals. These studies also had some limitations, for instance, the effect of the manipulation was evaluated with a single measure that may not be sensitive to state effects. Furthermore, there was an absence of any state measures of OC symptoms. Finally, in these studies participants recalled an intrusive thought that they had experienced in the past. This may have resulted in participants not feeling the same way that they did when they originally had the intrusive thought. Anxiety and distress caused by obsession-like thoughts subside over time (Rachman et al., 1996), therefore, when participants recalled their previous intrusive thought, it may have lacked much of its original distressing quality. Thus, it is less likely that the intrusion would have been experienced as intensely unacceptable, nor is it likely to have produced as much anxiety or distress as it did originally. Provoking intrusive thoughts as part of the experimental manipulation may be an important first step in the development of a more valid experimental design to investigate appraisals of these thoughts. The validity of the design would be improved because it would permit investigation of appraisals while participants are actively experiencing an obsession-like thought. When an intrusive thought is provoked, it would likely be more salient and produce more anxiety and distress than would recalled intrusions.

Provocation of an Intrusive Thought. Prior to investigating the effect of different types of thought appraisals on the severity of OC symptoms one must first get participants to experience an intrusive thought. A previous experimental study (Rachman et al., 1996), conducted to examine the effects of neutralizing intrusive thoughts, used an ingenious

design to provoke an obsession-like intrusive thought. In Rachman et al.'s study, the experimenter asked participants to think about a close friend or relative and then instructed them to complete the following sentence by inserting that person's name in the blank: "I hope _____ is in a car accident" (p. 891). Participants' anxiety level, recorded on a Visual Analogue Scale from "0" to "100", significantly increased from 14.6 to 67.4 after this sentence completion task [$t(62) = 24.6, p. < 0.001$].

Importance of Thoughts Manipulation. The sentence task designed by Rachman et al. (1996) was deemed to be particularly distressing for individuals prone to the thought-action fusion (TAF) cognitive bias. TAF has been defined as the "tendency for individuals to assume that certain thoughts either imply the immorality of their character or increase the likelihood of catastrophic events" (Berle & Starcevic, 2005, p. 263). Thus, it has two components: (1) the belief that thinking about an adverse event makes it more likely to occur (referred to as "TAF Likelihood"), and (2) the belief that thinking an immoral thought is equivalent to actually carrying out an immoral action (referred to as "TAF Moral"; Shafran, Thordarson, & Rachman, 1996). The two types of TAF appear to have relevance to the types of intrusive thought appraisals that were previously described. For example, TAF Likelihood assumptions, which focus on the likelihood that an event will occur, have relevance to appraisals of responsibility whereby individuals are focussed on preventing an adverse real-world event from occurring. TAF Moral has the most relevance to importance/control of thoughts appraisals (specifically the "importance" aspect) because the appraisals are more focussed on the immorality associated with having the unwanted thought, rather than on the likelihood of the feared

event actually occurring in the real world. Thus, it stands to reason that an experimental procedure encouraging participants to make TAF Moral assumptions will be effective in increasing appraisals of the importance of thoughts. This method is consistent with that used in Teachman et al. (2006) in which the experimenter in the "importance" condition told participants that their intrusive thoughts were important and revealing of their character.

Control of Thoughts Manipulation. To develop an experimental manipulation that incorporates the mental control aspect of importance/control of thoughts appraisals, it is beneficial to examine preexisting literature on thought suppression. Upon experiencing an intrusive thought, many people try to suppress it for the very reason that it is unpleasant and they would rather not think about it. Additionally, it is prudent to recall Clark and Purdon's (1993) theory that proposes that individuals who are prone to developing OCD have dysfunctional thought control beliefs in which they think that they should be in control of what enters their minds at all times. To these individuals, the presence of an intrusive thought indicates that they are not in control of their minds and they attempt to seek mental control via suppression of the disturbing thought. Hence, thought suppression may be a fruitful avenue to explore when attempting to create manipulations of the control aspect of importance/control of thoughts appraisals. Unfortunately, the thought suppression literature has very mixed findings related to immediate and rebound ironic effects of thought suppression (see Purdon (1999) and Rassin, Merkelbach, and Muris (2000) for more comprehensive reviews of the thought suppression literature).

In the seminal research by Wegner et al. (1987), non-clinical participants were asked to verbalize their thoughts for two five-minute periods. One group was instructed to try not to think of a "white bear" during the first period, and later they where instructed to try to think about the bear as much as possible for a second monitoring period (initial suppression group). Participants were instructed to ring a bell each time they thought of a white bear. The other group was instructed to think about a white bear as much as possible during the first five-minute period and then to try to not think about a white bear during the second period (initial expression group). Although no effect of thought suppression was found in period one (no immediate enhancement effect), participants who initially suppressed the intrusive thought had more frequent occurrences of the target thought in the second five-minute period than did those in the initial expression group (a rebound effect). However, findings from Lavy and van den Hout (1990) did suggest that thought suppression had an immediate paradoxical effect. These researchers had one group of participants suppress the thought of "vehicles" whereas another group were instructed to think about whatever they wanted, including "vehicles." Participants in the suppression group reported significantly more thoughts of vehicles than did those in the non-suppression group. Clark, Ball, and Pape (1991) conducted a study to further investigate the effects of thought suppression. All participants listened to a story and then one group was instructed to suppress details of the story. One of the control groups was simply instructed to think about anything that they wished to think about and the second control group was told to think about anything they wanted to, including thoughts of the story. The suppression group reported fewer thoughts of the story than did the control

groups during the initial monitoring period (no immediate enhancement effect). Later, all participants were instructed to think about anything they wanted. This time a rebound effect was found in that the group that had initially suppressed the details of the story reported more frequent thoughts about the story than did controls.

In the above studies the thoughts to be suppressed were neutral (e.g., a white bear). Obsessions are not neutral, they are unwanted and intrusive. Thus, to investigate thought suppression in relation to OCD it may be more valid to use target thoughts that possess the ego-dystonic quality of obsessional thoughts. Salkovskis and Campbell (1994) suggest that intrusive thoughts have an impact on one's emotions which may influence the manner in which they are processed. These researchers had non-clinical participants identify an intrusive thought that they had experienced during the previous month. Participants were given instructions to either suppress their intrusive thought, simply monitor the occurrence of their intrusive thought, suppress the intrusive thought and engage in distraction (no specific distraction task mentioned), suppress the intrusive thought and not engage in distraction, or suppress the thought and engage in a specific distraction task that was recommended. Participants recorded occurrences of their own intrusive thoughts by clicking a counter. In a second period, participants were instructed to think about anything, and to again record occurrences of their intrusive thought. Overall, the results indicated that the suppression groups experienced more intrusive thoughts than the control group (who were asked to simply monitor and record occurrences of their intrusive thoughts) during both periods. Salkovskis and Campbell stated that no evidence of a rebound effect was found because thought frequency was not

higher in any of the experimental groups in the second period compared to the first. Thus, only an immediate enhancement effect of thought suppression was found. The authors posit that these findings differ from those of Clark, Ball, and Pape (1991), who found evidence of a rebound effect and no immediate enhancement effect, because these targeted thoughts to be suppressed were "emotionally valanced and personally relevant" (Salkovskis & Campbell, 1994, p. 6). The targeted thoughts in Salkovskis and Campbell's (1994) study clearly have more relevance to OCD than do neutral thoughts because people with OCD attempt to suppress unwanted intrusive thoughts, not neutral thoughts.

In further contrasting fashion, a study conducted by Janeck and Calamari (1999) examining the effect of thought suppression in a clinical sample of individuals with OCD found no immediate enhancement or rebound effect of thought suppression of a personally-relevant obsessional thought. Similarly, Purdon and Clark (2001) found no paradoxical effects of neutral or intrusive thoughts using a non-clinical sample.

Overall, examination of the thought suppression research does not produce clear answers. However, much of the thought suppression research had focussed on thought frequency, which Abramowitz, Tolin, and Street (2001) point out may not be the only important factor associated with suppression. They state, "Individuals with psychological disorders may respond to thought suppression failure with catastrophic appraisals of the meaning of such failure (e.g., that they are weak, bad, or dangerous) " (pp. 700-701). This suggests that failed attempts and mental control are associated with importance appraisals.

An Importance/Control of Thoughts Manipulation. In order to create an ecologically valid importance of thoughts manipulation, the sentence completion task from Rachman et al. (1996) is excellent because it provokes an intrusive thought that resembles an obsession. Teachman and colleagues (Teachman & Clerkin, 2007; Teachman et al., 2006) demonstrated that appraisals of overimportance may be experimentally manipulated by systematically varying the information that the experimenter provides about having the intrusive thought (i.e., whether it is meaningful or not). Therefore, manipulating importance appraisals could be achieved by first planting an emotionally charged thought and then suggesting that having this thought is indicative of a character flaw. Control of thoughts appraisals may be investigated in the context of a thought suppression task. Appraisals of failed mental control are expected to occur naturally in response to participants being unable to suppress the intrusive thought that they are trying to suppress (due to the paradoxical effect of trying to suppress a distressing intrusive thought). Incorporating all three of these aspects (i.e., provocation of an intrusive thought, manipulating the feedback with regards to having the intrusive thought, and using a thought suppression task) into one study will allow for appraisals of importance/control of thoughts to be investigated in order to determine whether such appraisals lead to increased symptoms of OCD. Lastly, despite arriving at a manipulation of appraisals of importance/control of thoughts, one should also consider measuring appraisals of inflated responsibility given the nature of the intrusive thought provocation procedure (e.g., "I hope _____ is in a car accident') used by Rachman et al. (1996). That is, without any specific instructions to do so, it is possible that participants who complete

this procedure may make responsibility-related appraisals in which they feel responsible to prevent the thought from happening.

Rassin (2001) used the sentence completion task used by Rachman et al. (1996) to provoke an obsession-like thought in non-clinical participants. After this provocation procedure, one group of participants were instructed to suppress the intrusive thought and another group was instructed to think about anything that came to mind, including the intrusive thought. Results did not reveal a paradoxical effect of thought suppression, nor did individuals in the suppression condition report more distress than individuals in the non-suppression control group. The apparent effectiveness of thought suppression in this study may have actually been a result of participants making adaptive appraisals of the intrusive thought. It is expected that in a sample of non-clinical participants, appraisals of intrusions would be adaptive and intrusions would be interpreted as having little significance. Thus, such intrusive thoughts would likely fade from consciousness like many other unimportant thoughts or they would likely be easily suppressed. If participants were led to appraise the occurrence of the intrusive thought as having important personal meaning about themselves, they would be expected to have more difficulty suppressing the thought. This would be consistent with the findings of Rassin, Merckelbach, Muris, and Spaan (1999), who found that when individuals are given a reason to interpret a thought (even a neutral one) as bad, attempts to suppress the thought have a paradoxical effect resulting in an increased frequency of occurrence of the suppressed thought. Furthermore, using a structural equation modelling approach, Rassin, Muris, Schmidt, and Merkelbach (2000) found that TAF triggers thought suppression,

which is associated with increases in OC symptoms in a university sample.

Lastly, in an investigation of importance/control of thoughts, it is appropriate for the importance of thoughts manipulation to precede the control of thoughts manipulation as this coincides with cognitive theory in which people make initial appraisals of the occurrence of the intrusion (these may be related to overimportance, excessive responsibility or threat) and secondary appraisals of mental control (Clark, 2004).

Purposes of the Present Research

Research Question

The purpose of the present study was to answer the following research question: Do individuals who make appraisals of importance/control of thoughts experience more severe levels of OC symptoms than do individuals who do not make such appraisals?

Hypothesis

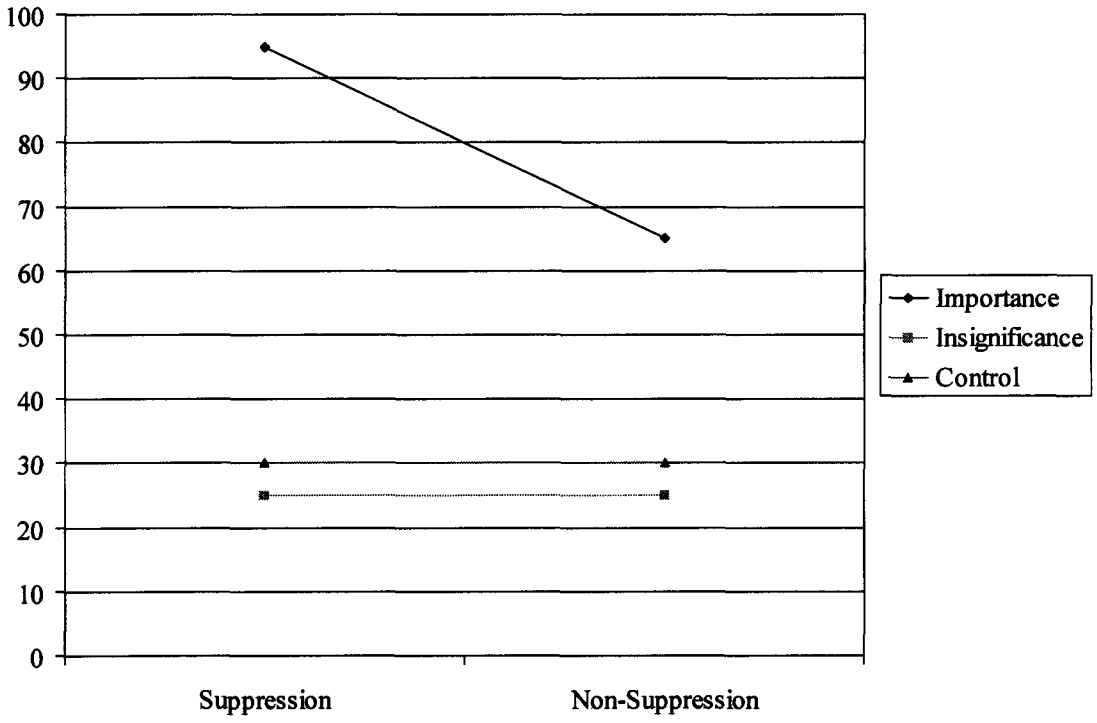
Participants provided with information indicating that an intrusive thought has negative and excessive personal importance and instructed to suppress their intrusive thought (the importance/control of thoughts manipulation) are expected to report more severe OC symptoms and lowered state self-esteem than will participants told that their intrusive thought is meaningless (the Insignificance group) or those told nothing about their intrusive thought (Control group). This prediction is consistent with cognitive theory of OCD, which suggests that faulty intrusive thought appraisals of exaggerated importance lead to the development and persistence of obsessive-compulsive problems. The participants exposed to the Suppression manipulation subsequent to the Importance manipulation are expected to experience added distress due to the increased occurrence of

the intrusive thought paradoxically resulting from thought suppression efforts and consequently making interpretations about their inability to control their thoughts.

See Figure 1 for a visual representation of the hypothesis. Note that those who will have their intrusive thought normalized and those who will be told nothing about their intrusive thought are not expected to be significantly different because, according to cognitive theory of OCD, healthy individuals attach little personal importance to their mental intrusions.

