RESPONSIBILITY IN OBSESSIVE COMPULSIVE DISORDER:
IS IT WORTH CHECKING?

by

CINDY LEE LOPATKA

B.A., The University of British Columbia, 1985

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES
(PSYCHOLOGY)

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA
November 1993
© Cindy Lee Lopatka, 1993
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

(Signature)

Department of \underline{Psychology}

The University of British Columbia
Vancouver, Canada

Date \underline{Apr. 11/99}
ABSTRACT

The purpose of this investigation was to test the hypothesis that perceived responsibility is a major determinant of compulsive checking. Thirty participants recruited from the community through the local media, who met criteria for Obsessive Compulsive Disorder, received four conditions. In the low responsibility condition, perceived responsibility for an anticipated negative event was transferred to the experimenter. In contrast, in the high responsibility condition, perceived responsibility for an anticipated negative event was given to the participant. The remaining two conditions served as control conditions. Subjects were assessed before and after each experimental manipulation.

Results suggest a causal connection between decreases in perceived responsibility and compulsive checking. Decreases in perceived responsibility produced decreases in several measures critical to compulsive checking. Results from increases in perceived responsibility were less clear. However, increases in perceived responsibility lead to increases in panic and likelihood of anticipated criticism.
There were trends for increases in perceived responsibility to lead to increases in perceptions of discomfort experienced, urge to check, and severity of anticipated criticism. There was no relationship between variations in perceived responsibility and perceived extent of controllability over an anticipated negative event.

Theoretical implications of the results and, in particular, the value of a cognitive analysis of compulsive checking, are discussed.
Table of Contents

Abstract ................................................................. ii
List of Tables ........................................................... vii
List of Figures ........................................................... viii
Acknowledgements ...................................................... ix
PREFACE ................................................................. 1
INTRODUCTION .......................................................... 3
  Biological Approach to OCD ........................................... 8
  Cognitive Deficit Approach to OCD ................................. 11
  Behavioural Theory of OCD ............................................ 14
  Cognitive Analyses .................................................... 24
  Cognitive-Behavioural Analysis of OCD ............................. 35
  Responsibility and OCD ................................................. 48
  Attribution Research .................................................. 50
  Criticism .............................................................. 55
  Beliefs of Harm ....................................................... 57
  Responsibility, Controllability and OCD ............................ 58
  Immediacy of Threat .................................................. 61
  Baserates .............................................................. 62
  Summary ............................................................... 63
  Hypotheses and Predictions .......................................... 64
METHOD ................................................................. 71
Experimental Design and Overview.........................71
Procedure.................................................75
Measures....................................................86

RESULTS.......................................................90
DISCUSSION..................................................138
  Theoretical Implications.................................145
  Maintenance...............................................148
  Cognitive Biases..........................................149
  Compulsive Checking and Depression....................151
  Compulsive Checking and Criticism......................152
  Limitations of Within Subject Design..................155
  Advantages of Within Subject Design....................157
  Strengths and Weakness of Self-Report Measures 158
  Bandura's Social Learning Model........................167
  Kohlberg's Model..........................................169
  Implications for Treatment...............................174
  Limitations.............................................182
  Contributions...........................................187
  Conclusions.............................................188

REFERENCES...............................................189

APPENDICES................................................210
APPENDIX A: VERBAL ANALOGUE SCALES .................... 211
APPENDIX B: CONSENT FORM .......................... 218
APPENDIX C: STRUCTURED INTERVIEW ................. 220
APPENDIX D: RESPONSIBILITY CONTRACTS ............... 227
APPENDIX E: DEBRIEFING FORM ....................... 231
LIST OF TABLES

TABLE 1
Subject Characteristics..........................91

TABLE 2
Pre Scores, Means and Standard Deviations.....96

TABLE 2
Post Scores, Means and Standard Deviations....97

TABLE 4
Dunnett Planned Comparisons....................105

TABLE 5
Control Condition
Pearson Correlations.............................122

TABLE 6
High Responsibility Condition
Pearson Correlations.............................124

TABLE 7
Low Responsibility Condition
Pearson Correlations .............................126

TABLE 8
High Responsibility Condition
Perceived responsibility>90.....................143
LIST OF FIGURES

FIGURE 1  
Schematic Representation of Results...........128
ACKNOWLEDGMENTS

I gratefully acknowledge the following people for their contributions to this study:

First, to my advisor, Jack Rachman, for years of his inspired views, turning the seemingly difficult into play, guidance, and fun; to Charlotte Johnston for her encouragement, commitment, and constructive feedback on methodology; and to my university examiners Ken Craig, and Ishu Ishiyama for their helpful comments and insights.

I would also like to acknowledge my friends and family who continue to make my life richer and more whole: to Karen, for her love, support, comfort, acceptance, and taking me out to play; to Jen, for her calm, caring perspective and laughter; to Cathy, for her "miracle-cure phone calls" and whose constant faith, and support have been invaluable; to Mel, for his longterm support and caring in both practical and spiritual ways; to James and Lorne, for their comfort at important times; and to my mother for long distance phone calls and always believing in me.
My strong interest in researching and treating those experiencing obsessive compulsive problems arose while working in a medical center in upstate New York. It was common practice in this facility to give people who were headed for psychosurgery in Boston, a last attempt at behavioural therapy before surgery was scheduled. One of my clients was in these dire circumstances. As we worked together I began to learn of the often extreme nature of their difficulties. I also became aware of the shortcomings of "my bag of theories and techniques". I read widely from various theoretical positions and models, and yet failed to find much solace. The theories and treatment approaches stemming from these models seemed to be a start but certainly were not sufficient to deal with the nature of the problems my clients, and others, grapple with daily.

If this type of circumstance was not enough to motivate me to learn more, my curiosity was piqued by the seemingly senseless behaviour these individuals
filled their lives with despite their desire not to do so. In many instances, highly articulate and intelligent people would describe their need to perform some tedious, action over and over again. In other cases, they would describe a seemingly bizarre action or thought and the intense need to literally fill their life with it - as if everything depended upon it.

As a start, I too wondered why their lives were filled with performing these senseless tasks and why they were unable to prevent themselves from carrying out these actions. At this point, I have come full circle and now find I am perplexed by why others coming from similar circumstances, do not go on to develop obsessive compulsive problems.

This thesis is an attempt to make sense of the presumed senselessness of their actions.
INTRODUCTION

Of all the anxiety disorders, obsessive compulsive disorder (OCD) is often conceptualized as the most severe emotional problem. Until recently, OCD was thought to be very uncommon with prevalence rates estimated at less than one percent (American Psychiatric Association, 1980). However, the surprising prevalence rates recently discovered in a large, multi-centered community study suggests otherwise. The Epidemiologic Catchment Area (ECA) survey study sponsored by the National Institute of Mental Health, found that for a six-month period prevalence rates were estimated at approximately 1.3-2% (Myers et al., 1984). The characteristic pattern of shame and guilt, extreme secrecy and fears of "going crazy" often associated with this disorder may result in a reluctance to self-disclose and enter treatment and ultimately, to be for accounted for (Rapoport, 1990; Tallis, 1992). The hundreds of phone calls I received for this study certainly attest to these
prevalence rates. Often their intense fears of "being found out" or "going crazy" would result in many not being willing to offer even a first name. Many who called spoke of their extreme desperation, secrecy and pain but were often unwilling to either take part in our study or accept referrals to community mental health resources.

The intensity and severity of this disorder may not be fully grasped without case illustrations. Barlow (1989) describes a severe example of a patient seeking help that illustrates both the complexity of this problem as well as the wide range of behavior that can accompany this disorder. He describes the client as:

... a nineteen year old, single white male, a college freshman majoring in philosophy who had withdrawn from school because of incapacitating ritualistic behaviors. The patient had an 8-year history of severe compulsive rituals. These included excessive hand washing and showering; ceremonial rituals for dressing and studying; compulsive placement of any objects handled; grotesque hissing, coughing, and head tossing, while eating; and shuffling and wiping his feet while walking. These rituals interfered with every aspect of his daily functioning. The patient had steadily deteriorated within the past 2 years, isolating himself from family
and friends, refusing meals, and neglecting his personal appearance. His hair was very long, as he had not allowed it to be cut in 5 years. He had never shaved or trimmed his beard. When he walked, he shuffled, taking small steps on his toes while continually looking back, checking and re-checking. On occasion he would run quickly in place. He had withdrawn his left arm completely from his shirt sleeve, as if he were crippled and his shirt was a sling. Seven weeks prior to admission, his rituals had become so time-consuming and debilitating that he refused to engage in any personal hygiene for fear that the associated rituals would interfere with the time needed to study. Almost continual showering became no showering. He stopped washing his hair, brushing his teeth, or changing his clothes. He left his room infrequently and, to avoid rituals associated with the toilet, had begun defecating on paper towels, urinating in paper cups, and storing the waste in a corner of the closet in his room. His eating habits had degenerated from eating with the family, to eating in an adjoining room, to eating in his own room. In the two months prior to admission, he had lost 20 pounds and would only eat late at night when others were asleep. He felt that eating was "barbaric"; this well described his grotesque eating rituals, consisting of hissing noises, coughs and hacks, and severe head tossing. His food intake had been narrowed to ice cream or a mixture of peanut butter, sugar, cocoa, milk, and mayonnaise. He considered several foods (e.g., cola, beef, and butter) contaminating, and would not eat these foods. He also had a long list of checking rituals associated with the placement of objects. Excessive time was spent checking and rechecking to see that wastebaskets and curtains were in place. These rituals had progressed to tilting of wastebaskets and twisting of curtains, which
were checked periodically throughout the day.
(Barlow, 1989, pp. 599-600)

The description of this severe case example clearly fits within the definition of OCD in the Diagnostic and Statistical Manual - Revised (DSM-III-R), which characterizes this disorder as "recurrent obsessions or compulsions sufficiently severe to cause marked distress, be time consuming, or significantly interfere with the person's normal routine, occupational functioning, or with usual social activities or relationships with others" (American Psychiatric Association, 1987, p. 245). Obsessions are defined as "persistent ideas, thoughts, impulses, or images that are experienced, at least initially, as intrusive and senseless (for example, a parent having repeated impulses to kill a love child, or a religious person having recurrent blasphemous thoughts)" (American Psychiatric Association 1987, p. 245). Additional criteria and guidelines include that the person must at least initially, resist, ignore or attempt to suppress these thoughts and that he/she must be aware that the thought is a product of his/her mind and not externally imposed. Compulsions are
defined as "repetitive, purposeful, and intentional behaviors that are performed in response to an obsession, or according to certain rules or in a stereotyped fashion...the behavior is designed to neutralize or to prevent discomfort or some dreaded event or situation; however, either the activity is not connected in a realistic way with what it is designed to neutralize or prevent, or it is clearly excessive...the person recognizes that his or her behavior is excessive or unreasonable" (American Psychiatric Association, 1987, p.245).

Before turning to the heart of this thesis which is a cognitive approach to OCD, a brief look at two alternative explanations, biological and cognitive deficit, will be discussed. This examination is a very simplified overview and is not intended to represent the field as a whole. It is provided solely to give reference and note the alternative explanation. Future research may need to consider integrating these competing theories. However, for all intents and purposes it will be considered outside the scope of this thesis.
A Biological Approach to OCD

This conceptualization proposes that OCD is a neurological disorder (Wise & Rapoport 1989). Within this framework, OCD is considered to be a motor disorder and the underlying pathology is hypothesized to be located in the basal ganglia. It links both ethological and neuroanatomic data and proposes a concept of parallel "loops" interconnecting basal ganglia, thalamus, and cerebral cortex (Alexander, DeLong, & Strick, 1988). To vastly simplify, the striatum acts to trigger ethologically prepared behaviour and OCD is the result of inappropriate triggering of genetically stored and learned behaviours. Predictions stemming from this position include: inability to inhibit inappropriate responses, perseveration and incorrect planning strategies. General neuropsychological deficits of spatial and shifting ability should be apparent. Rapoport (1991) provides evidence in support of this model through citing a link between OCD and Tourette's Syndrome, and other apparent associated basal ganglia dysfunction disorders such as Sydenham's chorea, and
postencephalitic Parkinsonism (see Wise & Rapoport 1989 for review). Prevalence rates of the co-occurrence of OCD and these disorders are used to substantiate this hypothesis.

In addition, brain imaging studies have been conducted to further test this basal ganglia dysfunction hypothesis. Structural as well as functional abnormalities in OCD patients have been reported using computed tomography (CT) and positron emission tomography (PET) (see Rapoport, 1991 for a review). However, the evidence is scanty at best and lacks reliability. That is, areas that showed pathology in one study failed to be replicated in another. Overall, as Rapoport (1991) reports none of the twelve studies conducted is without significant problems and tighter methodology must be employed to adequately test this hypothesis. This area of research is being pursued vigorously at present.

The second wave of evidence in support of a biological approach to OCD comes from drug treatment response. Individuals with OCD have been found to
respond to serotonin (5-hydroxytryptamine (5-HT) uptake blocking drugs clomipramine, fluoxetine, and fluvoxamine (see Jenike, Baer, Minichiello, 1990 for a review). There is presumed to be a specific 5-HT effect because noradrenergically selective antidepressants such as desipramine do not work (Leonard, Swedo, Rapoport, Koby, Lenane, Cheslow, & Hamburger, 1989), and clomipramine has not been shown to be effective with other anxiety disorders such as panic disorder (Zohar, 1989). In addition, individuals with OCD do not respond to provocative agents (ie. sodium lactate, carbon dioxide) that have been shown to increase symptoms in other anxiety disorders (Gorman, Liebowitz, Fyer, Dillon, Davies, Stein, & Klein, 1988; Hollander, DeCaria & Liebowitz, 1989). However, the use of provocation agents to indicate biological vulnerability or as a means of classifying anxiety disorders has been seriously challenged (for reviews see Margraf, Ehlers, & Roth; Rachman & Maser, 1988).

Overall, this "serotonin dysfunction" position has been acknowledged by many within this field as too simplistic and lacks in direct evidence of serotonin
pathology (see Rapoport, 1991). For example, there is little evidence to suggest that individuals with OCD have more or less serotonin production when compared to controls and apparent "selective drugs" are often found with time to have other actions. Further, to imply causation from the effect of a treatment is logically faulty. A variety of different treatments may be effective for a particular disorder but it tells us little about causation.

To summarize, the evidence in support of a biological approach to OCD appears to be weak. Given the active research being conducted from this perspective, we should be much clearer in the near future about the promise of the basal ganglia dysfunction hypothesis.

Cognitive Deficit Approach To OCD

Cognitive deficit approaches to OCD, as exemplified by Reed (1977) see OCD as a breakdown of cognitive control processes or a type of memory dysfunction. This approach draws from an information processing model and hypothesizes that the cognitive
processes of those with obsessive-compulsive problems are characterized by "overstructuring, involving close attention to the details of input, over-specificity, search for information and the deferral of decision as to completion." (Reed, 1977, p. 1984) This hypothesis is in keeping with the general characteristic that those with OCD appear excessively concerned with details that many may find irrelevant.

Studies providing support for this model include Reed (1969a) which found that those with OCD symptomatology selected fewer alternatives than a control group in a card sorting task and Reed (1969b) which found that those with OCD generated more categories than did a psychiatric control group. +

Although these results were provocative they were not specific in identifying deficits which may be related to compulsive checking. More recently, Persons and Foa (1984) hypothesized that rather than a general cognitive deficit as Reed (1977) posits, those with OCD may have a more complex definition of concepts but solely for items that are fear-related. Results did
not confirm this hypothesis but pointed to a general memory deficit. Others such as Sher, Frost and Otto (1983) also attempted to identify specific cognitive deficits which could be linked back to compulsive behaviour. They suggest that those with OCD have a poorer memory for actions but not an overall memory deficit.

