Change in Dysfunctional Beliefs and Symptoms during Cognitive Behavior Therapy for Resistant Obsessive Compulsive Disorder

Samara Dalfen B.Sc.
Department of Psychiatry
McGill University, Montreal
February 2004

A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of Mater's of Science in Psychiatry.

Your file Votre référence
ISBN: 0-612-98617-9
Our file Notre référence
ISBN: 0-612-98617-9

Table of Contents

Acknowledgements

I would like to thank first and foremost, my immediate supervisor, Dr. Debbie Sookman for her unfailing support, encouragement, and brilliance over the past year. No person has shown more dedication, enthusiasm, and interest in conjunction with this study than her. She helped structure the study included in this thesis and was a constant driving force for the duration of this project. Dr. Sookman has taught me a tremendous amount about the generation, description, and presentation of scientific results, and has allowed me the opportunity to attend and participate in several conferences and presentations, all in a relatively short amount of time. Dr. Sookman made this project attainable through her availability and invaluable feedback and has also provided me with an enriching academic experience. I am thankful for having had the opportunity to work and learn under her supervision. I would like to extend my gratitude to Lawrence Annable and Dr. Gilbert Pinard for their consultation, insight, constructive criticism, and dedication to the study. Professor Annable is an experienced statistician, without whom the analyses performed in this thesis could not have been properly carried out or interpreted. He made himself readily available at all times, and I extend a tremendous amount of gratitude and appreciation for his collaboration. Dr. Pinard is an experienced clinician and researcher, whose opinions and insight were an asset and a necessity throughout the development of this project. It was a privilege and a delight to work so closely with all three of these experienced researchers.

I am also thankful to Dr. Chawki Benkelfat for providing me with an office space in the Research and Training Building that was highly conducive to producing high quality work.

The success of this work is also attributed to Elif Giray whose commitment and efficiency enabled the thorough investigation that is presented here.

I would also like to thank Marije aan het Rot, Paul Gravel, Elisabeth Perreau-Linck, and Kevin Casey for their support, humor, and advice during this period of learning, stress, and achievement. I must extend a deep sense of gratitude and respect to my 'office-mate' Martine Regoli, without whom I would have completely lost my head. Her advice, positive attitude and mere presence in my life over the past year were a constant source of motivation and encouragement.

Finally, I would like to express my greatest gratitude to my mother, sister, and grandmother. The constant support, patience, and pride of these women were immeasurable. Albert's patience and encouragement enabled me to work consistently and diligently throughout the past year. I know that my father continues to watch, smile, and guide me. To the rest of my friends and family who pushed me until the end: Thank you.

Abstract

A central question in the field of Obsessive-Compulsive Disorder (OCD) is the role of symptom-related dysfunctional beliefs thought to underlie symptoms. This study examines change in symptoms and related dysfunctional beliefs during Cognitive Behavior Therapy (CBT) with 32 previously treatment resistant OCD patients. Three questions were examined: (a) What is the relationship between dysfunctional beliefs and symptoms at pre-treatment; (b) How much change occurs in symptoms, and related beliefs, during specialized CBT; and (c) What is the relationship between change in cognitive and symptom variables. On average, symptoms and related beliefs of symptomatic-responders resolved to within normal limits following treatment. Beliefs of patients whose symptoms did not improve remained unchanged. Pre-treatment strength of overestimation of threat and response to unpredictability were significant predictors of symptomatic improvement. Change in overcontrol of intrusive thoughts and overestimation of threat significantly predicted change in symptoms. Theoretical and treatment implications of the findings are discussed .

Résumé

Une problématique du Trouble Obsessif Compulsif (TOC) est le rôle des pensées irrationnelles qui sont sous-jacentes aux symptômes. La présente étude examine les changements de symptômes et les croyances irrationnelles associées chez 32 patients atteints de TOC considérés préalablement comme résistants aux thérapie disponibles. Nous avons examiné: (a) La relation entre les croyances irrationnelles et les symptômes prétraitement; (b) Le degré de changement des symptômes, et des croyances associées, lors de la TCC spécialisée; et (c) La relation entre les changements des variables cognitives et les symptômes. En moyenne, les symptômes et les croyances associées des répondants se situaient au alentour des limites normales après le traitement. Les non répondants demeurèrent sans changements. Pré-traitement, l'intensité de l'estimation de menace et l'intolérance de l'imprévisible indiquaient une amélioration symptomatique significative. Les changements dans le control des pensées intrusives et changement dans l'estimation de menace prédisaient des changements des symptômes. L'implication théorique et thérapeutique de ses données est discutée.

List of Tables

Chapter 1: Overview

The following literature review examines the key features of Obsessive Compulsive Disorder (OCD): characteristics that distinguish this disorder from others in the anxiety disorders category, several cognitive-behavioral models of OCD, specific classes and levels of symptom-related dysfunctional beliefs identified as characteristic of this disorder, specialized treatments available, and symptom and cognitive predictors of treatment outcome. The sections that follow describe the complexity of OCD, with attention to the heterogeneity of symptoms, related dysfunctional beliefs, specialized treatment requirements and responses to treatment. The current literature is extensive in certain areas, and lacking in others. Researchers have recently focused on the cognitive underpinnings of OCD, however the role of dysfunctional beliefs during specialized Cognitive Behavior Therapy (CBT) requires further examination. The latter is the objective of the present study.

Chapter 2: Literature Review

2.1 What is OCD?

Obsessive Compulsive Disorder (OCD) is defined in the literature as a difficult-to-treat specialty disorder, as 50% of OCD patients do not respond optimally to standard Cognitive Behavior Therapy (CBT), the empirically established psychotherapeutic treatment of choice (Frost and Steketee, 2002). OCD is a debilitating disorder characterized by recurrent obsessions and compulsions that are severe enough to consume more than 1 hour a day, cause noticeable distress, significant impairment in social or occupational functioning, or interfere detrimentally with personal relationships (American Psychiatric Association, 1994). Obsessions are persistent ideas, thoughts, urges, impulses, and images experienced as ego-dystonic (inappropriate), distressing, and distracting (Wells and Papageorgiou, 1998). The most common obsessions are repeated thoughts about contamination (e.g., becoming contaminated by shaking hands), repeated doubts (e.g., wondering whether or not one has performed some potentially dangerous act such as harming someone or leaving a stove on in an empty house), a need to have things in a particular order (e.g., feelings of intense distress when objects are disordered or out of place), aggressive or horrific impulses (e.g., to hurt one's child or scream obscenities in church), and sexual imagery (e.g., a recurrent pornographic image) (American Psychiatric Association, 1994). Compulsions are repetitive behaviors (e.g., hand washing, ordering, checking, hoarding) or mental acts (e.g., praying, counting, repeating words silently) performed in response to an obsession. These rituals (behaviors or mental acts) are aimed at preventing or reducing distress, or preventing some dreaded event from occurring. They may not be connected realistically with what they are designed to

neutralize or prevent, and are obviously excessive. Typically, a person suffering from OCD acknowledges that the obsessions or compulsions are irrational and unreasonable. However, a proportion of patients have *poor insight* into their obsessions and compulsions and do not perceive them as being senseless or unrealistic. This subgroup of OCD is discussed further in the text.

Although classified as an anxiety disorder, several authors have proposed that OCD is distinct from other anxiety disorders in terms of both psychopathology and response to treatment. The most noticeable symptomatic feature of OCD, distinct from others in the anxiety disorders category, are the overt rituals characteristic of many patients. In terms of etiological differences, Summerfeldt and Endler (1998) propose that although anxiety is one of the common mood states experienced by patients with OCD, it may not have a primary role in the development of specific pathology as it does in other anxiety disorders. Hoehn-Saric, McLeod, and Hipsley (1995) are cited in Summerfeldt and Endler (1998) as explicitly observing that "OCD symptoms trigger anxiety ... and [may be] a consequence rather than a cause of OCD". In their review of anxiety-related cognitive biases in OCD, Summerfeldt and Endler (1998) conclude that the secondary role of anxiety in the psychopathology of OCD characterizes this disorder as a diagnostic entity that does not resemble others in the anxiety classification. As for response to treatment, in their review of treatment outcome within the different anxiety disorders, Solvason, Ernst, and Roth (2003) state that clinical response to pharmacotherapy, is less robust among patients with OCD compared with other anxiety disorders.

Information-processing abnormalities are a common cognitive phenomenon among patients suffering from anxiety disorders. Examples include *ex-consequentia*

(emotional) reasoning, (Arntz, Rauner, and van den Hout, 1995) and memory biases for threat-related information (See review by Coles and Heimberg, 2002). However, there are aspects of cognition that are unique to OCD, and several authors have suggested that the role of cognitive factors be more thoroughly examined (Freeston, Rhéaume, and Ladouceur, 1996; OCCWG, 1997; Rachman, 1997; Salkovskis, 1989; Sookman, Pinard, and Beauchemin 1994). An information-processing distortion characteristic of pre-operational thought (i.e., a stage of early childhood development identified by Piaget, 1926/1960), which is unique to OCD, is thought-action fusion (TAF) (Rachman, 1993). This concept can be separated into two types: moral and likelihood TAF. Moral TAF reflects the belief that thinking "bad" things are equivalent to doing them. Likelihood TAF reflects the belief that thinking things makes them more likely to occur. Patients with OCD also overestimate the severity of threatening stimuli which are remotely associated with the original feared stimulus. For example, a patient could be afraid to sit on a chair that may have been "contaminated" by someone else several days, or even weeks, earlier.

OCD is also unique from other anxiety disorders as it is the only disorder characterized by diverse symptom subtypes. The conceptualization of symptomatic heterogeneity has been explored using factor analysis and continues to be examined with respect to the number and characteristics of subtypes, as well as their response to treatment. Five symptom dimensions were identified in several reports (Calamari, Wiegartz, and Janeck, 1999; Mataix-Cols, Rauch, Manzo, Jenike, and Baer, 1999; van Oppen, Hoekstra, and Emmelkamp, 1995b), four factors were identified by Leckman et al. (1997), and Bear (1994) identified three symptom subgroups based on factor analysis

of the Yale-Brown Obsessive-Compulsive Scale. The Y-BOCS (Goodman et al., 1989), the most widely used measure of OCD symptoms, assesses obsessions related to aggression, contamination, sexuality, hoarding/saving, religion, a need for symmetry or exactness, and somatic obsessions. Compulsions are categorized as cleaning/washing, checking, repeating, counting, ordering, or hoarding. Recently, Calamari et al. (2003) proposed a more complex model for OCD symptoms subtypes than described above. When the Calamari et al. samples of 1999 (N= 106) and 2003 (N = 114) were combined, a seven subgroup taxonomy emerged. The seven symptom subtypes were: contamination, harming, hoarding, obsessional, symmetry, certainty, contamination/harming. The utility of five, seven, or alternate subgroup models awaits additional treatment outcome studies or evaluations of subgroup-related differences in etiological processes (Calamari et al., 2003).

A proportion of patients experience obsessions without overt compulsive rituals. It is estimated that up to 50%-60% of OCD cases in the community report obsessions only (Weissman et al., 1994 quoted in Freeston et al., 1997). Patients with obsessions were up until recently less responsive to standard CBT treatment and considered a difficult-to-treat subtype of OCD (Freeston et al., 1997). Patients with hoarding symptoms are also considered a difficult-to-treat subtype, as hoarding compulsions have been associated with a poor response to CBT in several studies (e.g., Black et al., 1998). Several authors have commented on the 'special problems' presented by compulsive hoarders. For example, Kozak and Foa (1997) note that hoarders have perfectionistic behaviors and magical ideas about discarding objects that may interfere with standard CBT strategies. Baer (1994) suggested that these patients are more difficult to treat with

behavior therapy because of their difficulty with exposure (throwing things out). Ball, Baer, and Otto (1996) posit that the underrepresentation of hoarding, and other noncleaning/nonchecking symptoms of OCD, in the behavioral treatment literature may be due to these patients traditionally being non-responders to standard CBT. Treatments tailored for specific symptom subtypes will be described further in the text.

Patients are diagnosed as having 'OCD with poor insight' if the person fails to recognize that their obsessions and compulsions are excessive or unreasonable (American Psychiatric Association, 1994). Foa (1979) reported that patients who held a strong conviction that their fears were rational or realistic (i.e., overvalued ideation (OVI) or poor insight), failed to respond to treatment even though they did not drop out or resist therapy. Kozak and Foa (1994) proposed, based on clinical observation, that the degree of insight into symptoms varies in OCD individuals. Thus, there exists a separate subgroup of OCD patients characterized as having poor insight.

Therefore, although OCD had been previously hypothesized to be a relatively homogeneous entity, recent data have highlighted the heterogeneity of this disorder (See review by Lochner and Stein, 2003). The features of cognitive functioning unique to OCD compared with other anxiety disorders and the growing consensus of symptom subtypes are central in our further understanding the range of treatment responses of this disorder. One objective of this study is to examine the cognitive and symptomatic responses to CBT of a previously resistant sample.

2.2 Cognitive-Behavioral Models of OCD

Several models proposing cognitive underpinnings as a central etiological factor in the development of OCD symptoms have been proposed. Some of these are reviewed in this section.

SALKOVSKIS (1985, 1989)

The cognitive model of Salkovskis (1985, 1989) proposed that appraisals of intrusive thoughts, indicating that the person may be responsible for the intrusion itself and its perceived dangerous consequences, are at the root of OC symptoms. The person believes that he/she is responsible for preventing harm, and is therefore motivated to engage in neutralizing or ritualized behavior. These responsibility-motivated efforts reduce the perception of responsibility for harm in the short term but lead to increased preoccupation and triggering of further intrusions later on (Salkovskis and Forrester, 2002). The neutralizing behaviors, followed by the lack of a dreaded event, perpetuate the dysfunctional belief that he or she has the responsibility and capability to protect others from harm (Purdon and Clark, 1999).

The psychological definition of responsibility characteristic of people suffering from OCD is described by Salkovskis (1996) as: "The belief that one has the 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" (p. 110-111). Salkovskis (1989) hypothesized that without the appraisal of responsibility, an obsessional episode would not result. Another aspect of inflated responsibility is the idea that errors of omission are as culpable as errors of commission.

Salkovskis et al. (2000) suggest that responsibility cognitions are specific to

patients with OCD based on their findings that: 1) obsessional patients were more likely to endorse general responsibility beliefs and assumptions than were non-obsessionals and 2) they were also more likely to make responsibility-related appraisals of intrusive thoughts about possible harm than were normal or anxious controls.