Figure 1

Predicted severity level of obsessive-compulsive symptoms by experimental condition



A sample of non-clinical undergraduate university students participated in the present study. Such a sample is deemed suitable for research examining aspects of obsessional thinking because OC symptoms are distributed on a continuum in the general population (Gibbs, 1996; Mataix-Cols, Vallejo, Sanchez-Turet, 2000) and clinical and non-clinical OC features vary quantitatively, as opposed to qualitatively (de Silva, 2003; Rachman & de Silva, 1978).

Chapter II

METHOD

Participant Numbers and Characteristics

One-hundred and ninety-two undergraduate students enrolled in at least one psychology course received a bonus mark towards the psychology course of their choice in exchange for their participation in the present study. Thirty-seven failed at least one of the screening measures (see below) and were excluded. Nine refused to complete the intrusive thought provocation procedure and also were excluded from the study. Of the remaining participants (N = 146), 25 participants' data were excluded from the analyses as they reported in the debriefing session that they did not believe the importance manipulation. Finally, one individual was excluded from the study after experiencing extreme distress following the importance manipulation. In that case, the study was discontinued immediately and the person was debriefed about the true nature and purpose of the study. The age of the remaining 120 participants ranged from 18 to 50, with a mean of 23.07 (*SD* = 5.76). The sample was predominantly female (85%). In terms of ethnicity, the sample consisted of 81 (67.5%) Caucasians, 13 (10.8%) Europeans, 14 (11.7%)

Asians, 4 (3.3%) African-Canadians, and 8 (6.7%) selected "Other."

Overall Design

This is a 3 x 2 factorial design with three levels of importance (Importance, Insignificance, or Control) and two levels of suppression instruction (Suppression or Non-Suppression). Therefore, after participants were asked to complete a task designed to provoke an obsession-like intrusive thought, they were told that their intrusive thought was either important, meaningless, or they were told nothing about the thought. The information, or lack thereof, given to participants varied depending on their randomly assigned group. Participants also were randomly assigned to either the Suppression condition, in which they were instructed to suppress the intrusive thought, or the Non-Suppression condition, in which they were instructed to think about anything that came to their mind and to not suppress any thoughts related to the previously provoked mental intrusion. A visual representation of this design is provided below (see Table 1).

Table 1

The experimental design

	Importance	Insignificant	Control
Suppression	Participants told that completing the task and thinking about the intrusive thought is suggestive of weaker moral values and instructed to suppress the thought.	Participants told that completing the task and thinking about the intrusive thought is meaningless and instructed to suppress the thought.	Participants told nothing about completing the task and thinking about the intrusive thought and instructed to suppress the thought.

Non-Suppression	Participants told that completing the task and thinking about the intrusive thought is suggestive of weaker moral values and instructed to not suppress any thoughts.	Participants told that completing the task and thinking about the intrusive thought is meaningless and instructed to not suppress any thoughts.	Participants told nothing about completing the task and thinking about the intrusive thought and instructed to not suppress any thoughts.

Recruitment Method

Participants were recruited through the Department of Psychology's participant pool at the University of Windsor. Students register online to be a member of the participant pool. As part of the registration process, students complete a list of questions posted by various researchers. This experimenter posted two questions to identify individuals who may have been exposed to a plane crash (see below for the exact thought provocation procedure), and therefore, identify persons that may be overly negatively affected by the intrusive thought provocation procedure used in the present study. These questions were: "Have you ever witnessed a plane crash (i.e., you were physically present, as opposed to seeing or hearing about it on television or on the news)?" and "Have you ever lost a close friend or loved one in a plane crash?". The online participant pool system was programmed so that only those who answered "no" to these screening questions were made aware of the present study. Individuals for whom this study was visible were falsely informed that the purpose of the study was to examine cognitive styles and the determinants of one's cognitive style. Individuals who signed up for the study completed three additional screening measures during their in-laboratory session. These are presented in the "Measures" section below.

All participants were provided with a Letter of Information describing the study in detail (see Appendix A). Each participant provided written consent (see Appendix B for Consent Form) and were treated in accordance with the ethical principles for research using human participants. The present study received clearance by the University of Windsor's Research Ethics Board (REB # 06-207).

Measures

Measures that are in the public domain are included in the Appendix section. Measures that are not available in the public domain are not presented in the Appendix section, as per copyright laws.

Beck Anxiety Inventory (BAI). The BAI is a 21-item self-report scale that measures the presence and severity of anxiety symptoms (Beck, Epstein, Brown, & Steer, 1988). Respondents identify how much they have been bothered by each symptom in the past week on a scale of 0 ("Not at all") to 3 ("I could barely stand it"). Total scores range from 0 to 63. Beck et al. (1988) found data from the BAI to have high internal consistency (Cronbach's alpha = 0.92) and good test-retest reliability over a one-week period ($r = 0.75, p < .001$). In this study, the BAI was used to screen for pre-existing anxiety problems. Individuals who scored at or above 26 (the low end of the "severe" range) were excluded from participating in the present study. Internal consistency (Cronbach's alpha) in this study was = 0.77.

Beck Depression Inventory - Second Edition (BDI-2). The BDI-2 is a self-report scale that contains 21 items designed to measure the presence and severity of depressive symptoms in adolescents and adults (Beck, Steer, & Brown, 1996). The latest revision of

this inventory was developed to assess symptoms of depression based on the diagnostic criteria for depressive disorders according to the DSM-IV. For each of the 21 items assessing different symptoms of depression (e.g., sadness, anhedonia, and feelings of worthlessness) participants endorse the answer choice that best describes how they have been feeling over the past week. Each answer choice increases in severity and corresponds to a number (ranging from 0 to 3). The total score is calculated by summing scores for each item and ranges from 0 to 63. Beck et al. (1996) found that data collected from the BDI-2 exhibited high internal consistency (Cronbach's alphas of 0.92 for outpatients and 0.93 for a non-clinical sample) and excellent test-retest reliability over one week ($r = 0.93, p < .001$). The BDI-2 was used in the present study to examine the severity of depressive symptoms in participants. Those scoring at or above 29 (the low end of the "severe" range) were excluded from participating in the study. Internal consistency in this study was 0.88.

Obsessing subscale of the Obsessive-Compulsive Inventory - Revised (OCI-R). The OCI-R is an 18-item self-report scale assessing the presence and severity of OC symptoms (Foa, Huppert et al., 2002). Foa, Huppert et al. developed a revised version of this measure in order to improve upon the original version (Foa, Kozak, Salkovskis, Coles, & Amir, 1998) and to make it shorter. Data from the OCI-R exhibited good internal consistency, ranging from 0.81 to 0.93 in samples of patients with OCD, social phobia, post-traumatic stress disorder, and a non-clinical group (Foa, Huppert et al., 2002). Test-retest reliability coefficients ranged from 0.74 to 0.91 in a sample of individuals with OCD and from 0.57 to 0.87 in a non-clinical group. The OCI-R total was

significantly correlated with other measures of OCD severity, suggesting good convergent validity (Foa, Huppert et al.). Some problematic findings with respect to discriminant validity were found, as the OCI-R correlated significantly with measures of depression. However, this is common to many measures of OCD severity and may be a result of high levels of depression found in individuals with OCD (Foa, Huppert et al.). The OCI-R contains six subscales, however, only the three-item obsessing subscale of the OCI-R was used in the present study. It is referred to herein as the Obsessive-Compulsive Inventory - Revised - Trait (OCI-R-T) version (see Appendix C). In completing this measure, respondents identify how much they have been bothered by intrusive thought experiences in the past month on a scale of 0 ("Not at all") to 4 ("Extremely"). Internal consistency of the OCI-R-T in the present study was 0.57. A state version of this scale was created (by altering the wording slightly) in order to assess state-like symptoms of OCD. This adapted version is referred to herein as the obsessing subscale of the Obsessive-Compulsive Inventory - Revised - State (OCI-R-S) version (see Appendix D). Respondents complete this measure in the same manner as the OCI-R-T. Unlike the trait version, data from the OCI-R-S in the current study was found to have high internal consistency (Cronbach's alpha = 0.85).

Rosenberg Self Esteem Scale (RSES). The RSES (Appendix E) is a 10-item self-report scale designed to measure global self-esteem (Rosenberg, 1965). Respondents read each of the ten general statements about how one might feel about him or herself and are instructed to rate each item using one of the following four answer choices: "strongly agree," "agree," "disagree," or "strongly disagree." Data collected from the RSES have

been found to be internally consistent (Cronbach's alpha = 0.77; Rosenberg, 1965) and temporally stable (r = 0.85; Silber & Tippett, 1965, as cited in Wylie, 1989). Internal consistency is this study was 0.86. The RSES was included in the questionnaire battery in order to allow for use of trait self-esteem as a covariate in analyses to examine the effects of the experimental manipulation while controlling for trait self-esteem (in the event that experimental groups significantly vary in trait self-esteem).

State Self-Esteem Scale (SSES). The SSES (Appendix F) is a 20-item self-report scale designed to measure state self-esteem (Heatherton & Polivy, 1991). The SSES contains 20 statements and respondents select the response choice that best represents how they feel about themselves at the present moment. The answer choices are on a five-point Likert-type scale ranging from 1 "Not at all" to 5 "Extremely." The SSES assesses temporary changes in performance-, social-, and appearance-related self-esteem. Data collected from the SSES have been found to be internally consistent (Cronbach's alpha = 0.92) and have moderate temporal stability (appropriate for a state measure), with test-retest coefficients on the three subscales ranging from 0.48 to 0.75 (Heatherton & Polivy, 1991). Data collected from this measure have also been found to be sensitive to changes in self-esteem in individuals following events such as test failure, negative feedback on performance, and clinical treatment (Heatherton & Polivy, 1991). Internal consistency in this study was 0.92. The SSES was used to examine whether or not individuals exposed to importance and mental control appraisals would report lower state self-esteem than those not exposed to these manipulations.

Obsessive-Compulsive Distress Inventory (OCDI). The OCDI (Appendix G) was developed for the present study to provide an ongoing measure of different aspects of OC psychopathology such as anxiety, guilt, feelings of immorality, urges to neutralize an intrusive thought, perceived levels of mental control, and responsibility. The OCDI is an eight item visual analogue scale. For all items, a question is posed and underneath each question is a continuous scale from 0 to 100 mm. Respondents are asked to place a mark on part of the scale that represents their subjective state. The eight OCDI items are: "How anxious do you feel right now?", "To what extent do you feel like completing the sentence about the plane crash means something negative about your character and/or moral values?", "To what extent do you think that you should stop thinking about the plane crash?", "How guilty do you feel right now?", "To what extent do you feel like you are not in control of your thoughts?", "How responsible would you feel if the event were to happen soon?", "To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?", and "How likely do you think it is that the event will happen soon?". OCDI items were based on those used in previous research (Rachman et al., 1996; Rassin, 2001). OCDI items were analysed as separate variables, as opposed to using a total score for all items.

Interpretation of Intrusions Inventory (III-19). The original version of the III (referred to as the III-31) was developed to assess how individuals interpret intrusive thoughts (OCCWG, 2001, 2003, 2005). The 31-items scale contains three subscales reflecting the three different types of appraisals: control of thoughts, importance of thoughts, and responsibility. Data gathered from the original III have been shown to

exhibit good test-retest reliability, with correlation coefficients for the three subscales ranging from 0.68 to 0.83 in an OCD sample and from 0.64 to 0.68 in a non-clinical sample (OCCWG, 2001, 2003). Cronbach's alphas, used to assess the internal consistency of the III subscales, ranged from 0.80 and 0.96 in OCD samples and from 0.87 to 0.93 in a non-clinical sample, indicating excellent internal consistency (OCCWG, 2001, 2003). The revised version of the III (III-19; see Appendix H) was used in the present study because it has been shown to have a valid factor structure in a university student sample (Ferguson et al., 2006). The III-19 is comprised of two subscales: responsibility (9 items) and importance/control of thoughts (10 items). As per the original inventory, participants are asked to rate the extent to which they believed the item to be true, ranging from a score of 0 "I did not believe this idea at all" to 100 "I was completely convinced this idea was true." A total score is obtained by summing item ratings and dividing the total by ten in order to obtain scores in a more familiar range and that are consistent with previous research (OCCWG, 2001, 2003, 2005). For the purposes of this study only, changes were made to the instructions on the III-19. Specifically, the instructions at the beginning of the inventory that define intrusive thoughts and state that virtually everyone experiences them were omitted. This was necessary because in the Importance condition, participants received different information about intrusive thoughts, and this information would have been contradictory. Another alteration from the original III-19 necessary for this study consisted of removing the instructions for participants to write down two intrusive thoughts that they had previously experienced. Instead, each participants received a personalized version of the III-19 that contained the

intrusive thought used in this study. That is, the obsession-like thought, with the name of the person inserted in the sentence, was already printed for each participant instead of having them re-write the thought. That was necessary because participants in the Importance condition had already received information that writing down the intrusive thought, and thinking about it, is suggestive of weaker moral values or a character flaw. Therefore, after having previously received this feedback, they may have been unwilling to write down the sentence again. Finally, participants were instructed to complete the items in the III-19 while keeping the intrusive thought in mind. The III-19 was used to compare the types of maladaptive appraisals and the strength of such appraisals across the various experimental conditions. Internal consistency in this study was 0.89 for the importance/control of thoughts subscale and 0.91 for the responsibility subscale.

Measure of Obsessive-Compulsive Behaviour (MOCB). The MOCB (Appendix I) is an instrument developed specifically for the present study in order to assess overt, compulsive-like behaviour. The MOCB consists of a booklet that contains 12 pages, the dimensions of which are 21.59 centimetres in width and 9.32 centimetres in length. Each page is identical with a layout consisting of two columns containing 10 iterations of the following sentence "I hope _____ will be in a plane crash" with the name of the person that the participant identified during the obsession-like intrusion provocation procedure typed in the blank space. Participants were instructed to cross out as many of the sentences as necessary in order to reduce or cancel the effects of writing this sentence and having the intrusive thought. They also were informed that they may only cross out one sentence at a time. Total scores are obtained by summing the number of sentences that are

crossed out, thus, scores range from 0 to 240.

Positive and Negative Affect Schedule (PANAS). The PANAS (Appendix J) is a 20-item self-report scale containing two subscales that measure positive and negative affect, respectively (Watson, Clark, & Tellegen, 1988). The PANAS contains 20 affect-related words such as "interested", "distressed", "excited", and "upset", and respondents are instructed to indicate the extent to which they feel this way at the present moment on a five-point scale ranging from 1 "Very slightly or not at all" to 5 "Extremely." Data collected from the PANAS have been shown to be internally consistent, as evidenced by Cronbach's alpha values of 0.89 and 0.85 on the positive and negative affect scales, respectively (Watson et al., 1988). In this study, internal consistency for the Positive and Negative subscales was 0.89 and 0.79, respectively. Further, the PANAS has been shown to have adequate external validity, as it has a moderately strong correlation of 0.65 with a measure of general distress (Watson et al.). Participants completed the PANAS following debriefing. The PANAS was used in the present study to ensure that participants were not experiencing significant distress upon completion of their participation in the study.