Current research continues to address these issues. The focus of late has been to use college students who score high on the Maudsley Obsessional-compulsive Inventory (MOCI) in analogue type experiments. The thrust of this research is to look for specific memory deficits related to compulsive behaviour. At present it is still unclear whether there is a more general slowness of processing information or whether there is are specific deficits that can be linked back to compulsive behaviour. This area of research is currently being pursued vigorously by Sher, Frost and colleagues as well as others and results may begin to give us greater insight into the cognitive processes of those with compulsive problems.
The focus of this thesis will be on compulsive checking and the benefit of a cognitive analysis. However, before turning to these specifics, it may be fruitful to examine the forces that led to the emergence of this theoretical position. First, a brief examination of the behavioural theory of OCD and how the gaps in this model encouraged the emergence of a more encompassing approach to OCD will be discussed. Second, it will be argued that the spirit of the times, or zeitgeist, has been to re-examine emotional problems through the lens of cognitive theory and the reformulation of OCD is in keeping with this wave of change.

Behavioural Theory of OCD

As a start, it must be stated that prior to the development of the behavioural theory of OCD, there was no successful treatment for this disorder. Overall, traditional psychotherapy had not proven to be successful in treatment of OCD (Black, 1974). In fact, many considered OCD to be an intractable problem. As late as 1960, Breitner stated that "most of us are
agreed that the treatment of obsessional states is one of the most difficult tasks confronting the psychiatrist and many of us consider it hopeless" (p. 32).

The roots of the behavioural theory of OCD lie with Mowrer's (1939) two-factor theory of fear. Mowrer proposed that the onset and maintenance of fear and avoidance behaviour could be explained through simple conditioning theory. He predicted that when a neutral stimulus is paired with a unconditioned stimulus (e.g. it innately produces fear) the neutral stimulus will eventually take on the ability to evoke fear. This neutral stimulus may include physical objects as well as cognitions and images. The second stage of this model posits that the individual uses passive or active avoidance as a way of dealing with the intrinsically aversive anxiety state. Passive avoidance is difficult to maintain with obsessive-compulsive problems given the massive extent of generalization. Thus, active avoidance patterns, in the form of checking and washing often follow.
In more recent years, this theory has been generally viewed as insufficient for explaining the onset of fear (e.g. Rachman & Wilson, 1980). Although the beginnings of this disorder do often occur after a stressor, there is little evidence to suggest a traumatic onset or co-occurrence of symptoms and "hard-wired" fear reaction. Rachman (1981) suggested that heightened arousal may lead to sensitization of thoughts which are associated with this state. Similarly, Eysenck (1979) stated that individuals who have been exposed to aversive events which are above individual limits will lead to sensitization of these cues. Boulougouris (1977) provided experimental evidence in support of these views when demonstrating that individuals with OCD were more physiologically reactive when anticipating an aversive event than were an experimental control group.

According to behavioural theory, the maintenance of the disorder can be explained more readily. There is support for the notion that obsessions lead to an increase in anxiety whereas compulsions lead to a decrease in anxiety. In learning terms, an obsessive
thought produces anxiety because it is associated with an unconditioned stimulus eliciting anxiety. Similarly, compulsions arise because initially these rituals result in short-term anxiety reduction. However, in the long-run the decrease in anxiety serves to reinforce the compulsion. Boulougouris, Rabavilas, and Stefanis (1977) found that obsessive thoughts increased heart rate and skin conductance when compared to neutral thoughts. Similarly, exposure to feared objects led to increases in heart rate and subjective levels of anxiety (Hodgson & Rachman, 1972) and skin conductance levels (Hornsveld, Kraaimaat, & Van daml-baggen, 1979).

There is considerable evidence suggesting ritualistic behaviours result in anxiety reduction. A pioneering series of investigations with individuals experiencing washing and checking compulsions found that after intentional provocation of the urge to ritualize, the pattern of behaviour led to a decrease in subjective as well as physiological measures of anxiety (Hodgson & Rachman, 1972; Hornsveld et al.
The main treatment approach arising from a behavioural conceptualization of OCD is exposure and response prevention. Exposure and response prevention consists of exposure to the provoking stimuli, either invivo or imaginal and secondly, not allowing the patient to perform the ritual after the exposure. In 1966, initial reports of the efficacy of this approach emerged with Meyer (1966), who successfully treated two obsessive compulsive clients. Later studies showed that the treatment was successful in 10 out of 15 severely dysfunctional patients. The successes maintained themselves with a 5 to 6 year follow-up (Meyer & Levy, 1973; Meyer, Levy & Schnurer, 1974). Several controlled studies have confirmed the promising results of the early uncontrolled clinical trials (Emmelkamp & Van Kraanen, 1977; Foa & Goldstein, 1978; Marks, Hallam, Connolly, & Philpott, 1976). Long-term maintenance studies showed that improvement held over time. For example, Emmelkamp and Rabbie (1983) conducted a 4 year follow-up on 60 obsessive compulsive
disorder clients who had been treated with exposure and response prevention. Overall, they found improvement was maintained on subjective self-ratings of obsessive compulsive symptoms, anxiety and depression. Overall, global ratings showed 57% were much better, 23% were improved and 20% were unchanged. Other controlled studies, such as Mawson, Marks and Ramm (1982), suggest even greater long-term gains. Thirty-seven of 40 obsessive compulsive disorder clients were followed for 2 years. Results indicated that 75% of participants were much improved, 5% improved, and 20% unchanged. Similar results suggesting stability of gains were reported by Robertson (1979), Foa and Goldstein (1978) and Marks, Hodgson and Rachman (1975) in long-term follow-up studies varying from 2 to 4 years.

What can be said to summarize the studies with hundreds of obsessive compulsive clients treated with exposure and response prevention? First, the outcome rates have been remarkably consistent. Approximately 65-75% of clients treated with this procedure have improved and remained improved at long-term follow-up. Most patients in these studies have had chronic
problems with the mean duration of disorder of approximately 10 years and were at the top end of scales in both subjective distress and avoidance. Given the consistent results with such severe population, we can be reasonably confident of the efficacy of this approach.

Why then, if this approach to treatment was so successful, was there a need to develop alternative explanations and treatment models? Two possible sources of explanation may be considered. First, limitations of the behavioral theory and treatment of OCD provided the opening to consider alternate explanations. Some of these weaknesses will be explored below. Second, the growing dissatisfaction with behavioural theory across areas of emotional disorders, lead in part to the emergence of cognitive approaches to psychopathology.

Upon turning to the limitations of behavioural therapy for the treatment of OCD, the issue of clinical versus statistical significance becomes apparent (Meehl, 1966). We know that exposure plus response
prevention has been demonstrated as a statistically significant form of treatment. That is, when compared to wait-list, placebo, alternative forms of therapy, etc., exposure plus response prevention is a superior form of treatment. In addition, we know that this type of treatment produces a statistically significant reduction in symptoms. Yet, in the therapist's office are these differences meaningful? The answer may be both yes and no. It may be argued that clients and therapists alike, observe a marked decrease in symptomatology with this type of treatment. However, a decrease in obsessive thoughts, washing, checking etc. is not the same as long-term absence of symptoms. Exposure plus response prevention helps but does not remove the symptom cluster (Rachman, 1983). Therefore, it may be of use to describe this treatment as clinically helpful but certainly not a panacea.

Second, the issue of relapse is apparent in working with those who have gone through behavioural therapy (Foa, 1979). The clinical pattern of a decrease in symptoms at the end of treatment to be followed by an insidious return of symptoms is noted by
many clinicians. In other instances, clients may be symptom free for a time and then experience a sudden, intense return of symptoms (Rachman, 1992). In many instances stressors that are seemingly unrelated to the condition appear to trigger the relapse. Re-examining these triggers from the cognitive perspective that will be outlined later may be of benefit and possibly shed some light on to how these seemingly disparate sources trigger OCD symptoms.

Third, in severe cases with individuals who have a very complex, elaborate system of obsessive thoughts and compulsions such as in the case illustration, there may be from the onset, little if any, response to behavioural treatment (Foa, Stekette, Grayson & Doppelt, 1983). In these instances, many clinicians would agree that we are working around the periphery of the problem and move from targeting one minute, ritual or obsession to another. The heart or core of this disorder, remains elusive.

Fourth, behaviour therapy is shown to be less effective with overvalued ideation. Wernicke (1900)
first addressed the issue of overvalued ideation and defined it as being neither an obsession or a delusion but a single strongly held belief so dominant that it preoccupies the individual’s life. The distinctions between delusions and overvalued ideation are blurred and some sources such as the DSM-III-R suggest a direct, albeit circular, approach to separating the concepts. According to these authors, beliefs amenable to change should be considered overvalued ideation and those that cannot be changed, delusions.

Foa (1979) provided a more precise definition by defining overvalued ideation as client assignment of a high and unremitting probability to a feared negative consequence when not in the presence of the feared cue. Steketee and Foa (1985) suggest that this type of overvalued ideation is a negative prognostic sign for behavioural treatment. These authors suggest that the overvalued ideation must be assuaged before exposure and response prevention can be conducted. Again, re-examining this apparent treatment failure through a cognitive lens may be fruitful in understanding why
overvalued ideation does not respond to behavioural treatment.

The Wave of Cognitive Analyses

In response to the introspection and subjectivism of psychoanalytical theory, post-war behaviorism placed limits around what could be studied within psychology. Observable behaviour was of paramount importance. Mental processes were viewed as being outside of the psychological realm and thus, inferences were not allowed. Precision of measurement and recording of behaviour were hallmarks of this era. Psychological problems were translated into behavioural terms and treatment consisted of changing behaviour.

The late 1960’s marked the beginning of a period of great change in North American Psychology in which the seeds of cognitive psychology were planted. A balance between the subjectivism and psychoanalytical analyses of the pre-war era and the concrete, non-inference post-war behaviorism was greatly needed. By the mid-1960’s it was becoming apparent that the strict nonmediational, S-R approach was neither expansive nor
rich enough to account for all of human experience (Breger & McGaugh, 1965; Mahoney, 1974). Several pioneering studies such as Bandura’s (1965, 1971) classic experiments demonstrating vicarious learning and Mischel’s (Mischel, Ebbesen, & Zeiss, 1972) work on delay of gratification clearly were not explainable using traditional S-R behavioural theory. In a review of historical and philosophical bases of cognitive-behavioural therapy Dobson and Block (1988) indicate during this time there were several attempts to expand existing behavioral models through classifying cognition as a form of "covert" behaviour (e.g. Homme, 1965). These models gave voice to the growing dissatisfaction within behavioural quarters of the existing theoretical framework.

Along side this dissatisfaction with behavioural theory was the parallel rejection of psychoanalytical models of psychopathology and its reliance on unconscious, subjective processes and long-term therapy. Reviews of the efficacy of treatment approaches stemming from this tradition were less than promising (Eysenck, 1969; Luborsky, Singer & Luborsky,
1975; Rachman & Wilson, 1980). In fact, Rachman and Wilson (1980) in their extensive review of the literature conclude that "there still is no acceptable evidence to support the view that psychoanalysis is an effective treatment" (p. 76).

A third impetus for the rise of cognitive behavioural theory was the recognition that behaviour therapy targeted only the behaviour of many problems that were viewed as multifaceted. For example, the complexity of obsessive-compulsive symptomatology was reduced to examining the compulsive behaviour without targeting accompanying obsessions. The compulsive behaviour was the sole target of therapy. And so, treatment appeared to be successful for the target problem but left therapists and researchers aware that entire problems or major parts of problems were not being addressed (Dobson & Block, 1988).

The cognitive-behavioural approach as exemplified by the works of Beck (1964; 1967) began to bridge and address this dissatisfaction with existing theoretical frameworks. At the heart of Beck’s (1964;
1967) approach to depression, as well as to all cognitive-behavioural theories, lies three fundamental principles: a) cognition affects behaviour b) cognitions may be monitored and changed c) behaviour change may be produced through cognitive change (Dobson & Block, 1988). Beck proposed the following cognitive framework for depressive symptomatology:

...the cognitive model postulates three specific concepts to explain the psychological substrate of depression: 1) the cognitive triad, 2) schemas and 3) cognitive errors (faulty information processing)... The cognitive triad consists of three major cognitive patterns that induce the patient to regard himself, his future, and his experience in an idiosyncratic manner... The concept of schemas is used to explain why a depressed patient maintains his pain-inducing and self-defeating attitudes despite objective evidence of positive factors in his life. Relatively stable cognitive patterns form the basis for the regularity of interpretations of a particular set of situations. Faulty information processing consists of systematic errors in the thinking of the depressed person which maintain the patient's belief in the validity of his negative concepts, despite the presence of contradictory evidence (e.g. overgeneralization, magnification, personalization, etc.)

(Beck, Rush, Shaw, & Emery, 1979, pp.10-11)
This cognitive theory of depression, the first major theory of its kind, arose from clinical observation and empirical investigation (Beck, 1964; 1967). Within this theoretical framework, depression is regarded as an affective response to a series of negative beliefs about the self. Beck (1967) stresses that these negative core beliefs are the result of automatic thoughts which may be below awareness. During the course of therapy the client is encouraged to monitor and attend to these rapid, discrete thoughts. The client and therapist then examine the adaptiveness of these cognitions. Cognitive therapy attempts to modify thoughts that are seen as irrational. Central to this model is the technique of "collaborative empiricism" which involve directing clients to collect evidence and rationally test their negative beliefs pertaining to the self, future and environment. Support for the efficacy of cognitive therapy for depression is well documented (e.g., Blackburn, Bishop, Glen, Whalley, & Christie, 1981; Murphy, Silmons, Wetzel, & Lustman, 1974; Rush, Beck,
These successes have promoted an extension of cognitive analyses to a range of psychological problems including anxiety disorders. Yet, a potential weakness of this model may be that at its core it is untestable. That is, how can we disprove that there are underlying cognitions (e.g. Coyne & Gotlib, 1983; Seligman, 1988)? At what point can it be acknowledged that a client is experiencing non-cognitive depression or anxiety? While it is clear that depressed patients do selectively perceive negative information as more threatening to themselves than do nondepressed patients it remains unclear whether depressive cognitions always precede depression. Authors such as Seligman (1988) suggest automatic thoughts may be merely epiphenomena, and that both the thoughts and depression/anxiety have a cause that lies elsewhere (Beidel & Turner, 1985; Hallam, 1985).

Until recently, learning theorists postulated that agoraphobics were frightened of public places, driving,
etc. because these situations had become associated with anxiety. For example, Wolpe and Rachman (1960) argued that: "Any neutral stimulus, simple or complex, that happens to make an impact on an individual at about the time that a fear reaction is evoked, acquires the ability to evoke fear subsequently...there will be generalizations of fear reactions to stimuli resembling the conditioned stimulus and avoidance of these places/situations will follow" (p.145). This straight conditioning model was readily translated into behavioural treatment. If one could learn to be fearful, through repeated pairings of an unconditioned stimulus with a conditioned stimulus, then one could "unlearn" the association by breaking the connection. Behavioural treatments attempted to do this through gradually exposing agoraphobics to fearful situations/places and asking them to remain there until the anxiety lessened. This approach was found to be effective but often left residual fear (e.g., Emmelkamp, 1982; Kazdin & Wilson, 1978; Marks, 1987; Rachman & Wilson, 1980; Wilson, 1982).
As of late however, "conditioning theory has undergone a major revision", (Dickinson, 1987, p. 57). New approaches to conditioning as exemplified by the works of Mackintosh (1983) and Rescorla (1980, 1988) suggest that "even the simplest forms of conditioning...involve cognitive processes, that learning can occur without reinforcement...strict contiguity between the response or stimulus and the reinforcer is neither necessary nor sufficient for conditioning" (Dickinson, 1987, p. 57-58). These neo-conditioning models see the organism as an active, "information seeker, using logical and perceptual relations among events...to form sophisticated representation of its world" (Rescorla, 1988, p. 154). The flexibility and scope of conditioning has been shown to be far greater than what was originally thought (Davey, 1988; Mackintosh, 1983; Rescorla, 1980, 1988). Interestingly, Mackintosh (1983) suggests that the purpose of conditioning is to allow organisms to determine the source or cause of events that are significant. These cognitive reconceptualizations of
conditioning were soon expanded upon and extended to the anxiety disorders.