RACHMAN (1993, 1997, 1998); RACHMAN ET AL. (1995)

Rachman, Thordarson, Shafran, and Woody, (1995) suggest that responsibility in general is not sufficient to account for OCD. Rachman (1997, 1998) proposes that the taboos of moral systems (e.g., aggression, sex, and blasphemy) are reflected in the main themes of obsessions/intrusive thoughts. These types of thoughts may more easily be experienced as sinful, disgusting, or threatening and cause distress to the individual who believes they are indicative of their true self, are likely to actually come true, or imply that he or she is in danger of doing something "catastrophic". Once an intrusive thought is interpreted as threatening to the self-perception, it automatically gains excessive importance. Rachman proposed that thought-action fusion (TAF) serves to augment the importance and perceived threat attributed to intrusive thoughts. Rachman et al. (1995) found that TAF, as measured on the RAQ (Responsibility Appraisal Questionnaire), was most strongly correlated with measures of obsessionality, compared with the other three factors measured on the RAQ (responsibility for harm, responsibility in social contexts, and a positive outlook towards responsibility). His model postulates that attributing excessive importance to specific negative thoughts causes the individual to actively resist or suppress them (thought suppression), and/or to engage in behaviors that attempt to neutralize the perceived threat. A specific thought may persist as an obsession as long as it is being perceived as a negative reflection of one's moral sense of self.

WELLS AND PURDON (1999); PURDON AND CLARK (1998, 1999)

Wells and Purdon (1999) elaborate on the role of metacognition ("...the aspect of the information processing system that monitors, interprets, evaluates, and regulates the contents and processes of its own organization", p.71) in the pathogenesis of OCD. Purdon and Clark (1998a,b) expand on Rachman's theory of TAF in suggesting that by attributing overimportance to thoughts an individual will then attempt to overcontrol these thoughts. Metacognitive processes can activate strategies, such as thought suppression, as an attempt to cope with the negative perception of specific intrusive thoughts. However, thought suppression has been shown to increase the frequency of intrusions, causing the maintenance of distress and further attempts at over-control (Wegner, 1994; Wegner, Schneider, Carter, and White, 1987).

In their elaboration on previous meta-cognitive models, Purdon and Clark (1999) propose that ego-dystonicity of intrusions and excessive thought-control are important to the etiology of obsessional problems. In their 2002 review, Purdon and Clark (p. 37) outline the four central features accompanied with the need to control one's thoughts: 1) tracking of mental events and hypervigilence; 2) moral consequences of failing to control intrusive thoughts (control as a virtue); 3) psychological and behavioral consequences of failing to control intrusive thoughts; and 4) efficiency of thought control (efforts should result in immediate and prolonged control).

FROST AND HARTL (1996)

Hoarding has been defined as the "acquisition of and failure to discard possessions that appear useless or of limited value" (Frost and Gross, 1993, p.367). Frost and Hartl (1996) propose a cognitive-behavioral conceptualization specifically for

compulsive hoarding. The model suggests that hoarding is a complex syndrome characterized by: 1) information processing deficits (i.e. difficulty with decision-making, categorization, and memory functioning); 2) problems with excessive emotional attachment to possessions (i.e. hoarders view many of their possessions as extensions of themselves, therefore loss of these possessions may lead to distress or anxiety); 3) behavioral avoidance (i.e. hoarders avoid making decisions to discard possessions, and fear making a mistake); and 4) erroneous beliefs about the nature of possessions (i.e. beliefs about the necessity of maintaining control over possessions, responsibility for possessions, the necessity of perfection (Frost, Hartl, Christian, and Williams, 1995). Frost and Hartl (1996) suggest the necessity of further investigation into the distinctive features of hoarding compared to other OCD symptoms (e.g., cleaning and checking).

SOOKMAN, PINARD, AND BEAUCHEMIN (1994); SOOKMAN, PINARD, AND BECK (2001)

In their cognitive model of OCD, Sookman, Pinard and Beauchemin (1994), build upon and elaborate the work of several authors: A. T. Beck's (e.g., Beck, Emery, and Greenberg, 1985) notion of dysfunctional cognitive schemas (defined by Beck et al., (1985) as basic beliefs about self and world); Guidano and Liotti's (1983) constructivist-developmental notion of identity structure with explicit and tacit levels of organization; Carr's (1974) emphasis on unrealistic threat appraisals and intolerance for uncertainty as characteristic of OCD; and McFall and Wollersheim's (1979) elaboration on the importance of perceived coping skills in threatening situations.

Sookman, et al. (1994) discussed the interaction among dysfunctional core identity schemas, environmental, and physiological factors which may influence emotional responses to and appraisals of inner and external events. These authors

proposed a "multifaceted schematic constellation" in OCD, consisting of dysfunctional beliefs and emotional responses, they argued should be assessed and targeted in treatment. These include: an exaggerated sense of perceived vulnerability to threat/danger, inflexibility with respect to unpredictability, newness, or change, difficulty with/fear of strong feelings, and excessive need for control. Their model includes discussion of the etiological importance of core beliefs pertaining to view of self and world. Appraisals occurring in response to a particular intrusion, although indicative of central structures, are considered more peripheral. Responses to the intrusion, and subsequent obsession, have cognitive, affective, and behavioral manifestations. Consistent with the Sookman et al. (1994) model, Purdon and Clark (1999) proposed that individuals who are less susceptible to obsessional preoccupation may possess more varied and flexible self-schemas, so that even if a schema is triggered by a distressing intrusive thought, the overall self-percept is less likely to be challenged.

Sookman, Pinard, and A. T. Beck (2001) proposed that vulnerability schemas are a central underlying mechanism of excessive threat appraisals in OCD. Vulnerability schemas were defined as core beliefs and emotional memories about danger, and related behavior patterns (p. 111). Elaborating on A. T. Beck's (et al., 1985) general concept of vulnerability, Sookman et al. (2001) proposed several specific vulnerability schemas hypothesized to be relevant to etiology and maintenance of OCD symptoms. A *Vulnerability Self-Concept* schema was defined as an excessive sense of personal susceptibility to danger from internal (thoughts, feelings) as well as from external (illness, accidents, interpersonal) sources (p. 111). This is related to the *Concept of the World as Dangerous* schema, so that external events are perceived as excessively

dangerous. Overestimation of Threat of internal and external events is considered to be a component of vulnerability. Sookman at al. (2001) hypothesized that OCD patients experience as particularly threatening situations involving unpredictability, newness, and change in which degree of danger and capacity to cope is uncertain. In some cases, patients with OCD may have an associated *Concept of the Self as Dangerous* (p. 111). This schema seems particularly salient among patients whose checking or neutralizing behavior is intended to avert disaster, washers who fear spreading contamination to others, and patients with horrific impulses. These patients view others as vulnerable to their thoughts or actions, and feel excessively responsible for causing harm/danger (Salkovskis, 1985). Results of the Sookman et al. (2001) validation study (see below) provided support for the relevance of these schemas in OCD.

In summary, unwanted thoughts, images, or impulses are a universal phenomenon and not limited to people suffering from OCD or other obsessional problems. However, it is the dysfunctional interpretations or appraisals of these intrusions that lead to pathological obsessions (Freeston, Rhéaume, and Ladouceur, 1996; Salkovskis, 1985, 1989). Current cognitive-behavioral conceptualizations propose that: a) the faulty appraisals of unwanted thoughts, images, or impulses cause the individual to feel as though he or she must act to prevent the occurrence of some negative consequence (Rachman, 1997, 1998; Salkovskis, 1985); b) metacognitive beliefs about the importance of controlling one's thoughts (Wells and Purdon, 1999) can cause attempts at thought suppression in response to thoughts perceived as being ego-dystonic (Purdon and Clark, 1999); and c) dysfunctional core schemas are proposed to be a central mechanism of

excessive threat appraisals commonly reported by OCD patients (Beck and Clark, 1997; Sookman, et al. 2001).

2.3 Dysfunctional Beliefs

The international Obsessive Compulsive Cognitions Working Group (OCCWG) was formed following a symposium on OCD-related beliefs at the World Congress of Behavioural and Cognitive Therapies in July, 1995. The work conducted by this team of experts synthesizes the literature that was discussed in previous sections. They are the leading team of researchers in the field of OCD and are committed specifically to the role of cognition in this disorder.

The OCCWG (1997) has identified three levels of cognition: intrusions, appraisals, and assumptions. Subsequent studies were carried out by this group (2001, 2003a) to develop and validate two measures of dysfunctional appraisals and beliefs: the Interpretation of Intrusions Inventory (III) and the Obsessional Beliefs Questionnaire (OBQ-87). Appraisals are the interpretations given to a specific event and considered the most surface level of beliefs, for example an interpretation of a specific intrusive thought (OCCWG, 1997). The three domains of beliefs assessed on the III are: 1) Control of Thoughts; 2) Importance of Thoughts; and 3) Responsibility. Assumptions are more general beliefs, held across situations (OCCWG, 1997). Six domains or classes of beliefs characteristic of OCD were identified initially in 1997, and refined in the 2001 and 2003a OCCWG validation studies. They are: 1) Overimportance of Thoughts; 2) Overcontrol of Thoughts; 3) Inflated Responsibility; 4) Overestimation of Threat; 5) Intolerance for Uncertainty; and 6) Perfectionism. All definitions of belief domains are quoted from

OCCWG (2001). All examples of items from the III and OBQ-87 are quoted from Frost and Steketee (2002).

Overimportance of Thoughts

"The belief that the mere presence of a thought indicates that it is important. Beliefs may reflect thought-action fusion and magical thinking" (p. 1003). Examples of items on the III are: *"Having this unwanted thought means I will act on it"*(p. 490); *"This thought could harm people"* (p. 491). Examples of items on the OBQ are: *"Having bad thoughts or urges means I'm likely to act on them"*(p. 477); *"The more I think of something horrible, the greater the risk it will come true."* (p. 478).

Need to Control Thoughts

"The overvaluation of the importance of exerting complete control over intrusive thoughts, images, and impulses and the belief that this is both possible and desirable" (p. 1003). Examples of items on the III are: *"If I don't control this unwanted thought, something bad is bound to happen"*(p. 492); *"I should be able to rid my mind of this thought"*(p. 490). Examples of items on the OBQ are: *"If I don't control my unwanted thoughts, something bad is bound to happen"* (p. 477); *"If I exercise enough will-power, I should be able to gain complete control over my mind"*(p. 480).

Inflated Responsibility

"The belief that one has the power that is pivotal to bring about or prevent subjectively crucial negative outcomes. These outcomes are perceived as essential to prevent and may have consequences in the real world and/or at a moral level" (p. 1002). Examples of items on the III are: *"Now that I've thought of something bad that could go wrong, I have a responsibility to make sure it doesn't happen."* (p. 491); *"If I ignore this*

thought, I could be responsible for serious harm" (p. 492). Examples of items on the OBQ are: *"When I hear about tragedy, I can't stop wondering if I am responsible in some way"* (p. 477); *"To me, failing to prevent a disaster is as bad as causing it"* (p. 482).

OVERESTIMATION OF THREAT

"An exaggeration of the probability or severity of harm" (p. 1004). Examples of items on the OBQ are: *"I often think things around me are unsafe" "* (p. 483); "*Even when I am careful, I often think that bad things will happen"* (p. 487).

INTOLERANCE FOR UNCERTAINTY

"Beliefs about the necessity for being certain, that one has poor capacity to cope with unpredictable change, and that it is difficult to function adequately in ambiguous situations" (p. 1004). Examples of items on the OBQ are: *"If I'm not absolutely sure of something, I'm bound to make a mistake"* (p. 478); *"It is essential for me to consider all possible outcomes of a situation"* (p. 479).

PERFECTIONISM

"The belief that there is a perfect solution to every problem, that doing something perfectly is possible and necessary, and that even minor mistakes will have serious consequences" (p. 1004). Examples of items on the OBQ are: *"If I can't do something perfectly, I shouldn't do it at all"* (p. 479); *"For me, making a mistake is as bad as failing completely"* (p. 480).

Certain classes of beliefs are present at different levels, for example, responsibility assumptions (attitudes) versus responsibility appraisals (interpretations). Salkovskis et al. (2000) differentiate between these two levels of responsibility-related

cognitions by their prediction of obsessive-compulsive symptoms. The authors found that responsibility appraisals predicted OC symptoms whereas responsibility assumptions did not. Hence, they hypothesize that responsibility assumptions are less specific to OCD than responsibility appraisals. Overimportance of Thoughts and Need to Control Thoughts are two domains present at both the appraisal and assumption level (OCCWG, 2001). An example of Overimportance of Thoughts on the III would be "*Having this unwanted thought means I will act on it.*" Whereas an example of the same domain as a general assumption would be "*Having bad thoughts or urges means I'm likely to act on them.*" The domain Need to Control Thoughts is an appraisal when it is phrased "*If I don't control this unwanted thought, something bad is bound to happen*" and an assumption when worded "*If I don't control my unwanted thoughts, something bad is bound to happen.*"

The OCCWG has recently published Part I of the psychometric validation of the OBQ-87 and III (2003a). This research group examined the relationship among the subscales of the two questionnaires, and included a battery of other variables such as anxiety, depression, and obsessive-compulsive symptoms. The sample consisted of 248 outpatients with a DSM-IV diagnosis of OCD, 105 non-obsessional anxious patients, 87 non-clinical community controls, and 291 graduate students. The main findings were that: 1) the III and OBQ subscales were moderately to highly intercorrelated in both the OCD (Range: 0.50 to 0.79) and non-OCD controls (Range: 0.65 to 0.81). The highest correlations among OBQ subscales for the OCD sample (N=222) were between Perfectionism and Intolerance for Uncertainty (0.79), and Overestimation of Threat and Intolerance for Uncertainty (0.78); 2) the OBQ subscales, with the exception of

importance of thoughts, correlated moderately with OC symptoms on the Y-BOCS, demonstrating reasonably good convergent validity; 3) the III and OBQ were as highly correlated with the total scores of non-OCD symptoms (anxiety, depression) as they were with OC symptom measures. However, after partialling out the effect of worry, the III and OBQ had a specific relationship with OC symptoms; 4) OC patients scored significantly higher ($p < 0.001$) than both non-clinical samples on every subscale, and scored higher than other anxiety disorder patients on two of the three III subscales (control of thoughts and responsibility) and three of the six OBQ subscales (control of thoughts, importance of thoughts and responsibility). The authors propose that these beliefs may be specific to OCD. OC patients did not differ from anxious controls on III importance of thoughts, and OBQ overestimation of threat, intolerance for uncertainty, and perfectionism. The authors suggest that these domains of belief appear to be relevant, but not specific, to OCD. The conclusions drawn from this study supported the reliability and validity of the III and OBQ as self-report measures of OC-related cognitive phenomena. Further investigation into the role of these beliefs in OCD is required.