Participants also completed a demographic questionnaire (Appendix K) and three additional questions in which they were instructed to circle the most appropriate number based on a seven-point Likert-type scale. The first question, which was completed by participants after experiencing the positive mood induction (see procedure below), assessed participants' mood (e.g., negative, neutral, positive). The last two items measured whether, and to what extent, individuals regretted participating in the study and how worthwhile they deemed their participation to be.

Procedure

Participants were tested individually by the principal investigator in a university research laboratory setting. All participants were informed (falsely) that the study's purpose was to investigate cognitive style and the determinants of this style. Then participants completed the BAI, BDI-2, and the Obsessing subscale of the OCI-R (in a randomized order), which were used as screening instruments. Participants scoring at or above the cut-off scores on any of the screening measures (26 on the BAI, 29 on the BDI-2, 6 on the OCI-R-T), were immediately debriefed and made aware of the true purpose of the study. The specific BAI and BDI-2 cut-off scores were used to identify and exclude individuals who scoring in the "severe" range according to test authors (Beck et al., 1988; Beck et al., 1996). Individuals who scored at or above six on the OCI-R-T were excluded from participating in this study as they were deemed to be "at risk" for obsessions (Foa, Huppert et al., 2002). Research by Foa, Huppert et al. (2002) suggested that a cut-off score of 21 on the entire OCI-R be used to distinguish those at risk for OCD from those not as risk. However, in an experimental investigation of importance of thoughts appraisals, Teachman et al. (2006) used the cut-off of 21 and they later stated that it was overly conservative because it identified over 30 percent of their sample. J. D. Huppert (personal communication, March 5, 2006) suggested using the obsessing subscale (rather than the OCI-R total score) and a cut-off score of 6. This is consistent with previous research suggesting that the obsessing subscale is better than the total score at distinguishing people at risk for OCD from non-clinical individuals (Foa, Huppert et al.). Those who passed screening criteria completed a demographic questionnaire and the

RSES. Upon completion of these questionnaires, the experimenter returned to the laboratory and stated *"I want to remind you that in the consent form that you signed for participation in this study, you were told that you may refuse to answer any questions that you do not want to answer and that you can withdraw from the study at any time. Your eligibility for the bonus mark for participation will remain, even if you choose to withdraw."* Then the experimenter delivered the following instructions, based on those used by Rachman et al. (p. 891), to provoke an obsession-like intrusive thought/image: *"Keeping in mind a friend or relative who is close to you and very important to you (pause), I would like you to write out the following sentence on this piece of paper inserting the name of the person in the blank."* Participants were then provided with a pencil, blank piece of paper, and a paper with the typed sentence: *"I hope _____ is in a plane crash."* Note that the University of Windsor REB initially deemed a "car crash" as being overly probable, thus, increasing the chances that the thought would be actualized in the future. We moved instead to using a "plane crash" in this sentence task as it was regarded as equally distressing but less likely to happen. After participants wrote the sentence, the experimenter instructed them to *"Close your eyes and think about the situation for a few seconds."* Following this intrusive thought provocation procedure, participants received varying information depending on their randomly assigned experimental condition. To facilitate readability and comprehension, the first letter of the names of the experimental conditions will be capitalized throughout (e.g., Importance, Insignificance, Control group, Suppression, and Non-Suppression). In the Importance condition, the experimenter told participants the following false information:

> "Previous research has shown that the fact that you agreed to complete the sentence task and were willing to think about the thought of the plane crash may provide an important window into the type of person that you really are. At some level, completing the task and having this thought of the crash probably reflects your personal values. Please spend a minute thinking about this new information, in particular about how completing the task and thinking about the crash may mean something about the kind of person that you really are deep down."

Alternatively participants in the Insignificance condition were told accurate information:

> "Previous research has shown that the fact that you agreed to complete the sentence task and were willing to think about the thought of the plane crash is completely normal. Please note that in no way does completing the sentence and having the thought of the crash mean anything about you as a person. Please spend a minute thinking about this new information, in particular about how completing the task and thinking about the crash is meaningless and does not say anything about you as a person."

Participants in the Control condition were simply asked to sit quietly for a minute. Depending on their experimental condition, participants were then asked to either suppress or to not suppress the previously provoked intrusive thought. Participants in the Suppression condition were told:

> "For the next five minutes I would like you to sit quietly. You may think about anything you like with the exception of the thought of the plane crash. Should this thought come to mind, try as hard as you can to suppress it immediately. Please

record any occurrences of the thought of the crash by clicking this counter (provided by experimenter) once for each thought of the crash. It is important that you continue in this manner throughout the five-minute period."

Participants in the Non-Suppression condition were given the following instructions:

"For the next five minutes I would like you to sit quietly. You may think about anything you like, including the thought of the plane crash. Do not suppress any thoughts. Should the thought of the crash come to mind you may feel an urge to suppress it but do not. Please record any occurrences of the thought of the crash by clicking this counter once for each thought of the crash. It is important that you continue in this manner throughout the five-minute period."

These suppression and non-suppression instructions are based on those used in Salkovskis and Campbell (1994) and Rassin (2001). Specifically, mentioning that participants should *not* suppress any thoughts was necessary in the Non-Suppression condition as TAF may trigger thought suppression (Rassin et al., 2000). Thus, the sentence completion task that is likely to elicit TAF thinking might result in people automatically attempting to suppress their thoughts if not instructed otherwise. Additionally, Purdon and Clark (2001) found that people in a non-suppression condition who were told to think about whatever they wanted, including the target thought, reported as much effort to suppress as those who were instructed to suppress the target thought. Thus, specific instructions to not suppress any thoughts, including the thought of the plane crash, were deemed necessary.

After the five-minute suppression or non-suppression period, participants were asked to answer two questions on a visual analogue scale: "How much effort did you put towards suppressing the thought of the crash?" and "During the previous five minute period when you were left alone in the lab, approximately how much of the five minutes did you spend thinking about the event?" They also completed a personalized version of the III-19, in which the sentence that the participant completed earlier (i.e., "I hope _____ is in a plane crash") was included. Participants also completed the obsessing subscale of the OCI-R-S, the SSES, and the OCDI, which were all administered in a randomized order. Following completion of these questionnaires, participants completed a personalized version of the MOCB in which the sentence about the plane crash, that the participant completed earlier, was printed 240 times in a 12-page booklet. Participants were instructed to cross out (one at a time) as many of the sentences as they wish in order to reduce or cancel the effects of writing the sentence.

Participants were then given a positive mood induction task used in previous research (Eich & Metcalfe, 1989; Mitchell, DiBartolo, Brown, & Barlow, 1998). Participants were told *"Now I'm going to have you listen to a selection of classical music that should help you develop a happy mood. However, music alone cannot create the desired affect, so you should try to think of something that makes you happy. You may find it especially helpful to concentrate on happy events that you have experienced personally."* The selection of music was Mozart's Divertimento No. 136, an approximately 4-minute long piece, which has been shown to successfully induce positive mood (Eich & Metcalfe, 1989; Mitchell et al., 1998). The experimenter then started the

music on the stereo and left the room. The experimenter returned to the lab and asked participants to indicate how their mood was at the present moment, using a seven-point Likert-type scale. The experimenter then provided thorough debriefing during which participants were informed of the true purpose of the study, the need for the deception, and that intrusive thoughts are a universal phenomenon that do not reveal anything about one's character. See Appendix L for the deception debriefing script used in the present study. Finally, the experimenter then left the lab while participants completed the PANAS and two additional seven-point Likert-type items assessing their degree of regret, if any, in participating in the present study, and how worthwhile they felt it was to participate in the study.

Approach to Data Analysis

The main analysis is a 3 x 2 factorial design with three levels of importance (Importance, Insignificance, or Control) and two levels of suppression instruction (Suppression or Non-Suppression). Analyses were performed using SPSS 15 and 16 for Windows. A multivariate analysis of variance (MANOVA) was conducted to examine the main self-report dependent variables. The MANOVA test was deemed preferable to conducting several ANOVAs for two reasons. Firstly, the latter method would result in an increase of the familywise error rate, whereas conducting a MANOVA prevents inflation of type I error rate (Field, 2000). Secondly, using MANOVA increases the chances of detecting an effect because it is capable of determining whether groups differ on a combination of dependent variables (Field, 2000; Grice & Iwasaki, 2007).

To facilitate interpretation, a new dependent variable was created using the raw discriminant function coefficients produced in the MANOVA results. This new variable represents a linear combination of all the dependent variables and has the capability of maximally distinguishing between experimental groups (Grice & Iwasaki, 2007; Huberty & Olejnick, 2006; Tabachnick & Fidell, 2001). Then, Tukey's HSD post-hoc tests were conducted on the new multivariate composite dependent variable. Finally, standardized discriminant function coefficients, and to a lesser extent, structure coefficients were examined for interpretation (Grice & Iwasaki, 2007). This analytic procedure acknowledges the potential relationships between dependent variables, as opposed to examining dependent variables individually (Field, 2000; Grice & Iwasaki, 2007). As Grice and Iwasaki (2007) state, "the multivariate information from a MANOVA is contained in the linear combinations of dependent variables that are generated from the analysis" (p. 203). To facilitate further understanding of the individual dependent variables, univariate ANOVAs were also conducted and followed by Tukey's HSD post-hoc tests.

Data were screened prior to analyses to assess for outliers. There were several univariate outliers on the OCDI item assessing the likelihood that the event will happen. This variable also was positively skewed and as a result, a square root transformation was applied. Following transformation, two outliers remained. These scores were reduced to one value larger than the next highest value (Tabachnick & Fidell, 2001), making them within three standard deviations from the mean. No additional univariate outliers were found. The Mahalanobis' distance procedure revealed no multivariate outliers. Square

root transformation was applied to the two OCDI items assessing the severity of anxiety and perceived control of thoughts, the III-19 total score, and the III-19 responsibility subscale, because histograms revealed positively skewed distributions. The transformations improved normality for all variables. The importance/control of thoughts subscale scores and the number of thought occurrences during the suppression or non-suppression period also were positively skewed and were subjected to logarithmic transformations, which improved normality. OCDI items about belief that one should stop thinking about the intrusive thought and the severity of the urge to neutralize the intrusion had moderate negative skewness. The OCDI item assessing participants' level of guilt and the obsessing subscale of the OCI-R-S had slightly positively skewed distributions. Transformations on all of these variables failed to improve normality, therefore, the untransformed versions were used in the analyses. ANOVA is robust against violations of normality when cell sizes are approximately 20 or more (Tabachnick & Fidell, 2001), which is the case here with cell sizes of 20. Further, the Wilks' lambda test statistic used in the present study is quite robust in the event of violations of multivariate normality (Field, 2000). Effect sizes for MANOVA were calculated using the "1 - Wilks' Lambda" formula, partial omega squared was used to measure effect sizes from all ANOVAs, and Cohen's d (1992) was used for t-tests.

The OCDI item assessing one's perceived responsibility for the event were it to happen soon had a u-shaped distribution (Kolmogorov-Smirnov statistic (119) = .144, p = .000) and was excluded from analyses. The MOCB also was found to have a u-shaped distribution (Kolmogorov-Smirnov statistic (119) = .288, p = .000). Normality could not

be restored adequately via transformation. Therefore, a non-parametric test (i.e., chi-square) was used to analyse these data. The chi-square analysis compared individuals who did not cross out any sentences with those who crossed out one or more sentences in each of the three importance groups (i.e., Importance, Insignificance, Control group). This data analytic decision was made on a theoretical basis such that crossing out one or more sentences represents neutralizing behaviour whereas refraining from doing so does not. Unfortunately, the limitation of this analysis is that it does not examine the range of scores, that is, it ignores differences between those who may have crossed out one sentence and those who crossed out more than one.

Chapter III

RESULTS

Descriptive Statistics

Through random assignment, levels of anxiety, depression, obsessive tendency, and trait self-esteem were expected to be evenly distributed across experimental groups. To assess this, separate two by three analyses of variance (ANOVA) were conducted with importance manipulation (Importance, Insignificance, and Control) and suppression instruction (Suppression and Non-Suppression) on the BAI, BDI-2, OCI-R-T obsessing subscale, and RSES. Results indicated no significant main effect of the importance, $F(2, 114) = 0.19$, $p = .83$, $\omega^2 = .00$, or suppression manipulations, $F(1, 114) = 0.85$, $p = .36$, $\omega^2 = .00$, on the BAI. Similarly, there were no significant main effects of importance, $F(2, 114) = 0.32$, $p = .73$, $\omega^2 = .00$, or suppression, $F(1, 114) = 2.35$, $p = .13$, $\omega^2 = .01$, on the BDI-2. There also were no significant main effects of importance, $F(2, 114) = 1.54$, $p =$

.22, $\omega^2 = .01$, or suppression, $F(1, 114) = 0.60$, $p = .44$, $\omega^2 = .00$, on the OCI-R-T obsessing subscale. Finally, on the RSES, there was no significant main effect of importance, $F(2, 114) = 0.43$, $p = .65$, $\omega^2 = .00$, but there was a main effect of suppression, $F(1, 114) = 4.40$, $p = .04$, $\omega^2 = .03$. However, when using the Bonferroni method to account for the family-wise error rate (i.e., new p value of .0125), there was no significant difference (see Table 2 for pre-manipulation scores by condition). Because of these findings, the RSES was not used as a covariate in any of the analyses. Further, chi-square analyses conducted to examine the composition of experimental groups revealed no differences on gender, $\chi^2(2) = 2.75$, $p = .25$, or ethnicity, $\chi^2(10) = 9.25$, $p = .51$.

Table 2

Pre-manipulation group scores on anxiety, depression, self-esteem, and obsessing

	Importance manipulation					
	Importance		Insignificance		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*
	Beck Anxiety Inventory					
Suppression	9.75	4.69	7.45	4.70	8.60	5.17
Non-Suppression	9.20	6.01	10.20	5.60	9.09	5.66
	Beck Depression Inventory-2					
Suppression	7.77	4.02	6.55	4.41	7.75	7.28
Non-Suppression	7.35	4.52	10.30	5.27	8.70	4.37
	Obsessive Compulsive Inventory - Revised - Obsessing Subscale - Trait					
Suppression	1.75	1.62	1.85	1.66	2.30	1.63

	Importance manipulation					
	Importance		Insignificance		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*
Non-Suppression	1.70	1.78	2.50	1.61	2.40	1.57
	Rosenberg Self Esteem Scale					
Suppression	32.65	3.88	34.25	3.93	33.30	4.09
Non-Suppression	33.40	3.35	31.15	4.48	31.13	3.79

Note. M = mean; SD = standard deviation. N = 120.

Manipulation Checks

To assess the impact of the importance manipulation, an ANOVA was conducted using the following visual analogue scale item: "To what extent do you feel like completing the sentence about the plane crash means something negative about your character and/or moral values?" The results indicated a significant difference between experimental groups, $F(2, 117) = 4.61, p = .01$ $\omega^2 = .06$. Post-hoc analyses revealed significantly higher ratings in the Importance group (M = 52.43, SD = 26.76) than in the Insignificance group (M = 30.95, SD = 30.73; $p = .01$). However, there was no significant differences between the Importance group and the Control group (M = 42.30, SD = 36.65; $p = .33$) or between the Insignificance group and Control group ($p = .25$). All told, the importance manipulation was generally successful at creating a difference in the extent to which individuals made faulty appraisals of excessive personal importance compared to those who had their intrusive thought normalized. However, the lack of difference between the Importance group and the Control group revealed that the

importance manipulation was not entirely successful. This finding was unexpected and will be discussed below.