By the mid 1980's cognitive perspectives of the anxiety disorders began to emerge and have deepened our understanding of fear processes. In 1986, David Clark while working with his close collaborator, Paul Salkovskis, introduced a cognitive theory of panic that subsumed previous explanations of agoraphobia:

...panic attacks result from the catastrophic misinterpretation of certain bodily sensations. The sensations which are misinterpreted are mainly those which are involved in normal anxiety responses (e.g., palpitations, breathlessness and dizziness) but also include some other sensations. The catastrophic misinterpretation involves perceiving these sensations as much more dangerous than they really are, and in particular, interpreting the sensations as indicative of an immediate, impending disaster. Examples of catastrophic misinterpretations would be a healthy individual perceiving heart palpitations as evidence of an impending heart attack; perceiving a shaky feeling as evidence of impending loss of control and insanity...

(Clark, 1988, p.73)

This fresh approach lead to the emergence of a model suggesting that people with agoraphobia were not
simply frightened of situations associated with fear (i.e. classical conditioning) rather it was the belief that the physical sensations they were experiencing were indicative of imminent catastrophic danger. For example, agoraphobics often report they are frightened of "going crazy", "having a heart attack", or "losing control" in situations ranging from being home alone to freeways and supermarkets. Several studies have now demonstrated that these irrational beliefs are central to panic and agoraphobia (Clark, 1986; Barlow, 1987). It is presumed that by targeting these critical cognitions, we are pinpointing the key of this disorder, a perceived threat to oneself. Irrational beliefs tied to imminent threat are thought to drive fear and the ensuing avoidance. Treatment studies targeting key cognitions have shown this method to be extremely successful (see for example, Barlow, Cohen, Waddell, Vermilyea, Klosko, Blanchard & Di Nardo, 1984; Ost, 1988; Barlow, Craske, Cerny & Klosko, 1989; De Ruiter, Rijken, Garssen & Kraaimaat, 1989; Klosko, Barlow, Tassinari & Cerny, 1990; for a review see Margraf, Barlow, Clark & Telch, 1993).
Cognitive analyses of obsessions appeared in the mid 1970's shortly after their fruitful introduction into depression research. Analysis of the content of obsessions by researchers such as Akhtar, Wig, Verma, Pershad, and Verma (1975) and Jenike, Baer, and Minichiello (1986) found consistent themes of dirt and contamination, followed by aggression and violence, religion, and sex. Others have examined the risk-taking pattern of obsessionals noting the reluctance of these individuals to engage in any behaviour associated with risk (Steiner, 1972). However, the results of this investigation have not been replicated. Carr (1974) has suggested that the characteristic sense of doubt and indecision associated with this disorder may be the result of a heightened sense of the probability of an unfavorable outcome. Laboratory tasks such as card-sorting have confirmed that obsessives require more information than non-obsessionals before making a decision associated with risk (Beech, 1974; Milner, Beech, & Walker, 1971).
Cognitive-Behavioural Analysis of OCD

Recently, Salkovskis (1985) presented an innovative cognitive-behavioural formulation of obsessions and compulsions. He begins his analysis by bridging the cognitive framework as proposed by Beck (e.g. Beck, Epstein & Harrison, 1983) and obsessions. He argues that this can best be achieved through elucidating the relationship between intrusive thoughts and negative automatic thoughts. Salkovskis draws on the work of Rachman and Hodgson (1980) in comparing obsessional thoughts and automatic thoughts as proposed by Beck (1976):

The major differences between these negative automatic thoughts and obsessions seem to lie in the perceived intrusiveness, immediate accessibility to consciousness and the extent to which they are seen as being consistent with the individual’s belief system. This last differences is particularly important, insofar as Beck’s view of cognitions producing affective disturbance rests on their perceived realistic and plausible nature, and their acceptance by the individual experiencing them. By contrast, obsessions are unacceptable, irrational and implausible. Obsessions are incongruent with the individual’s belief system, unlike negative automatic thoughts which are an expression of it (Salkovskis, 1985, p. 573).
He then argues that obsessions may serve to elicit automatic thoughts and that persistent intrusive thoughts will occur only if there is some type of negative evaluation of the obsession. He states that mood disturbances and discomfort over having experienced intrusive thoughts will only occur if the individual attaches extreme, averse personal implications to having the thought. He also speaks of a predisposing factor of depression which can increase the range of triggering stimuli, and personal significance given to intrusive thoughts. He views obsessions as intrusive thoughts that the client interprets as being a sign that they will be responsible for harm to themselves or others. In order to prevent the harm from occurring, the client engages in behaviour attempting to suppress or neutralize the intrusive thoughts. Thus, it is not simply the occurrence of an intrusive thought or the negative association with having the thought but rather, the responsibility that arises from having the thought that is the critical feature:

That is, obsession-provoked automatic thoughts or images revolve around personal
responsibility, the possibility that if things go wrong it might well be the persons' own fault. Such responsibility may be indirect as well as direct, so that the possibility of preventing harm caused by external agents is equally potent. Clearly, such ideas of responsibility would lead to self-condemnation in vulnerable individuals to the extent that such responsibility ... is abhorrent to them. Such ideas of responsibility can extend to having had the thought itself; that is, if the person believes that they are responsible for their own thoughts... the content of which is abhorrent to them, then they presumably regard themselves as being responsible for being a bad or evil person unless they take steps to ensure their blamelessness. The affective disturbance usually described as arising from the obsession or intrusion actually arises from such automatic thoughts about the intrusion rather than from the intrusion itself (Salkovskis, 1985, p. 574).

According to Salkovskis, once responsibility is taken for the potential occurrence of harm, then the ensuing attempt to prevent harm is almost inevitable. The means of preventing harm is some form of neutralization, either compulsive behaviour or cognitive rituals. In terms of treatment implications, Salkovskis (1985) proposes that therapy should "concentrate not on modifications of intrusions... but on automatic thoughts consequent on the intrusions, and on the beliefs which give rise to these" (p. 581).
Empirical evidence for this model comes from four sources which primarily pertain to obsessions and cognitive neutralizing rather than compulsive behaviour. In addition, the work conducted comes almost exclusively from non-clinical samples. Dickerson and colleagues examined the relationship between the salience of intrusive thoughts and aversiveness in a normal population. England and Dickerson (1988) found that the magnitude of uncontrollability of an intrusive thought was linked to the salience of the thought rather than the content of the thought. Additional evidence comes from Edwards and Dickerson (1987a) who found that intrusive thoughts are more salient than neutral thoughts as measured by the length of time required to replace the thought. These authors suggest that these data are consistent with the notion that the reaction or response to the intrusive thought is more important than the content of the thought.

The second area of research provides a start for examination of the potential links between responsibility and compulsive behaviour. Salkovskis
(1989) reports a study by Salkovskis and Dent (1989) as indicating evidence for a relationship between responsibility and compulsive behaviour. In this survey study of 243 nonclinical participants, individuals were asked to rate their beliefs concerning responsibility for harm, threat and loss. These authors found that individuals who reported compulsive behaviour scored higher on the Maudsley Obsessional-Compulsive Inventory (MOC-I) (Hodgson & Rachman, 1978) than those who did not perform compulsive behaviour. Salkovskis (1989) indicates that this result provides support for a link between responsibility and compulsive behaviour. The finding that those who reported compulsive behaviour scored higher on the MOCI is not surprising given that two of the four sub-scales measure precisely this phenomena. However, the result does little in elucidating the relationship between responsibility and compulsive behaviour. Salkovskis and Dent's (1989) data showing that subjects who performed compulsive behaviour had higher scores on belief ratings of responsibility for harm but not for threat or loss is consistent with responsibility being
a critical component for compulsive behaviour. A further analysis separating those who demonstrated compulsive checking from those who compulsively washed would be of benefit in determining if responsibility is a critical component for all compulsive behaviour or is limited to a sub-group.

A third line of evidence in support of Salkovskis (1985) theory examined the relationship between neutralizing activities and discomfort and persistence of intrusive thoughts. Wegner, Schneider, Carter and White (1987) asked non-clinical subjects to think of anything except for a white bear and then measured the occurrence and contents of thoughts. They found that these instructions actually increased the frequency of thoughts surrounding white bears in comparison to a control group. Using a similar line of thought, Salkovskis, Westbrook, Davis, Jeavons and Gledhill (1989) had non-clinical subjects who experienced both intrusive thoughts and cognitive neutralizing behavior record one intrusive thought on a loop tape. Half of the subjects were instructed to use their usual neutralizing thought and the other half were instructed
to perform a distraction task. Thoughts that were neutralized resulted in greater discomfort on Time 2 in comparison to the distraction group. Salkovskis (1989) interprets this finding as support for the premise that neutralizing behaviour increases discomfort associated with intrusive thoughts. It may be more precise to say that this experiment provides evidence in support of cognitive neutralizing leading to increased discomfort of intrusive thoughts. Further research is necessary to determine whether other types of rituals (e.g. checking and washing) produce similar increases in discomfort.

The final evidence Salkovskis (1989) cites in support of his model comes from treatment outcome studies. Emmelkamp, Visser and Hoekstra (1988) and Emmelkamp (1988) have both shown that cognitive interventions attempting to alter the manner in which patients interpret intrusive thoughts were as effective as exposure plus response prevention.

Overall, these studies provide early support for the Salkovskis (1985) formulation of OCD. However, the
focus of the research to date and ensuing support for the theory is primarily from studies examining intrusive thoughts and cognitive rituals. Salkovskis (1985) asserts that the onset of all behavioural rituals involve cognitive mediation but not necessarily the maintenance. Little, and then only passing mention has been given to compulsive behaviour. Salkovskis argues a one to one relationship between heightened responsibility and neutralizing activity. It must be assumed then that he views all cognitive rituals as being cognitively mediated. He does not separate cognitive rituals from behavioural rituals, and therefore one must also conclude that all behavioural rituals are also cognitively mediated. Clinical intuition suggests otherwise. That is, even in the development of the disorder, people describe instances where they wash or check without being aware of any obsessional thought. Salkovskis' assertion that rituals involve cognitive mediation is readily testable. One could either change the intrusive cognition and then test to see if the ritual has disappeared or change the ritual and see if the
intrusive cognition is no longer troublesome. Future research is necessary to examine if in the early stages of the disorder behavioural rituals have the same one to one relationship, between obsessions and rituals, as Salkovskis proposes.

Second, a comment pertaining to the theory as a whole is warranted. Salkovskis’ model of obsessions and compulsions lacks specificity. Fleshing out the skeletal draft is greatly needed. For example, as discussed above, are all forms of compulsions equally influenced by an exaggerated sense of responsibility? Salkovskis’ model does not account for any variation from the direct link between obsessions, responsibility and compulsions proposed in the current conceptualization. Salkovskis (1985) posits that neutralising is invariably present in OCD. This hypothesis awaits empirical validation. The model may need to consider cases where obsessions without neutralizing occur, or instances where a less than perfect relationship between obsessions and compulsions is present, as well as determining the potentially unique sequela of the various types of rituals.
Third, it may be of benefit to clarify the role of triggering stimuli. At this point it appears to be somewhat of a wildcard that does not allow for specific predictions. That is, what factors determine whether the stimuli will trigger the intrusive thought? In the current model if a specific stimulus does not produce an intrusion and subsequent negative evaluation it is defined as non-salient. Similarly, if the stimuli does produce the intrusive thought it is considered salient. This type of analysis is circular and adds little clarity. It may be of benefit to examine the relationship between the triggering stimuli and responsibility and derive specific predictions based upon this relationship. For example, how do varying levels of responsibility influence the saliency of triggering of stimuli? What is the relationship between varying levels of responsibility triggering stimuli and depressive affect? More generally, what is the relationship between responsibility and depression? Exploring the effects of variations in responsibility on the critical components in the model such as intrusive thoughts, triggering stimuli, and specific
compulsions may begin to provide the necessary detail
to bring a sharper focus to this model.

Fourth, the role of depression in this model
remains unclear. Salkovskis (1985) discusses
depression as serving two roles and being of importance
at various stages in the model. First, he argues that
depression can be conceptualized as a predisposing
factor which may influence processing at a variety of
levels. Second, he views depression arising as a
result of increased responsibility and the negative
evaluation stemming from it. Mood acting as a
modulating influence is certainly intriguing but gives
us little predictive power unless we can begin to
determine what mechanisms are responsible for
triggering the presence or absence of depressed affect.
Reynolds and Salkovskis (1992) began to address this
issue through comparing positive and negative intrusive
and their effects on mood. Induced happy and sad moods
appeared to differentially affect intrusive thoughts.
Future research may need to examine differences between
negative automatic thoughts and intrusive thoughts and
mechanisms responsible for each type of thought. In
addition, it may be interesting to examine what factors contribute to depression and associated negative automatic thoughts being present at various stages and what factors influence it.

Despite these potential limitations, Salkovskis’ model is a highly testable and intriguing one which begins to consider the complexity of this disorder. Examining how variations in responsibility affect obsessions and compulsions is greatly needed to give this conceptualization greater specificity and testability. In addition, further discussion of the influence of mood and its relationship to levels of responsibility would be of benefit.

As is evident in accounts such as Salkovskis’ (1985), research on obsessions has been primarily cognitive in focus. In contrast, the research on compulsive checking has been almost exclusively behavioural.

Investigators have attempted to delineate types of compulsions associated with Obsessive Compulsive Disorder. For example, Hodgson and Rachman
(1977) factor analysed questionnaire data and found two main forms of compulsions: checking and cleaning. Overall, 52% of their patients had checking rituals and 48% had cleaning rituals. Others such as Stern and Cobb (1978) found similar percentages of cleaners and checkers in their sample and also report that 40% of their patients had repeating rituals (doing things by number). Jenike, Baer, and Minichiello (1986) found that 79% of their patients had checking rituals, 21% had counting rituals and 58% had cleaning rituals. Overall, these investigations point to two main types of compulsions: washing and checking.

Rachman (1974) identified a major difference between these two types of rituals. He noted that compulsive washing occurs after the person is exposed to some type of perceived contaminant, germ or dirt. The cleaning is restorative and serves to reestablish a sense of safety and control. On the other hand, checking functions to ward off some future harm or imperfection from occurring. Checking rituals are preventative. Steketee, Grayson and Foa (1985) failed to find any further differences between washers and
checkers in a detailed examination. However, as is the case with any negative result, it is unclear whether there are no true differences or if the correct probe was not used.

**Responsibility as a Major Determinant of OCD**

Rachman and Hodgson (1980) noted the difficulties involved in attempting to provoke the urge to check in a group of subjects diagnosed as having compulsive checking problems. Unlike cleaning compulsions, which can be readily provoked through exposure to a contaminant in the experimenter's laboratory/department store/office etc., checking rituals were difficult or impossible to initiate and produced mild or no anxiety in the laboratory. They suggested that if the study is conducted in the experimenter's laboratory, compulsive checkers feel that the experimenter is responsible for any negative outcome that may result from not checking. With this lessening of responsibility, the checker feels little discomfort when asked to expose him/herself to situations in which she/he would normally check. Rachman and Hodgson (1980) observed
that "if the obsessional subject is divested wholly or partly of responsibility for the act, he or she experiences little discomfort". These authors also noted that subjects felt most anxious and worried when they experienced the urge to check in the absence of the experimenter. It was suggested that "the presence of another person may serve to reduce the obsessional's sense of responsibility for the act and hence, allow them to experience less discomfort when someone else is present." (Rachman & Hodgson, p.181) Clinical impression as well as documented reports (Rachman & Hodgson, p. 1979) note the increase in anxiety, urge to check, and worry when the checker is asked to resist the urge to check when the therapist is absent. Obsessionals reported that it is particularly difficult to resist the urge to check in their own homes while alone. This finding together with earlier experimental analyses of compulsive checking confirming that a major theme in compulsive checking is a fear of harm (Rachman & Hodgson, 1980) has led to the following cognitive analysis.
The central thesis is that compulsive checking stems from a combination of an inflated fear of harm plus an exaggerated sense of personal responsibility.

Related to this position is Salkovskis' (1985) view that obsessions involve an "inflated belief in the probability of being the cause of serious harm to others or self or failing to avert harm". In this analysis, Salkovskis distinguishes between an increased belief in the probability of harm and an increased probability of being the cause of harm. He emphasizes the role of an inflated probability of being the cause of harm, or an increased sense of personal responsibility over harm in obsessional problems.