The Vulnerability Schemata Scale (VSS) (Sookman, et al. 2001) was developed to measure core beliefs about perceived vulnerability and related constructs in OCD. In their development and validation of the VSS, Sookman, et al. (2001) identified four domains of beliefs that are hypothesized to comprise vulnerability schemas in OCD: Perceived Vulnerability; View of/Response to Unpredictability, Newness, and Change; Response to Strong Affect; and Need for Control. The Perceived Vulnerability domain includes beliefs about: general overestimation of the probability of danger; personalized overestimation of the occurrence of danger; exaggeration of the seriousness of danger to

the self or significant others; danger to self-percept; and beliefs that one's coping skills are deficient. For example "*Bad things such as accidents or illness are more likely to happen to me than to other people*"; "*Something bad will often happen just when things are going well*" (p.114). The domain of View of/Response to Unpredictability, Newness, and Change includes beliefs about: situations which are unforeseen, unexpected, or unfamiliar; potential change or novelty; uncertainty; and experiences to which it is difficult to assign a single meaning (ambiguity). For example "*If something unexpected happens, I will not be able to cope with it*"; "*If I make a change in my daily life, something bad will happen*" (p. 114). The domain of Response to Strong Affect includes beliefs about strong emotion, and the capacity to tolerate or cope with one's own feelings and those of others. Response to strong affect was conceptualized as an important aspect of perceived inner vulnerability that is relevant, but not specific, to OCD. Examples of these beliefs are "*Strong feelings are dangerous*"; "*I am a bad person if I express strong negative feelings*" (p. 114). The domain of Need for Control pertains to the individual's excessive need to be in control of internal (thoughts and feelings) and external (objects, people) events. Examples of beliefs in this domain are: "*I will be overwhelmed if I do not keep things under tight control*"; "*If I cannot control my thoughts and feelings, that means I am a weak person*" (p. 115). This domain of beliefs was conceptualized as being a dysfunctional response to perceived vulnerability characteristic of OCD. In their validation study, Sookman, et al. (2001), found that OCD patients more strongly endorsed beliefs on all four of these domains compared with patients suffering from other anxiety disorders, mood disorders, and normal controls. This was the case even after the effect of anxiety and depression was controlled, for all domains except Response to

Strong Affect. Although more characteristic of OCD, the Perceived Vulnerability items were also more strongly endorsed by the other psychiatric patients compared with normals. As described above the domains of Perceived Vulnerability and View of/Response to Unpredictability include beliefs about external threat, and uncertainty, respectively. Selected items from these VSS subscales were included in the conceptualization and subscales of the OCCWG domains Overestimation of Threat and Intolerance for Uncertainty respectively (OCCWG, 1997, 2001, 2003a).

2.4 Treatment

Cognitive Behavior Therapy is the empirically established treatment of choice for OCD (Frost and Steketee, 2002), combining both cognitive therapy (CT) and behavior therapy in the form of exposure plus response prevention (ERP). The aim of CT is to help patients to re-appraise their dysfunctional beliefs and to facilitate ERP (Frost and Steketee, 2002). CT aims to reduce the strength of dysfunctional appraisals and beliefs associated with intrusive thoughts, as well as maladaptive emotional and behavioral responses to events perceived as threatening. Cognitive restructuring has been found to be effective for patients suffering from overt compulsions (Ladouceur, Léger, Rhéaume, Dubé, 1996; van Oppen et al., 1995a) as well as from obsessive thoughts only (Freeston et al., 1997). Ladouceur et al. (1996) showed in a clinical case study that cognitive therapy based solely on cognitive restructuring improved OCD symptoms (Range: 52%-100% decrease on Y-BOCS) for four patients with checking rituals. Similar results were found in a case study examining six patients with obsessions only (Freeston, Léger, and Ladouceur, 2001). Freeston et al. (2001) found that four patients (66%) were significantly improved (RCI, Jacobson and Truax, 1991) on the Y-BOCS at post-

treatment (mean of 16 sessions). Five patients (83%) were improved at six- and twelve-month follow-up. The aim of behavior therapy is to help patients face what they are scared of without ritualizing. During ERP patients are encouraged to 1) gradually expose themselves to feared situations or events they avoid because they induce distress, urge to ritualize and/or obsessions, and 2) refrain from ritualizing during and following exposure. Hiss, Foa, and Kozak (1994) showed that on average, OCD patients (N = 20) improved 63% in OCD symptoms following 15 daily sessions of ERP over three weeks. They also found evidence supporting the value of adding relapse prevention strategies to ERP, as 87% of patients receiving relapse prevention compared with 50% of control patients had maintained improvement at six-month follow-up. In their review of long-term outcome following ERP, O'Sullivan and Marks (1990) note that in all nine follow-up studies that were reviewed, significant improvement that had been observed at post-treatment was maintained for 79% of patients at one to six years after ERP was administered.

The differential efficacy of BT and CT has been examined in several studies. In their comparison of treatment efficacy between CT and ERP, van Oppen et al. (1995a) found that a considerable percentage of patients in both categories were rated as 'recovered' (defined as an RCI $\geq$ 6 on the Y-BOCS and a final Y-BOCS score of 12 or less, Jacobson and Truax, 1991). However, there were significantly more 'recovered' patients in the CT category (75%) than in the ERP category (66%). McLean et al. (2001) found that at three-month follow-up, significantly more ERP participants (45%) met criteria for recovered status (RCI, Jacobson and Truax, 1991) than patients receiving CT (cognitive therapy plus behavioral experiments designed for re-appraisal purposes) (13%) ($p < 0.05$). Cognitive Behavior Therapy (CBT) combines both techniques and is

considered, to be "...the psychotherapeutic treatment of choice for children, adolescents, and adults with OCD" (March et al., 1997, p. 68). When CT is added to BT, the patient can address both their emotional reaction and behavioral response to threatening stimuli as well as related dysfunctional beliefs. CT may also benefit by improving compliance with ERP.

Relatively few studies have examined the efficacy of CBT in decreasing strength of symptom-related dysfunctional beliefs. For example, Freeston and Ladouceur (1995) showed that changes in beliefs specifically related to obsessions, as measured on the Inventory of Beliefs Related to Obsessions (IBRO), were correlated with changes in obsessive symptoms. A more recent study by Freeston, Léger, and Ladouceur (2001) found similar results. Ladouceur, Léger, Rhéaume, and Dubé (1996) and Williams, Salkovskis, Forrester, and Allsopp (2002) found that CT targeting responsibility appraisals of checkers reduced these appraisals as well as related symptoms. McLean et al. (2001) found that beliefs pertaining to inflated responsibility as measured on the Responsibility Attitude Scale (R-Scale, Salkovskis, et al., 2000), changed with symptom improvement following ERP and CT. Treated patients showed significantly more reduction on the R-Scale than waitlist controls ($p < 0.01$). These studies suggested that CBT is effective in decreasing strength of dysfunctional beliefs, however, this question requires further examination.

Serotonin reuptake inhibitors (SRIs) have been shown consistently in the literature to be only partially effective for the treatment for OCD symptoms. Fewer than 20% of patients treated with medication alone maintain a symptom-free status (March et al., 1997). In their review of four randomized control studies involving combined

treatments (CBT plus pharmacotherapy) for OCD, Foa, Franklin, and Moser (2002) concluded that the addition of medication does not produce better treatment outcome than CBT alone. With respect to change in dysfunctional beliefs, O'Connor et al. (1999) found that only patients receiving CBT showed reduced strength on their 'primary beliefs' ("the strength of subjects' beliefs that the original obsessional conviction was correct when others did not share it" p. 67) compared with patients on medication alone and those on a waiting-list. Patients in the wait-list group were significantly reduced on the strength of their 'secondary beliefs' ("beliefs that something other than anxiety will occur if he/she does not perform the ritual" p. 67) after receiving CBT ($p < 0.003$). Despite these encouraging findings regarding the use of CBT in the treatment of OCD, 50% of patients do not respond optimally to standard CBT (Frost and Steketee, 2002). Specialized treatment approaches designed for several OCD subtypes will be described next.

SPECIALIZED TREATMENT FOR: PATIENTS WITH OBSESSIONS WITHOUT OVERT COMPULSIONS FREESTON ET AL. (1997)

Freeston et al. (1997) developed and examined the efficacy of a specialized model of CBT for patients with obsessive thoughts without overt compulsions. Cognitive restructuring targeted the following dysfunctional appraisals: (a) overimportance of thoughts and magical thinking, (b) exaggerated responsibility for negative consequences such as harm to others, (c) perfectionist expectations for control and certainty, and (d) inflated estimates of probability and severity of consequences associated with feared events. At post-treatment, 67% of the total sample ($N = 28$) of obsessionals showed clinically significant change (Jacobson and Truax, 1991) on OC symptoms compared to

waitlist controls. Of the patients who completed treatment (n = 22), 77% showed clinically significant change on the Y-BOCS (mean Y-BOCS pre-treatment score for all completers = 23; post = 7.2) and 59% maintained this improvement at six-month follow-up (mean Y-BOCS at follow-up = 8.1). The Freeston et al. approach resulted in better than previous results for the treatment of patients with obsessions without overt compulsions.

SPECIALIZED TREATMENT FOR: PATIENTS WITH COMPULSIVE HOARDING FROST AND HARTL (1996, 1999); STEKETEE ET AL. (2000)

Frost and Hartl (1996) identified three types of beliefs associated with compulsive hoarders: beliefs about the necessity of maintaining control over possessions, about responsibility for the possessions themselves, and about the necessity of perfectionism. Hartl and Frost (1999) described a case study of their cognitive-behavioral approach for compulsive hoarding. Treatment focused specifically on decision-making training, exposure and response prevention, and cognitive restructuring. The patient showed a marked decrease in symptoms after nine months of intervention as assessed by decreases on ratios of clutter space to overall space (mean at pre-treatment: 0.54 (floors) and 0.85 (furniture); mean at post treatment: 0.02 (floors) and 0.05 (furniture)), and on self-report measures of OC symptomatology (Y-BOCS pre = 26; Y-BOCS post = 17; Hoarding Scale pre = 95; Hoarding scale post = 72).

Steketee, Frost, Wincze, Greene, and Douglas (2000) reported results from a pilot study (N = 7) in which cognitive and behavioral interventions addressed the components of hoarding described by Frost and Hartl (1996). After 20 weeks, the 6 patients who completed post-treatment measures showed a significant ($p < 0.03$) decrease in symptoms

as assessed on the Hoarding Y-BOCS (Goodman et al., 1989). Five out of the seven patients showed a noticeable improvement in several hoarding symptoms, particularly reduction in excessive acquisition of possessions. However, problems with clutter persisted. The findings from these two studies, although preliminary, provide a more promising outlook on the prognosis of patients with hoarding rituals

SPECIALIZED TREATMENT FOR: PATIENTS RESISTANT TO STANDARD CBT SOOKMAN AND PINARD (1999)

Sookman et al. (1994) and Sookman and Pinard (1999) developed a specialized schema-focused CBT approach for OCD patients resistant to standard CBT. Their approach focuses on core cognitive and emotional schemas and addresses developmental and attachment experiences, combined with standard cognitive behavioral techniques. This longer-term approach targets multiple dysfunctional beliefs related to symptoms, including the domains of beliefs identified by the OCCWG (1997, 2001) as well as those domains hypothesized by Sookman et al. (1994, 2001) to be relevant to OCD: perceived vulnerability; view of/response to unpredictability, newness, and change; response to strong affect; and excessive need for control. Sookman and Pinard (1999, 2000) examined the efficiency of this technique with a series of seven and fifteen OCD patients who were previously CBT resistant. In the first study, the authors found that at post-treatment (mean of 10 months), six out of seven patients showed significant reduction on OCD symptoms, on average, from a moderately severe level (21.7 on Y-BOCS) to recovered (4.7 on Y-BOCS), and were also reliably changed on all VSS belief subscales (RCI, Jacobson and Truax, 1991). Reduction in secondary depression, as assessed on the Beck Depression Inventory (BDI) was substantial (pre = 15.9; post = 3.0). At follow-up

(range: 9 months to 2 yrs.) changes in OCD symptoms, depression, and dysfunctional beliefs were maintained. In the second study, the authors examined this approach with 15 previously resistant OCD patients. Following an average of six months of specialized CBT, the ten patients who responded symptomatically (improved greater than 33% on the Y-BOCS) also reported significant change on related dysfunctional beliefs (OBQ and VSS, $p < 0.05$). Five patients did not respond symptomatically, and their related dysfunctional beliefs were unchanged. The results from these studies provided initial evidence of synchrony of change between symptoms and beliefs, and supported the efficacy of this comprehensive CBT approach for patients resistant to existing treatments. The authors suggested that further studies with larger, more heterogeneous samples are required to further examine patients' cognitive and symptom response to this specialized approach.

The studies discussed above examine cognitive and symptomatic response to specialized treatments for particularly resistant subtypes. However, one of the difficulties in assessing treatment response across studies is the discrepancy among the different definitions of "treatment response" or "treatment responder". A 33% decrease on the Y-BOCS does not constitute clinically significant improvement in symptoms or quality of life, yet it is the most commonly used criteria in pharmacotherapy studies (Goodman et al., 1992). A final score of seven or less is considered 'recovered' on the Y-BOCS, however this definition does not incorporate the extent of the illness at pre-treatment. Determining treatment effects by statistical comparisons is limited because it provides no information as to whether the individual remains in the dysfunctional range or has improved to within the normal range of functioning. Jacobson and Truax (1991) state

that whether a treatment effect exists in the statistical sense has little to do with the clinical significance of that effect. Jacobson and Truax (RCI, 1991) define treatment response to be at least a six point decrease on the Y-BOCS with a final post-treatment score of less than or equal to 12. Pallanti et al. (2002) suggest standardization of a clinically meaningful definition to facilitate cross-study comparisons. These aspects are considered when examining treatment response in the present study.