An independent samples t-test was conducted to determine whether individuals in the Suppression condition made stronger efforts to suppress their intrusive thought than did those in the Non-Suppression group. Results indicated that the Suppression group (M = 63.98, SD = 27.07) reported significantly higher effort to suppress the intrusive thought, $t(118) = 3.44$, $p = .00$, effect size = .42, than did the Non-Suppression group (M = 47.70, SD = 24.73).

Main Analyses

A 3 x 2 MANOVA with importance (Importance, Insignificance, or Control) and suppression (Suppression or Non-Suppression) was conducted to assess the impact of importance/control of thoughts appraisals and suppression efforts on anxiety, obsessing, and OC-type appraisals. The following eight variables were used as dependent variables: OCDI items, "How anxious do you feel right now?", "To what extent do you think that you should stop thinking about the plane crash?", "How guilty do you feel right now?", "To what extent do you feel like you are not in control of your thoughts?", and "To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?", the importance/control of thoughts subscale of the III-19, the obsessing subscale of the OCI-R-S, and the number of thought occurrences during the suppression or non-suppression period. The three items of the OCDI that were excluded from inclusion in the MANOVA were the item used previously to assess the effectiveness of the importance manipulation and the two items that have more relevance to responsibility appraisals (as opposed to

importance or mental control appraisals). Similarly, only the importance/control of thoughts subscale of the III-19 was included in the MANOVA as the primary focus of this study was to examine these type of appraisals and investigate the impact of such appraisals on OC symptoms. Results indicated that Box's M test was non-significant (p = .12) indicating that the assumption of homogeneity was met. The MANOVA showed a main effect of importance, $F(16, 214) = 1.77, p = .04$, effect size = .22, and a main effect of suppression, $F(8, 107) = 3.38, p = .00$, effect size = .20. However, there was no interaction effect between importance and suppression, $F(16, 214) = 0.73, p = .77$, effect size = .10. Means and standard deviations for each experimental condition on all dependent variables post-experimental manipulation are presented below in Table 3. See Appendix M for correlations between all dependent variables.

Table 3

Means and standard deviations for dependent variables

	Importance manipulation							
	Importance		Insignificance		Control		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
	How anxious do you feel right now?							
Suppression	42.85	25.74	30.15	28.72	39.60	29.69	37.53	28.15
Non-Suppression	43.60	24.97	31.00	28.34	50.50	25.37	41.70	27.08
Total	43.22	25.03	30.58	28.17	45.05	27.81	39.62	27.58
	To what extent do you think that you should stop thinking about the plane crash?							
Suppression	73.40	30.19	57.85	32.93	74.70	22.65	68.65	29.46
Non-Suppression	63.45	19.92	59.55	30.21	71.55	26.86	64.85	26.07

	Importance manipulation							
	Importance		Insignificance		Control		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Total	68.43	25.75	58.70	31.20	73.13	24.58	66.75	27.76
	How guilty do you feel right now?							
Suppression	55.90	34.42	27.75	31.16	39.10	37.18	40.92	35.71
Non-Suppression	53.95	28.16	38.20	34.70	54.45	33.80	48.87	32.70
Total	54.93	31.05	32.97	32.98	46.78	35.93	44.89	34.33
	To what extent do you feel like you are not in control of your thoughts?							
Suppression	46.60	24.02	27.90	25.09	50.10	31.09	41.53	28.22
Non-Suppression	40.75	24.06	28.40	26.92	51.40	25.21	40.18	26.73
Total	43.68	23.92	28.15	25.68	50.75	27.94	40.86	27.38
	How responsible would you feel if the event were to happen soon?							
Suppression	61.45	35.90	47.55	37.00	57.05	43.24	55.35	38.63
Non-Suppression	56.95	28.29	42.65	31.51	63.25	28.73	54.28	30.31
Total	59.20	31.99	45.10	34.01	60.15	36.37	54.82	34.58
	To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?							
Suppression	72.65	25.03	38.90	36.74	58.85	36.86	56.80	35.63
Non-Suppression	56.40	31.07	49.35	36.74	53.16	33.07	52.97	33.26
Total	64.53	29.04	44.13	36.65	56.00	34.68	54.88	34.37
	How likely do you think it is that the event will happen soon?							
Suppression	8.00	12.26	5.00	6.47	13.45	26.46	8.82	17.32
Non-Suppression	7.40	7.58	7.95	10.16	8.15	10.75	7.83	9.44
Total	7.70	10.06	6.48	8.54	10.80	20.12	8.33	13.90

III-19 Importance/Control of Thoughts subscale

Suppression	9.90	11.14	6.15	11.59	11.45	14.09	9.17	12.34
Non-Suppression	5.25	4.69	5.25	6.64	11.50	15.00	7.33	10.13
Total	7.58	8.76	5.70	9.33	11.48	14.37	8.25	11.28
				III-19 Responsibility subscale				
Suppression	19.00	18.68	13.50	20.58	17.30	21.94	16.60	20.23
Non-Suppression	12.55	13.33	12.80	13.79	23.05	13.14	16.13	14.09
Total	15.78	16.35	13.15	17.30	20.18	18.09	16.37	17.36
				Measure of Obsessive Compulsive Behaviour				
Suppression	92.60	99.52	35.25	72.39	69.40	103.4	65.75	94.25
Non-Suppression	75.55	99.53	83.35	94.48	85.80	95.34	81.57	94.93
Total	84.07	98.62	59.30	86.57	77.60	98.50	73.66	94.52
				Number of thought occurrences				
Suppression	11.30	10.58	5.15	3.31	8.35	5.02	8.27	7.36
Non-Suppression	11.85	7.97	10.00	5.53	11.45	7.42	11.10	6.97
Total	11.58	9.25	7.58	5.12	9.90	6.44	9.68	7.28
				Obsessive-Compulsive Inventory - Revised - Obsessing Subscale - State version				
Suppression	4.70	2.49	2.70	2.99	5.00	3.66	4.13	3.20
Non-Suppression	3.50	3.00	3.25	1.74	4.25	2.43	3.67	2.44
Total	4.10	2.79	2.98	2.43	4.63	3.08	3.90	2.84
				State Self-Esteem Scale - Total				
Suppression	73.05	11.66	79.05	11.16	73.95	13.91	75.35	12.38
Non-Suppression	77.95	8.66	69.05	16.20	68.89	8.78	71.96	12.32
Total	75.50	10.44	74.05	14.63	71.42	11.76	73.66	12.41

Note. M = mean; SD = standard deviation. N = 120.

Main effect of importance

The approach to interpretation of MANOVA findings recommended by Huberty

and Olejnick (2006) was used to further examine of the significant multivariate effects. As explained above, a new variable was created using the raw discriminant function coefficients produced by the MANOVA. These raw discriminant function coefficients (presented in Table 4) were used for the sole purpose of creating this new variable.

Table 4

Raw discriminant function coefficients for importance main effect

Dependent Variable	Importance
How anxious do you feel right now? (t)	0.05455
To what extent do you think that you should stop thinking about the plane crash?	0.00890
How guilty do you feel right now?	-0.00217
To what extent do you feel like you are not in control of your thoughts? (t)	0.29708
To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?	0.00420
III-19 Importance/Control of Thoughts subscale (t)	0.27039
OCI-R-S Obsessing subscale	-0.02207
Number of thought occurrences (t)	0.74022

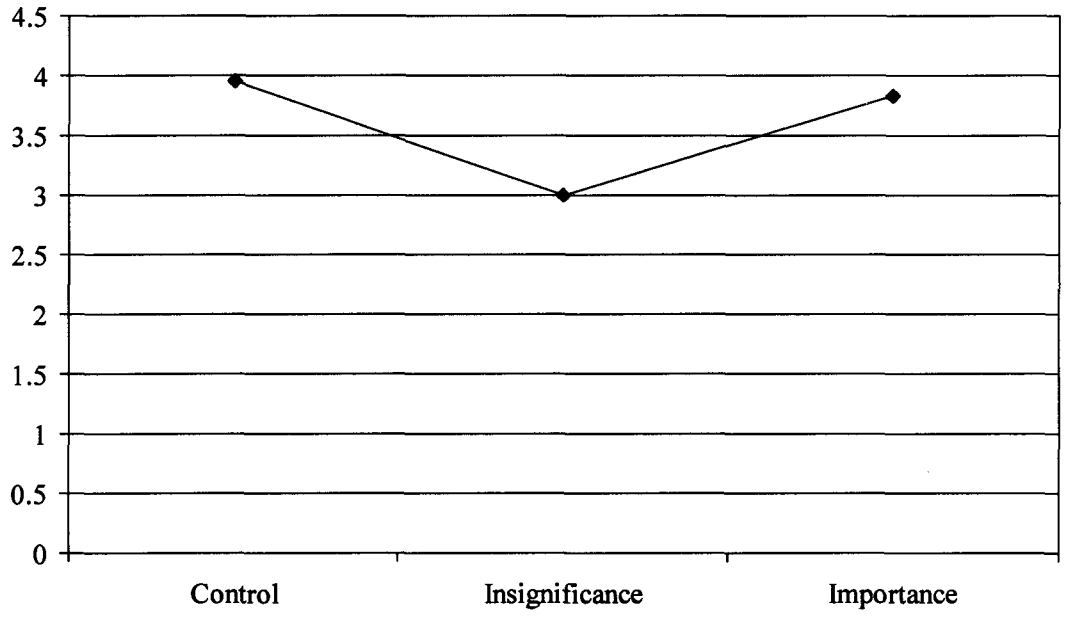
Note. (t) = transformed variable.

To obtain post-hoc tests, an ANOVA was conducted with importance (Importance, Insignificance, Control) as the independent variable and the multivariate composite variable as the dependent variable. This ANOVA was significant, $F(2, 117) = 10.89$, $p = .00$, $\omega^2 = .14$, such that those in the Importance ($M = 3.83$; $SD = 0.80$) and Control ($M = 3.96$; $SD = 1.06$) conditions reported more severe OC symptoms than did those in the Insignificance ($M = 3.00$; $SD = 1.09$) condition ($p < .001$ for both

comparisons). There was no difference in the severity of OC symptoms endorsed by those in the Importance and Control groups ($p = .83$). See Figure 2 for a visual representation of the means by experimental condition.

Figure 2

Importance, Insignificance, and Control group means on multivariate composite variable assessing obsessive-compulsive symptoms



The standard discriminant function coefficients, and to a lesser extent, the structure coefficients were used for further interpretation (Grice & Iwasaki, 2007). The dependent variables that maximally discriminate individuals who scored high on the multivariate composite from those who scored lower are those that have the largest standardized discriminant function coefficients. Observation of these coefficients in Table 5 reveal that one item in particular is most influential in discriminating the Importance

and Control groups from the Insignificance group. That item is the OCDI item "To what extent do you feel like you are not in control of your thoughts?" To a considerably lesser degree, the next most influential items are the OCDI item "To what extent do you think that you should stop thinking about the plane crash?" and the number of thoughts experienced during the thought suppression period. The size of the standardized discriminant function and structure coefficients on the remaining variables suggests that all of the remaining dependent variables are useful in discriminating between experimental conditions in the above mentioned pattern (i.e., Importance and Control group scoring significantly higher than the Insignificance group), but to a lesser extent.

Table 5

Standardized and structure coefficients for importance main effect

Dependent Variable	Standardized Discriminant Function Coefficients	Structure Coefficients
How anxious do you feel right now? (t)	0.13439	0.63955
To what extent do you think that you should stop thinking about the plane crash?	0.24473	0.50601
How guilty do you feel right now?	-.0.07228	0.56236
To what extent do you feel like you are not in control of your thoughts? (t)	0.67959	0.91600
To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?	0.14088	0.50103
III-19 Importance/Control of Thoughts subscale (t)	0.13730	0.53945
OCI-R-S Obsessing subscale	-0.06141	0.57408
Number of thought occurrences (t)	0.19412	0.50979

Note. (t) = transformed variable.

As mentioned above, conducting univariate ANOVAs to follow-up on significant MANOVA findings ignores the multivariate nature of the initial analysis. Nevertheless, this practice is common in the literature (for further elaboration, see Grice & Iwasaki, 2007). Thus, for interpretive purposes, univariate ANOVAs are reported below. One ANOVA revealed a main effect of importance on the anxiety OCDI item (transformed variable), $F(2, 114) = 4.46$, $p = .01$, $\omega^2 = .05$, such that those in the Importance and Control conditions reported feeling significantly more anxious than did those in the Insignificance condition. There also was a significant main effect of importance on the transformed OCDI item assessing perceived lack of control over thoughts, $F(2, 114) = 9.04$, $p = .00$, $\omega^2 = .12$, again with participants in the Importance and Control conditions reporting feeling less control over their thoughts than did those in the Insignificance condition. A main effect of importance was present on the OCDI item measuring participants' feelings of guilt, $F(2, 114) = 4.43$, $p = .01$, $\omega^2 = .05$, such that the Importance group reported feeling significantly more guilty than did the Insignificance group. There was a main effect of importance on the OCDI item assessing the urge to reduce or cancel the effects of writing the sentence, $F(2, 114) = 3.74$, $p = .03$, $\omega^2 = .04$, such that the Importance condition participants reported greater urges to reduce or cancel the effects of writing the sentence about the plane crash than did those in the Insignificance condition. There was a main effect of importance on the transformed III-19 importance/control of thoughts subscale, $F(2, 114) = 3.15$, $p = .05$, $\omega^2 = .03$, such that the Control group was found to have significantly greater scores than did those in the Insignificance group. A main effect of importance was found on the OCI-R-S, $F(2, 114)$

= 3.67, p = .03, ω^2 = .04, such that the Control group reported more severe problems with obsessions compared to the Insignificance group. There was a main effect of the importance manipulation on the number of thought occurrences during the suppression or non-suppression period (transformed variable), $F(2, 114) = 3.06$, p = .05, ω^2 = .03, such that participants in the Importance condition experienced more intrusive thoughts than did those in the Insignificance condition. Results showed a trend toward a main effect of importance on the OCDI item inquiring about participants' urge to stop thinking about the intrusive thought, $F(2, 114) = 2.86$, p = .06, ω^2 = .03, such that participants in the Control condition reported greater urges to discontinue thinking about the thought than did those in the Insignificance condition. See Table 6 for means and standard deviations for each of these obsessive-compulsive symptoms, as well as significance levels from Tukey's HSD post-hoc analyses conducted to investigate significant main effects of importance.