Attribution Research

Most of the research on the maladaptive nature of responsibility comes from attributional research examining the role of self-blame in adjustment after serious, unanticipated negative events (e.g. Abramson, Seligman, & Teasdale, 1978; Janoff-Bulman, 1979; Lerner & Miller, 1978; Shaver, 1985; Taylor, 1983; Walster, 1966; Wortman, 1976) These events are thought to call
into question the notion that people are motivated to believe that the world is controllable and predictable (Heider, 1958; Kelley, 1971). When a traumatic event occurs it challenges this belief and leads to the question of "why?" and leads to attributing responsibility for such events to oneself or others (Kelley, 1971; Weiner, 1985).

Typically, self-blame has been assumed to be maladaptive (e.g. Becker, Skinner, Abel, Howell, & Bruce, 1982; Affleck, Allen, McGrade, & McQueenyey, 1982; M.A. Graham, Thompson, Estrada, & Yonekura, 1987: Kiecolt-Glaser & Williams, 1987; Meyer & Taylor, 1986; Moulton, Sweet, Temoshok, & Mandel, 1987). The theoretical position driving these studies and others, argues that self-blame is maladaptive because it undermines self-esteem, triggers feelings of helplessness and thus increases the likelihood of depression (Abramson, Seligman, & Teasdale, 1978; Peterson & Seligman, 1984).

However, others have found that self-blame is adaptive. This theoretical position argues that self-
blame is adaptive because it defends against randomness and uncontrollability and contributes to a sense of safety through viewing the world as being predictable and controllable (e.g. Bulman & Wortman, 1977; Lerner & Miller, 1978; Shaver, 1985; Tennen, Affleck, Allen-McGrade, & Ratzan, 1984; Tennen, Affleck, & Gershman, 1986; Timko & Janoff-Bulman, 1985; Wortman, 1976).

Yet a third group of investigators have found no relation between self-blame and adjustment (e.g. Miller & Porter, 1983; Silver, 1982; Taylor, Lichtman & Wood, 1984; Witenberg, Blanchard, Suls, Tennen, McCoy, & McGoldrick, 1983). Janoff-Bulman (1979) attempted to bridge these apparent inconsistencies by proposing that two types of self-blame are present, behavioural and characterological. Behavioural self-blame is thought to be adaptive if the victim directs the blame at controllable, specific behaviours. This type of blame is thought to be related to better adjustment because it may allow the individual to hang on to the belief that the world is a predictable, controllable, safe place and thus, protect oneself from future negative events. On the other hand, characterological self-
blame is said to be maladaptive because it involves attributions to the self which are stable and uncontrollable and thus, does not provide the same sense of control. Unfortunately, empirical support for this differentiation is equivocal (see Turnquist, Harvey & Andersen, 1988). Overall, the mixed set of results has led several authors to conclude that despite the voluminous number of studies conducted in this area over the past 15 years, little has been firmly established about the role of self-blame in adjustment (see Michela & Wood, 1986; Turnquist et al., 1988).

After reviewing the work in this area, it appeared limited in use for the focus of this research for several reasons: a) attributional theory generally focuses on how individuals assign responsibility after the occurrence of an event, b) the work focuses on unexpected events, and c) the negative event is a real occurrence as opposed to obsessional’s characteristic thoughts pertaining to imagined future harm/danger. When examining the dynamics (specifics) of compulsive behaviour, it is important to consider we are examining
how an individual assigns responsibility prior to an event. Second, compulsive checkers overpredict the probability of the occurrence of negative events. They are constantly vigilant, and by checking attempt to prevent the negative event. This vigilance and threat of danger is very different from the phenomena studied in attribution research examining how people cope after a single, unexpected event. Third, compulsive checkers are trying to prevent future, imagined danger or harm. The participants in the attributional research are individuals who have experienced a serious, negative event. Fourth, this study proposes that compulsive checkers have a stable, exaggerated sense of responsibility. This heightened sense of responsibility differs from participants in attributional research who may feel responsible for an outcome in a limited instance but do not maintain a consistent, stable state of heightened responsibility for all negative events. Although attributional research is not central to the development of specific hypotheses and predictions of this study for the reasons discussed above, it may be of benefit when
exploring the origins of a heightened sense of responsibility and will be discussed at that point.

Fear of Criticism and OCD

Psychodynamic and learning theorists alike have suggested that rituals are a means of preventing criticism (e.g. Cameron, 1947; Dowson, 1977; Rosen, 1975). Early behaviourists such as Dollard and Miller (1950) postulated that if a child is frequently criticized or punished for being unclean or having not done a task correctly, the act of washing or checking may produce a reassuring effect. That is, the washing/checking is associated with prevention of criticism and is therefore anxiety reducing.

Other researchers, such as McFall and Wollersheim (1979), have attempted to delineate some of the beliefs associated with OCD. They indicate that two of the primary faulty cognitions are:

1. One should be perfectly competent, adequate and high-achieving in all possible respects in order to
be worthwhile and to avoid criticism or disapproval by others/oneself;

2. Making mistakes or failing to live up to one's perfectionistic ideals should result in punishment or condemnation.

Turner, Steketee, and Foa (1979) attempted to examine this hypothesis through administering a fear of criticism questionnaire to a group of obsssives and a control group of simple phobics. They found that obsessives were more fearful of criticism than the control group of simple phobics. Thyer, Curtis, and Fechner (1984) attempted to replicate these findings with social phobics and agoraphobics serving as control groups, but failed to confirm the Turner et al. (1979) findings, suggesting sensitivity to criticism may not be specific to OCD.

However, another possible interpretation of the negative results may be that the measures of criticism or perfectionism were not tailored to the specific beliefs of harm associated with this disorder.
Beliefs of Harm

Although not systematically evaluated, several authors (e.g. Rachman & Hodgson, 1980; Steketee & Foa, 1980) have noted that compulsives fear negative consequences will occur if the urge to check/clean is not carried out. Most washers have strong expectations of disease, death or physical impairment of themselves or their spouse/children. Compulsive checkers often fear that they will be responsible for either: 1) something bad happening (e.g., fire, injury, as a result of leaving the iron on) or 2) something not being perfect; not okay (e.g., something is not right if the picture is crooked and I may be criticized). Foa (1979) also made reference to the vagueness of some washers' and checkers' anticipated harm. Her impression is that some fear that the "anxiety/discomfort will last forever" and will lead to "going crazy" or "losing control". If Foa's impression can be confirmed experimentally, these types of irrational thoughts can be readily translated into the "collaborative hypothesis testing" framework of cognitive therapy. At this point, however, the
specific beliefs of harm held by people with OCD have not been studied empirically and have received only passing mention.

Responsibility, Controllability and OCD

There is an interesting paradox between the extent of responsibility assumed by compulsive checkers and the level of perceived controllability over anticipated danger or harm. Compulsive checkers may accept or take on high levels of responsibility for anticipated harm even in the absence of control. It is difficult to conceive of being responsible for any event if one is unable to exert any control over the outcome. Yet, compulsive checkers appear to do exactly this. For example, H.G. who repeatedly checks window locks in her home, will indicate she is highly responsible if someone breaks into her home, but that she has no control over whether or not she will be burglarized. Another example is of C.R. who checks electrical appliances repeatedly fearing there may be an electrical short-circuit. He indicates he would feel highly responsible if the short was to occur, yet also
says he has little control over whether the circuit will short.

These examples point to the double bind of a perceived loss of control over an external threat coupled with high sense of responsibility in compulsive checkers. Given the frequency with which those with anxiety disorders, other than OCD, complain of a loss of control or insufficient control over anticipated danger or harm, it may be timely to investigate its importance in OCD.

Prominent anxiety investigators such as Mineka and Kihlstrom (1978) and Seligman (1975) point to the centrality of a loss of control in the development and maintenance of anxiety disorders. Human and animal studies alike, suggest control is intimately linked with anxiety through perceptions of lack of control over negative events (Geer, Davison & Gatchel, 1970; Neale & Katahn, 1968; Pervin 1963; Staub, Tursky, & Schwartz, 1971: see also Miller, 1979, for a review).

In a classic study on the role of control and responsibility, Rodin and Langer (1977) had one group
of nursing home residents take responsibility and control for the arrangements of items in their room, as well as for their time. This group evidenced lower mortality rates, 18 months later, than a control group. Langer (1979) as well as Sanderson, Rapee and Barlow (1989) suggest it is not control in itself that is critical but rather the illusion of control.

The influential work of Seligman and colleagues (1968; 1975) on helplessness and uncontrollability demonstrated that animals who have a history of unpredictable, uncontrollable events are more apt to experience emotional disturbances. The typical pattern for animals with this history is to appear extremely anxious and then later to become severely depressed.

The parallels between this sequence in animals and the high rates of co-morbidity of OCD and depression (Foa, 1979) readily tie in with the present analysis of OCD.

High levels of responsibility and an exaggerated sense of harm, combined with little controllability over external threat may result in the characteristic
pattern of compulsive checking. It is predicted that for people with OCD, the sense of responsibility for anticipated harm is independent of a sense of control over the pertinent threat.

**Immediacy of Threat in OCD**

Panic is not limited to those suffering from Panic Disorder. Rather, panic is experienced across the anxiety disorders and is commonly reported in the general public (Barlow, 1988; Norton, Harrison, Hauch, & Rhodes, 1985). In the current investigation we are interested in determining whether and when perceived panic occurs. Central to perceived panic is the immediacy of the presumed threat or danger. In panic disorder, imminent threat is produced by catastrophic misinterpretations of bodily sensations (Clark, 1986). It may be that any stimulus which produces imminent threat will lead to panic. In contrast, if no imminent threat is present, there should be no panic. It is hypothesized that in OCD, the immediacy of threat is variable. For compulsive checkers, some future danger or harm is prevented through ritualized checking;
rituals are preventative (Rachman & Hodgson, 1980). Therefore, for those who check repeatedly threat is futuristic. Differential predictions can be made with respect to frequency of perceived panic based upon immediacy of perceived danger.

It is predicted that the more immediate the threat the greater the likelihood of perceived panic.

**Baserates**

We have little information about many of the cognitive processes associated with OCD. For example, we do not know the baserates for sensitivity to criticism, probability for negative events, or the baseline level of control they experience when dealing with fear related events. This study attempts to gather such information using a within subject design so that each subject may serve as her/his control. The details of the design will be described under the "method" section.
Summary

Cognitive analyses of panic have proven to be fruitful and have improved our understanding of the nature and treatment of this disorder. The extension of cognitive analyses to other anxiety disorders has begun, but to date there is an absence of information about the role of cognition in compulsive checking. This gap in the cognitive analysis of OCD, and the experimental observations of the role of responsibility in this disorder, are the impetus for the proposed research. The central argument presented is that compulsive checking stems from a combination of an inflated fear of harm plus a heightened sense of responsibility. The primary purpose of the proposed research is to test the hypothesis that responsibility is a major determinant of OCD. Examination of the combination of inflated fear and heightened responsibility will await future research.
Hypotheses and Predictions

Hypothesis 1

There is a causal relationship between perceived responsibility and compulsive checking.

Prediction 1a. An increase in perceived responsibility will be followed by an increase in perceived discomfort.

Prediction 1b. An increase in perceived responsibility will be followed by an increase in the urge to complete a check.

Prediction 1c. An increase in perceived responsibility will be followed by an increase in the estimation of length of time needed to complete a check.

Prediction 1d. A decrease in perceived responsibility will be followed by a decrease in perceived discomfort.
**Prediction 1e.** A decrease in perceived responsibility will be followed by a decrease in the urge to check.

**Prediction 1f.** A decrease in perceived responsibility will be followed by a decrease in the length of time needed to check.

**Hypothesis 2**

Estimations of the timing of anticipated threat influence the probability of perceived panic.

**Prediction 2a.** The more immediate the anticipated threat, the greater the probability of perceived panic.

**Prediction 2b.** The less immediate the anticipated threat, the lower the probability of perceived panic.

**Hypothesis 3**

Variations in perceived responsibility do not alter estimations of the probability of anticipated harm.
Prediction 3a. An increase in perceived responsibility will be followed by no change in the probability of anticipated harm.

Prediction 3b. A decrease in perceived responsibility will be followed by no change in the probability of anticipated harm.

Hypothesis 4

Variations in perceived responsibility do not alter estimations of the seriousness of anticipated harm.

Prediction 4a. An increase in perceived responsibility will be followed by no change in the estimated seriousness of anticipated harm.

Prediction 4b. A decrease in perceived responsibility will be followed by no change in the estimated seriousness of anticipated harm.
Hypothesis 5

Variations in perceived responsibility do not alter estimations of when the anticipated harm will occur.

Prediction 5a. An increase in perceived responsibility will be followed by no change in when anticipated harm will occur.

Prediction 5b. A decrease in perceived responsibility will be followed by no change in when anticipated harm will occur.

Hypothesis 6

Perceived responsibility for anticipated harm is independent of a sense of control over the pertinent anticipated threat.

Prediction 6a. An increase in perceived responsibility will not alter estimations of amount of controllability.
Prediction 6b. A decrease in perceived responsibility will not influence estimations of amount of controllability.

Hypothesis 7

Variations in perceived responsibility will alter estimations of the likelihood of anticipated criticism.

Prediction 7a. An increase in perceived responsibility will be followed by an increase in the estimated likelihood of anticipated criticism.

Prediction 7b. A decrease in perceived responsibility will be followed by a decrease in the estimated likelihood of anticipated criticism.

Hypothesis 8

Variations in perceived responsibility will alter estimations of the severity of anticipated criticism.

Prediction 8a. An increase in perceived responsibility will be followed by an increase in the estimated severity of anticipated criticism.
Prediction 8b. A decrease in perceived responsibility will be followed by a decrease in the estimated severity of anticipated criticism.

Hypothesis 9

Variations in perceived responsibility will alter estimations of the timing of anticipated criticism.

Prediction 9a. An increase in perceived responsibility will be followed by a decrease in the estimated length of time before anticipated criticism.

Prediction 9b. A decrease in perceived responsibility will be followed by an increase in the estimated length of time before anticipated criticism.

Hypothesis 10

Perceived responsibility for anticipated harm is independent of a sense of control over anticipated criticism.
Prediction 10a. An increase in perceived responsibility will not alter estimations of amount of controllability over anticipated criticism.

Prediction 10b. A decrease in perceived responsibility will not influence estimations of amount of controllability over anticipated criticism.
METHOD

Experimental Design and Overview

In order to test the central thesis of the current study, that compulsive checking stems from an exaggerated sense of personal responsibility, it was necessary to examine the influence of levels of perceived responsibility on critical dependent measures. Hence, the current study is a within-subject repeated measures design with levels of perceived responsibility (high, control, low) as the independent variable. Given the difficulties in collecting this inaccessible sample, a within-subject design was chosen to maximize power. One of the major drawbacks associated with this type of design is carryover effects. After preliminary testing of the manipulation it seemed unlikely that such effects would be present and thus, the within subject design was chosen.

The effects of variations in perceived responsibility were examined on several dependent measures. In all cases dependent measures are based on
the client's perception. For ease of expression, in the remainder of this thesis I will refer to the dependent measures without adding the term "perceived". However, in all cases the dependent measures are based upon the client's perception. Thus, the shorthand of "responsibility" refers to perceived responsibility, "criticism" refers to perceived criticism and so on.

The dependent measures for the current study are: urge to check, perceived discomfort, responsibility (manipulation check), likelihood of anticipated threat, severity of anticipated threat, control over anticipated threat, timing of anticipated threat, estimation of the time needed to check, likelihood of anticipated criticism, severity of anticipated criticism, control over anticipated criticism, and the timing of anticipated criticism.

Subjects received each of the following conditions: 1) high responsibility 2) low responsibility 3) control-check 4) control-clean. The control-clean condition was designed to address a separate series of hypotheses than those discussed herein. It is described in this section, and will be
analysed later, only in terms of its impact (if any) on the three remaining conditions. It will be referred to as a secondary study.