2.4.1 Predictors of treatment outcome

There is a small body of literature examining predictors of CBT response in OCD. Ball, et al. (1996) suggest that the underreporting of certain symptom subtypes (counting, repeating, symmetry, hoarding) in the literature is a reflection of their association with poorer treatment outcome. Basoglu, Lax, Kasvikis, and Marks, (1988) found that baseline severity of rituals, social disability, male sex, checking rituals, bizarre and fixed obsessions, and severe and uncontrollable obsessions predicted poorer outcome. Black et al. (1998) reported that non-responders (defined as a Clinical Global Impression, CGI score greater than 1 or 2 and a less than 40% decrease in the Y-BOCS total score) had a more severe illness, more symptoms at onset, and were more likely to have had previous drug trials (perhaps because of severity of illness). Mataix-Cols, et al. (1999) found that initial severity of OCD symptoms was related to greater post-treatment symptom severity, and higher scores on the hoarding dimension predicted poorer outcome following treatment with SRI's, after controlling for pre-treatment symptom severity. Mataix-Cols, Marks, Greist, Kobak, and Baer, L. (2002) also found that patients who scored highest on the hoarding dimension were more likely to drop out prematurely, and tended to improve less. In their study, the strongest predictor of outcome was pre-

treatment symptom severity. Initial depression scores were unrelated to outcome. Alonso et al. (2001) reported that severity of sexual/religious obsessions at pre-treatment was the only factor related to poorer long-term outcome using a treatment combination of SRIs (Serotonin Reuptake Inhibitors) and Behavior Therapy. After controlling for pre-treatment symptom severity, higher scores on the sexual/religious obsessions predicted poorer outcome. Solvason et al. (2003) and the International OCD Treatment Refractory Consortium (reported in Hollander et al., 2002) reviewed predictors of response in anxiety disorders. They identified the following risk factors of treatment non-response in OCD: more severe illness, poorer insight into their illness, and comorbid psychiatric conditions. Hollander et al. (2002) noted no significant differences between responders and non-responders on age, gender, age at onset, duration of illness, or prominent symptom subtype. One interpretation of these inconsistent findings may be heterogeneity of sample characteristics examined among studies.

Several authors have hypothesized that overvalued ideation (OVI) or poor insight is linked to poorer treatment outcome. Foa (1979) examined ten OCD patients who failed to respond to treatment and found that four manifested OVI, four other patients had severe depression, and two expressed both characteristics. Kozak and Foa (1994) state that the degree of insight into one's OCD symptoms, and how that perception changes during treatment, may be a critical indicator of treatment outcome. Neziroglu, Stevens, McKay, and Yaryura-Tobias (2001) found that severity of overvalued of ideas as measured on the Overvalued Ideas Scale (Neziroglu, McKay, Yaryura-Tobias, Stevens, and Todaro, 1999) predicted treatment outcome. As far as we know, no study has previously examined the role of cognition in predicting response to treatment.

2.5 Rationale for the Current Study

A central question regarding etiology, maintenance, and response to treatment of Obsessive-Compulsive Disorder is the role of dysfunctional beliefs hypothesized to underlie symptoms. Recently, two measures of dysfunctional appraisals and beliefs (OCCWG, 2001, 2003a) and one measure of core beliefs (Sookman et al., 2001) characteristic of OCD have been developed and validated. Systematic examination of the efficacy of CBT for symptom-related beliefs is needed to facilitate development of more effective specialized interventions, especially for patients resistant to current approaches. Previous findings suggest that dysfunctional beliefs can improve to normal range in some cases (Sookman and Pinard, 1999), and this question merits further study.

This study examines the following three questions: (a) what is the relationship between dysfunctional beliefs and symptoms at pre-treatment in a resistant OCD sample; (b) how much change occurs in symptoms as well as beliefs targeted during CBT; (c) what domain or level of belief predicts symptomatic response to treatment. An important exploratory question is to what extent dysfunctional beliefs resolve to within normal limits following therapy.

2.6 Hypotheses

Review of the above literature has lead to several hypotheses:

1. Strength of dysfunctional beliefs at pre-treatment is expected to be a significant predictor of treatment response, especially those pertaining to overestimation of threat, perceived vulnerability, and response to unpredictability.

2. Change in OCD symptoms following CBT will be associated with change in related dysfunctional beliefs. Specifically, patients who report significant reduction in

obsessions and compulsions (responders) should endorse significantly fewer dysfunctional beliefs. These beliefs are expected to resolve to within normal range for patients who are symptomatically recovered at post-treatment.

3. Given current findings about the relationship between symptoms and dysfunctional beliefs in OCD, extent of change in beliefs is expected to predict change in OCD symptoms.

Chapter 3: Method

3.1 Ethics

The study was approved by the Research Ethics Board (REB) of the Royal Victoria Hospital, McGill University Health Centre (PSYCH-02-102). All patients gave written informed consent regarding their participation in the study, and patients were free to withdraw from the study at any time.

3.2 Sample

The sample consisted of 32 patients with a DSM-IV-R diagnosis of OCD. These patients were previously CBT resistant, having not responded to one or more previous six-month trials of Cognitive Behavior Therapy (CBT) elsewhere. Mean duration of previous treatment was 6.1 years. CBT had been combined in 53% (17/32) of cases with several adequate trials of pharmacotherapy, with a poor response.

According to therapist and patient reports previous CBT included a) Beckian cognitive therapy for a variety of symptom-related appraisals and beliefs, and b) several attempts at graduated exposure and response prevention for cognitive and behavioral rituals. The patients in this sample were previously unable to participate fully in exposure, were unable to sustain response prevention, with resultant limited improvement in symptoms.

Patients were treated at the Obsessive Compulsive Disorder Clinic of the McGill University Health Centre, Montreal, Canada. Inclusion criteria were 18 to 65 years of age and at least eighth grade level of education. All patients who met DSM-IV-R criteria for OCD were included regardless of symptom severity, subtype, degree of insight, severity of depression, or presence of other Axis I and II disorders. Exclusion criteria

were acute psychosis, ongoing substance abuse, or severe physical illness. Sample demographics are shown in Table 3.1. The sample consisted of 15 men and 17 women. Mean age was 34.3 (range: 18 to 66). Mean duration of illness was 17.6 years (range: 1 to 44).

With the exception of one person who was an incapacitated washer, every patient reported multiple rituals and/or obsessions. All symptom subtypes (Calamari et al., 2003) were reported. Six patients reported hoarding, three of whom rated it as their primary symptom. Nine patients reported cognitive as well as behavioral rituals. Two patients had obsessions without overt compulsions. Three patients met criteria for OCD and Body Dysmorphic Disorder (BDD), and three other patients reported overvalued ideas defined as a score of 3 ("I don't think my obsessions or compulsions are unreasonable or excessive") or 4 ("I am sure my obsessions or compulsions are reasonable, no matter what anyone says") on Y-BOCS Question 11 (Goodman et al., 1989).

3.3 Procedure

All patients completed several validated self-report measures to assess OCD symptoms, severity of depression, and dysfunctional beliefs. However, five patients did not complete the Padua Inventory, six patients did not complete the Interpretation of Intrusions Inventory, and one patient did not complete the Vulnerability Schemata Scale.

Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989). The Y-BOCS is the gold standard measure of obsessive-compulsive symptoms and has good reliability and validity. Each of the 10 items is scored from 0 (no symptoms) to 4 (extremely severe symptoms), yielding two subscale scores: severity of obsessions and

severity of compulsions. The subscale scores are summed to calculate a total score that ranges from 0 to 40. Severity of OCD symptoms is categorized on the Y-BOCS as follows: recovered (score 0-7), mild (8-15), moderate (16-23), severe (24-31), and extreme (32-40).

The Padua Inventory (*PI; Sanavio, 1987*) is another widely used measure of OCD symptoms. The Padua includes 60 items measuring four dimensions relevant to OCD: (1) impaired control over undesirable thoughts, difficulties coping with simple decisions and doubts, ruminative thinking about low-probability dangers, uncertainty about one's own responsibility in occasional accidents; (2) excessive washing/cleaning, overconcern with dirt, worries about unrealistic contamination; (3) checking behaviors; and (4) urges of violence against animals or things, impulses to kill oneself or others without reason, fear of losing control over antisocial or sexual impulses. Each item is measured on a 5-point scale according to the degree of disturbance caused by the thought or behavior (0 = "not at all" to 4 = "very much").

Beck Depression Inventory (*BDI*; *Beck, Rush, Shaw, and Emery, 1979).* The BDI is a widely used 21-item self-report measure of symptoms of depression, with excellent psychometric properties (Beck, Steer, & Garbin, 1988). Each item is rated on a 0- to 3-point scale.

The cognitive measures included in this study assess three levels of cognition: appraisals, assumptions, and core beliefs.

The Interpretation of Intrusions Inventory (*III; OCCWG, 2003a*). The III is a 31-item measure, assessing patients' interpretations (appraisals) of unwanted and distressing intrusive thoughts (OCCWG, 1997, 2001). Patients write down two intrusive thoughts,

images or impulses that they have experienced recently and rate the extent to which they believe these on a scale from 0 ('I did not believe this idea at all') to 100 ('I was completely convinced this idea was true'). The three subscales on the III are: (i) Importance of Thoughts, 10 items; (ii) Control of Thoughts, 11 items; and (iii) Responsibility, 10 items.

Obsessional Beliefs Questionnaire (OBQ-87; OCCWG, 2003a). The OBQ-87 includes 87-items measuring six classes of more general beliefs held across contexts (assumptions) identified as characteristic of dysfunctional cognition in OCD (OCCWG, 1997, 2001). The patient rates his or her level of agreement with each statement on a 7-point scale ranging from (1) 'disagree very much' to (7) 'agree very much' with '4' being neutral. The six subscales on the OBQ are: (i) Overimportance of Thoughts, 14 items; (ii) Overcontrol of Thoughts, 14 items; (iii) Inflated Responsibility, 16 items; (iv) Overestimation of Threat, 14 items; (v) Intolerance for Uncertainty, 13 items; and (vi) Perfectionism.

Vulnerability Schemata Scale (VSS; Sookman, Pinard, and A. T. Beck, 2001). The VSS measures four domains of core beliefs about the self and others related to perceived vulnerability. The four domains of beliefs are: (i) Perceived Vulnerability, 24 items; (ii) View of/Response to Unpredictability, Newness and Change, 16 items; (iii) Response to Strong Affect, 21 items; and (iv) Need for Control, 20 items.

Recently the OBQ-87 has been revised, with items deleted/combined based on factor analyses (OCCWG, 2003b). The new scale, OBQ-44, has three subscales: (i) Responsibility/Overestimation of Threat; (ii) Overimportance/Control of Thoughts; and (iii) Perfectionism/Intolerance for Uncertainty. Patients' OBQ-44 score was calculated

from their responses on the OBQ-87, as the former was not available when this study was carried out.

3.3.1 Treatment

Severity of obsessive-compulsive and depressive symptoms, as well as related dysfunctional beliefs, were assessed at baseline. After this initial assessment, all patients received a comprehensive CBT approach specialized for OCD (Freeston, Rhéaume, and Ladouceur, 1996; Frost and Hartl, 1996; Salkovskis, 1985, 1989; Sookman, Pinard, and Beauchemin, 1994; Steketee, 1999). Beckian CBT for each patient addressed dysfunctional appraisals and beliefs related to primary symptoms (at least two belief domains). Beliefs targeted for each patient were case-conceptualized based on those most strongly endorsed on the cognitive measures, idiographic record keeping, and during therapist-assisted *in vivo* exposure. A Schema-Focused Cognitive Therapy approach developed for OCD (Sookman, Pinard, and Beauchemin, 1994; Sookman and Pinard, 1999) was added for patients who did not respond optimally, or for whom these aspects were considered relevant to symptoms or other difficulties. Aspects considered to be related to resistance to CT and ERP received special attention, such as: perceived vulnerability, overestimation of threat, risk aversion, and difficulty coping with strong emotions. Graduated ERP was administered for behavioral and cognitive rituals, with homework, and was therapist-assisted as needed. *In vivo* ERP was combined with practice of reappraisal and other skills to foster emotionally meaningful re-learning. This treatment protocol is described in detail by Sookman and Pinard (1999).

Treatment was administered by senior doctoral psychology students or psychiatric residents under the supervision of the Director of the OCD Clinic, Dr. Debbie Sookman.

Treatment integrity was assessed on a weekly basis during intensive (two-hour) supervision, and included use of videotapes. Outpatient, individual treatment was an average of 9 months of once weekly, hour-long individual sessions. Patients taking an SSRI (n = 17, 53.1%) were stabilized for at least 3 months prior to onset of CBT.

Severity of obsessive and compulsive symptomatology and related dysfunctional beliefs were re-assessed at post-treatment, determined to be after at least 6 months of specialized CBT. Four patients received less than six months of CBT (mean duration of treatment = 4.25 months) for the following reasons: a) referred from abroad for specialized CBT (n = 2), b) recovered after five months (n = 1), and c) marked improvement, and receiving only monthly boosters (n = 1). If it was felt that any patient could benefit from additional treatment, weekly sessions of CBT were continued after the post-treatment evaluation. This was the case for two patients.

3.4 Statistical Analyses

Paired sample t-tests were used to analyze changes in symptom and belief measures between baseline and post-treatment. To examine the pattern of change in dysfunctional beliefs based on symptomatic response to treatment the sample was divided into responders and non-responders. Patients were classified as responders if they fulfilled one of the following criteria: a 30% decrease on the Y-BOCS or a 50% improvement on the Padua. There were 26 responders and 6 nonresponders. Independent sample t-tests were carried out to compare the two groups on the following variables: age, duration of previous treatment, duration of illness, and pre- and post-treatment symptom and belief severity. The sample was also examined based on OCD symptom severity at post-treatment: recovered (Y-BOCS $\leq$ 7); mild (8 $\leq$ Y-BOCS $\leq$ 15);

or moderate ($16 \leq$ Y-BOCS ≤ 23). A one-way ANOVA was carried out to compare differences between these three groups.

Pearson correlations were carried out to assess the relationship between symptoms and beliefs at pre-treatment and with respect to change.

Hierarchical and stepwise multiple regression analyses were conducted to examine: a) what domains of belief at pre-treatment predicted symptomatic improvement; b) what level of belief at pre-treatment predicted symptomatic improvement; and c) to what extent did change in dysfunctional beliefs predict symptomatic response during CBT. Change in OCD symptoms was the dependent variable. Unless otherwise specified, all analyses controlled for pre-treatment OCD and depressive symptoms, followed by stepwise selection of cognitive variables.

The SPSS statistical package (version 6.0) was used in all analyses. Significance level was set at $p < .05$ (2-tailed).

Chapter 4: Results

4.1 Correlation Analyses

Pearson Correlations among the total scale scores of the cognitive and symptom measures at pre-treatment are presented in Table 4.1. The belief measures were moderately to highly correlated with the Padua and BDI. Only the III correlated significantly with obsessions as measured on the Y-BOCS ($r = 0.43$, $p < 0.05$).