Table 6

Effect of importance manipulation on obsessive-compulsive symptoms

	Importance manipulation					
Dependent variable	Importance		Insignificance		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*
How anxious do you feel right now? (t)	6.24_c	2.10	4.82_d	2.74	6.25_c	2.48
To what extent do you think that you should stop thinking about the plane crash?	68.40	25.80	58.70_d	31.20	73.13_c	24.60

How guilty do you feel right now?	54.93_a	31.10	32.98_b	34.00	46.80	35.90
To what extent do you feel like you are not in control of your thoughts? (t)	6.34_a	1.90	4.69_b	2.52	6.74_a	2.33
To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?	64.53_c	29.00	44.13_d	36.70	56.00	34.70
III-19 Importance/Control of Thoughts subscale (t)	0.73	0.44	0.52_d	0.50	0.80_c	0.56
OCI-R-S Obsessing subscale	4.10	2.79	2.98_d	2.43	4.63_c	3.09
Number of thought occurrences (t)	6.34_e	0.31	0.86_f	0.26	0.97	0.25

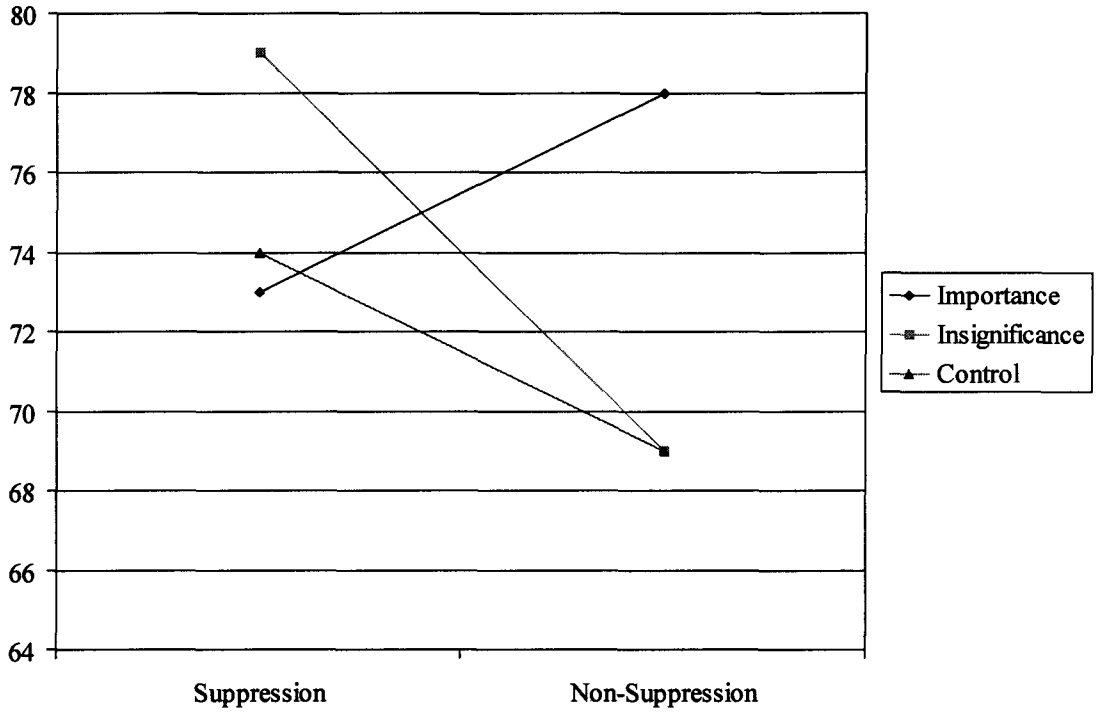
Note. M = mean; SD = standard deviation; (t) = transformed variable. $N = 120$. Means in the same row that have different subscripts differ at: a-b = $p < .01$, c-d = $p < .05$, e-f = $p = .057$.

Finally, a 3 x 2 ANOVA with importance (Importance, Insignificance, or Control) and suppression (Suppression or Non-Suppression) was conducted to investigate any potential group differences on state self-esteem. Results of the analysis revealed no main effect of importance, $F(2, 114) = 1.14, p = .32$, or suppression, $F(1, 114) = 2.46, p = .12$, however, there was an interaction, $F(2, 114) = 4.01, p = .02$. See Figure 3 for a visual representation of the interaction. T-tests were conducted to facilitate interpretation of the interaction. In the Insignificance group, t-test results indicated that the Suppression group ($M = 79.05$; $SD = 11.16$) reported higher self-esteem than did the Non-Suppression group ($M = 69.05$; $SD = 16.20$), $t(38) = 2.27, p = .03$, effect size = 74. This finding is surprising given that we know from the other findings that people in the Insignificance condition experienced relatively minor distress related to the experimental manipulation, and it was

unexpected that these individuals' self-esteem would be impacted by suppression or non-suppression instructions. No significant difference was found between Suppression (M = 73.05; SD = 11.66) and Non-Suppression (M = 77.95; SD = 8.66) in the Importance condition, $t(38) = 1.51$, $p = .14$, effect size = .49. In the Suppression group, results revealed no significant difference, $t(38) = 1.66$, $p = .11$, effect size = .54, between the Importance group (M = 73.05; SD = 11.66) and Insignificance group (M = 79.05; SD = 11.16). However, in the Non-Suppression group, results indicate a significant difference, $t(38) = -2.17$, $p = .04$, effect size = .70, between the Importance group (M = 77.95; SD = 8.66) and Insignificance group (M = 69.05; SD = 16.20). This finding that, in the Non-Suppression group, people who were made to feel poorly about their intrusive thought reported higher states self-esteem than those who had their intrusions normalized was surprising and unclear from a theoretical perspective. Overall these additional t-tests do not appear to provide further clarity in understanding this interaction. These results will be discussed further below.

Figure 3

State Self-Esteem Scale means by experimental condition



Main effect of suppression

The standardized discriminant function coefficients and the structure coefficients for the suppression main effect (see Table 7) were examined for interpretative purposes. Creating a new variable based on the raw discriminant function coefficients was unnecessary in facilitating interpretation for this main effect because there are only two comparison groups (i.e., Suppression and Non-Suppression). The dependent variables that maximally discriminate between these experimental groups are the OCDI item "How

guilty do you feel right now?" and the number of thought occurrences experienced during the thought suppression period. The other variables appear to be useful in discriminating between the experimental groups, but to a considerably lesser extent as evidenced by the lower coefficient values.

Table 7

Standardized and structure coefficients for suppression main effect

Dependent Variable	Standardized Discriminant Function Coefficients	Structure Coefficients
How anxious do you feel right now? (t)	-0.24871	-0.18984
To what extent do you think that you should stop thinking about the plane crash?	0.23175	0.14103
How guilty do you feel right now?	-1.03054	-0.24329
To what extent do you feel like you are not in control of your thoughts? (t)	0.37840	0.03850
To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?	0.54444	0.11665
III-19 Importance/Control of Thoughts subscale (t)	0.19361	0.00760
OCI-R-S Obsessing subscale	0.52641	0.17119
Number of thought occurrences (t)	-0.89045	0.56119

Note. (t) = transformed variable.

Univariate ANOVAs also were examined to further interpret the main effect of thought suppression. Results revealed that the only significant main effect was on the number of thought occurrences (transformed variable) during the suppression or non-suppression period, $F(1, 114) = 9.01, p = .00, \omega^2 = .06$. Examination of the mean number of thought occurrences between groups revealed that the Non-Suppression group

experienced significantly more thought occurrences ($M = 1.01$; $SD = 0.25$) than did the Suppression group ($M = 0.87$; $SD = 0.28$). This result contradicts the predicted paradoxical effect of thought suppression. The main effect of suppression failed to reach significance on the remaining variables of anxiety, urge to stop thinking about the thought, guilt, perceived control over thoughts, urge to reduce or cancel the effects of writing the sentence, the III-19 importance/control of thoughts subscale, and the state obsessing subscale of the OCI-R-S (all $ps > .13$). See Table 3 for means and standard deviations. In this case, analysing linear combinations of dependent variables (as opposed to only conducting univariate ANOVAs) elucidated the impact that the suppression manipulation had on the variable assessing perceived level of guilt.

Neutralizing behaviour

In terms of compulsive-like behaviour, the mean sentences crossed out on the MOCB by the Importance group was 84.07 ($SD = 98.62$), compared to 59.30 ($SD = 86.57$) by participants in the Insignificance condition, and 77.60 ($SD = 98.50$) by the Control group. As previously noted, the MOCB was found to have a u-shaped distribution and was unsuitable for ANOVA. Thus, a chi-square analysis was conducted to compare individuals who failed to cross out any sentences with those who crossed out at least one sentence in each of the three importance groups (i.e., Importance, Insignificance, Control group). The theoretical rationale for conducting the chi-square analysis in this particular manner is that crossing out even one sentence represents neutralizing behaviour whereas abstaining from crossing out a sentence does not. Results of the analysis approached significance, $\chi^2(2) = 5.255$, $p = .07$, suggesting that more

participants in the Importance condition and in the Control condition crossed at least one sentence than did those in the Insignificance condition.

Exploratory analyses: Responsibility effects

Although the purpose of the experimental manipulation in the present study was to examine the impact of importance and mental control appraisals, it is possible that the intrusive thought provocation procedure also influenced responsibility appraisals. To investigate this, another 3 x 2 MANOVA with importance (Importance, Insignificance, or Control) and suppression (Suppression or Non-Suppression) was conducted. The dependent variables used in the analysis were the responsibility subscale of the III-19 and OCDI item, "How likely do you think it is that the event will happen soon?". The MANOVA showed no main effect of importance, $F(4, 226) = 1.42$, $p = .23$, effect size = .05, no main effect of suppression, $F(2, 113) = 0.16$, $p = .85$, effect size = .00, and no interaction effect between importance and suppression, $F(4, 226) = 1.69$, $p = .15$, effect size = .06. For exploratory purposes, univariate ANOVA were examined despite the non-significant multivariate test. The mean difference on the III-19 responsibility subscale between Insignificance and Control group approached significance, $F(2, 114) = 2.84$, $p = .06$, suggesting that the Control group identified more severe maladaptive responsibility-related appraisals than did those in the Insignificance group. Table 8 displays means and standard deviations for the dependent variables in these analyses.

Table 8

Effect of importance manipulation on variables relevant to responsibility appraisals

	Importance manipulation					
Dependent variable	Importance		Insignificance		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*
III-19 Responsibility subscale (t)	3.37	2.13	2.87_b	2.23	4.01_a	2.05
How likely do you think it is that the event will happen soon? (t)	2.05	1.89	1.92	1.70	2.24	2.17

Note. *M* = mean; *SD* = standard deviation; (t) = transformed variable. *N* = 120. Means in the same row that have different subscripts differ at: a-b = $p = .06$.

Debriefing Results

To assess whether our debriefing procedure effectively countered increased distress caused by the deceptive and distressing importance manipulation, data from the PANAS were analysed. Recall that the PANAS was administered post-debriefing. Univariate ANOVA with importance (Importance, Insignificance, or Control) revealed no significant main effects of importance on the negative affect subscale, $F(2, 117) = 1.81$, $p = .17$, $\omega^2 = .03$ or on the positive affect subscale, $F(2, 117) = 0.14$, $p = .87$, $\omega^2 = .00$. Further, Likert scale items (with response choices ranging from 1 to 7) assessing the extent to which participants had regrets about participating in the study and the degree to which they thought their participation was worthwhile also revealed no significant effects of importance [regrets: $F(2, 114) = 0.01$, $p = .99$, $\omega^2 = .00$; worthwhile: $F(2, 114) = 2.73$, $p = .07$, $\omega^2 = .03$]. These findings clearly indicate that participants who were exposed to the importance manipulation were no more distressed after debriefing than were participants who had their intrusive thoughts normalized or who were told nothing about

their intrusive thoughts. See Table 9 for these group means and standard deviations for each experimental condition.

Table 9

Means and standard deviations for measures completed after debriefing

	Importance manipulation					
	Importance		Insignificance		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*
	Positive and Negative Affect Schedule - Negative Affect					
Suppression	11.50	2.52	11.10	2.10	12.60	3.32
Non-Suppression	11.90	2.92	11.05	1.36	11.65	2.28
	Positive and Negative Affect Schedule - Positive Affect					
Suppression	29.30	9.03	30.94	10.26	28.75	6.06
Non-Suppression	29.65	6.33	29.00	7.79	32.05	5.77
	Level of regret for participation in study					
Suppression	1.05	0.22	1.25	0.91	1.35	0.93
Non-Suppression	1.35	1.35	1.10	0.31	1.05	0.22
	How worthwhile was participation?					
Suppression	5.85	0.99	5.60	1.19	6.35	0.99
Non-Suppression	5.60	1.47	5.30	1.30	5.75	0.85

Note. *M* = mean; *SD* = standard deviation. *N* = 120. PANAS - N = Positive and Negative Affect Schedule - Negative Affect; PANAS - P = Positive and Negative Affect Schedule - Positive Affect.

Chapter IV

DISCUSSION

In this study, it was initially hypothesized that participants subjected to an importance appraisal manipulation (Importance condition) of a distressing intrusive thought would experience more severe OC symptoms than would participants told that their intrusive thought was meaningless (Insignificance condition) or participants who were told nothing and, therefore, were left to make their own appraisals (Control condition). This prediction was based on the assumption that non-clinical individuals make healthy appraisals of intrusive thoughts, meaning that they essentially do for themselves what the experimenter did for participants in the Insignificance condition. It also was expected that thought suppression instructions would further increase the distress of the Importance participants by virtue of paradoxical increase in thought occurrence. These predictions were not upheld. Instead, participants exposed to the importance manipulation did not endorse more severe negative importance or other mental appraisals than did those who were not given any feedback about their mental intrusion. In fact, these two groups were remarkably similar in their overall response to the measured dependant variables. Furthermore, the results were such that overall, both of these groups of participants engaged in more dysfunctional appraisals and were more distressed than were participants who received normalizing instructions in the Insignificance condition. In terms of the thought suppression findings, there was no paradoxical increase in the frequency of the intrusive thought.

Clearly, the lack of difference between the Importance and Control group means that the Importance manipulation failed. This manipulation did not succeed in making participants engage in more severe dysfunctional importance appraisals than were experienced by those left to themselves to make their own thought appraisals. Recall that the importance manipulation check revealed that those in the Importance group reported more severe importance appraisals than did those in the Insignificance condition. However, the mean Control group score on the importance manipulation check item was not significantly different from the means of the Importance or Insignificance groups. Thus, although the manipulation check item was helpful in determining that the Importance group engaged in more severe appraisals of excessive personal importance than did the Insignificance group, the manipulation check was unhelpful in clearly determining the type of appraisals engaged in by the Control group. As a result, the data were examined further to facilitate interpretation.

Findings from the MANOVA indicated that the Importance and Control groups reported significantly more severe dysfunctional appraisals and OC symptoms than did those in the Insignificance condition. Analyses of specific dependent variables revealed that the Control group scored higher on the importance/control of thoughts subscale of the III-19 than did the Insignificance group, but not significantly higher than the Importance group. This suggests that the Control group did indeed engage in importance appraisals without being specifically provoked to do so. All told, the data suggest that the Control group had a similar experience to that of the Importance group. This suggests that all participants may have spontaneously engaged in maladaptive importance appraisals as

a result of the thought induction procedure with the importance manipulation not adding to the severity of the dysfunctional appraisal. The insignificance manipulation was clearly successful in restructuring faulty appraisals and significantly diminishing the distress that participants may have been experiencing as a result of the thought provocation manipulation.