All participants were first assigned to one of the two control conditions (control-check, control-clean). The order of the control conditions was counterbalanced. In both control conditions, there was no manipulation of the sense of perceived responsibility. The control conditions differ only in that in the control-check condition, the urge to check is provoked whereas in the control-clean condition the urge to clean is provoked.

After completion of the control conditions subjects were assigned to the two variations in responsibility conditions. Order of the perceived responsibility conditions was counterbalanced. In the high responsibility condition, the subjects' perceived responsibility for a personally relevant negative event was deliberately increased. In the low responsibility condition, the subjects' perceived responsibility for a
personally relevant negative event was transferred to the experimenter.

Subjects were assessed before and after each experimental manipulation on all dependent measures. The pre-assessment consisted of a behavioural approach test where the urge to check/clean was provoked and several self-report measures of anxiety. The post-assessment was identical to the pre-assessment.

Subjects. The subjects were 30 volunteers who checked compulsively. The secondary study was comprised of 10 volunteers who cleaned compulsively. Participation in the study was restricted to individuals who: 1) were over 18 years old, 2) met DSM-III-R criteria for obsessive compulsive disorder, and 3) had no history of psychosis.

Further inclusion criteria required that participants report a minimum score of 70/100 (on a 0 to 100 verbal analogue scale where "0" is no discomfort and "100" is extreme discomfort) when the urge to check was provoked.
In order to be considered appropriate for the secondary study additional participants were required to report a minimum score of 70/100 on the subjective units of discomfort scale when the urge to clean was provoked.

Procedure

Subject Recruitment. Subjects were recruited as follows:

1. Therapists at the Psychology Clinic, U.B.C. and Health Psychology Clinic, U.B.C asked clients if they were interested in participating in the study. Those clients who expressed a willingness to participate were asked to complete a consent form which allowed the investigators to contact them by telephone.

2. The investigator advertised in newspapers, and participated in interviews on radio and television.

3. Notices were posted on bulletin boards in hospitals, mental health clinics and "self-help" bookstores.
**Initial Screening**  Many of the potential subjects first made contact by telephone. During this contact, a brief interview was conducted to screen out individuals who were inappropriate for the study. Screening criteria were as follows:

1. Callers were required to answer affirmatively to the first question on the obsessive compulsive subsection of the Anxiety Disorders Interview Schedule - Revised (ADIS-R) (DiNardo, Barlow, Cerny, Vermilyea, Vermilyea, Himadi, & Waddell, 1985) The specific question was: "Have you had to repeat some act over and over again which doesn’t seem to make sense and that you don’t want to do? For example, washing something over and over again or counting things, or checking something repeatedly like locked doors, important papers or retracing driving routes?"

2. In addition to an affirmative answer on the above question, callers were required to meet **either** of the two following criteria:
a) wash or check more than 60 minutes per day, or

b) indicate that their checking/cleaning difficulties significantly interfere with their life.

The following information was given to potential subjects over the telephone:

We certainly appreciate your calling today, but before we give you the details of our study, we would like to ask you a few questions. Is that Okay with you?

(Administer telephone interview)

It sounds like you have been having some problems with checking/cleaning, and because of this, we would be interested in finding out more about your experience. If you agree to be in our study, we would ask you to take part in a short interview. At that time we would ask you more about your pattern of checking/cleaning. In addition, we would ask you to go into four situations where you would usually check/clean. After you go into the situation, we would ask you some questions about your thoughts and feelings while you were checking/cleaning. Finally, we would ask you a few more questions about your experience.

It is our experience that people's reactions to checking/cleaning are different at home than when they are away, so we would conduct the study in your home, if you agree. The study takes roughly four hours and we would be giving you a information package on checking and cleaning problems, which includes some
treatment alternatives. We are very interested in your thoughts and feelings about checking/cleaning and would really appreciate your participation. Our long term goals of this research are to help others, like yourself, by developing an effective treatment program. The more we can find out about your experience with checking/cleaning, the better we can be at putting together a treatment program that works.

**Initial Evaluation**  The purpose of the initial evaluation was to determine if potential subjects meet DSM-IIIR criteria for OCD. The evaluation and assessments were conducted in the subject’s home. In order to achieve the above objective subjects were evaluated using the Obsessive Compulsive Disorder section of a structured interview designed to assess anxiety disorders (ADIS-R; DiNardo, et al. 1983). In addition, they were asked to complete the Maudsley Obsessional Compulsive Inventory (MOCI), a scale which measures obsessive compulsive symptoms (Hodgson & Rachman, 1977).

**Experimental Procedure**  If subjects met DSM-IIIR criteria and were within clinical range on the MOCI they then received the four conditions. Each condition consisted of a pre-assessment, experimental
manipulation and a post-assessment. The pre-assessment and post-assessment were identical and involved a behavioural approach test (BAT) and completion of all self-report measures of anxiety. The BAT was an individually tailored approach test which involved exposing the subject to an object/situation where s/he usually checks/cleans. Subjects were assessed after this exposure using self-report measures. It is important to note that there were no invivo based behavioural observations but rather that the participants were asked to complete several self-report measures after the urge to check was provoked in the BAT. The self-report measures were as follows: urge to check, perceived discomfort, perceived responsibility (manipulation check), likelihood of anticipated threat, severity of anticipated threat, control over anticipated threat, the timing of anticipated threat, estimation of the time needed to check, likelihood of anticipated criticism, severity of anticipated criticism, control over anticipated criticism, the timing of anticipated criticism,
negative cognitions and bodily sensations questionnaires.

A research assistant "blind" to the order of the experimental conditions and major hypotheses conducted the pre and post assessments.

Instructions for BAT Task Determination The experimenter determined which tasks were used for the BAT's by asking the following questions:

"You mentioned, that you check/clean ___ over and over again, if I was to ask you to ___ at this moment, and not check/clean at all, how much discomfort do you think you would experience? I'd like you to use a scale where "0" is "no discomfort" and "100" is "extreme discomfort".

"If I was to ask you to _________ at this moment, and not check at all, and then something bad happened or something was not perfect, how responsible would you feel? I'd like you to use a scale where "0" is "not at all responsible" and "100" is "completely responsible".

The interviewer used trial and error until the subject reported a score of "70" on the perceived
discomfort scale and "50" on perceived responsibility with three separate tasks.

All the tasks chosen for the BAT’s were randomly assigned to condition.

Instructions Prior to First BAT "In a moment we will ask you to go into four situations where you previously have checked/cleaned. We will ask you to go into each situation twice. Each time you go into the situation, we will ask you not to check/clean and then we will ask you some questions about your experience. There are no right or wrong answers. Each question is designed to be answered quickly and is not meant to be thought about too much."

After completion of the pre-test and all dependent measures, the experimental manipulation was introduced. Depending on their assignment to condition, subjects were encouraged to increase, decrease or not change their perceived responsibility for an anticipated negative event. The specific instructions given for each condition was as follows.

Low Responsibility Condition "You mentioned that you check ____ over and over again. In a moment we will ask you to go into a situation where you usually would check ____ . People who check sometimes worry that something bad will happen or what they do won’t be
They sometimes worry that damage of some kind may occur, that someone will be hurt, or that they will have to undo any damage or harm. People who have these worries sometimes feel that something bad will happen or is not perfect when they are in situations like the one you are about to be in. Except this time, I want you to know that I will take complete responsibility if anything bad happens or anything is not perfect. You are not responsible for anything that happens or is not perfect.

I will take on complete responsibility. I will be to blame if anything bad happens or is not perfect. Your name will not be mentioned. I will also take responsibility for any damage that may occur and will pay back or undo any damage or harm that may occur.

I would like to put this agreement in writing. There is one further point, I would like to mention and that is, I am asking you to give up your responsibility in this one limited instance. I would like you to take this position seriously. It may be that outside of this situation, you are a highly responsible person and will remain so. I am solely asking you to give up your responsibility in this one situation. Do you have any questions? Do you need any further information or evidence before you feel confident that I will in fact take on the full responsibility? (ADD THESE ITEMS TO CONTRACT)

Could we go over the contract, just to make sure we both understand the agreement? First, as you can see here in writing, I will take complete responsibility for anything that may happen or is not perfect as a result of not checking. Second, I will be to blame if anything bad happens or is not perfect and your name will not be mentioned. Third, my responsibility applies to this situation only. Fourth, I will undo any damage or harm that may occur as a result of not checking. I would like you to sign here as a witness, that I must assume complete responsibility. I would also like you to initial these changes/additions/deletions that we have made to make
this contract tailored to your specific pattern of checking. (Have participant sign form) You know you can count on me."

**High Responsibility Condition** "You mentioned that you check ____ over and over again. In a moment we will ask you to go into a situation where you usually would check _____. People who check sometimes worry that something bad will happen or what they do won't be perfect. They sometimes worry that damage of some kind may occur, that someone will be hurt, or that they will have to undo any damage or harm. People who have these worries sometimes feel that something bad will happen or is not perfect when they are in situations like the one you are about to be in. Except this time, I want you to know that you will have to take complete responsibility if anything bad happens or anything is not perfect.

You are responsible for anything that happens or anything that is not perfect as a result of not checking. You will be asked to take on complete responsibility. You will be to blame if anything bad happens or if anything is not perfect. Your name will be mentioned. You will also take responsibility for any damage that may occur and will be asked to pay back or undo any damage or harm that may occur.

I would like to put this agreement in writing. There is one further point, I would like to mention and that is, I am asking to you to assume responsibility in this one limited instance and we hope you will take this position seriously. It may be that outside of this situation, you are a highly responsible person and that will remain so. I am asking you to be completely responsible in only this one situation. Do you have any questions? Do you need any additional information or evidence to make sure that you really do take on the full responsibility? (ADD THESE ITEMS TO CONTRACT)
Could we go over the agreement, just to make sure of our understanding? First, as you can see here in writing, you will take complete responsibility for anything that may happen or anything that is not perfect as a result of you not checking. Second, you will be to blame if anything bad happens or anything is not perfect and your name will be mentioned. Third, your responsibility applies to this situation only. Fourth, you will be asked to undo any damage or harm that may occur as a result of not checking. I would like you to sign here to guarantee that you will assume complete responsibility. I would also like you to initial these changes/additions/deletions that we have made to make this contract tailored to your specific pattern of checking. I will sign as a witness to your taking on the responsibility. I know I can count on you."

Control-Check Condition "You mentioned that you check ____ over and over again. In a moment we will ask you to go into a situation where you usually check _____. People who check sometimes worry that something bad will happen or what they do won't be perfect. They sometimes worry that damage of some kind may occur, that someone will be hurt, or that they will have to undo any damage or harm. People who have these worries sometimes feel that something bad will happen or is not perfect when they are in situations like the one you are about to be in. We would like you to try to treat this test like a realistic situation that you encounter regularly.

We would like to get an understanding of your typical pattern of checking, so please try and treat this situation as you usually do. (As before) we will ask you to go into ____ situation and then we will ask you some questions about your experience. Do you have any questions?
I would like to put this agreement in writing. As you can see here in writing, we would like you to 1) treat this situation as you usually do and 2) we would like you to try to treat this behavioral test like a realistic situation - the kind of situation you encounter regularly.

Is there anything that we can add/change in this contract, that will help you treat this situation as you usually do? I would like you to sign here to acknowledge our agreement. I will sign as a witness."

Control-Clean Condition "You mentioned that you clean ______ over and over again. In a moment we will ask you to go into a situation where you usually clean ______. People who clean sometimes worry that something bad will happen or what they do won't be perfect. They sometimes worry that damage of some kind may occur, that someone will be hurt, or that they will have to undo any damage or harm. People who have these worries sometimes feel that something bad will happen or is not perfect when they are in situations like the one you are about to be in. We would like you to try to treat this test like a realistic situation that you encounter regularly.

We would like to get an understanding of your typical pattern of cleaning, so please try and treat this situation as you usually do. (As before) we will ask you to go into ___ situation and then we will ask you some questions about your experience. Do you have any questions?

I would like to put this agreement in writing. As you can see here in writing, we would like you to 1) treat this situation as you usually do and 2) we would like you to try to treat this behavioral test like a realistic situation - the kind of situation you encounter regularly.
Is there anything that we can add/change in this contract, that will help you treat this situation as you usually do? I would like you to sign here to acknowledge our agreement. I will sign as a witness."

Post-assessment The post-assessment followed each experimental manipulation and consisted of the same standard behavioral approach test and completion of the self-report measures of anxiety.

Structured Interview At the very end of the session, clients took part in a structured interview which focused on history of trauma, responsibility and explored possible sources of a heightened sense of perceived responsibility.

Measures

Anxiety Disorders Interview Schedule - Revised

The Anxiety Disorders Interview Schedule - Revised (ADIS-R) (DiNardo et al., 1985) is a detailed structured interview designed to assess anxiety disorders. For purposes of this investigation, only the Obsessive Compulsive Disorder Subsection was used. This interview has high internal reliability for
diagnosis of OCD with Kappa Coefficients ranging from .825 to .857 (Barlow, 1987; DiNardo, O’Brien, Barlow, Waddell, & Blanchard, 1983)

**Maudsley Obsessional Compulsive Inventory**

The Maudsley Obsessional-Compulsive Inventory (MOCI) (Hodgson & Rachman, 1977) is a 30 item true-false questionnaire designed to measure Obsessive Compulsive symptomatology. Principal-component analysis has revealed four separate subscales, checking (9 items), cleaning (11 items), slowness (7 items) and doubting (7 items). This measure has good internal consistency and test-retest stability, as well as good convergent and divergent validity with the nine subscales of the Symptom Checklist-90-Revised (Sanavio & Vidotto, 1985; Sternberger & Burns, 1990). It has been used widely with both clinical and non-clinical populations (e.g. Perse, Greist, Jefferson, Rosenfield, & Dar, 1987 Sher, Mann & Frost, 1984;).
Verbal Analogue Scales

Verbal analogue scales (0 to 100) were used to derive scores for the 12 dependent variables: urge to check, perceived discomfort, perceived responsibility (manipulation check), likelihood of anticipated threat, severity of anticipated threat, control over anticipated threat, the timing of anticipated threat, time needed to check, likelihood of anticipated criticism, severity of anticipated criticism, control over anticipated criticism, the timing of anticipated criticism. These scales are widely used in behavioural research on anxiety disorders, and are known to correlate with several indices of autonomic arousal (Thyer, Papsdorf, Davis, & Vallecorsa, 1984).

Behavioural Approach Tests

Behavioural Approach Tests (BAT's) have commonly been used to assess compulsive checking in both research and clinical settings (e.g. Roper, Rachman & Hodgson, 1973; Steketee & Foa, 1985). Individualized BAT's may be used to assess personally relevant
behaviours in naturalistic situations. In the current study the BAT was tailored to the participant's individual pattern of checking. For example, if the subject reported checking door locks repetitively, then the subject was given the following instructions in the BAT:

"We would like you to lock the door and then walk away from it without checking it at all."

Other examples of typical tasks chosen and instructions for BAT's:

Example 2 "We would like you to turn the stove on and then off and then walk into the next room without checking it at all."

Example 3 "We would like you to follow the route you normally take home without retracing your path."

Example 4 "We would like you to adjust the thermostat to 20 C and then walk into the next room without checking it at all."
RESULTS

Subject Characteristics

Thirty people participated in the one-session, 4 hour study. Sixty percent (18/30) of participants were female and 40 percent (12/30) of participants were male. The mean age was 36.76 (S.D. 15.37) years (See Table 1).

Medication

Fifty percent (15/30) of participants were on medication. Five of the 15 participants were on clomipramine (Anafranil), 3 of the 15 were on fluoxetine (Prozac), and the remaining 7 out of 15 were on some other form of anxiolytic or anti-depressant medication. None of the participants were on anti-psychotic or major tranquilizers.