The correlations among change on the belief measures are presented in Table 4.2. As was the case at pre-treatment (not shown), change on the belief scales was highly inter-correlated ($r = 0.53$ to 0.76, $p < 0.01$), and was lowest between the measure of appraisals (III) and core beliefs (VSS).

The correlations among changes in beliefs and changes in symptoms are presented in Table 4.3. The belief scales correlated moderately with change on the Padua and BDI. Change on the III, but not on the other belief scales, correlated significantly with reduction of symptoms measured on the Y-BOCS ($r = 0.47$, $p < 0.05$).

4.2 Summary of Treatment Outcome

Table 4.4 shows the mean (SD) pre- and post-treatment scores of OCD symptoms and secondary depression for the whole sample (N=32). The mean (SD) Y-BOCS score at pre-treatment was at the severe level, 23.2 (6.4). Secondary depression was considerable at 17.5 (10.5). On average, OCD symptoms on the Y-BOCS significantly improved ($p < 0.001$) to mild range (11.9), as was the case for depression on the BDI ($p < 0.001$). The sample was then divided into responders and non-responders based on improvement on either the Y-BOCS or Padua, defined as a 30% decrease on the Y-BOCS or a 50% improvement on the Padua. To assess clinical significance of outcome, scores

on the cognitive measures were compared to OCD controls at pre-treatment and normal community controls at post-treatment. The latter comparison was to assess if patients' dysfunctional beliefs had resolved to within normal range. Table 4.5 shows the means (SD) and ranges for the belief measures of normal controls. Patients' post-treatment scores were considered to be in normal limits if they were within ± one SD from the means of the validation samples of normal controls (OCCWG, 2003a; Sookman, Pinard, and A.T. Beck, 2001). Table 4.6 shows the mean (SD) pre- and post-treatment scores for symptoms and related dysfunctional beliefs for responders (n = 26) and non-responders (n = 6). On the Y-BOCS, responders improved significantly ($p < 0.001$) from a pre-treatment level of 23.5 (6.8) to 10.0 (6.6) at post treatment. Non-responders did not significantly improve. The cognitive measures paralleled the symptom results. At pre-treatment the severity of dysfunctional beliefs and symptoms for both groups were in OCD range. There were no significant group differences on any of the self-report measures. At the time of re-assessment, on average, strength of dysfunctional beliefs of responders were resolved to within normal limits on the III and OBQ-87. The VSS total score (2.90) fell just above the upper limit of the normal range (2.88). Beliefs of non-responders were unchanged. The group differences were all significant at post-test ($p < 0.01$). The results were similar for the OBQ-87 and VSS subscales, shown in Table 4.7. The belief domains of responders which had resolved to within normal range were: Overimportance of Thoughts, Overcontrol of Thoughts Inflated Responsibility, Overestimation of Threat, and Intolerance for Uncertainty on the OBQ-87, and Perceived Vulnerability, Need for Control, and Response to Strong Affect on the VSS (**bold** in Table 4.7).

In Table 4.8 the sample is examined by OCD symptom status at post-treatment. Mean pre- and post-treatment scores for symptoms and corresponding dysfunctional beliefs are shown. At post-treatment, ten patients were recovered (0-7), eleven were in the mild range (8-15), and ten were in the moderate range (16-23) on the Y-BOCS. The patient who was most disabled at pre-treatment (40 on Y-BOCS), although symptoms were improved, was still severely ill at post-treatment (24 on Y-BOCS), and her related dysfunctional beliefs were unchanged (not shown). With one exception, all patients in the recovered category met the criteria for the Jacobson and Truax (1991) definition of clinical significant change, (at least a six point decrease on the Y-BOCS with a final post-treatment score of 12 or less). This was not the case for one patient who had obsessions only (Pre Y-BOCS = 7; Post Y-BOCS = 2). In the mild category, five out of the eleven patients met these criteria. Pre-treatment symptom severity, on the Y-BOCS and Padua, was compared for the three groups using a one-way ANOVA. Patients who were still moderately ill at post-treatment had significantly higher ($p = 0.035$) severity of symptoms at pre-treatment compared with patients who were recovered at post-treatment. There were no significant group differences on the Padua scores at pre-treatment.

At pre-treatment, the total scale scores of the belief measures were in OCD range for the three groups. A one-way ANOVA yielded no significant inter-group differences on the total scale scores of the belief measures. The subscales of the OBQ-87 and VSS were also in OCD range at pre-treatment for the three groups (VSS Need for Control for the recovered group was at the lower limit of OCD range). Independent sample t-tests were carried out to examine differences in pre-treatment OBQ-87 and VSS subscales between the recovered and moderate categories only. Patients who were still

moderately ill at post-treatment had significantly higher ($p < 0.05$) beliefs about Overestimation of Threat than did patients who were recovered. There were no significant differences on any other belief domain. However, when the Bonferroni correction was applied, which would require a $p < 0.005$, this significance was lost.

At post-treatment, the recovered group was, on average, resolved to within normal range (**bold** in the table) for the total scale scores of the three belief measures. This was also the case for the OBQ-87 and VSS subscales, except for VSS Unpredictability. The mild group differed in that the III total scale score did not resolve to within normal, and this was also the case for two belief domains: OBQ Perfectionism and VSS Unpredictability. Patients who were still moderately ill at post-treatment did not resolve to within normal range on any cognitive measure, or belief domain.

4.3 Hierarchical regression analyses

Hierarchical regression analyses were used to examine the contribution of dysfunctional beliefs in predicting symptomatic response to CBT. In all analyses, except where otherwise specified, severity of pre-treatment OC symptoms (Y-BOCS or Padua) and depression (BDI) were controlled.

Do dysfunctional beliefs at pre-treatment predict change in symptoms?

The pre-treatment Y-BOCS total scale score and BDI were forced in first, followed by stepwise entry of the OBQ-87 total scale score. The Y-BOCS total scale change score (post-pre) was the criterion variable. The OBQ-87 total scale pre-treatment score explained an additional 13.5% of the variance on Y-BOCS change beyond symptom severity (19%), with a standardized beta of 0.40 ($F(3,28) = 4.49$, $p = 0.01$) (Table 4.9).

Which domains of belief at pretreatment predict change in symptoms?

The six pre-treatment subscale scores of the OBQ-87 were entered stepwise into the model after entering pre-treatment Y-BOCS and BDI scores. Overestimation of Threat accounted for an additional 21.8% of variance on Y-BOCS change with a standardized beta of 0.56 ($F(3,28) = 6.43$, $p < 0.01$) (Table 4.10). No other belief domain entered the model. As hypothesized, greater Overestimation of Threat at pre-treatment was associated with less symptom change.

What level of belief at pretreatment predicts change in symptoms?

To examine this question the total scale scores of the III (appraisals of intrusions), OBQ-87 (assumptions), and the VSS (core beliefs) were entered stepwise after forcing in pre-treatment symptom severity. The VSS predicted 11.8% ($F(3,17) = 12.82$, $p < 0.001$) of additional variance on the Padua change score (with a standardized beta of 0.48), but not on the Y-BOCS, beyond that predicted by pre-treatment Padua and BDI scores (57.5%) (Table 4.11).

Which domain of core beliefs at pre-treatment predicts symptomatic response?

The four pre-VSS subscale scores were entered stepwise into a separate analysis, after controlling for pre-treatment symptoms. The domain Unpredictability, Newness, and Change predicted 18.8% of variance ($F(3,22) = 20.77$, $p < 0.001$) above pre-treatment symptom severity (55.1%) with a standardized beta of 0.60 (Table 4.12).

Therefore, for this sample, pre-treatment strength of more general dysfunctional beliefs about threat, and unpredictability, newness, and change, were significant predictors of response to CBT when pre-treatment symptom severity was controlled. Higher dysfunctional beliefs at pretreatment predicted less symptom change.

The next set of regression analyses were carried out to determine the relative contribution of change (from pre- to post-treatment) in severity of dysfunctional beliefs as predictors of change in symptoms.

What level of change in beliefs during CBT predicts change in symptoms?

The total scale scores of the III, OBQ-87 and VSS were entered stepwise after controlling for pre-treatment Y-BOCS and BDI. The III change score predicted an additional 18.9% of variance ($F(3,21 = 3.15, p < 0.05)$, beyond symptom severity (12.1%) on Y-BOCS change with a standardized beta of 0.45 (Table 4.13).

What domain at the appraisal level predicts changes in symptoms?

In examining the predictive value of the three III subscales, Overcontrol of Thoughts predicted an additional 15.8% of variance ($F(3,22 = 3.06, p < 0.05)$ with a standardized beta of 0.41 above pre-treatment Y-BOCS and BDI severity (13.6%). No other belief domain entered the model (Table 4.14).

Does change on the OBQ-87 predict change in symptoms?

Change on the OBQ-87 total score, and change on the subscales examined in separate analyses, did not predict improvement in symptoms beyond the contribution of pre-treatment symptom severity. When the predictive value of the OBQ-87 was examined without controlling for pre-treatment symptoms the OBQ-87 predicted significant variance (32.6%) on the Padua ($F(1,25) = 12.11, p < 0.01$) but not on the Y-BOCS. In a separate regression examining the subscales, Overestimation of Threat predicted 28.7% of variance ($F(1,25 = 10.05, p < 0.01$) on Padua change with a standardized beta of 0.54 (Table 4.15). Again, no other belief domain entered the model.

Do the results differ when the OBQ-44 is used rather than the OBQ-87?

In order to compare the relative predictive power of the theoretically/clinically derived OBQ-87, versus the empirically derived OBQ-44, in predicting symptom change, the OBQ-44 total scale pre-treatment score was entered stepwise into the model after pre-treatment Y-BOCS and BDI scores. It predicted 11.2% of variance beyond pre-treatment symptoms (19%) with a standardized beta of 0.37 ($F(3,28) = 4.04$, $p = 0.02$) (Table 4.16). The three subscales of the OBQ-44 were entered stepwise in a separate analysis. None of the domains on the OBQ-44 predicted significant variance on the Y-BOCS change score. Therefore, with this sample, the predictive value of strength of Overestimation of Threat beliefs at pre-treatment is lost when combined with Responsibility beliefs on the OBQ-44.

When controlling for pre-treatment symptom severity, neither change on the OBQ-44 total score nor on the subscales examined in separate analyses, predicted improvement in symptoms beyond pre-treatment severity. When pre-treatment symptom severity was not controlled, change in the OBQ-44 predicted significant variance (35.9%) on the Padua ($F(1,25) = 14.00$, $p < 0.01$) but not on the Y-BOCS. When the predictive value of the OBQ-44 belief domains was examined without controlling for pre-treatment symptoms, Perfectionism/Intolerance for Uncertainty predicted 27.8% of variance ($F(1,25 = 9.64$, $p < 0.01$) on Padua change with a standardized beta of 0.53 (Table 4.17).

Chapter 5: Discussion

The first noteworthy finding of this study is that some patients who were previously CBT resistant responded to the specialized CBT approach administered during this treatment trial. This sample had not responded to one or more previous six month trials of standard CBT, during which they reported having been unable to participate fully in ERP. Patients entered treatment with moderate to severe levels of OCD symptoms, and their related dysfunctional beliefs were in OCD range (OCCWG, 2003a). One of the aims of this study was to examine patients' symptomatic response based on several criteria outlined in the literature. According to the most widely used definition of treatment response ($\geq$ 30% improvement on the Y-BOCS or $\geq$ 50% improvement on the Padua), 81% (26/32) of the sample responded to treatment, and for these patients the pre to post treatment changes were highly significant. However, according to the Jacobson and Truax criteria (defined as an RCI $\geq$ 6 on the Y-BOCS and a final Y-BOCS score of 12 or less, 1991), 43.8% (14/32) of the sample showed clinically significant response. One patient who did not meet these criteria had obsessions without overt compulsions which had resolved at post-treatment. Using DSM-IV-R guidelines (post Y-BOCS $\leq$ 7), 31.2% (10/32) of this sample had recovered, no longer meeting criteria for OCD. As has been previously suggested (e.g., Frost and Steketee, 2002), replicable examination of the efficacy of specialized CBT approaches for OCD requires standardized, clinically meaningful outcome criteria beyond a minimum of one third reduction in symptoms that reaches statistical significance.

In this study, symptomatic responders were able to participate in ERP despite previously not having been able to do so. Several hypotheses about the clinical response found during this specialized CBT approach are: a) It is a comprehensive, case-conceptualized approach that is not time-limited, and is of longer duration than most trials reported in the literature; b) specialized techniques described in the literature were applied for primary symptom subtypes (e.g., Freeston et al., 1997; Frost & Hartl, 1996; Salkovskis, 1985, 1989; Sookman et al., 1999; Steketee, 1999); c) dysfunctional beliefs targeted during treatment were assessed using multiple methodologies, including validated scales, idiographic record keeping, as well as those experienced/expressed as most salient during *in vivo* exposure; and d) variables hypothesized to be relevant to resistance of OCD to standard CBT (Sookman and Pinard, 1999) received special attention, such as overestimation of threat, sense of personal susceptibility/vulnerability to threat, risk aversion, and difficulty coping with strong emotions. This approach also systematically targeted core cognitive and emotional schemas hypothesized to contribute to intransigence of beliefs despite disconfirmatory experiences, including the therapeutic (Beck, 1996, Sookman, Pinard, & Beck, 2001). The findings of this study are consistent with the authors' previous outcome studies (Sookman and Pinard, 1999, 2000), that found their specialized integrative schema-focused CBT approach for OCD improves the response of patients who were considered resistant or refractory to standard CBT approaches. There is evidence that specialized approaches for OCD such as this also improve response of milder cases (Frost and Steketee, 2002).