The other possible argument is that the Importance and Control group were identical by virtue of not being distraught. If this interpretation is correct, then participants would not have engaged in maladaptive appraisals (or would have done so to a very limited extent) and they would not have reported experiencing any significant amount of distress. Following from this explanation, the significant difference found between the Importance and Control group on one hand, and the Insignificance group on the other hand, would be a reflection of the Insignificance group feeling even better than did the other groups due to the normalizing information they received. This explanation of findings appears unlikely given that the Importance and Control groups reported experiencing a moderate level of OC symptom severity, and the Insignificance group endorsed a milder severity level of OC symptoms. If participants from all experimental groups made healthy (neutral) appraisals of the intrusive thought, then they would have likely all reported making adaptive appraisals and experiencing very minor or no distress. This was not the case.

Importance manipulation

As mentioned above, the more plausible explanation for these findings is that when not given any information about how to interpret the content of a distressing

unwanted intrusive thought, those in the Control group did indeed engage in faulty appraisals of excessive importance to a similar extent as did those in the Importance group. Review of the means of the main dependent variables reveals that individuals in the Importance and Control group tended to report engaging in dysfunctional appraisals and they experienced moderately severe OC symptoms for a non-clinical sample. Thus, it appears that participants in the Importance and Control groups were indeed distressed, and as noted above, they were significantly more distressed than those in the Insignificance condition. Although some may argue that the intrusive thought provocation procedure was the reason for the individuals being distressed, it is argued here that a thought can only be distressing if it is *interpreted* as such, a central tenet of both cognitive theory of OCD and cognitive therapy in general.

Previous research has shown that healthy individuals engage in more adaptive appraisals of intrusive thoughts than do individuals with OCD (OCCWG, 2003). In this study, participants were selected to be healthy in that none endorsed any significant problems with anxiety, depression, or obsessions in the pre-study screening. Therefore, we expected that Control group participants, who were told nothing following the intrusive thought induction, would spontaneously engage in adaptive appraisals and consequently show OC symptoms roughly equivalent to those of the group who received normalizing verbal feedback. This expectation is consistent with Rachman's (1997, 1998) theory of obsessions stating that maladaptive appraisals of the importance of intrusive thoughts lead to increased obsessions and that the latter subside when individuals make adaptive appraisals of intrusions, as do healthy individuals. Thus, the finding that when

left to make their own appraisals, participants experienced OC symptoms equivalent to those of the group made to engage in importance appraisals, combined with the fact that the means on measures of OCD from the Importance group and Control group were both in the moderate severity range for a non-clinical sample, challenges the proposition that non-clinical individuals naturally engage in adaptive appraisals that protect them from symptoms typically associated with OCD.

However, whether this proposition can be extended to all intrusive thoughts remains an empirical question. Examination of the content of the provoked intrusive thought used in this study may facilitate understanding of the current findings. The intrusive thought provocation task was designed explicitly to threaten participants' view of themselves as moral people. One could argue that the content of the planted thought had a built in Importance appraisal component. Thoughts at odds with valued aspects of the self have been shown to be very troubling for people in general (Rowa & Purdon, 2003), not just those with OCD tendencies. It is possible that the task used here overrode people's naturally adaptive intrusive thought appraisals, hence the Control groups' levels of distress being overall comparable to that of the group to whom it was suggested that they were, in fact, immoral for engaging in this task. Again, if this is the case, then maladaptive importance appraisals may be more common than previously thought, especially in response to thoughts that challenge valued aspects of the self.

The main effect of importance, which revealed that the Importance and Control groups reported more severe dysfunctional appraisals and OC symptoms than did the Insignificance group, was interpreted by analysing the linear combinations of the

variables capable of maximally discriminating between experimental groups. Although all variables were found to be useful in discriminating between experimental conditions, one variable was found to be particularly influential. Specifically, the variable that best differentiated between the Importance and Control group on one hand and the Insignificance group on the other hand was the OCDI item, "To what extent do you feel like you are not in control of your thoughts?" The next best dependent variable at distinguishing the Importance and Control groups from the Insignificance group (albeit to a considerably lesser extent) was the OCDI item, "To what extent do you think that you should stop thinking about the plane crash?" These findings suggest that after making faulty appraisals of overimportance, individuals in both the Importance and Control groups engaged in more severe faulty appraisals of mental control. These findings appear to provide support for the proposition that importance and control appraisals are inherently combined. This is consistent with factor analytic studies findings showing that importance and control appraisals (Ferguson et al., 2006) and beliefs (OCCWG, 2005) are co-occurring phenomena.

A measure of compulsive behaviour was created for the present study. These types of measures are beneficial in allowing for investigation of the impact of cognitive manipulations on compulsive behaviours. Results revealed a trend toward significance (p = .07) such that the Importance and Control group participants were more likely to engage in compulsive behaviour than were Insignificance participants who had their intrusive thought normalized. This finding suggests that appraisals of excessive personal importance may increase compulsive behaviour.

Contrary to expectations, there was no main effect of importance (or suppression) on participants' reports of state self-esteem. However, there was an interaction. The lack of main effect of importance suggests that the importance manipulation did not adversely impact participants perceived self-worth. This result is consistent with previous research (Teachman & Clerkin, 2007; Teachman et al., 2006) showing that the importance manipulation did not change participants' state self-esteem ratings. The lack of changes in state self-esteem ratings may be a result of the nature of the items that comprise the SSES. Tests conducted to interpret the interaction failed to bring clarity to understanding the interaction effect. It is recommended that any interpretation of the interaction be done with tentativeness. The specific items that comprise the SSES appear to have little relevance to OC-relevant thought appraisals and this was the only interaction found in all of the results which, therefore, represents a different pattern of findings that it not clearly understood from a theoretical perspective. Further, this finding may have happened by chance or it may be some indication of measuring pre-existing self-esteem characteristics that were different from those measured by the RSES.

Interestingly, there was a trend toward a significant finding ($p = .06$) such that those who were not given any specific information about how to interpret the provoked intrusive thought reported an increase in their perceived level of responsibility, compared to those in the Insignificance condition. Thus, when left to make their own appraisals, people in the Control group not only appeared to engage in faulty importance and control appraisals, but also in maladaptive appraisals of inflated personal responsibility to prevent a negative outcome. This suggests that certain intrusive thoughts are associated with both

spontaneous importance/control appraisals and responsibility appraisals. The thought provoked in this study (i.e., "I hope _____ is in a plane crash") was associated with people in the Control group feeling bad about themselves for having it and increased desire to control the thought. However, in the absence of any information about how to interpret this thought, individuals also engaged in faulty appraisals of responsibility for preventing this harmful thought from occurring in the real world. These thought appraisals have been found to be related as the OCCWG (2001, 2003) have noted correlations between responsibility, importance, and control appraisals and beliefs using data from clinical and non-clinical samples.

Suppression manipulation

When the suppression task was asked of those already exposed to appraisals of excessive personal importance, it was expected that participants would make appraisals of a perceived breakdown in mental control in response to experiencing a paradoxical increase in the frequency of their intrusive thought. No paradoxical effect of thought suppression on the frequency of the suppressed thought was found. One potential obvious possibility for understanding the lack of paradoxical effect of thought suppression is that non-clinical individuals may be able to suppress unpleasant thoughts reasonably well. Indeed, using the same type of intrusive thought provocation procedure as was used in the present study, Rassin (2001) found that suppression of a distressing thought did not lead to increased frequency of intrusions in a non-clinical sample. Marcks and Woods (2007) also used the same type of intrusive thought provocation procedure with a sample of non-clinical individuals and found that those who were instructed to take an acceptance-based

approach, in which they observed their thoughts but did not try to change or suppress them, experienced more frequent intrusions than did individuals told to suppress their unpleasant intrusive thoughts. Purdon et al. (2005) also did not find a paradoxical effect of suppression of participants' most upsetting intrusive thought, using a sample of individuals with OCD. Thus, the findings of these studies suggest that individuals are generally able to suppress their intrusive thoughts reasonably well, which is in contrast to the findings of Wegner et al. (1987).

Interestingly though, while there was no paradoxical effect of thought suppression on the frequency of intrusive thoughts, participants who were exposed to the importance manipulation or given no information about their intrusive thought not only spontaneously engaged in appraisals of excessive importance (as discussed above), but also appraisals of faulty mental control. It was not the thought suppression instructions, but rather the negative interpretations associated with the occurrence of the unwanted thought, that caused participants to perceive a loss of mental control and a strong desire to gain control over their thoughts. These findings are similar to those of Purdon et al. (2005), who found that despite no paradoxical effect of thought suppression on the frequency of intrusive thoughts in an OCD sample, participants' maladaptive appraisals in response to their failed attempts to totally suppress their intrusive thoughts were associated with heightened levels of distress and increased urges to control the thought. As Purdon et al. (p. 105) states, "appraisals of failures in *thought control*, as opposed to appraisals of thoughts in general, may be a key factor in understanding the persistence of obsessional problems."

Although healthy people may just be good as suppressing unpleasant thoughts, participants in the present and above mentioned studies may have been motivated to comply with instructions, or at least appear to be able to comply, and may have under-reported the number of thought occurrences during the thought suppression task. Clearly, demand characteristics cannot be ruled out. However, the fact that in this study, these instructions had no effect on any of the other variables suggests that these particular instructions genuinely did not have an immediate paradoxical effect on participants.

Normalization manipulation

The overarching purpose of research like the present study is to facilitate our understanding of cognitive factors that are relevant to OCD in hopes that it will lead to improved treatment protocols for the disorder. This study was carried out with this aspiration in mind. The present findings point to the significant value of normalizing intrusive thoughts. Recall that participants in the Insignificance group were told accurate information stating that intrusive thoughts are normal experiences and, therefore, have no character-related meaning. Not surprisingly, these participants reported significantly less severe dysfunctional appraisals and OC symptoms compared to those who were falsely told that their intrusions had negative and personally-relevant implications. Interestingly though, those who had their intrusive thoughts normalized reported significantly less severe dysfunctional appraisals and OC symptoms compared to those in the Control group who were not told anything about their intrusive thoughts. These findings have two major implications. Firstly, it suggests that providing accurate information may be very useful in the psychological treatment of OCD. Researchers and clinicians with expertise

in anxiety disorders are keenly aware of this and as such, this type of psychoeducation is often a key component during the initial stages of treatment. For instance, psychoeducational information is a central component in Barlow's (2008) unified treatment protocol designed to provide a model of treatment for understanding and treating all emotional disorders. Secondly, with OCD now being recognized as far more prevalent than once thought (Antony, Downie, & Swinson, 1998; Krochmalik & Menzies, 2003), the present findings of vulnerability to spontaneous importance appraisals in non-clinical individuals points to the value of prevention efforts aimed at normalizing the experience of intrusive thoughts, even those particularly distressing intrusions that contradict valued aspects of the self (Rowa & Purdon, 2003).

Methodological Considerations

In this study, we chose to manipulate thought suppression as an expression of control appraisals rather than directly inducing a control appraisal by, for example, telling participants that they should be able to control the planted intrusive thought. The implications of this methodological choice constitute an empirical question that could potentially be answered with a replication comparing direct control appraisal induction with thought suppression instructions. Furthermore, the effect of the thought suppression instructions were measured immediately after participants received these instructions. This methodology allowed for the investigation of possible immediate paradoxical effects associated with thought suppression, but not for long term effects. An additional thought monitoring period later in the experimental procedure may have revealed a rebound effect of thought suppression. For instance, using a non-clinical sample, Clark et al. (1991)

found no immediate enhancement effect in response to the suppression of neutral thoughts, however, they did find a rebound effect. However, this possibility seems unlikely given that Salkovskis and Campbell (1994) who, as in the present study, had *intrusive* thoughts as the targets of suppression, found an immediate enhancement effect and no rebound effect associated with thought suppression. Their study also was conducted using a non-clinical sample.

Another methodological consideration that may have influenced the present results was the manner in which the suppression and non-suppression instructions were delivered. Those in the Non-Suppression group still reported a moderately strong effort to suppress (48/100 on visual analogue scale). Although this level of effort was significantly lower than that put forth by those in the Suppression condition (64/100), these overall mean effort scores are much closer than what was originally anticipated. Perhaps efforts at suppressing could be enhanced by strongly encouraging participants to follow the suppression instructions. Whether these encouragements would result in greater efforts to suppress and, therefore, in different results in reported frequency of intrusive thoughts remains an empirical question.

Another methodological choice that may have some bearing on the interpretation of the present findings concerns the manner in which the intrusive thought was induced. This strategy had a behavioural component, as we instructed participants to write out a distressing sentence that was incongruent with their true feelings. Thus, not only did participants have an intrusive thought, they also agreed to actually write out what is essentially a death wish for a loved one. This intrusive thought provocation procedure

was chosen to control for the type of unwanted thought participants had and to have participants experience an obsession-like thought which, unlike the method of recalling past intrusive thoughts (Teachman et al., 2006; Teachman et al., 2007), would retain its distressing quality. The consequences of this component of the methodology is that one cannot be certain that participants made actual thought appraisals as opposed to appraisals of having performed a behaviour. Although, this procedure has long been used to provoke intrusive, obsession-like thoughts (Rachman et al., 1996), whether its behavioural component is meaningful also is an empirical question at this point.

In any research that requires deception and induction of distress, it is crucial to ensure a favourable balance in the ratio of benefit to the scientific literature and the risks to participants. The value of this type of research is in targeting and understanding underlying causal factors leading to the development and maintenance of OCD. The logical extension from such increased understanding of causal factors of OCD is the development of new treatments or enhancement of existing interventions. The primary risk associated with this type of research is that participants will be harmed by experiencing intense distress and will leave these studies in an emotional state such that they may be harmed by their participation in the research. Several measures were taken to prevent this from occurring in the present study. Firstly, individuals deemed to be particularly vulnerable to the experimental manipulation were identified via screening procedures and excluded from participation. The individuals that did participate in the study underwent an empirically supported positive mood induction procedure used in previous research (Eich & Metcalfe, 1989; Mitchell et al., 1998) and then a detailed

debriefing procedure in which they were informed of the true purpose of the study, the need for deception, and were given a description of OCD. They also had opportunities to ask questions throughout the debriefing procedure and were informed of community resources available to them in the event that the study caused them ongoing distress. Data collected from participants following the debriefing procedure revealed no group differences between those in the Importance, Insignificance, or Control conditions, suggesting that participants were not distressed upon completion of the study. More broadly, it suggests that sound screening and debriefing procedures can ensure that participants are not harmed from taking part in research that involves deception and threats to one's ego (for further elaboration see Jarry, 2008).

Limitations and Future Research

A potential limitation to the present study is the non-clinical nature of the sample. The value of this type of research is primarily based on the assumption that the findings from non-clinical samples can be applied to clinical samples of individuals with obsessive-compulsive problems. Fortunately, as mentioned earlier, individuals in the general population have varying levels of OC symptoms (Gibbs, 1996; Mataix-Cols, Vallejo, Sanchez-Turet, 2000) and there is empirical data suggesting that the differences between individuals with clinical and non-clinical symptoms of OC are quantitative, rather than qualitative (de Silva, 2003; Rachman & de Silva, 1978). In more recent studies by Rassin and Muris (2006), the Rachman and de Silva data were both re-analysed and replicated in separate studies. The findings suggested that "the content of at least some obsessions is diagnostic of mental illness" (Rassin & Muris, 2006, p. 1067)

and that the landmark findings of Rachman and de Silva may have been overstated. To the extent that additional future research suggests that qualitative differences do indeed exist between abnormal and normal obsessions, the findings of this type of research with non-clinical samples would have reduced external validity.