All participants were instructed not to alter their regular dosage of medication nor take any other form of medication for twenty-four hours prior to the testing.
<table>
<thead>
<tr>
<th></th>
<th>(n=18)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FEMALE</strong></td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td><strong>MALE</strong></td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td></td>
<td>36.76(15.37)</td>
</tr>
</tbody>
</table>
Subject Screening

We received 423 phone calls for this study. Despite our attempts to be specific in our publicity, many of those who called requested information for other problems (i.e., relationship problems, depression etc.). If the individual indicated they washed or checked repeatedly we conducted the telephone screen (see methods section). Hence, of these 423 calls we conducted telephone screens with 221 individuals. Of these 221 individuals, 38 appeared suitable for our study and we arranged appointments to go to their homes. This low acceptance rate for the study, had to do with our stringent recruitment guidelines. Many of the callers who reported checking repeatedly, indicated on the telephone that either it did not significantly interfere with their lives, or mentioned they occasionally checked repeatedly but that it wasn’t on a regular or consistent basis. Thus, these individuals would not meet criteria for OCD and were deemed inappropriate for this study.
Of the 38 homes we went to, 8 people did not experience an urge to check in the presence of the experimenter and thus, for these individuals we were unable to proceed with the study. We noted that 6/8 people who did not experience an urge to check, appeared to be less severe in overall OCD symptomatology than those who participated. That is, in comparison to the remainder of the sample these people scored lower on the ADIS (x=4.2 (1.4) vs. (x=6.1 (1.79) and MOCI x=2.2 (1.34) vs x=19 3 (6.34). No further information was collected from these individuals so they could not be compared on any other characteristics. Of the remaining 2/8 who met criteria for OCD these individuals reported significant interference but failed to report an urge to check in our presence. In both these cases, the participants indicated that they only checked late at night before retiring for bed and that our presence made them feel more safe.
Missing Data

In limited instances participants reported that they were unable to answer specific questions. In most cases, it appeared that participants would perseverate and would fail to make a decision. After prompting for a reply if the participant was still unable to answer, or simply indicated that they "didn't know" these data were coded as missing.

Missing data comprised less than 1% of the total data set and appeared to be randomly distributed across the data set. That is, no apparent pattern relating to missing data was evident.

These missing data were recoded with values taken from randomly sampling the distribution with the mean and standard deviation of each condition. Other methods such as simply replacing the missing data with the mean and standard deviation of each condition would artificially reduce the variance of each condition. Thus, this approach of obtaining scores through sampling the distribution to replace missing data maintains the actual variance of each condition.
Preliminary Analyses. Means and standard deviations were calculated for each dependent measure, pre and post manipulation and are reported in Tables 2 and 3.

Major Analyses

Alpha level. Given that this is exploratory research and therefore conclusions will be tentative and will be fully tested again, the risk of Type I errors need not have the overriding importance it must have in other circumstances. Indeed if power is overly reduced, there is a risk that findings might not be noted and duly followed up. Therefore, an alpha level of .05 will be used for multivariate tests.
## TABLE 2

MEANS AND STANDARD DEVIATIONS

**PRE SCORES (n=30)**

<table>
<thead>
<tr>
<th></th>
<th>CONTROL</th>
<th>HI RESP</th>
<th>LO RESP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>54.67 (9.00)</td>
<td>55.83 (8.62)</td>
<td>53.70 (6.25)</td>
</tr>
<tr>
<td>Urge to Check</td>
<td>74.67 (18.64)</td>
<td>70.33 (19.16)</td>
<td>74.77 (21.69)</td>
</tr>
<tr>
<td>Discomfort</td>
<td>65.83 (15.60)</td>
<td>65.29 (17.57)</td>
<td>65.47 (21.23)</td>
</tr>
<tr>
<td>Likely/Bad</td>
<td>50.70 (32.64)</td>
<td>56.67 (20.48)</td>
<td>55.83 (24.73)</td>
</tr>
<tr>
<td>Sev/Bad</td>
<td>61.57 (32.13)</td>
<td>62.21 (24.37)</td>
<td>62.97 (23.62)</td>
</tr>
<tr>
<td>Time/Bad</td>
<td>2.76 (1.28)</td>
<td>2.60 (1.33)</td>
<td>2.37 (1.13)</td>
</tr>
<tr>
<td>Finish Check</td>
<td>6.80 (11.74)</td>
<td>5.00 (4.73)</td>
<td>5.43 (7.63)</td>
</tr>
<tr>
<td>Control/Bad</td>
<td>42.83 (32.73)</td>
<td>43.83 (29.50)</td>
<td>40.83 (30.43)</td>
</tr>
<tr>
<td>Panic</td>
<td>1.67 (.80)</td>
<td>1.57 (.68)</td>
<td>1.73 (.74)</td>
</tr>
<tr>
<td>Lik/Criticism</td>
<td>57.87 (38.74)</td>
<td>52.60 (26.89)</td>
<td>55.33 (30.48)</td>
</tr>
<tr>
<td>Sev/Criticism</td>
<td>59.63 (34.70)</td>
<td>55.43 (31.19)</td>
<td>56.53 (28.25)</td>
</tr>
<tr>
<td>Control/Crit</td>
<td>35.30 (30.94)</td>
<td>37.67 (30.92)</td>
<td>38.73 (30.78)</td>
</tr>
<tr>
<td>Time/Crit</td>
<td>3.00 (1.93)</td>
<td>2.57 (1.38)</td>
<td>3.03 (1.61)</td>
</tr>
</tbody>
</table>
### TABLE 3

**MEANS AND STANDARD DEVIATIONS**

**POST SCORES (n=30)**

<table>
<thead>
<tr>
<th></th>
<th>CONTROL</th>
<th>HI RESP</th>
<th>LO RESP</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>58.73 (20.06)</td>
<td>90.17(24.55)</td>
<td>16.47(23.14)</td>
<td>65.09**</td>
</tr>
<tr>
<td>Urge to Check</td>
<td>68.73 (25.70)</td>
<td>79.50(25.78)</td>
<td>35.00(35.04)</td>
<td>17.97**</td>
</tr>
<tr>
<td>Discomfort</td>
<td>60.23 (22.57)</td>
<td>72.17(27.50)</td>
<td>26.13(31.40)</td>
<td>22.06**</td>
</tr>
<tr>
<td>Likely/Bad</td>
<td>53.83 (24.77)</td>
<td>59.57(30.87)</td>
<td>25.90(24.18)</td>
<td>15.69**</td>
</tr>
<tr>
<td>Sev/Bad</td>
<td>66.77 (25.32)</td>
<td>73.50(26.98)</td>
<td>43.13(32.59)</td>
<td>13.91**</td>
</tr>
<tr>
<td>Time/Bad</td>
<td>2.56 (1.01)</td>
<td>2.48(1.25)</td>
<td>2.63(1.57)</td>
<td>.15</td>
</tr>
<tr>
<td>Finish Check</td>
<td>7.03 (12.02)</td>
<td>9.00(12.48)</td>
<td>2.40(3.40)</td>
<td>4.58*</td>
</tr>
<tr>
<td>Control/Bad</td>
<td>43.83 (30.73)</td>
<td>33.43(39.41)</td>
<td>28.13(25.93)</td>
<td>1.69</td>
</tr>
<tr>
<td>Panic</td>
<td>1.60 (.72)</td>
<td>2.03(.93)</td>
<td>1.20(.48)</td>
<td>11.52**</td>
</tr>
<tr>
<td>Lik/Criticism</td>
<td>56.30 (37.62)</td>
<td>73.77(31.60)</td>
<td>16.87(25.79)</td>
<td>26.81**</td>
</tr>
<tr>
<td>Sev/Criticism</td>
<td>62.87 (29.92)</td>
<td>74.30(31.19)</td>
<td>28.73(32.44)</td>
<td>19.29**</td>
</tr>
<tr>
<td>Control/Crit</td>
<td>34.70 (33.02)</td>
<td>37.13(39.03)</td>
<td>34.40(38.28)</td>
<td>.08</td>
</tr>
<tr>
<td>Time/Crit</td>
<td>3.00 (2.04)</td>
<td>2.54(1.30)</td>
<td>4.27(2.29)</td>
<td>6.04*</td>
</tr>
</tbody>
</table>

**p<.001**

* p<.01
Were there baseline differences? In order to ensure there were no differences between conditions prior to manipulation a multivariate analysis of variance for repeated measures (MANOVAR) was conducted on all pre measures. The within-subject factor was condition (control-check, high responsibility, low responsibility). A Mauchley sphericity test was not significant. No significant differences between conditions were found using either multivariate ($F(4,26)=.70, p=n.s.)$ or univariate results ($F(26,92)=.58, p=n.s.$). These results confirm no differences in baseline measures prior to manipulation of perceived responsibility.

Order Effects In order to test for order effects, the order in which subjects received the conditions (control-check, control-clean, hi responsibility, low responsibility) was examined.

The two control conditions (control-check, control-clean) were always given first and the order of these two conditions was counterbalanced. For the purpose of analysis, control-check was assigned a
value of one and control-clean a value of two. The possible order could be either one, two or two, one. The two experimental conditions (high responsibility, low responsibility) were always assigned after completion of the control conditions. The order of these two conditions was counterbalanced. The high responsibility condition was assigned a numeric equivalent of three, and low responsibility a numeric equivalent of four. The possible order was either 3, 4 or 4, 3. Overall then, there were four possible orders: 1,2,3,4; 1,2,4,3; 2,1,3,4; 2,1,4,3. These four possible combinations were used in the analyses described below.

In order to examine if order in which conditions were received influenced the dependent measures, a multivariate analysis of variance for repeated measures (MANOVAR) was conducted on all pre-measures. The between-subjects factor was order (combination 1, combination 2, combination 3, combination 4). The within-subject factor was condition (control-check, high responsibility, low responsibility). In order to minimize the probability
of a type II error, univariate results, with stronger power to detect differences, were used. No main effect of order ($F(3,26)=1.05, p=n.s.$), condition ($F(2,52)=1.06, p=n.s.$), nor Order X Condition interaction ($F(3,26)=1.12, p=n.s.$) was present. These results suggest that the order in which subjects received the conditions had no effect on the baseline dependent measures.

Given that there were no differences in the dependent measures prior to the experimental manipulation, nor were order effects present, all subsequent major analyses were performed using post score results.

In order to test the series of predictions for this investigation, a MANOVAR was conducted on all post measures. This approach of including all post measures in one MANOVAR was used for several reasons. First, it provides protection against Type 1 error. Second, it best controls for type one error rates through taking into consideration that several dependent variables are assumed to be correlated and it may reveal differences
not shown in separate ANOVAs. According to Tabachnick and Fidell (1988), "...when responses to two dependent variables are considered in combination, differences may become apparent. Thus, MANOVA which considers dependent variables in combination, may sometimes be more powerful than separate ANOVAs".

For purposes of this analysis, the between-group factor was Order (combination 1, combination 2, combination 3, combination 4). The within-subject factor was Condition (control-check, high responsibility, low responsibility). A main effect for Condition ($F(2,52)=4.23, p<.03$) emerged. A Mauchley sphericity test was not significant. The significant main effect suggests that there were differences between the three conditions in dependent measures. Univariate results will be described below. There was no main effect for Order ($F(3,26)=.98, p=n.s.$), nor Order x Condition interaction ($F(3,26)=1.32, p=n.s.$). Therefore, the order in which subjects received the conditions did not appear to influence the dependent measures. In addition, there was no interaction
between the order of conditions and the conditions themselves.

Did the manipulation work?

Repeated measures analyses of variance (ANOVAR) were then computed for each post measure comparing the control condition to each of the experimental conditions (high responsibility, low responsibility). In order to control for the number of comparisons being made alpha level was set at $p=.025$ for all ANOVAR results. Significant results were then followed up using Dunnett planned comparisons.

The first question to be put to the test is whether the manipulation of perceived responsibility was effective. A univariate ANOVAR revealed that there was a difference between the three conditions on perceived responsibility ($F(2,58)=65.02$, $p<.001$). Dunnett planned comparisons indicated that the measure of perceived responsibility was significantly higher in the high responsibility condition than in the control condition ($t=4.85$, $p<.01$)(See Table 3). Similarly, Dunnett planned contrasts showed that perceived
responsibility scores were significantly lower in the low responsibility than in the control condition (t=6.52, p<.01). These analyses confirmed that the manipulation was successful; perceived responsibility scores in the high responsibility condition were higher than the control condition and perceived responsibility scores in the low responsibility condition were significantly lower than in the control condition.

Is there a causal relationship between perceived responsibility and compulsive checking?

Hypothesis 1 stated that there is a causal relationship between perceived responsibility and compulsive checking. In order to address this postulate, predictions 1a through 1f were tested. Prediction 1a stated that an increase in perceived responsibility would be followed by an increase in perceived discomfort. In contrast, Prediction 1d indicated that a decrease in perceived responsibility would be followed by a decrease in perceived discomfort. An ANOVAR indicated there was a difference between conditions in perceived discomfort
(F(2, 58) = 22.06, p < .001). Dunnett planned comparisons revealed that there was a trend for perceived discomfort levels to be greater in the high responsibility condition than in the control condition (t = 1.66, p < .10). Dunnett tests found that perceived discomfort scores were significantly lower in the low condition than in the control condition (t = 4.74, p < .01). Therefore, Prediction 1a and 1d were partially confirmed; there was a trend for an increase in perceived responsibility to be followed by an increase in perceived discomfort and a decrease in perceived responsibility.
Table 4
Dunnett Planned Comparisons
Post Scores (n=30)

<table>
<thead>
<tr>
<th></th>
<th>CONTROL</th>
<th>HI RESP</th>
<th>LO RESP</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>58.73 (20.06)</td>
<td>90.17 (24.55)</td>
<td></td>
<td>4.85**</td>
</tr>
<tr>
<td></td>
<td>58.73 (20.06)</td>
<td></td>
<td>16.47 (23.14)</td>
<td>6.52**</td>
</tr>
<tr>
<td>Urge to Check</td>
<td>68.73 (25.70)</td>
<td>79.50 (25.78)</td>
<td></td>
<td>1.39</td>
</tr>
<tr>
<td></td>
<td>68.73 (25.70)</td>
<td></td>
<td>35.00 (35.04)</td>
<td>4.35**</td>
</tr>
<tr>
<td>Discomfort</td>
<td>60.23 (22.57)</td>
<td>72.17 (27.50)</td>
<td></td>
<td>1.66</td>
</tr>
<tr>
<td></td>
<td>60.23 (22.57)</td>
<td></td>
<td>26.13 (31.40)</td>
<td>4.74**</td>
</tr>
<tr>
<td>Likely/Bad</td>
<td>53.83 (24.77)</td>
<td>59.57 (30.87)</td>
<td></td>
<td>.89</td>
</tr>
<tr>
<td></td>
<td>53.83 (24.77)</td>
<td></td>
<td>25.90 (24.18)</td>
<td>4.34**</td>
</tr>
<tr>
<td>Sev/Bad</td>
<td>66.77 (25.32)</td>
<td>73.50 (26.98)</td>
<td></td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>66.77 (25.32)</td>
<td></td>
<td>43.13 (32.59)</td>
<td>3.91**</td>
</tr>
</tbody>
</table>

* p<.05
**p<.01
Table 4 (Cont’d)
Dunnett Planned Comparisons
Post Scores (n=30)

<table>
<thead>
<tr>
<th></th>
<th>CONTROL</th>
<th>HI_RESP</th>
<th>LO RESP</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time/Bad</td>
<td>2.56 (1.01)</td>
<td>2.48 (1.25)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.56 (1.01)</td>
<td>2.63 (1.57)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Finish Check</td>
<td>7.03 (12.02)</td>
<td>9.00 (12.48)</td>
<td>.88</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.03 (12.02)</td>
<td>2.40 (3.40)</td>
<td>2.07*</td>
<td></td>
</tr>
<tr>
<td>Control/Bad</td>
<td>43.83 (30.73)</td>
<td>33.43 (39.41)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>43.83 (30.73)</td>
<td>28.13 (25.93)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Panic</td>
<td>1.60 (.72)</td>
<td>2.03 (.93)</td>
<td>2.50*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.60 (.72)</td>
<td>1.20 (.48)</td>
<td>2.31*</td>
<td></td>
</tr>
<tr>
<td>Lik/Criticism</td>
<td>56.30 (37.62)</td>
<td>73.77 (31.60)</td>
<td>2.19*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56.30 (37.62)</td>
<td>16.87 (25.79)</td>
<td>4.95**</td>
<td></td>
</tr>
<tr>
<td>Sev/Criticism</td>
<td>62.87 (29.92)</td>
<td>74.30 (31.19)</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>62.87 (29.92)</td>
<td>28.73 (32.44)</td>
<td>4.47**</td>
<td></td>
</tr>
</tbody>
</table>