Patients who did not respond (≤ 30% decrease on Y-BOCS) to treatment in this study did not differ on any of the descriptive variables (symptoms or dysfunctional beliefs) at pre-treatment compared with responders. Sample size may have been too small to detect pre-treatment differences. Common features of the six non-responders were: a) poor insight as defined by question #11 on the Y-BOCS; b) intransigence of beliefs about situations/events perceived as threatening; and, perhaps as a consequence c) relative unwillingness to participate in ERP. Patients who remained moderately ill at post-treatment (≥ 16 on Y-BOCS), shown on Table 4.8, did report significantly higher severity of obsessive-compulsive symptoms at pre-treatment compared with the recovered group (≤ 7 on Y-BOCS). These finding are consistent with that of other studies which found greater severity of illness and poor insight at pre-treatment were associated with less symptom improvement (Black et al., 1998; Foa, Abramowitz, Franklin, and Kozak, 1999; Hollander et al., 2002; Mataix-Cols et al., 1999). There was a trend for patients who were still moderately ill at post-treatment to endorse significantly stronger beliefs about overestimation of threat at pre-treatment, compared with patients who were recovered or only mildly ill at post-treatment. However, non-responders did not more strongly endorse other dysfunctional beliefs at pre-treatment compared with responders. As Sookman and Pinard (1999, 2002) have proposed, other aspects of belief besides reported intensity may be relevant to response to CBT. For example, flexibility of beliefs/schemas to disconfirmation or accommodation (Piaget, 1926/1960), and strength of *emotional* versus cognitive aspect of beliefs/schemas: "I *feel* this idea is true", versus "I *believe* this idea is true" may impact response to CT and ERP. These aspects of

beliefs were assessed idiographically and targeted in the current treatment protocol, although their role during CBT was not systematically assessed on a group basis.

As far as we know, no published study to date has examined the role during CBT of appraisals as measured on the Interpretation of Intrusions Inventory, and the domains of beliefs assessed on the Obsessional Beliefs Questionnaire-87, identified by the OCCWG (1997, 2001, 2003) as characteristic of OCD. The results supported our first hypothesis that strength of dysfunctional beliefs at pre-treatment would be a significant predictor of treatment response: specifically beliefs about overestimation of threat, perceived vulnerability, and response to unpredictability. Pre-treatment severity of dysfunctional beliefs as assessed on the OBQ-87 and on the VSS Total Scales predicted significant variance in symptom change above that explained by pre-treatment symptom severity. As hypothesized, OBQ Overestimation of Threat and VSS Unpredictability, Newness, and Change significantly predicted symptomatic response. Patients who more strongly endorsed these beliefs at pre-treatment showed less symptom improvement during CBT. These results provide support for the theoretical formulation of several authors (Beck, 1996; Beck et al, 1985; Beck and Clark, 1997; Sookman and Pinard, 2002) who have proposed the centrality of overestimation of threat as a susceptibility factor in development and maintenance of anxiety symptoms. Several studies have found a strong association between overestimation of threat and intolerance of uncertainty or unpredictability in OCD (OCCWG, 2001, 2003; Sookman, Pinard, & A.T. Beck, 2001; Steketee, Frost, and Cohen, 1998). The findings of the current study support the hypothesis of Sookman et al. (2001) that OCD patients experience particular difficulty with unpredictable situations in which degree of threat and capacity to cope is uncertain.

Overestimation of threat is associated with risk aversion, a common feature of OCD (Steketee and Frost, 1994). Risk aversive patients are less willing to face situations perceived as threatening, including during ERP, considered to be an essential therapeutic ingredient of effective CBT. Overestimation of threat may thus be of particular importance in resistant samples such as the one examined in this study.

The results provide support for our second hypothesis, that change in OCD symptoms during CBT would be associated with change in related dysfunctional beliefs. Patients who reported significant reduction in obsessions and compulsions (responders) endorsed significantly fewer dysfunctional beliefs on all the cognitive measures at post treatment. Beliefs of symptomatic non-responders were unchanged. On average, dysfunctional beliefs of responders resolved from OCD range to within (or at the upper limit of) normal range on the total scale scores of the measures of appraisals (III), assumptions (OBQ-87), and core beliefs (VSS). Although the OBQ domain of Perfectionism and the VSS domain Unpredictability, Newness, and Change were significantly improved, these were the only two domains of beliefs that had not resolved to within normal limits. As expected, beliefs of patients who were symptomatically recovered at post-treatment were also resolved to within normal range on the total scale scores of the three belief measures. All their subscale scores were within normal range; interestingly, the only exception was VSS Unpredictability, Newness, and Change. Why was difficulty with Unpredictability, Newness, and Change not resolved to within normal limits for patients who were symptomatically recovered? The VSS was developed to assess beliefs at the more core or schema level, theoretically hypothesized to be more difficult to change (Beck, 1996). Inflexibility with respect to newness and change may

be a "dispositional trait" which persists even after resolution of symptoms. Inflexibility of schemas to accommodation (learning) during new experience has been hypothesized to interfere with adaptive transformation of schemas during normal development (Piaget, 1926/1960), rendering the individual susceptible to symptom development in response to environmental and/or physiological stressors which exceed the individual's capacity to cope (Rosen, 1985). This hypothesis, although obviously beyond the scope of this study to examine, is particularly intriguing in view of the information processing distortions commonly reported by OCD patients which are characteristic of pre-operational thought (magical thinking, thought-action fusion).

The third hypothesis proposed in this study, that change in dysfunctional beliefs would predict change in OCD symptoms, was also supported. In this sample, change in III Overcontrol of Thoughts predicted significant additional variance in symptom change above that explained by pre-treatment symptom severity. This finding is consistent with the cognitive models of Rachman (1997, 1998) and Purdon and Clark (1998a,b) which propose overcontrol of thoughts, a typical maladaptive response to intrusions in OCD, is particularly important in perpetuation of symptoms. As described in this manuscript (see also Sookman and Pinard, 1999) the treatment approach used in this study integrates (and indeed starts with) empirically-established standard CBT techniques for OCD. The educational phase of standard CBT involves communicating to the patient that attempts to resist, suppress, or neutralize unwanted or frightening intrusions increases their occurrence. Standard CT and ERP involves response prevention for cognitive rituals, with generation and practice of re-appraisal and other adaptive cognitive and emotional responses to intrusions. These standard interventions were systematically administered at

the onset of therapy to all patients in this study. Consistent with the theoretical and treatment literature (see Frost and Steketee, 2002 for review), patients who reported reduction in overcontrol of thoughts also reported improvement in their obsessions and associated behavioral rituals.

Change on the OBQ-87 total scale, and change on the subscales when examined in separate analyses, did not predict significant variance in symptom change above pre-treatment symptom severity. However, change in beliefs on the OBQ did predict symptom change when pre-treatment symptom severity was not controlled. Consistent with the results throughout this study, only change on the domain Overestimation of Threat significantly predicted change in symptoms. No other OBQ belief domain entered the model. Patients in this sample reported beliefs in OCD range at pre-treatment on all the OBQ belief domains. On average, all the OBQ belief domains resolved to within normal limits for symptomatic responders. Nonetheless, in this sample, only strength of overestimation of threat at pre-treatment predicted change in symptoms; and only change in overestimation of threat predicted change in symptoms. Beck and Clark (1997) proposed that successful treatment of anxiety symptoms requires deactivation of the automatic response to perceived threat, and the strengthening of more constructive and reflective modes of thinking. The findings of this study underline the importance of further refining CBT interventions for patients' beliefs about and emotional responses to specific threats from inner and external events, which may be of particular importance in CBT resistant samples.

Examination of the OBQ-44, versus the OBQ-87, in this study was exploratory. The main preliminary finding was that OBQ-87 Overestimation of Threat at pre-

treatment and change predicted symptom change, but this information was lost when responsibility and threat beliefs were combined on the Responsibility/Overestimation of Threat subscale of the OBQ-44. While these results require replication, a possible interpretation is that items about threat unrelated to responsibility which were omitted from the OBQ-44 may be important to clinical assessment of overestimation of threat. For example, OBQ-87 items which were omitted from the OBQ-44 included: "*Bad things are more likely to happen to me than to other people"* and *"I believe the world is a dangerous place"*. Examples of threat items that were retained in the OBQ-44 include: *"I am more likely than other people to accidentally cause harm to myself or others"* and *"Harmful events will happen unless I am careful."*

This study has several limitations which should be noted. Although this treatment approach is described in detail by Sookman and Pinard (1999) it has not yet been manualized, with implications for replicability. Empirically based standard CBT techniques for OCD, specialized interventions developed for OCD subtypes (see review in Introduction), and specialized schema focused interventions developed for resistant OCD (Sookman and colleagues) are combined for each patient on an individualized basis. While the complex and individualized nature of this approach is likely related to its efficacy with resistant samples, it is also by definition more difficult to manualize. Although it was clinically assessed and observed that responders in this study were able to participate in ERP, amount of ERP homework was not systematically quantified. The nature and sequence of the interaction among changes in symptoms and beliefs during CT and ERP were beyond the scope of this study to examine. The relative importance of dysfunctional beliefs likely varies by sample and subtype (Calamari et al., 2003). The

efficacy of this specialized CBT approach for OCD subtypes requires investigation. The relationship between resolution of dysfunctional beliefs at post-treatment and long-term maintenance of symptomatic improvement or recovery is a crucial clinical question to be examined next. These are important questions for further CBT process and outcome research.

Summary and Conclusions

Consistent with our hypotheses, the present study found that:

1) Severity of pre-treatment dysfunctional beliefs, specifically OBQ Overestimation of Threat and VSS Unpredictability, Newness, and Change predicted symptomatic response during specialized CBT for resistant OCD.
2) Patients who responded symptomatically to CBT also improved on related dysfunctional beliefs. This was not the case for patients whose symptoms did not improve.
3) Change in III Overcontrol of Thoughts, and change in OBQ Overestimation of Threat, predicted change in symptoms.

Sookman and Pinard (2002) stated: "An important question that awaits further research is to what extent overestimation of threat is such a central aspect of OCD that it is a necessary condition to the development and maintenance of symptoms" (p. 82). The results of this study provide support for the important role of OCD patients' dysfunctional beliefs about threat in determining their response to specialized cognitive behavior therapy.

Table 3.1 Demographics (N=32)

Demographic	Mean (SD or Range)
Sex	
Male	15
Female	17
Age	34.3 (18-66)
Marital Status	
Single	24
Married	8
Duration of Illness (years)	17.6 (1-44)
Duration of Previous Treatment (years)	6.1 (1-17)
Duration of Current Treatment (months)	8.9 (3-17)
Pre-Treatment Y-BOCS	23.2 (6.4)
Pre-Treatment BDI	17.5 (10.5)

Y-BOCS = Yale-Brown Obsessive Compulsive Questionnaire,
BDI = Beck Depression Inventory.

Table 4.1
Pearson Correlation Coefficients Among Symptoms and Beliefs at Pre-Treatment

	Symptoms				
	Y-BOCS				
Dysfunctional Beliefs	Total	Obsessions	Compulsions	Padua	BDI
III Total	0.43*	0.57**	0.12	0.58**	0.41*
OBQ-87 Total	0.23	0.19	0.18	0.71**	0.42*
VSS Total	0.31	0.18	0.32	0.57**	0.47**

Y-BOCS =Yale-Brown Obsessive Compulsive Scale, BDI = Beck Depression, III = Intepretation of Intrusions Inventory, OBQ-87 = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.
*$p < 0.05$, **$p < 0.01$

Table 4.2
Pearson Correlation Coefficients among Changes in Belief Measures

	III	OBQ-87	VSS
III	-		
OBQ-87	0.76	-	
VSS	0.53	0.70	-

III = Interpretation of Intrusions Inventory, OBQ-87 = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.
All correlations significant, $p < 0.01$

Table 4.3
Pearson Correlation Coefficients Among Changes in Symptom and Changes in Belief Measures

	Symptoms				
	Y-BOCS				
Dysfunctional Beliefs	Total	Obsessions	Compulsions	Padua	BDI
III Total	0.47*	0.39	0.36	0.54**	0.57**
OBQ-87 Total	0.17	0.10	0.18	0.57**	0.50**
VSS Total	0.04	-0.09	0.14	0.44*	0.41*

Y-BOCS =Yale-Brown Obsessive Compulsive Scale, BDI = Beck Depression, III = Interpretation of Intrusions Inventory, OBQ-87 = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.
*$p < 0.05$, ** $p < 0.01$

Table 4.4
Mean (SD) Pre- and Post-Treatment OCD and Depressive Symptom Scores (N=32)

Measures	Pre		Post		Improvement (%)
	Mean	SD	Mean	SD	Mean
Y-BOCS Total	23.2	6.4	11.9	7.4	48.7
Y-BOCS Obsessions	11.1	4.1	6.7	4.1	39.6
Y-BOCS Compulsions	12.1	3.7	5.2	4.3	57.0
BDI	17.5	10.5	10.7	10.3	38.9

Y-BOCS = Yale-Brown Obsessive Compulsive Scale, BDI = Beck Depression Inventory.
All changes significant, $p < 0.001$

Table 4.5
Means (SD) and Ranges on the Cognitive Measures for OCD and Community Controls

	OCD Controls Mean (SD) [Range]	Community Controls Mean (SD) [Range]
Measures		
III Total	51.59 (21.6) [29.98,73.20]	16.60 (14.66) [1.94,31.23]
OBQ-87 Total	3.94 (1.11) [2.83,5.05]	2.07 (0.74) [1.33,2.81]
Importance of Thoughts	3.14 (1.33) [1.81,4.47]	1.55 (0.64) [0.91,2.19]
Control of Thoughts	4.34 (1.23) [3.11,5.56]	2.08 (0.89) [1.19,2.97]
Responsibility	4.11 (1.36) [2.75,5.46]	2.33 (0.93) [1.40,3.26]
Overestimation of Threat	3.86 (1.37) [2.49,5.24]	1.78 (0.76) [1.02,2.54]
Intolerance for Uncertainty	4.18 (1.22) [2.95,5.40]	2.32 (0.88) [1.44,3.20]
Perfectionism	3.98 (1.41) [2.56,5.39]	2.30 (1.04) [1.26,2.34]
VSS Total	3.99 (0.59) [3.40, 4.58]	2.33 (0.55) [1.78,2.88]
Perceived Vulnerability	4.07 (063) [3.44, 4.70]	2.23 (0.60) [1.63,2.83]
View of Unpredictability	3.73 (0.89) [2.84, 4.62]	2.07 (0.59) [1.48,2.66]
Need for Control	4.46 (0.75) [3.71,5.21]	2.74 (0.73) [2.01,3.47]
Response to Strong Affect	3.64 (0.77) [2.87,4.41]	2.26 (0.61) [1.65,2.87]

III = Interpretation of Instrusions Inventory, OBQ = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.