Another limitation, which is not new to thought suppression research, but should be noted nonetheless, concerns the reliability of the measure of intrusive thought frequency. The extent to which we can rely on participants' ability to accurately identify and record instances when they are experiencing an intrusive thought remains to be established.

In the context of discussing limitations, it is also useful to consider more broad-based limitations of the cognitive-behavioural models of OCD. The gold standard treatment, based on the behavioural theory of OCD, is referred to as exposure and response prevention (ERP; Meyer, 1966). ERP has a strong behavioural emphasis whereby participants are repeatedly exposed to their fears and prevented from engaging in compulsive behaviours until extinction occurs. Clark (2004) highlights several limitations associated with ERP, which include the fact that 20-30% of individuals with OCD refuse treatment, and of those who partake in treatment, approximately 25% fail to improve. Additionally, Clark notes that the highly behavioural focus fails to adequately acknowledge the maladaptive appraisals and beliefs which are clearly evident in typical presentations of OCD and may minimize the importance of directly targeting these cognitive aspects of the disorder. The present findings provide further support for the notion that faulty interpretations of intrusive thoughts lead to increased severity of OC

symptoms. The findings from the Insignificance group point to the benefits of making healthy appraisals.

To replicate and advance the findings of the present study, a logical next step would be to directly manipulate mental control appraisals, as opposed to control behaviours, as was done in the present study. Although mental control appraisals that one should control the presence of the intrusive thought were assumed to be present when individuals were given instructions to engage in a mental control-related behaviour (i.e., suppression), this assumption warrants empirical investigation. More importantly, however, is that people who were instructed to suppress their intrusive thought did not report more severe faulty appraisals of mental control. This finding supports the notion of using a different methodology that directly manipulates mental control *appraisals*, not *behaviours*.

Although most experts agree that optimal treatments for OCD should include both cognitive and behavioural elements (Huppert & Franklin, 2005, as cited in Koran, Hanna, Hollander, Nestadt, & Simpson, 2007), the specific way in which the cognitive and behavioural components should be combined for optimal treatment outcomes remains to be explored. Further, the optimal combination of behavioural and cognitive treatment techniques would likely vary with each OCD subtypes (e.g., checking, need for symmetry, hoarders, etc). Future research to address these issues may advance the current knowledge relevant to OCD treatment and improve treatment outcomes.

The present findings may gain in validity if considered in combination with process and outcome studies of OCD therapy applying principles derived from the present

findings. Indeed, the present results showed that, when left to themselves, people appear to make maladaptive appraisals of their intrusive thoughts but that active normalization of these thoughts by a third party greatly reduces such appraisals. Maina, Saracco, & Albert (2006) reviewed family-focussed treatments for OCD and argue that the psychoeducation component to OCD should be considered as having much more importance that it currently does. They also recommend inclusion of family members in treatment to help enrich their knowledge base about OCD and to ensure they are not acting in a way that facilitates the persistence of the disorder. Finding a beneficial impact of the particular component of normalizing intrusive thoughts in a dismantling study in a clinical setting would lend further validity to data gathered with non-clinical samples such as the one used in this study. No such studies have been conducted to date.

Finally, as mentioned earlier, the present findings may have prevention implications as normalizing individuals' intrusive thoughts in the present study significantly reduced their level of distress and OC symptoms. Longitudinal studies revealing lowered prevalence rates as a result of normalizing intrusive thoughts would help to support the significance and success of such preventative efforts. The specific information to be provided to prevent OCD and the optimal method for delineating such information remain to be determined. However, the accurate and brief amount of information provided to the Insignificance group in the present study suggests that simply making people aware of the universal nature of these thoughts may result in a considerable reduction of any OC symptoms that may have been associated with the thought.

Summary

To provide further test of cognitive theory of OCD, an intrusive thought was provoked and appraisals of excessive personal importance and efforts to achieve mental control were experimentally manipulated. The impact of these manipulations on the severity of OCD associated symptoms was investigated. The findings indicated that individuals who were exposed to the importance manipulation, and those who were not told anything about experiencing an intrusive thought (Control group), reported more severe dysfunctional appraisals of importance and mental control, as well as more severe non-specific OC symptoms such as anxiety and guilt than did the group who had their intrusive thoughts normalized. It was hoped that faulty appraisals of mental control would occur in response to difficulties experienced during a thought suppression task. However, those asked to suppress their intrusive thought failed to report more severe dysfunctional appraisals of mental control or OC symptoms than did those who were asked to not suppress. Because the Importance group failed to endorse higher scores than the Control group on the item that served as the importance manipulation check, it cannot be concluded that the importance manipulation caused significant increases in the level of dysfunctional appraisals or OC symptoms reported. However, given that the rest of the results suggest that the Control group had a very similar experience to that of those exposed to the importance manipulation, it was deemed legitimate to conclude that the Control group did engage in faulty appraisals of importance. What is clear, is that when individuals were exposed to the importance manipulation or were left to themselves to appraise their intrusive thought, they tended to engage in more faulty appraisals of mental

control than did those who had their intrusions normalized. This provides further support for the notion that importance and mental control appraisals may be best described as measuring a unitary construct. Finally, a central finding of this study is that those who had their intrusive thoughts normalized, reported significantly less dysfunctional thought appraisals and less severe OC symptoms compared to those who did not receive such normalizing information. This result suggests that providing psychoeducational information that normalizes and minimizes the importance of intrusive thoughts may be valuable not only in OCD treatment, but also in a preventative manner to reduce prevalence rates of the disorder.

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APPENDICES

Appendix A

Letter of Information

Title: An investigation of cognitive style

You are asked to participate in a research study conducted by Rob Ferguson, from the Department of Psychology at the University of Windsor. Rob Ferguson is a graduate student in the Department of Psychology and these data will contribute to his doctoral dissertation. Dr. Josée L. Jarry, a faculty member in the Department of Psychology, is supervising Rob Ferguson's research. If you have any questions or concerns about this research please feel free to contact Rob Ferguson at fergusu@uwindsor.ca or (519) 253-3000, ext. 4708 and/or Dr. Jarry at (519) 253-3000, ext. 2237.

PURPOSE OF THE STUDY
The purpose of the present research is to examine the cognitive style of individuals and the determinants of one's cognitive style.

PROCEDURES
You will be asked to complete a series of questionnaires and a sentence completion task. Your participation will take approximately 60 minutes. This study will be conducted in room 286-1 of the Chrysler Hall South building. If you recognize the experimenter and you feel uncomfortable because of this, you may withdraw from the study.

Research findings will be made available to you by the Fall of 2007 through a PDF attachment on Dr. Jarry's website.

POTENTIAL RISKS AND DISCOMFORTS
While thinking about certain thoughts it is possible that you may feel uncomfortable. Please note that if you do feel uncomfortable at all, you may contact Dr. Jarry (see above for contact information) with your concerns. If you wish to discuss your concerns with someone unaffiliated with the study, you may contact the Student Counselling Centre at (519) 253-3000, ext. 4616.

POTENTIAL BENEFITS TO SUBJECTS AND/OR SOCIETY
You may find the following study interesting as it examines the way you think. This research will benefit the scientific community, as it will provide further insight into people's cognitive style.

PAYMENT FOR PARTICIPATION

There is no payment for participating in this study, however, you will be receive 1 bonus point towards the psychology course of your choice.

CONFIDENTIALITY

It is extremely important that you feel comfortable to answer all questions in an honest manner. Therefore, all information obtained in this research that can be identified with you will remain confidential and will not be disclosed unless you provide your permission. To ensure confidentiality, do not write your name on any materials other than the Consent Form. All of your data will be linked with a code number determined prior to your participation and all questionnaires will be identified with this number. The signed Consent Form will be stored separately from the raw data set, in locking filing cabinets.

❑ Check here if you agree to have your data be used in subsequent studies. You may withdraw them from subsequent use at any point in time.

PARTICIPATION AND WITHDRAWAL

You may choose whether or not to participate in this research. If you volunteer to participate in this study, you may withdraw at any time without consequences of any kind. You may exercise your option of removing your data from the study. Although it is highly desirable for research purposes that you answer all questions, you may also refuse to answer any question(s) that you do not want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

RIGHTS OF RESEARCH SUBJECTS

You may withdrawal your consent at any time and discontinue participation in this research without any penalty. This study has been reviewed by the Research Ethics Board at the University of Windsor and has received ethics clearance. If you have any questions about your rights as a research participant that have not been addressed here, contact:

Research Ethics Co-ordinator

University of Windsor
Windsor, Ontario
N9B 3P4

Telephone: (519) 253-3000, ext. 3916
Email: ethics@uwindsor.ca

Appendix B

Consent Form
Title: An investigation of cognitive style

You are asked to participate in a research study conducted by Rob Ferguson, from the Department of Psychology at the University of Windsor. Rob Ferguson is a graduate student in the Department of Psychology and these data will contribute to his doctoral dissertation. Dr. Josée L. Jarry, a faculty member in the Department of Psychology, is supervising Rob Ferguson's research. If you have any questions or concerns about this research please feel free to contact Rob Ferguson at fergusu@uwindsor.ca or (519) 253-3000, ext. 4708 and/or Dr. Jarry at (519) 253-3000, ext. 2237.

PURPOSE OF THE STUDY
The purpose of the present research is to examine the cognitive style of individuals and the determinants of one's cognitive style.

PROCEDURES
You will be asked to complete a series of questionnaires and a sentence completion task. Your participation will take approximately 60 minutes. This study will be conducted in room 286-1 of the Chrysler Hall South building. If you recognize the experimenter and you feel uncomfortable because of this, you may withdraw from the study.

Research findings will be made available to you by the Fall of 2007 through a WordPerfect attachment on Dr. Jarry's website.

POTENTIAL RISKS AND DISCOMFORTS
While thinking about certain thoughts it is possible that you may feel uncomfortable. Please note that if you do feel uncomfortable at all, you may contact Dr. Jarry (see above for contact information) with your concerns. If you wish to discuss your concerns with someone unaffiliated with the study, you may contact the Student Counselling Centre at (519) 253-3000, ext. 4616.

POTENTIAL BENEFITS TO SUBJECTS AND/OR SOCIETY
You may find the following study interesting as it examines the way you think. This research will benefit the scientific community, as it will provide further insight into people's cognitive style.

PAYMENT FOR PARTICIPATION
There is no payment for participating in this study, however, you will be receive 1 bonus point towards the psychology course of your choice.

CONFIDENTIALITY

It is extremely important that you feel comfortable to answer all questions in an honest manner. Therefore, all information obtained in this research that can be identified with you will remain confidential and will not be disclosed unless you provide your permission. To ensure confidentiality, do not write your name on any materials other than the Consent Form. All of your data will be linked with a code number determined prior to your participation and all questionnaires will be identified with this number. The signed Consent Form will be stored separately from the raw data set, in locking filing cabinets.

❑ Check here if you agree to have your data be used in subsequent studies. You may withdraw them from subsequent use at any point in time.

PARTICIPATION AND WITHDRAWAL

You may choose whether or not to participate in this research. If you volunteer to participate in this study, you may withdraw at any time without consequences of any kind. You may exercise your option of removing your data from the study. Although it is highly desirable for research purposes that you answer all questions, you may also refuse to answer any question(s) that you do not want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

RIGHTS OF RESEARCH SUBJECTS

You may withdrawal your consent at any time and discontinue participation in this research without any penalty. This study has been reviewed by the Research Ethics Board at the University of Windsor and has received ethics clearance. If you have any questions about your rights as a research participant that have not been addressed here, contact:

Research Ethics Co-ordinator

University of Windsor
Windsor, Ontario N9B 3P4

Telephone: (519) 253-3000, ext. 3916
Email: ethics@uwindsor.ca

SIGNATURE OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE

I understand the information provided for the study "An investigation of cognitive style" as provided herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

_____
Name of Subject

_____ _____
Signature of Subject Date

SIGNATURE OF INVESTIGATOR

In my judgement, the subject is voluntarily and knowingly giving informed consent to participate in this research study.

_____ _____

Signature of Investigator Date

Appendix C

OCI-R (T)

The following statements refer to experiences that many people may have in their everyday lives. Circle the number that best describes **HOW MUCH** the experience **DISTRESSED or BOTHERED you during the PAST MONTH**. The numbers refer to the following verbal labels:

0	1	2	3	4
Not at all	A little	Moderately	A lot	Extremely

A. I find it difficult to control my own thoughts.	0	1	2	3	4
B. I am upset by unpleasant thoughts that come into my mind against my will.	0	1	2	3	4
C. I frequently get nasty thoughts and have difficulty in getting rid of them.	0	1	2	3	4

Appendix D

OCI-R (S)

The following statements refer to experiences that many people may have in their everyday lives. Circle the number that best describes **HOW MUCH** the experience **DISTRESSES or BOTHERS you AT THIS MOMENT.** The numbers refer to the following verbal labels:

0	1	2	3	4
Not at all	A little	Moderately	A lot	Extremely

A. I find it difficult to control my own thoughts.	0	1	2	3	4
B. I am upset by unpleasant thoughts that are coming into my mind against my will.	0	1	2	3	4
C. I am having nasty thoughts and I am having difficulty in getting rid of them.	0	1	2	3	4

Appendix E

RSES

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

		STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
1	On the whole, I am satisfied with myself.	SA	A	D	SD
2	At times I think I am no good at all.	SA	A	D	SD
3	I feel that I have a number of good qualities.	SA	A	D	SD
4	I am able to do things as well as most other people.	SA	A	D	SD
5	I feel I do not have much to be proud of.	SA	A	D	SD
6	I certainly feel useless at times.	SA	A	D	SD
7	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8	I wish I could have more respect for myself.	SA	A	D	SD
9	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10	I take a positive attitude toward myself.	SA	A	D	SD

Appendix F

SSES

This is a questionnaire designed to measure what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you RIGHT NOW.

Using the following scale, place a number in the box to the right of the statement that indicates what is true for you at this moment:

1	2	3	4	5
Not at all	A little bit	Somewhat	Very much	Extremely

1. I feel confident about my abilities.	1	2	3	4	5
2. I am worried about whether I am regarded as a success or failure.	1	2	3	4	5
3. I feel satisfied with the way my body looks right now.	1	2	3	4	5
4. I feel frustrated or rattled about my performance.	1	2	3	4	5
5. I feel that I am having trouble understanding things that I read.	1	2	3	4	5
6. I feel that others respect and admire me.	1	2	3	4	5
7. I am dissatisfied with my weight.	1	2	3	4	5
8. I feel self-conscious.	1	2	3	4	5
9. I feel as smart as others.	1	2	3	4	5
10. I feel displeased with myself.	1	2	3	4	5
11. I feel good about myself.	1	2	3	4	5
12. I am pleased with my appearance right now.	1	2	3	4	5
13. I am worried about other people think of me.	1	2	3	4	5
14. I feel confident that I understand things.	1	2	3	4	5
15. I feel inferior to others at this moment.	1	2	3	4	5
16. I feel unattractive.	1	2	3	4	5
17. I feel concerned about the impression I am making.	1	2	3	4	5
18. I feel that I have less scholastic ability right now than others.	1	2	3	4	5
19. I feel like I'm not doing well.	1	2	3	4	5
20. I am worried about looking foolish.	1	2	3	4	5

Appendix G

OCDI

For each of the following questions please indicate your response by drawing a vertical line through the appropriate part of the continuum scale that reflects **how you feel at this moment.**

1. How anxious do you feel right now?

.....