* p<.05
**p<.01
Table 4 (Cont’d)
Dunnett Planned Comparisons

Post Scores (n=30)

<table>
<thead>
<tr>
<th></th>
<th>CONTROL</th>
<th>HI RESP</th>
<th>LO RESP</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control/Crit</td>
<td>34.70 (33.02)</td>
<td>37.13 (39.03)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34.70 (33.02)</td>
<td></td>
<td>34.40 (38.28)</td>
<td>n/a</td>
</tr>
<tr>
<td>Time/Crit</td>
<td>3.00 (2.04)</td>
<td>2.54 (1.30)</td>
<td></td>
<td>.72</td>
</tr>
<tr>
<td></td>
<td>3.00 (2.04)</td>
<td></td>
<td>4.27 (2.29)</td>
<td>3.01**</td>
</tr>
</tbody>
</table>

* p < .05

** p < .01
was followed by a decrease in perceived discomfort.

Prediction 1b stated that an increase in perceived responsibility would be followed by an increase in the urge to check and Prediction 1e put forward that decreases in perceived responsibility would result in decreases in the urge to check. The three conditions were shown to be significantly different in the urge to check ($F(2,58)=17.97$, $p<.001$). Dunnett planned comparisons showed that there was a trend for the urge to check to be greater in the high responsibility condition than in the control condition ($t=1.39$, $p<.10$). This same test revealed that the urge to check was significantly lesser in the low responsibility condition than in the control condition ($t=4.35$, $p<.01$). To summarize, prediction 1b and 1e were partially verified: there was a trend for an increase in perceived responsibility to be followed by an increase in the urge to check and a decrease in perceived responsibility was followed by a decrease in the urge to check.
Prediction 1c stated an increase in perceived responsibility would be followed by an increase in the estimated length of time needed to complete a check and Prediction 1e proposes that a decrease in perceived responsibility would be followed by a decrease in the estimated time needed to complete a check. An ANOVAR showed that the three conditions were significantly different in the estimated length of time needed to complete a check \((F(2,58)=4.58, p<.01)\). Dunnett planned contrasts found no significant difference in estimated length of time needed to complete a check when comparing the high responsibility condition to the control condition \((t=.88, p=n.s.)\). However, a significant difference emerged when examining the estimated length of time needed to finish checking in the low responsibility versus control conditions \((t=2.07, p<.05)\). Therefore, prediction 1c was not confirmed. There was no significant difference in the estimated length of time needed to complete a check in the high responsibility versus control conditions. In contrast prediction 1e was confirmed; decreases in
perceived responsibility were followed by decreases in the estimation of the time needed to complete a check.

**Do estimations of the timing of anticipated threat influence the probability of perceived panic?**

Hypothesis 2 stated that predictions of the timing of anticipated threat would influence the probability of perceived panic. Prediction 2a proposed that the more immediate the anticipated threat, the greater the probability of perceived panic. Similarly, Prediction 2b stated that the less immediate the anticipated threat, the lower the probability of perceived panic. Given that there were no differences between conditions in the timing of anticipated threat (see below), Pearson Correlations were computed, collapsed on condition, between the timing of anticipated threat and perceived panic scores. No significant correlation was found (r=.12, p=n.s.). Therefore, prediction 2a and 2b were not confirmed: the timing of anticipated threat did not appear to influence the probability of perceived panic.
Do variations in perceived responsibility alter estimations of the probability of anticipated harm?

Hypothesis 3 postulated that variations in perceived responsibility would not alter estimations of the probability of anticipated harm. In order to test this, Predictions 3a and 3b were put to the test. These predictions proposed that increases in perceived responsibility (Prediction 3a) or decreases in perceived responsibility (Prediction 3b) would both be followed by no change in the probability of anticipated harm. An ANOVAR revealed that the three conditions were significantly different ($F(2,58)=15.69$, $p<.001$). Dunnett planned comparisons found that decreases in perceived responsibility were followed by decreased estimated probability of anticipated harm ($t=4.34$, $p<.01$). No differences were found between increases in perceived responsibility and estimated probability of anticipated harm ($t=.89$, $p=n.s.$). Therefore, prediction 3a was confirmed; increases in perceived responsibility did not produce changes in the probability of anticipated harm. In contrast, prediction 3b was not confirmed; decreases in perceived
responsibility lead to decreases in the probability of anticipated harm.

Do variations in perceived responsibility alter estimations of the seriousness of anticipated harm?

Hypothesis 4 postulated that variations in perceived responsibility would not alter estimations of the seriousness of anticipated harm. Predictions arising from this premise, proposed that increases in perceived responsibility (prediction 4a) and decreases in perceived responsibility (prediction 4b) would both be followed by no change in the seriousness of anticipated harm. An ANOVAR showed that the three conditions were significantly different ($F(2,58)=13.91$, $p<.001$). Dunnett planned comparisons revealed that the seriousness of anticipated harm was significantly less in the low responsibility than in the control condition ($t=3.91$, $p<.01$). No difference was found in severity of anticipated harm in the high responsibility condition as compared to the control condition ($t=1.11$, $p=n.s.$). Therefore, Prediction 4a was confirmed: there was no difference in seriousness of anticipated harm in
the high responsibility condition as compared to the control condition. Prediction 4b was not confirmed; decreases in perceived responsibility were followed by decreases in the severity of anticipated harm.

Do variations in perceived responsibility alter estimations of when perceived harm will occur?

Hypothesis 5 stated that changes in perceived responsibility would not influence estimations of when perceived harm would occur. Two predictions were tested to examine this hypothesis. Predictions 5a proposed that increases in perceived responsibility would not change estimations of when the perceived harm would occur. Prediction 5b postulated that decreases in perceived responsibility would be followed by no change in when perceived harm would occur. An ANOVAR found no difference between conditions in when perceived harm would occur ($F(2,58)=.15, p=n.s.$). Therefore, Predictions 5a and 5b were confirmed. Variations in perceived responsibility did not alter estimations of when perceived harm would occur.
Do variations in perceived responsibility for anticipated harm influence amount of control over the pertinent anticipated threat?

Hypothesis 6 stipulated that changes in perceived responsibility were independent of a sense of control over the pertinent anticipated threat. Two predictions were put forward to test this postulate. Prediction 6a stated that an increase in perceived responsibility would not change degree of control and prediction 6b proposed that a decrease in perceived responsibility would not alter subjects' sense of control. An ANOVAR showed no difference between the conditions \((F(2,58)=1.69, p=n.s.)\). To summarize, Prediction 6a and 6b were confirmed: variations in perceived responsibility were independent of a sense of control.

Do variations in perceived responsibility influence the probability of anticipated criticism?

Hypothesis 7 postulated that changes in perceived responsibility would result in changes in the probability of anticipated criticism. Prediction 7a stated that increases in perceived responsibility would
lead to increases in the probability of anticipated criticism and Prediction 7b indicated that decreases in perceived responsibility would lead to decreases in the probability of anticipated criticism. The three conditions were found to be significantly different in the likelihood of anticipated criticism \( F(2,58)=26.81, p<.001 \). Dunnett planned comparisons revealed that increases in perceived responsibility were followed by increases in the likelihood of anticipated criticism \( t=2.19, p <.05 \) and decreases in perceived responsibility were followed by decreases in the likelihood of anticipated criticism \( t=4.95, p <.01 \). In sum, prediction 7a and 7b were confirmed: increases in perceived responsibility were followed by increases in the likelihood of anticipated criticism and decreases in perceived responsibility were followed by decreases in the likelihood of anticipated criticism.

**Do variations in perceived responsibility alter estimations of the severity of anticipated criticism?**

Hypothesis 8 stated that perceived responsibility would influence estimations of the
severity of anticipated criticism. Prediction 8a suggested an increase in perceived responsibility would be followed by an increase in the severity of anticipated criticism and Prediction 8b proposed that a decrease in perceived responsibility would be followed by a decrease in the severity of anticipated criticism. An ANOVAR found a significant difference between conditions ($F(2,58)=19.29, p<.001$). Dunnett planned comparisons revealed that there was a trend for severity of anticipated criticism to be greater in the high responsibility condition than in the control condition ($t=1.50, p <.10$). This same test found a significant difference between the low responsibility condition and control condition in severity of anticipated criticism ($t=4.47, p <.01$). Therefore, prediction 8a and 8b were partially confirmed. There was a trend for increases in perceived responsibility to produce increases in the severity of anticipated criticism. Decreases in perceived responsibility resulted in decreases in the severity of anticipated criticism.
Do variations in perceived responsibility alter estimations of the timing of anticipated criticism?

Hypothesis 9 postulated that changes in perceived responsibility would influence predictions of the timing of anticipated criticism. Prediction 9a proposed that increases in perceived responsibility would be followed by decreases in period of time before anticipated criticism. Similarly, Prediction 9b suggested that decreases in perceived responsibility would be followed by increases in estimated length of time before anticipated criticism. An ANOVAR found the three conditions to be significantly different ($F(2,58)=7.83$, $p<.001$). Dunnett planned comparisons showed that the low responsibility condition was significantly different from the control condition ($t=3.01$, $p<.01$). This same test found no difference between the high responsibility and control conditions ($t=.72$, $p=n.s.$). Therefore, prediction 9a was not confirmed: increases in perceived responsibility did not lead to a decrease in the estimated length of time before anticipated criticism. In contrast, prediction 9b was confirmed: decreases in perceived responsibility
lead to an increases in estimation of the estimated length of time before anticipated criticism.

Do variations in perceived responsibility influence estimations of the amount of control over anticipated criticism?

Hypothesis 10 stated that variations in perceived responsibility would not alter estimations of the amount of control over anticipated criticism. Prediction 10a postulated that increases in perceived responsibility would not lead to increases in control over anticipated criticism and Prediction 10b stated that decreases in perceived responsibility would not lead to decreases in control over anticipated criticism. A repeated measures ANOVA found no differences between conditions in control over anticipated criticism ($F(2, 58) = .08, p = \text{n.s.}$). Prediction 10a and 10b were therefore verified: variations in perceived responsibility did not appear to influence amount of control over anticipated criticism.
Correlations

Pearson correlations were computed between all dependent variables for each condition and are reported in Tables 5-7. Given the numbers of correlations being computed, alpha level was set at $p < .01$. Despite this adjustment the probability of a type 1 error remains exceedingly high and thus, interpretation is tenuous at best.

Correlations that are noteworthy in the control condition include the correlation between perceived responsibility and perceived discomfort ($r = .48$, $p < .01$). In the high responsibility condition, perceived responsibility was correlated with the urge to check ($r = .77$, $p < .001$), perceived discomfort ($r = .61$, $p < .001$), likelihood of anticipated threat ($r = .44$, $p < .01$), and severity of anticipated threat ($r = .67$, $p < .001$), likelihood of anticipated criticism ($r = .58$, $p < .001$), and severity of anticipated criticism ($r = .59$, $p < .001$). In the low responsibility condition, perceived responsibility was correlated with urge to check ($r = .52$, $p < .01$), perceived discomfort ($r = .58$, $p < .001$),
estimated length of time needed to finish checking (r = .44, p < .01), and perceived panic (r = .56, p < .001), likelihood of anticipated criticism (r = .85, p < .001), and severity of anticipated criticism (r = .65, p < .001).

Of interest are correlations that are present in one of the experimental conditions but absent in another. There are significant correlations between estimated length of time needed to finish checking and perceived responsibility, and perceived panic and perceived responsibility, in the low responsibility condition. These links disappear in the high responsibility condition. In addition, correlations between perceived responsibility and likelihood of anticipated threat, and perceived responsibility and severity of anticipated threat in the high responsibility condition are not found in the low responsibility condition.

**Trauma History**

During the course of the structured interview participants were asked if they had experienced physical, sexual or emotional abuse before 18 years of
age. Definitions were given for each category. Physical abuse was defined as "excessive physical punishment (i.e., more than a spanking)". Sexual abuse was defined as "any sexually inappropriate act (for example, fondling, masturbation, oral, anal or vaginal intercourse) or acts with sexual overtones to meet someone else's sexual or emotional needs". Emotional abuse was defined as "force to perform cruel or degrading tasks, or repeated humiliation and anticipated criticism (see appendix for precise questions).

Twenty three out of 30 participants or 73%, reported yes to at least one of these categories. Four of the 30 (13%) participants met criteria for physical abuse, 19 out of 30 met criteria for sexual abuse (63%) and 24 out of 30 (80%) met criteria for emotional abuse.

Given that this interview was exploratory no formal baserates have been established and thus comparison of these scores with other data could not be done.
TABLE 5
PEARSON CORRELATIONS
CONTROL CONDITION
(N=30)*

<table>
<thead>
<tr>
<th></th>
<th>URGE</th>
<th>DISC</th>
<th>RESP</th>
<th>LIKB</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>1.00**</td>
<td>.51</td>
<td>.21</td>
<td>.26</td>
</tr>
<tr>
<td>DISC</td>
<td>.51*</td>
<td>1.00**</td>
<td>.48*</td>
<td>.65**</td>
</tr>
<tr>
<td>RESP</td>
<td>.21</td>
<td>.48*</td>
<td>1.00**</td>
<td>.50*</td>
</tr>
<tr>
<td>LIKB</td>
<td>.26</td>
<td>.65**</td>
<td>.50*</td>
<td>1.00**</td>
</tr>
<tr>
<td>SEVB</td>
<td>-.11</td>
<td>-.04</td>
<td>.18</td>
<td>.34</td>
</tr>
<tr>
<td>FINISH</td>
<td>.14</td>
<td>.10</td>
<td>-.15</td>
<td>.26</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>.19</td>
<td>.06</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>PANIC</td>
<td>.05</td>
<td>.20</td>
<td>.33</td>
<td>.38</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>-.02</td>
<td>.25</td>
<td>.30</td>
<td>.61**</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>-.06</td>
<td>.34</td>
<td>.40</td>
<td>.53*</td>
</tr>
<tr>
<td>CONTROLCZ</td>
<td>-.08</td>
<td>.25</td>
<td>.19</td>
<td>-.01</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>-.19</td>
<td>-.41</td>
<td>-.14</td>
<td>-.44*</td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>-.28</td>
<td>-.07</td>
<td>.21</td>
<td>-.26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SEVB</th>
<th>FINISH</th>
<th>CONTROLBAD</th>
<th>PANIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>-.11</td>
<td>.14</td>
<td>.19</td>
<td>.05</td>
</tr>
<tr>
<td>DISC</td>
<td>-.03</td>
<td>.10</td>
<td>.06</td>
<td>.20</td>
</tr>
<tr>
<td>RESP</td>
<td>.18</td>
<td>-.15</td>
<td>.06</td>
<td>.32</td>
</tr>
<tr>
<td>LIKB</td>
<td>.34</td>
<td>.26</td>
<td>.06</td>
<td>.38</td>
</tr>
<tr>
<td>SEVB</td>
<td>1.00**</td>
<td>.45*</td>
<td>-.11</td>
<td>.33</td>
</tr>
<tr>
<td>FINISH</td>
<td>.45*</td>
<td>1.00**</td>
<td>-.08</td>
<td>.30</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>-.11</td>
<td>-.08</td>
<td>1.00**</td>
<td>-.15</td>
</tr>
<tr>
<td>PANIC</td>
<td>.33</td>
<td>.30</td>
<td>-.15</td>
<td>1.00**</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>.19</td>
<td>.24</td>
<td>.04</td>
<td>.18</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.43*</td>
<td>.32</td>
<td>-.13</td>
<td>.22</td>
</tr>
<tr>
<td>CONTROLCZ</td>
<td>-.16</td>
<td>-.19</td>
<td>.36</td>
<td>-.23</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>.07</td>
<td>.01</td>
<td>.00</td>
<td>-.17</td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>-.26</td>
<td>-.18</td>
<td>-.13</td>
<td>-.14</td>
</tr>
</tbody>
</table>