Table 4.6
Mean (SD) Pre-Post Changes in OCD and Depressive Symptoms and Dysfunctional Beliefs for Responders (n = 26) and Non-responders (n = 6)

		Pre		Post		% Improvement
Measures		Mean	SD	Mean	SD	Mean
Symptoms						
Y-BOCS Total[+]	Responders*	23.5	6.8	10.0	6.6	57.4
	Non-responders	21.8	4.5	20.3	4.2	6.9
Y-BOCS Obsessions[+]	Responders*	11.4	4.4	5.9	3.9	48.2
	Non-responders	10.2	3.0	10.2	3.2	0.0
Y-BOCS Compulsions[+]	Responders*	12.1	3.9	4.1	3.7	66.1
	Non-responders	11.7	2.9	10.2	2.7	12.8
BDI[+]	Responders*	18.3	11.0	8.7	9.5	52.5
	Non-responders	14.3	8.3	19.3	9.7	-35.0
Dysfunctional Beliefs						
III Total[+]	Responders*	55.2	23.8	**30.4**	21.8	44.9
	Non-responders	39.6	11.9	46.7	11.4	-17.9
OBQ-87 Total[+]	Responders*	3.9	1.4	**2.6**	1.0	33.3
	Non-responders	3.6	0.4	3.7	0.9	-2.8
VSS Total[+]	Responders*	3.5	0.9	2.9	0.9	17.1
	Non-responders	3.6	0.6	3.4	0.4	5.6

Y-BOCS = Yale-Brown Obsessive Compulsive Scale, BDI = Beck Depression Inventory, III = Interpretation of Instrusions Inventory, OBQ-87 = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.
*Changes pre-post, $p < 0.001$
[+]All group differences at pre-treatment, ns; All group differences at post-treatment, $p < 0.01$
NOTE: Values in **bold** script are within +/- 1 SD from the means of the validation samples of normal controls (See table 4.5).

Table 4.7

Mean (SD) Pre-Post Changes in the OBQ-87 and VSS Subscales of Dysfunctional Beliefs for Responders (n = 26) and Non-responders (n = 6)

		Pre		Post		% Improvement
Measures		Mean	SD	Mean	SD	Mean
OBQ						
Importance of Thoughts[+]	Responders**	3.3	1.7	**2.0**	1.0	39.4
	Non-responders	2.5	0.7	2.8	0.9	-12.0
Control of Thoughts[+]	Responders**	4.4	1.6	**2.8**	1.2	36.4
	Non-responders	3.9	0.4	3.8	0.7	2.6
Responsibility[+]	Responders**	4.2	1.5	**2.8**	1.3	33.3
	Non-responders	3.8	0.5	3.9	0.9	-2.6
Overestimation of Threat[+]	Responders**	3.8	1.7	**2.5**	1.3	34.2
	Non-responders	3.6	0.7	3.5	0.8	2.8
Intolerance for Uncertainty[+]	Responders**	4.1	1.5	**3.0**	1.5	26.8
	Non-responders	4.3	1.0	4.5	1.2	-4.7
Perfectionism[+]	Responders**	3.7	1.6	2.5	1.3	32.4
	Non-responders	3.5	1.0	3.8	1.5	-8.6
VSS						
Perceived Vulnerability[+]	Responders**	3.5	1.0	**2.8**	1.0	18.8
	Non-responders	3.4	0.7	3.3	0.5	2.4
View of Unpredictability[+]	Responders*	3.4	1.1	2.9	1.1	14.3
	Non-responders	3.7	0.7	3.5	0.4	5.1
Need for Control[+]	Responders**	4.0	1.1	**3.2**	0.9	19.4
	Non-responders	4.1	0.6	3.6	0.3	11.0
Response to Strong Affect[+]	Responders**	3.2	1.0	**2.7**	0.8	16.0
	Non-responders	3.4	0.6	3.3	0.6	4.4

OBQ-87 = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.

Changes pre-post, *$p < 0.01$, **$p < 0.001$

[+]All group differences at pre-treatment, ns; All group differences at post-treatment, $p < 0.01$

NOTE: Values in **bold** script are within +/- 1 SD from the means of the validation samples of normal controls (See table 4.5).

Table 4.8
Mean (SD) Pre- and Post-Treatment Scores and % Improvement on OCD Symptoms and Dysfunctional Beliefs Categorized by Y-BOCS Post Score (n=31)[1]

MEASURES	Category At Post Treatment: Recovered (0-7 on Y-BOCS) (n=10, 31.2%)			Mild (8-15 on Y-BOCS) (n=11, 34.4%)			Moderate (16-23 on Y-BOCS) (n=10, 31.2%)		
	Pre	Post	% Improved	Pre	Post	% Improved	Pre	Post	% Improved
Symptoms									
Y-BOCS[+]	20.2	3.4	83.2	22.2	11.4	48.8	25.6	19.8	22.7
Padua	64.3	22.9	64.4	60.0	34.0	43.3	84.3	60.0	28.8
Cognitive Measures									
III Total	48.1	**22.1**	54.1	50.9	37.1	27.1	51.7	36.4	29.6
OBQ-Total	3.6	**2.3**	36.1	3.4	**2.6**	23.1	4.4	3.4	22.4
Importance of Thoughts	3.1	**1.9**	41.1	2.8	**2.0**	28.5	3.4	2.5	27.0
Control of Thoughts	4.0	**2.4**	39.9	3.9	**3.0**	24.0	4.6	3.4	26.1
Responsibility	3.8	**2.4**	36.1	3.7	**3.0**	19.4	4.6	3.4	25.7
Overestimation of Threat[+]	3.2	**2.0**	37.3	3.4	**2.4**	30.0	4.6	3.5	24.4
Intolerance for Uncertainty	4.0	**3.0**	26.0	3.5	**2.7**	23.5	4.7	4.0	15.6
Perfectionism	3.6	**2.2**	38.2	2.9	2.5	14.6	4.4	3.6	18.7
VSS Total	3.3	**2.7**	18.0	3.3	**2.8**	15.4	4.0	3.5	13.3
Perceived Vulnerability	3.2	**2.6**	18.8	3.3	**2.6**	19.9	3.8	3.3	12.9
View of Unpredictability	3.2	2.8	12.7	3.2	2.8	12.9	4.1	3.4	16.2
Need for Control	3.7	**3.0**	19.9	3.9	**3.0**	21.6	4.5	3.8	15.9
Response to Strong Affect	3.0	**2.4**	18.8	3.3	**2.8**	16.8	3.6	3.3	8.0

Y-BOCS = Yale-Brown Obsessive Compulsive Scale, III = Interpretation of Instrusions Inventory, OBQ = Obsessional Beliefs Questionnaire-87, VSS = Vulnerability Schemata Scale.

[1]One patient was severely ill at post-treatment (Y-BOCS = 24), and related dysfunctional beliefs were unchanged (not shown)

[+]Recovered and moderate groups differ at pre-treatment, $p < 0.05$

NOTE: Values in **bold** script are within +/- 1 SD from the means of the validation samples of normal controls (See table 4.5).

Table 4.9
Pre-Treatment Obsessional Beliefs Questionnaire-87 Predicting Y-BOCS Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Y-BOCS Pre-Treatment	-0.40	0.19	0.19	F[2,29] = 3.39*
BDI Pre-Treatment	-0.07			
Obsessional Beliefs Questionnaire-87	0.40	0.33	0.14	F[3,28] = 4.49*

*$p < 0.05$

Table 4.10
Pre-Treatment Subscales of the Obsessional Beliefs Questionnaire-87 Predicting Y-BOCS Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Y-BOCS Pre-Treatment	-0.40	0.19	0.19	F[2,29] = 3.39*
BDI Pre-Treatment	-0.07			
Overestimation of Threat	0.56	0.41	0.22	F[3,28] = 6.43**

No other belief domain on the OBQ-87 entered the model (Overimportance of Thoughts, Overcontrol of Thoughts, Responsibility, Intolerance for Uncertainty, Perfectionism)

*$p < 0.05$, **$p < 0.01$

Table 4.11
Level of Beliefs at Pre-Treatment Predicting Padua Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Padua Pre-Treatment	-0.77	0.58	0.58	F[2,18] = 12.2**
BDI Pre-Treatment	0.03			
Vulnerability Schemata Scale	0.48	0.69	0.12	F[3,17] = 12.82**

No other belief scale entered the model (Interpretation of Intrusions Inventory, Obsessional Beliefs Questionnaire-87)
**$p < 0.001$

Table 4.12
Pre-Treatment Subscales of the Vulnerability Schemata Scale Predicting Padua Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Padua Pre-Treatment	-0.75	0.55	0.55	F[2,23] = 14.09**
BDI Pre-Treatment	0.03			
View of/Response to Unpredictability, Newness and Change	0.60	0.74	0.19	F[3,22] = 20.77**

No other belief domain on the VSS entered the model (Perceived Vulnerability, Need for Control, Response to Strong Affect)
**$p < 0.001$

Table 4.13
Change on the Belief Scales Predicting Y-BOCS Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Y-BOCS Pre-Treatment	-0.06	0.12	0.12	F[2,22] = 1.52
BDI Pre-Treatment	-0.31			
Interpretation of Intrusions Inventory (change in total score)	0.45	0.31	0.19	F[3,21] = 3.15*

No other belief scale entered the model (Vulnerability Schemata Scale, Obsessional Beliefs Questionnaire-87)

*$p < 0.05$

Table 4.14
Change on the Subscales of the Interpretation of Intrusions Inventory Predicting Y-BOCS Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Y-BOCS Pre-Treatment	-0.08	0.14	0.14	F[2,23] = 1.81
BDI Pre-Treatment	-0.31			
Overcontrol of Thoughts	0.41	0.29	0.16	F[3,22] = 3.06*

No other belief domain on the III entered the model (Importance of Thoughts, Responsibility)
*$p < 0.05$

Table 4.15
Change in the Subscales of the Obsessional Beliefs Questionnaire-87 Predicting Padua Change without Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Overestimation of Threat	0.54	0.29	0.29	F[1,25] = 10.05*

No other belief domain on the OBQ-87 entered the model (Overimportance of Thoughts, Overcontrol of Thoughts, Responsibility, Intolerance for Uncertainty, Perfectionism)

*$p < 0.01$

Table 4.16
Pre-Treatment Obsessional Beliefs Questionnaire-44 Predicting Y-BOCS Change while Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Y-BOCS Pre-Treatment	-0.40	0.19	0.19	F[2,29] = 3.39*
BDI Pre-Treatment	-0.07			
Obsessional Beliefs Questionnaire-44	0.37	0.30	0.11	F[3,28] = 4.04*

*$p < 0.05$

Table 4.17
Change in the Subscales of the Obsessional Beliefs Questionnaire-44 Predicting Padua Change without Controlling for Pre-Treatment Symptom Severity

Independent Variables	Standardized Beta	Cumulative R^2	Change in R^2	F
Perfectionism/Intolerance for Uncertainty	0.53	0.28	0.28	F[1,25] = 9.64*

No other belief domain on the OBQ-44 entered the model (Responsibility/Overestimation of Threat, Overimportance/Control of Thoughts)
*$p < 0.01$

References

American Psychiatric Association. (1994). Diagnostic and Statistical Manual of Mental Disorders. (4th ed.). Washington D.C., American Psychiatric Association.

Alonso, P., Menchon, J.M, Pifarre, J., Mataix-Cols, D. Torres, L., Salgado, P., & Vallejo, J. (2001). Long-term follow-up and predictors of clinical outcome in obsessive-compulsive patients treated with serotonin reuptake inhibitors and behavioral therapy. Journal of Clinical Psychiatry, 62, 535-540.

Arntz, A., Rauner, M., & van den Hout, M. (1995). "If I feel anxious, there must be danger": Ex-Consequentia Reasoning in inferring danger in anxiety disorders. Behaviour Research and Therapy, 33,917-925.

Baer, L. (1994). Factor analysis of symptom subtypes of obsessive compulsive disorder and their relation to personality and tic disorders. Journal of Clinical Psychiatry, 55 (3, Suppl), 18-23.

Ball, S. G., Baer, L., & Otto, M. W. Symptom subtypes of obsessive-compulsive disorder in behavioral treatment studies: A quantitative review. (1996). Behaviour Research and Therapy, 34, 47-51.

Basoglu, M., Lax, T., Kasvikis, Y., & Marks, I.M. (1988). Predictors of improvement in obsessive-compulsive disorder. Journal of Anxiety Disorders, 2, 299-317.

Beck, A. T. (1996). Beyond belief: a theory of modes, personality, and psychopathology. In: Salkovskis, Paul M. (Ed.), Frontiers of cognitive therapy, (pp. 1-25). New York: Guilford Press.

Beck, A.T. & Clark, D.A. (1997). An information processing model of anxiety: automatic and strategic processes. Behaviour Research and Therapy, 35, 49-58.
Beck, A.T., Emery, G., & Greenberg, R. (1985). Anxiety disorders and phobias: a cognitive perspective. New York: Basic Books.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). Cognitive therapy of depression. New York: Guilford Press.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.

Black, D. W., Monahan, P., Gabel, J., Blum, N., Clancy, G., & Baker, P. (1998). Hoarding and treatment response in 38 nondepressed subjects with obsessive-compulsive disorder. Journal of Clinical Psychiatry, 59, 159-163.

Calamari, J. E., Wiegartz, P. S., & Janeck, A. S. (1999). Obsessive-compulsive disorder subgroups: A symptom-based clustering approach. Behaviour Research and Therapy, 37,113-125.

Calamari, J. E., Wiegartz, P. S., Riemann, B. C., Cohen, R. J., Greer, Al., Jacobi, D. M., Jahn, S. C., & Carmin, C. (2003). Obsessive-compulsive disorder subtypes: An attempted replication and extension of a symptom-based taxonomy. In press.

Carr, A.T. (1974). Compulsive neurosis: a review of the literature. Psychological Bulletin, 81, 311-318.

Coles, M. E. & Heimberg, R. G. (2002). Memory biases in the anxiety disorders: Current status. Clinical Psychology Review, 22, 587-627.

Foa, E.B. (1979). Failure in treating obsessive-compulsives. Beahviour Research & Therapy, 17, 169-176.

Foa, E. B., Abramowitz, J. S., Franklin, M. E., & Kozak, M. J. (1999). Feared consequences, fixity of belief, and treatment outcome in patients with obsessive-compulsive disorder. Behavior Therapy, 30, 717-724

Foa, E. B., Franklin, M. E., & Moser, J. (2002). Context in the clinic: How well do cognitive-behavioral therapies and medications work in combination? Biological Psychiatry, 52, 987-997.

Freeston, M.H. & Ladouceur, R. (1995). Cognitive change in the treatment of obsessional thoughts. In Rachman, S., Steketee, G., Frost, R. & Salkovskis, P. (Chairs), Toward a better understanding of obsessive-compulsive problems. Symposium at the World Congress of Behavioural and Cognitive Therapies, Copenhagen, Denmark.