0 100

"Not at all" "Extremely"

2. To what extent do you feel like completing the sentence about the plane crash means something negative about your character and/or moral values?

.....

0 100

"Not at all" "Extremely"

3. To what extent do you think that you should stop thinking about the plane crash?

.....

0 100

"Not at all" "Extremely"

4. How guilty do you feel right now?

.....

0 100

"Not at all" "Extremely"

5. To what extent do you feel like you are not in control of your thoughts?

.....

0 100

"Not at all" "Extremely"

6. How responsible would you feel if the event were to happen soon?

.....

0 100

"Not at all" "Extremely"

7. To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?

.....

0 100

"Not at all" "Extremely"

8. How likely do you think it is that the event will happen soon?

.....

0 100

"Not at all" "Extremely"

Appendix H

III-19
(Font reduced to comply with dissertation formatting)

We are interested in your experiences with unpleasant and unwanted thoughts or images or impulses. The entire sentence you completed earlier, including the name of the person close to you in the blank part of the sentence, is written in the space below.

I hope_____ is in a plane crash.

While keeping this unwanted intrusive thought in mind, rate how much you believe in each of the ideas listed below. Circle the number that best represents your belief when this intrusion is occurring.

Use the following scale:

0	10	20	30	40	50	60	70	80	90	100
I did not believe this idea at all					I was moderately convinced this idea was true					I was completely convinced this idea was true

1. Because I've thought of bad things that might happen, I must act to prevent them.	0	10	20	30	40	50	60	70	80	90	100
2. Because I have this thought, it must be important.	0	10	20	30	40	50	60	70	80	90	100
3. If I don't do something about this intrusive thought, it will be my fault if something terrible happens.	0	10	20	30	40	50	60	70	80	90	100
4. Because this thought comes from my mind, I must want to have it.	0	10	20	30	40	50	60	70	80	90	100
5. It's wrong to ignore this unwanted thought.	0	10	20	30	40	50	60	70	80	90	100
6. Because I can't control this thought, I am a weak person.	0	10	20	30	40	50	60	70	80	90	100
7. I cannot take the risk that this thought will come true.	0	10	20	30	40	50	60	70	80	90	100
8. Now that I've thought of something bad that could go wrong, I have a responsibility to make sure it doesn't happen.	0	10	20	30	40	50	60	70	80	90	100

0	10	20	30	40	50	60	70	80	90	100
I did not believe this idea at all					I was moderately convinced this idea was true					I was completely convinced this idea was true

9. Because I've had this thought, I must want it to happen.	0	10	20	30	40	50	60	70	80	90	100
10. Having this intrusive thought means that I could lose control of my mind.	0	10	20	30	40	50	60	70	80	90	100
11. I need to be certain something awful won't happen as a result of this thought.	0	10	20	30	40	50	60	70	80	90	100
12. Having this intrusive thought means I'm out of control.	0	10	20	30	40	50	60	70	80	90	100
13. Having this thought means I am weird or abnormal.	0	10	20	30	40	50	60	70	80	90	100
14. I would be irresponsible if I ignored this intrusive thought.	0	10	20	30	40	50	60	70	80	90	100
15. Having this intrusive thought means I am a terrible person.	0	10	20	30	40	50	60	70	80	90	100
16. If I don't control this unwanted thought, something bad is bound to happen.	0	10	20	30	40	50	60	70	80	90	100
17. The more I think about these things, the greater the risk they will come true.	0	10	20	30	40	50	60	70	80	90	100
18. I'll feel guilty unless I do something about this thought.	0	10	20	30	40	50	60	70	80	90	100
19. If I don't control this thought, I'll be punished.	0	10	20	30	40	50	60	70	80	90	100

Appendix I

MOCB

Sample first page of the MOCB:

I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.
I hope Rob is in a plane crash.	I hope Rob is in a plane crash.

Appendix J

The PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way *right now*, that is, *at the present moment*. Use the following scale to record your answers.

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

_____ interested
_____ distressed
_____ excited
_____ upset
_____ strong
_____ guilty
_____ scared
_____ hostile
_____ enthusiastic
_____ proud
_____ irritable
_____ alert
_____ ashamed
_____ inspired
_____ nervous
_____ determined
_____ attentive
_____ jittery
_____ active
_____ afraid

Appendix K

Demographic Questionnaire

Age: _____ Sex: _____

Marital status:
Married/common law ☐ Divorced/separated ☐ Single ☐ Widowed ☐

Number of children: 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ more than 4 ☐

What is your ethnic background?
Caucasian ☐ South Asian ☐ Hispanic ☐
African-Canadian ☐ European ☐ Native-Canadian ☐
East Asian ☐ Other (please specify): _____

School enrolment:
Full time student ☐ Part time student ☐

Years in University:
First year ☐ Third year ☐ More than 4 years ☐
Second year ☐ Fourth year ☐

Including your current psychology course(s), how many psychology courses have you taken so far? _____

What is/are your major(s)? _____

What is/are your minor(s)? _____

If currently employed, your occupation is:
Full time ☐ Clerical ☐ Labourer ☐
Part time ☐ Professional ☐ Self-employed ☐
Owner/manager ☐ Unemployed ☐
Other: _____

Mother or guardian's occupation:
Full time ☐ Clerical ☐ Labourer ☐
Part time ☐ Professional ☐ Self-employed ☐
Owner/manager ☐ Unemployed ☐
Other: _____

Father or guardian's occupation:

Full time	☐	Clerical	☐	Labourer	☐
Part time	☐	Professional	☐	Self-employed	☐
Owner/manager	☐	Unemployed	☐		

Other: _____

Appendix L

Debriefing for Deception

There is more to this study than I have told you about so far. Before I tell you exactly what it is, I would like to know what you think this study was about. [Pause and wait for response].

Before I tell you more about the true purpose of this study I would like to explain why it is necessary for some kinds of psychological studies not to tell people all about the purpose of the study at the very beginning. In some kinds of studies, if we tell people what the purpose of the experiment is and what we predict about how they will react under particular conditions, they might deliberately do whatever they think we want them to do, just to help us out and give us the results that they think we want. If that happened, their reactions would not be a good indication of how they might react in a situation in every day life, where they didn't think they were being studied. It is also possible that the opposite might occur and that people might think that if we predicted that they would do a certain thing, they might deliberately not do it to show us that we can't figure them out. This would also make the results invalid, because again, what people would be responding to is what they thought we were looking for rather than responding naturally. Can you see why in some studies we can't tell people all about the purpose of the study at the beginning because it would influence the results and make the data invalid? [Pause and give the participants a chance to ask questions or comment].

Now I would like to explain exactly what we are trying to get at in this study. We told you that we were looking at one's cognitive style and what determines how people

think. However, the study that you just participated in looked at the effect that faulty interpretations of unwanted, intrusive thoughts have on the severity of obsessive-compulsive disorder (OCD) symptoms. There is much research that suggests that almost all people experience unwanted, intrusive thoughts, which means that they are a normal experience. Research also suggests that people with OCD experience similar types of intrusive thoughts as people who do not have OCD. However, people with OCD exaggerate the importance of their intrusive thoughts. For example, they night think that having an intrusive thought means they are a bad person when in actuality, they are having a very normal experience of intrusive thoughts. In contrast, people without OCD tend to interpret the occurrence of intrusive thoughts as unimportant and they can easily stop thinking about them. In this study, some people were informed that writing the sentence about the plane crash, and having the intrusive thought of the crash, suggested that they may have weaker moral values or a weaker character that the vast majority of people. This is entirely untrue. It really does not mean anything about one's moral values or character. We told others that having the intrusive thought was meaningless (the truth), and a third group of people were not told anything about having the intrusive thought (control group). We want to see if people who were told that having the intrusive thought of the plane crash means that they may have weaker moral values than most people exhibit more symptoms of OCD than those who were told that completing the sentence task and having the intrusive thought were meaningless or those who were told nothing about having the intrusive thought. As mentioned earlier, research findings indicate that attaching too much importance to the occurrence of intrusive thoughts is associated with

OCD symptoms. This study was trying to further demonstrate that making faulty interpretations of intrusive thoughts leads one to report and demonstrate more symptoms of OCD than those who make adaptive interpretations.

We also asked some people in the study to suppress all thoughts of the plane crash and we asked another group to not suppress any thoughts. Research has shown that trying to suppress distressing thoughts actually has the opposite effect, and results in an increase in the occurrences of the thought that the person was trying to suppress. We want to see if people who were told that having the intrusive thought of the plane crash means that they may have weaker moral values than most people, and were asked to suppress the thought of the plane crash, report and show more symptoms of OCD than those people in all other conditions.

How people interpret their intrusive thoughts is important because faulty interpretations can lead to symptoms of OCD and even a clinical diagnosis of OCD. So, it is important for psychologists to have as much information as possible about these interpretations that people make. That is why we are conducting this study. Do you understand why we had to do that? Do you have any questions? [Pause and allow participant to talk about this if they have any concerns for questions].

As in most psychological research, we are interested in how the average person reacts in this situation. We need to test many people and combine their results in order to get a good indication of how the average person reacts under the different conditions. In order for us to draw any conclusions, we have to combine the data we got from you with data we get from other people so that we have enough data to draw conclusions. What

this means is that there will be many people participating in this study. It is going to be necessary for us to ask you not to say anything about the study to anyone else. If you talked to someone else about the study and told them all the things I just told you and then they were in the study; their reactions wouldn't be spontaneous and natural, and their results couldn't be used and combined with your data and those from other people. If that happened, we wouldn't have enough data to make conclusions about the average person, so the whole study really would be for nothing. I hope you can see why it is extremely important that I ask you not to say anything about the study. You might think that it won't make a difference if you talk to your roommate about it because they'll never be in the study, but your roommate might say something to someone else who might be in the study. So, I would like to ask you not to say anything about the study, other than you completed a sentence completion task and some self-report questionnaires that examined your thoughts at least until the end of this school year in April 2007. Would you be comfortable telling me now that you will not tell others about the study until it is all over? Your participation in research is very important. In a study like this where we didn't give you all the information up front, we want to make sure you are satisfied with your participation and that you wish to keep your data in the study. If you tell me now that you do not want your data to be used, we will remove it from our pool of data. Do you want to keep your data in the study, or have it removed? Do you have any questions about that?

We also want to let you know that we realize that some of the questionnaires we asked you to complete were personal in nature. Some of them made you think about very distressing experiences you did not want to think about. Some people might be upset after

completing questionnaires, others will not be upset at all. Both of these responses are perfectly normal. If you have any concerns, I really want to encourage you to discuss your reactions with me, either now or later on. The contact information for myself and my research advisor are included on your copy of the consent form. If you would prefer to discuss your reactions to the study with someone else, you may contact the Student Counseling Centre (SCC) on campus. The phone number for the SCC is also included on the consent form. If you prefer to speak to someone off campus about this study, we can provide you a list of community resources for which you may contact as you see fit. Your participation in this study was very much appreciated. I hope you found your experience of participating in this study interesting. I would be glad to answer any questions you might have.

Appendix M

Correlation Table of Dependent Variables

	OCDI 1 (t)	OCDI 2	OCDI 3	OCDI 4	OCDI 5 (t)	OCDI 7	OCDI 8 (t)
OCDI 1 (t)	-						
OCDI 2	.59**	-					
OCDI 3	.34**	.44**	-				
OCDI 4	.67**	.76**	.47**	-			
OCDI 5 (t)	.54**	.45**	.32**	.48**	-		
OCDI 7	.56**	.63**	.38**	.68**	.36**	-	
OCDI 8 (t)	.33**	.27**	0.07	.27**	.29**	0.18	-
OCI-R-S Ob	.47**	.38**	.42**	.50**	.54**	.40**	0.18
I/C III-19 (t)	.41**	.41**	.26**	.44**	.43**	.34**	.34**
R III-19 (t)	.38**	.42**	.36**	.46**	.34**	.35**	.43**
Tght Occ (t)	.23*	.19*	0.1	0.13	.39**	0.11	0.14
Suppress Eff	.29**	.30**	.43**	.34**	.43**	.29**	-0.03
MOCB	.26**	.31**	.23*	.24**	.18*	.23**	.21*
SSES	-.40**	-.36**	-.22*	-.43**	-.32**	-.31**	-.30**

	OCI-R-S Ob	I/C III-19 (t)	R III-19 (t)	Tght Occ (t)	Suppress Eff	MOCB	SSES
OCDI 1 (t)							
OCDI 2							
OCDI 3							
OCDI 4							
OCDI 5 (t)							
OCDI 7							
OCDI 8 (t)							
OCI-R-S Ob	-						
I/C III-19 (t)	.48**	-					
R III-19 (t)	.42**	.71**	-				
Tght Occ (t)	.33**	.32**	.22*	-			
Suppress Eff	.46**	.30**	.24**	.25**	-		
MOCB	0.1	.22*	.31**	0.05	-0.04	-	
SSES	-.41**	-.47**	-.36**	-.23*	-0.1	-.33**	-

Note. OCDI 1 = How anxious do you feel right now?; OCDI 2 = To what extent do you feel like completing the sentence about the plane crash means something negative about your character and/or moral values?; OCDI 3 = To what extent do you think that you should stop thinking about the plane crash?; OCDI 4 = How guilty do you feel right now?; OCDI 5 = To what extent do you feel like you are not in control of your thoughts?; OCDI 7 = To what extent do you feel the urge to reduce or cancel the effects of writing the sentence?; OCDI 8 = How likely do you think it is that the event will happen soon?; OCI-R-S Ob = Obsessive-Compulsive Inventory - Revised Obsessing subscale; I/C III-19 = Importance/Control of Thoughts subscale of III-19; R III-19 = Responsibility subscale of III-19; Tght Occ = Thought occurrences; Suppression Eff = Suppression effort; MOCB = Measure of Obsessive Compulsive Behaviour; SSES = State Self Esteem Scale. OCDI 6 was excluded from analyses and therefore was not reported here. $p <$ .01**; $p <$ .05*.

VITA AUCTORIS

Robert Ferguson was born in Toronto, Ontario. He received his high school diploma from Etobicoke Collegiate Institute in 1997. From there he went on to receive an Honours Bachelor of Arts degree in Psychology at Wilfrid Laurier University in 2001. Robert began graduate studies at the University of Windsor in 2002 and he received the Master's of Arts degree in Adult Clinical Psychology in 2004. He is currently a candidate for the Doctoral degree in Adult Clinical Psychology.