Freeston, M. H., Ladouceur, R., Gagnon, F., Thibodeau, N., Rhéaume, J., Letarte, H., & Bujold, A. (1997). Cognitive-behavioral treatment for obsessive thoughts: A controlled study. Journal of Consulting and Clinical Psychology, 65, 405-413.

Freeston, M.H., Léger, E. & Ladouceur, R. (2001). Cognitive therapy of obsessive thoughts. Cognitive & Behavioral Practice, 8, 61-78.

Freeston, M. H., Rhéaume, J., & Ladouceur, R. (1996). Correcting faulty appraisals of obsessional thoughts. Behaviour Research and Therapy, 34, 433-446.

Frost, R.O. & Gross, R.C. (1993). The hoarding of possessions. Behaviour Research and Therapy, 31, 367-381.

Frost, R.O. & Hartl, T.L. (1996). A Cognitive-Behavioral Model of Compulsive Hoarding. Behaviour Research and Therapy, 34, 341-350.

Frost, R. O., Hartl, T.L., Christian, R., & Williams, N. (1995). The value of possessions in compulsive hoarding. Behaviour Research and Therapy, 33, 897-902.

Frost, R. O. & Steketee, G. (Eds). (2002). Cognitive approaches to obsessions and compulsions: Theory, assessment, and treatment. Amsterdam, Netherlands: Pergamon/Elsevier Science Inc.

Goodman, W. K., McDougle, C. J., & Price, L. H. (1992). Pharmacotherapy of obsessive compulsive disorder. Journal of Clinical Psychiatry, 53, (4,Suppl) 29-37.

Goodman, W.K., Price, L.H., Rasmussen, S.A., Mazure, C., Fleischmann, R.L., Hill, C.L., Heninger, G.R. & Charney, D.S. (1989). The Yale-Brown Obsessive Compulsive Scale. I. development, use, and reliability. Archives of General Psychiatry, 46, 1006-1011.

Guidano, V.F. & Liotti, G. (1983). Cognitive processes and emotional disorders New York: Guilford Press.

Hartl, T.L. & Frost, R.O. (1999). Cognitive-behavioral treatment of compulsive hoarding: A multiple baseline experimental case study. Behaviour Research and Therapy, 37, 451-461.

Hiss, H., Foa, E. B., & Kozak, M. (1994). Relapse prevention program fro treatment of OCD. Journal of Consultation and Clinical Psychology, 62, 801-808.

Hoehn-Saric, R., McLeod, D.R. & Hipsley, P. (1995). Is hyperarousal sssential to obsessive-compulsive disorder? Diminished physiologic flexibility, but not hyperarousal, characterizes patients with obsessive-compulsive disorder. Archives of General Psychiatry, 52, 688-693.

Hollander, E., Bienstock, C.A., Koran, L. M., Pallanti, S., Marazitti, D., Rasmussen, S.A., Ravizza, L., Benkelfat, C., Saxena, S., Greenberg, B. D., Sasson, Y., & Zohar, J. (2002). Refractory obsessive-compulsive disorder: State-of-the-art treatment. Journal of Clinical Psychiatry, 63, (Suppl6), 20-29.

Jacobson, N. S. & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. Journal of Consulting & Clinical Psychology, 59, 12-19.

Kozak, M. J. & Foa, E. B. (1994). Obsessions, overvalued ideas, and delusions in obsessive-compulsive disorder. Behaviour Research and Therapy, 32, 343-353.

Kozak, M. J. & Foa, E. B. (1997). Mastery of obsessive-compulsive disorder: A cognitive-behavioural approach (Therapist Guide). Albany, NY: Graywind Publications.

Ladouceur, R., Léger, E., Rhéaume, J. & Dubé, D. (1996). Correction of inflated responsibility in the treatment of obsessive-compulsive disorder. Behaviour Research and Therapy, 34, 767-774.

Leckman, J. F., Grice, D. E., Boardman, J., Zhang, H., Vitale, A., Bondi, C., Alsobrook, J., Peterson, B. S., Cohen, D. J., Rasmussen, S. A., Goodman, W. K., McDougle, C. J., & Pauls, D. L. (1997). Symptoms of obsessive-compulsive disorder. American Journal of Psychiatry, 154, 911-917.

Lochner, C. & Stein, D. (2003). Heterogeneity of obsessive-compulsive disorder: A literature review. Harvard Review of Psychiatry, 11, 113-132.

March, J. S., Frances, A., Carpenter, D., & Kahn, D. (1997). The expert consensus guidelines series: Treatment of obsessive-compulsive disorder. Journal of Clinical Psychiatry. 58(suppl. 4), 65-72.

Mataix-Cols, D., Marks, I.M., Greist, J.H., Kobak, K. A., & Baer, L. (2002). Obsessive-compulsive symptom dimensions as predictors of compliance with and response to behaviour therapy: Results from a controlled trial. Psychotherapy & Psychosomatics, 71, 255-262.

Mataix-Cols, D., Rauch, S. L., Manzo, P. A., Jenike, M. A., & Baer, L. (1999). Use of factor-analyzed symptom dimensions to predict outcome with serotonin reuptake inhibitors and placebo in the treatment of obsessive-compulsive disorder. American Journal of Psychiatry, 156, 1409-1416.

McFall, M. E. & Wollersheim, J. P. (1979). Obsessive-compulsive neurosis: A cognitive-behavioral formulation and approach to treatment. Cognitive Therapy and Research, 3, 333-348.

McLean, P. D., Whittal, M.L., Thordarson, D.S., Taylor, S., Soechting, I., Koch, W.J., Paterson, R., & Anderson, K.W. (2001). Cognitive versus behavior therapy in the group treatment of obsessive-compulsive disorder. Journal of Consulting & Clinical Psychology, 69, 205-214.

Neziroglu, F., McKay, D., Yaryura-Tobias, J. A., Stevens, K. P., & Todaro, J. (1999). The overvalued ideas scale: Development, reliability and validity in obsessive-compulsive disorder. Behaviour Research and Therapy, 37, 881-902.

Neziroglu, F., Stevens, K. P., McKay, D., & Yaryura-Tobias, J. A. (2001). Predictive validity of the Overvalued Ideals Scale: Outcome in obsessive-compulsive and body dysmorphic disorders. Behaviour Research and Therapy, 39, 745-756.

Obsessive Compulsive Cognitions Working Group (OCCWG). (1997). Cognitive Assessment of Obsessive-Compulsive Disorder. Obsessive Compulsive Cognitions Working Group. Behaviour Research and Therapy, 35, 667-681.

Obsessive Compulsive Cognitions Working Group (OCCWG). (2001). Development and Initial Validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory. Behaviour Research and Therapy, 39, 987-1006.

Obsessive Compulsive Cognitions Working Group (OCCWG). (2003a). Psychometric validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory: Part I. Behaviour Research and Therapy, 41, 863-878.

Obsessive Compulsive Cognitions Working Group (OCCWG). (2003b). Psychometric validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory: Part II. Submitted.

O'Connor, K., Todorov, C., Robillard, S., Borgeat, F. & Brault, M. (1999). Cognitive-behaviour therapy and medication in the treatment of obsessive-compulsive disorder: A controlled study. Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie, 44, 64-71.

O'Sullivan, G. and Marks, I. M. (1990). Long-term outcome pf phobic and obsessive-compulsive disorders after exposure: A review. In: Noyes, R., Roth, M., & Burrows, G. (Eds.), Handbook of Anxiety Vol. 4. (pp. 87-108). Amsterdam: Elsevier.

Pallanti, S., Hollander, E., Bienstock, C., Koran, L., Leckman, J., Marazziti, D., Pato, M., Stein, D., & Zohar, J. (2002). Treatment non-response in OCD: Methodological issues and operational definitions. International Journal of Neuropsychopharmacology, 5, 181-191.

Piaget, J. (1960). The child's conception of the world. (J. & A. B Tomilson, Trans.) Totawa, NJ: Littlefield, Adams. (Original work published in 1926.)

Purdon, C. & Clark, D. A. (1998a). Suppression of intrusive thoughts: A case of failed habituation? Submitted for publication.

Purdon, C. & Clark, D. A. (1998b). Thought suppression and beliefs about obsessional intrusive thoughts. Manuscript in preparation.

Purdon, C. & Clark, D. A. (1999). Metacognition and obsessions. Clinical Psychology and Psychotherapy, 6, 102-110.

Purdon, C. & Clark, D.A. (2002). The need to control thoughts. In: Frost, R. O. & Steketee, (Eds). Cognitive approaches to obsessions and compulsions: Theory, assessment, and treatment. (pp. 29-43). Amsterdam, Netherlands: Pergamon/Elsevier Science Inc.

Rachman, S. (1993). Obsessions, responsibility and guilt. Behaviour Research and Therapy, 31, 149-154.

Rachman, S. (1997). A cognitive theory of obsessions. Behaviour Research and Therapy, 35, 793-802.

Rachman, S. (1998). A cognitive theory of obsessions: Elaborations. Behaviour Research and Therapy, 36, 385-401.

Rachman, S., Thordarson, D. S., Shafran, R., & Woody, S. (1995). Perceived responsibility:Structure and significance. Behaviour Research and Therapy, 33, 779-784.

Rosen, H. (1985). Piagetian dimension of clinical relevance. New York: Columbia University Press.

Salkovskis, P.M. (1985) Obsessional-Compulsive Problems: a Cognitive-Behavioural Analysis. Behaviour Research and Therapy, 23, 571-583.

Salkovskis, P.M. (1989). Cognitive-behavioural factors and the persistence of intrusive thoughts in obsessional problems. Behaviour Research and Therapy, 27, 677-682.

Salkovskis, P. (1996). Cognitive-behavioral approaches to the understanding of obsessional problems. In: R. Rapee (Ed.), Current controversies in the anxiety disorders (pp. 103-133). New York: Guilford.

Salkovskis, P. M & Forrester, E. (2002). Responsibility. In: Frost, R. O. & Steketee, G (Eds.), Cognitive approaches to obsessions and compulsions: Theory, assessment, and treatment. (pp. 45-61). Amsterdam, Netherlands: Pergamon/Elsevier Science Inc.

Salkovskis, P. M., Wroe, A. L., Gledhill, A., Morrison, N., Forrester, E., Richards, C., Reynolds, M., & Thorpe, S. (2000). Responsibility attitudes and interpretations are characteristic of obsessive compulsive disorder. Behaviour Research and Therapy, 38, 347-372.

Sanavio, E. (1988). Obsessions and Compulsions: the Padua Inventory. Behaviour Research and Therapy, 26, 169-177.

Solvason, H.B., Ernst, H., & Roth, W. (2003). Predictors of response in anxiety disorders. Psychiatric Clinics of North America, 26, 411-433.

Sookman, D. & Pinard, G. (1999). Integrative cognitive therapy for obsessive-compulsive disorder: A focus on multiple schemas. Cognitive & Behavioral Practice, 6, 351-362.

Sookman, D. & Pinard, G. (2000). Assessing change in core beliefs in the treatment of resistant obsessive-compulsive disorder. Paper presented at the 20th Anxiety Disorders Association of America Conference, Washington, DC.

Sookman, D. & Pinard, G. (2002). Overestimation of threat and intolerance of uncertainty in obsessive compulsive disorder. In: Frost, R. O. & Steketee, G. (Eds)., Cognitive approaches to obsessions and compulsions: Theory, assessment, and treatment. (pp. 63-89). Amsterdam, Netherlands: Pergamon/Elsevier Science Inc.

Sookman, D., Pinard, G., & Beauchemin, N. (1994). Multidimensional schematic restructuring treatment for obsessions: Theory and practice. Journal of Cognitive Psychotherapy, 8, 175-194.

Sookman, D., Pinard, G. & Beck, A.T. (2001). Vulnerability schemas in obsessive-compulsive disorder. Journal of Cognitive Psychotherapy: An International Quarterly, 15, 109-130.

Steketee, G. (1999). Overcoming obsessive-compulsive disorder: Client manual. (Best practices for therapy: Empirically based treatment protocols series). Oakland, CA: New Harbinger Publications.

Steketee, G. & Frost, R.O. (1994). Measurement of risk-taking in obsessive-compuslive disorder. Behavioural and Cognitive Psychotherapy, 15, 109-130.

Steketee, G., Frost, R.O. & Cohen, I. (1998). Beliefs in Obsessive-Compulsive Disorder. Journal of Anxiety Disorders, 12, 525-537.

Steketee, G., Frost, R.O., Wincze, J., Greene, K., and Douglas, H. (2000). Group and individual treatment of compulsive hoarding: A pilot study. Behavioural and Cognitive Psychotherapy, 28, 259-268.

Summerfeldt, L.J. & Endler, N.S. (1998). Examining the evidence for anxiety-related cognitive biases in obsessive-compulsive disorder. Journal of Anxiety Disorders, 12, 579-598.

Van Oppen, P., de Haan, E., van Balkom, A.J., Spinhoven, P., Hoogduin, K. & van Dyck, R. (1995a). Cognitive therapy and exposure *in vivo* in the treatment of obsessive compulsive disorder. Behaviour Research and Therapy, 33, 379-390.

Van Oppen, P., Hoekstra, R. J., & Emmelkamp, P. M. (1995b). The structure of obsessive-compulsive symptoms. Behaviour Research and Therapy, 33, 5-23

Wegner, D.M. (1994). Ironic Processes of Mental Control. Psychological Review, 101, 34-52.

Wegner, D.M., Schneider, D.J., Carter, S.R. 3rd & White, T.L. (1987). Paradoxical Effects of Thought Suppression. Journal of Personality & Social Psychology, 53, 5-13.

Weissman, M.M., Bland, R. C,, Canino, G.J., Greenwald, S., Hwu, H.-G., Lee, C.K., Newman, S.C., Oaldey-Browne, M.A., Rubio- Stipec, M., Wickramarathe, E J., Wittchen, H.U., & Yeh, E.K. (1994). The cross-national epidemiology of obsessive-compulsive disorder. Journal of Clinical Psychiatry, 55, 5-10.

Wells, A. & Purdon, C. (1999). Metacognition and cognitive-behaviour therapy: A special issue. Clinical Psychology and Psychotherapy, 6, 71-72.

Wells, A. & Papageorgiou, C. (1998). Relationships Between Worry, Obsessive-Compulsive Symptoms and Meta-Cognitive Beliefs. Behaviour Research and Therapy, 36, 899-913.

Williams, T.I., Salkovskis, P. M., Forrester, E.A., & Allsopp, M. A. (2002). Changes in symptoms of OCD and appraisal of responsibility during cognitive behavioural treatment: A pilot study. Behavioural and Cognitive Psychotherapy, 30, 69-78.