* p<.01
**p<.001
TABLE 5 (CONT’D)
PEARSON CORRELATIONS
CONTROL CONDITION
(N=30)*

<table>
<thead>
<tr>
<th></th>
<th>LIKCZ</th>
<th>SEVCZ</th>
<th>CONTROLZ</th>
<th>TIM/BAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>-.02</td>
<td>-.06</td>
<td>-.08</td>
<td>-.19</td>
</tr>
<tr>
<td>DISC</td>
<td>.25</td>
<td>.34</td>
<td>.25</td>
<td>-.41</td>
</tr>
<tr>
<td>RESP</td>
<td>.30</td>
<td>.40</td>
<td>.19</td>
<td>-.14</td>
</tr>
<tr>
<td>LIKB</td>
<td>.61**</td>
<td>.53*</td>
<td>-.01</td>
<td>-.44*</td>
</tr>
<tr>
<td>SEVB</td>
<td>.19</td>
<td>.43*</td>
<td>-.16</td>
<td>.07</td>
</tr>
<tr>
<td>FINISH</td>
<td>.24</td>
<td>.32</td>
<td>-.19</td>
<td>.01</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>.04</td>
<td>-.13</td>
<td>.36</td>
<td>.00</td>
</tr>
<tr>
<td>PANIC</td>
<td>.18</td>
<td>.22</td>
<td>-.23</td>
<td>-.17</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>1.0**</td>
<td>.69**</td>
<td>.02</td>
<td>-.39</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.69**</td>
<td>1.0**</td>
<td>.02</td>
<td>-.28</td>
</tr>
<tr>
<td>CONTROLZ</td>
<td>.02</td>
<td>.02</td>
<td>1.0**</td>
<td>.16</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>-.39</td>
<td>-.28</td>
<td>.16</td>
<td>1.0**</td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>-.19</td>
<td>-.12</td>
<td>.47*</td>
<td>.34</td>
</tr>
</tbody>
</table>

TIMCZ

<table>
<thead>
<tr>
<th></th>
<th>URGE</th>
<th>DISC</th>
<th>RESP</th>
<th>LIKB</th>
<th>SEVB</th>
<th>FINISH</th>
<th>CONTROLBAD</th>
<th>PANIC</th>
<th>LIKCZ</th>
<th>SEVCZ</th>
<th>CONTROLZ</th>
<th>TIM/BAD</th>
<th>TIMINGCZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>-.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISC</td>
<td>-.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESP</td>
<td>.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIKB</td>
<td>-.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEVB</td>
<td>-.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINISH</td>
<td>-.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>-.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANIC</td>
<td>-.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIKCZ</td>
<td>-.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEVCZ</td>
<td>-.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTROLZ</td>
<td>.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>-.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>1.0*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*LEGEND
URGE    URGE TO CHECK
DISC    DISCOMFORT EXPERIENCED
RESP    RESPONSIBILITY
LIKZ    LIKELIHOOD OF THREAT
SEVB    SEVERITY OF THREAT
FINISH  TIME TO FINISH CHECKING
CONTROLBAD CONTROL OVER THREAT
PANIC   REPORTED PANIC
LIKZ    LIKELIHOOD OF CRITICISM
SEVB    SEVERITY OF CRITICISM
CONTROLZ CONTROL OVER CRITICISM
TIM/BAD TIMING OF THREAT
TIMINGCZ TIMING OF CRITICISM
<table>
<thead>
<tr>
<th></th>
<th>URGE</th>
<th>DISC</th>
<th>RESP</th>
<th>LIKB</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>1.00**</td>
<td>.77**</td>
<td>.77**</td>
<td>.45*</td>
</tr>
<tr>
<td>DISC</td>
<td>.77**</td>
<td>1.00**</td>
<td>.61**</td>
<td>.65**</td>
</tr>
<tr>
<td>RESP</td>
<td>.77**</td>
<td>.61**</td>
<td>1.00**</td>
<td>.44*</td>
</tr>
<tr>
<td>LIKB</td>
<td>.45*</td>
<td>.65**</td>
<td>.44*</td>
<td>1.00**</td>
</tr>
<tr>
<td>SEVB</td>
<td>.45*</td>
<td>.65**</td>
<td>.67**</td>
<td>.54*</td>
</tr>
<tr>
<td>FINISH</td>
<td>.34</td>
<td>.09</td>
<td>.18</td>
<td>.22</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>.06</td>
<td>.12</td>
<td>.24</td>
<td>.01</td>
</tr>
<tr>
<td>PANIC</td>
<td>.57**</td>
<td>.65**</td>
<td>.30</td>
<td>.60**</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>.57**</td>
<td>.63**</td>
<td>.58**</td>
<td>.70**</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.57**</td>
<td>.67**</td>
<td>.59**</td>
<td>.76**</td>
</tr>
<tr>
<td>CONTROL/CZ</td>
<td>-.50*</td>
<td>-.46*</td>
<td>-.30</td>
<td>-.20</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>.03</td>
<td>-.10</td>
<td>.11</td>
<td>-.29</td>
</tr>
<tr>
<td>TIMING/CZ</td>
<td>-.51*</td>
<td>-.50*</td>
<td>-.46*</td>
<td>-.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SEVB</th>
<th>FINISH</th>
<th>CONTROLBAD</th>
<th>PANIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>.45*</td>
<td>.34</td>
<td>.06</td>
<td>.57**</td>
</tr>
<tr>
<td>DISC</td>
<td>.65**</td>
<td>.09</td>
<td>.12</td>
<td>.65**</td>
</tr>
<tr>
<td>RESP</td>
<td>.67**</td>
<td>.18</td>
<td>.24</td>
<td>.30</td>
</tr>
<tr>
<td>LIKB</td>
<td>.54*</td>
<td>.22</td>
<td>.01</td>
<td>.60**</td>
</tr>
<tr>
<td>SEVB</td>
<td>1.00**</td>
<td>.03</td>
<td>-.01</td>
<td>.33</td>
</tr>
<tr>
<td>FINISH</td>
<td>.03</td>
<td>1.00**</td>
<td>.12</td>
<td>.23</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>-.01</td>
<td>.12</td>
<td>1.00**</td>
<td>.12</td>
</tr>
<tr>
<td>PANIC</td>
<td>.33</td>
<td>.23</td>
<td>.12</td>
<td>1.00**</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>.53*</td>
<td>.30</td>
<td>.11</td>
<td>.44*</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.59**</td>
<td>.36</td>
<td>.08</td>
<td>.53*</td>
</tr>
<tr>
<td>CONTROL/CRIT</td>
<td>-.37</td>
<td>-.15</td>
<td>.53*</td>
<td>-.14</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>.09</td>
<td>-.30</td>
<td>-.08</td>
<td>-.02</td>
</tr>
<tr>
<td>TIMING/CZ</td>
<td>-.20</td>
<td>-.26</td>
<td>-.23</td>
<td>-.27</td>
</tr>
</tbody>
</table>

* p<.01
**p<.001
TABLE 6 (CONT’D)
PEARSON CORRELATIONS
HIGH RESPONSIBILITY CONDITION
(N=30)*

<table>
<thead>
<tr>
<th></th>
<th>LIKCZ</th>
<th>SEVCZ</th>
<th>CONTROLCZ</th>
<th>TIM/BAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>.57**</td>
<td>.57**</td>
<td>-.50*</td>
<td>.03</td>
</tr>
<tr>
<td>DISC</td>
<td>.63**</td>
<td>.67**</td>
<td>-.46*</td>
<td>-.10</td>
</tr>
<tr>
<td>RESP</td>
<td>.58**</td>
<td>.59**</td>
<td>-.30</td>
<td>.11</td>
</tr>
<tr>
<td>LIKB</td>
<td>.70**</td>
<td>.76**</td>
<td>-.20</td>
<td>-.29*</td>
</tr>
<tr>
<td>SEVB</td>
<td>.53*</td>
<td>.59**</td>
<td>-.37</td>
<td>.09</td>
</tr>
<tr>
<td>FINISH</td>
<td>.30</td>
<td>.36</td>
<td>-.15</td>
<td>-.30</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>.11</td>
<td>.08</td>
<td>.53*</td>
<td>-.08</td>
</tr>
<tr>
<td>PANIC</td>
<td>.44*</td>
<td>.53*</td>
<td>-.14</td>
<td>-.02</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>1.0**</td>
<td>.91**</td>
<td>-.29</td>
<td>-.23</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.91**</td>
<td>1.0**</td>
<td>-.31</td>
<td>-.12</td>
</tr>
<tr>
<td>CONTROL/CRIT</td>
<td>-.29</td>
<td>-.31</td>
<td>1.0**</td>
<td>.08</td>
</tr>
<tr>
<td>TIMING/BAD</td>
<td>-.23</td>
<td>-.12</td>
<td>.08</td>
<td>1.0**</td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>-.36</td>
<td>-.47*</td>
<td>.29</td>
<td>.18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TIM/BAD</th>
<th>TIMINGCZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>-.51*</td>
<td></td>
</tr>
<tr>
<td>DISC</td>
<td>-.50</td>
<td></td>
</tr>
<tr>
<td>RESP</td>
<td>-.46*</td>
<td></td>
</tr>
<tr>
<td>LIKB</td>
<td>-.40</td>
<td></td>
</tr>
<tr>
<td>SEVB</td>
<td>-.20</td>
<td></td>
</tr>
<tr>
<td>FINISH</td>
<td>-.26</td>
<td></td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>-.23</td>
<td></td>
</tr>
<tr>
<td>PANIC</td>
<td>-.27</td>
<td></td>
</tr>
<tr>
<td>LIKCZ</td>
<td>-.36</td>
<td></td>
</tr>
<tr>
<td>SEVCZ</td>
<td>-.47</td>
<td></td>
</tr>
<tr>
<td>CONTROL/CRIT</td>
<td>.29*</td>
<td></td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>.18</td>
<td></td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>1.0**</td>
<td></td>
</tr>
</tbody>
</table>

*LEGEND
URGE = URGE TO CHECK
DISC = DISCOMFORT EXPERIENCED
RESP = RESPONSIBILITY
LIK = LIKELIHOOD OF THREAT
SEV = SEVERITY OF THREAT
CON = CONTROL OVER THREAT
PAN = REPORTED PANIC
LIK = LIKELIHOOD OF CRITICISM
SEV = SEVERITY OF CRITICISM
CON = CONTROL OVER CRITICISM
TIM = TIMING OF THREAT
TIM = TIMING OF CRITICISM
TABLE 7
PEARSON CORRELATIONS
LOW RESPONSIBILITY CONDITION
(N=30)*

<table>
<thead>
<tr>
<th></th>
<th>URGE</th>
<th>DISC</th>
<th>RESP</th>
<th>LIKB</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>1.00**</td>
<td>.78**</td>
<td>.52*</td>
<td>.44*</td>
</tr>
<tr>
<td>DISC</td>
<td>.78**</td>
<td>1.00**</td>
<td>.58**</td>
<td>.51*</td>
</tr>
<tr>
<td>RESP</td>
<td>.52*</td>
<td>.58**</td>
<td>1.00**</td>
<td>.40</td>
</tr>
<tr>
<td>LIKB</td>
<td>.44*</td>
<td>.51*</td>
<td>.40</td>
<td>1.00**</td>
</tr>
<tr>
<td>SEVB</td>
<td>.32</td>
<td>.37</td>
<td>.41</td>
<td>.35</td>
</tr>
<tr>
<td>FINISH</td>
<td>.42</td>
<td>.37</td>
<td>.44*</td>
<td>.17</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>.37</td>
<td>.37</td>
<td>.39</td>
<td>.21</td>
</tr>
<tr>
<td>PANIC</td>
<td>.51*</td>
<td>.61**</td>
<td>.56**</td>
<td>.59**</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>.43*</td>
<td>.55**</td>
<td>.85**</td>
<td>.47*</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.41</td>
<td>.45*</td>
<td>.65**</td>
<td>.35</td>
</tr>
<tr>
<td>CONTROL/CZ</td>
<td>.24</td>
<td>.24</td>
<td>.11</td>
<td>-.01</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>-.11</td>
<td>-.13</td>
<td>.18</td>
<td>-.28</td>
</tr>
<tr>
<td>TIMING/CZ</td>
<td>-.16</td>
<td>-.03</td>
<td>-.34</td>
<td>-.13</td>
</tr>
</tbody>
</table>

* p<.01
**p<.001

<table>
<thead>
<tr>
<th></th>
<th>SEVB</th>
<th>FINISH</th>
<th>CONTROLBAD</th>
<th>PANIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>.32</td>
<td>.42</td>
<td>.37</td>
<td>.51*</td>
</tr>
<tr>
<td>DISC</td>
<td>.37</td>
<td>.37</td>
<td>.37</td>
<td>.61**</td>
</tr>
<tr>
<td>RESP</td>
<td>.41</td>
<td>.44*</td>
<td>.39</td>
<td>.56**</td>
</tr>
<tr>
<td>LIKB</td>
<td>.35*</td>
<td>.17</td>
<td>.21</td>
<td>.59**</td>
</tr>
<tr>
<td>SEVB</td>
<td>1.00**</td>
<td>.48*</td>
<td>.00</td>
<td>.41</td>
</tr>
<tr>
<td>FINISH</td>
<td>.48*</td>
<td>1.00**</td>
<td>.41</td>
<td>.10</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>-.00</td>
<td>.41</td>
<td>1.00**</td>
<td>.10</td>
</tr>
<tr>
<td>PANIC</td>
<td>.41</td>
<td>.10</td>
<td>.10</td>
<td>1.00**</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>.38</td>
<td>.21</td>
<td>.21</td>
<td>.77**</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>.38</td>
<td>.11</td>
<td>-.02</td>
<td>.61**</td>
</tr>
<tr>
<td>CONTROL/CRT</td>
<td>.08</td>
<td>.16</td>
<td>.71**</td>
<td>.06</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>-.16</td>
<td>.02</td>
<td>-.03</td>
<td>-.13</td>
</tr>
<tr>
<td>TIMING/CZ</td>
<td>-.25</td>
<td>.01</td>
<td>.21</td>
<td>-.20</td>
</tr>
</tbody>
</table>
TABLE 7 (CONT’D)
PEARSON CORRELATIONS
LOW RESPONSIBILITY CONDITION
(N=30)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>LIKCZ</th>
<th>SEVCZ</th>
<th>CONTROLZ</th>
<th>TIM/BAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>URGE</td>
<td>.43*</td>
<td>.41</td>
<td>.24</td>
<td>-.11</td>
</tr>
<tr>
<td>DISC</td>
<td>.55**</td>
<td>.45*</td>
<td>.24</td>
<td>-.13</td>
</tr>
<tr>
<td>RESP</td>
<td>.85**</td>
<td>.65**</td>
<td>.11</td>
<td>.18</td>
</tr>
<tr>
<td>LIKB</td>
<td>.47*</td>
<td>.35</td>
<td>-.01</td>
<td>-.28</td>
</tr>
<tr>
<td>SEVB</td>
<td>.38</td>
<td>.38</td>
<td>.08</td>
<td>-.16</td>
</tr>
<tr>
<td>FINISH</td>
<td>.21</td>
<td>.11</td>
<td>.16</td>
<td>.02</td>
</tr>
<tr>
<td>CONTROLBAD</td>
<td>.21</td>
<td>-.02</td>
<td>.71**</td>
<td>-.03</td>
</tr>
<tr>
<td>PANIC</td>
<td>.77**</td>
<td>.61**</td>
<td>.06</td>
<td>-.13</td>
</tr>
<tr>
<td>LIKCZ</td>
<td>1.0**</td>
<td>.76**</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>SEVCZ</td>
<td>76</td>
<td>1.0**</td>
<td>-.18</td>
<td>.03</td>
</tr>
<tr>
<td>CONTROL/CRIT</td>
<td>.02</td>
<td>-.18</td>
<td>1.0**</td>
<td>-.06</td>
</tr>
<tr>
<td>TIM/BAD</td>
<td>.01</td>
<td>.03</td>
<td>-.06</td>
<td>1.00**</td>
</tr>
<tr>
<td>TIMINGCZ</td>
<td>-.40</td>
<td>-.27</td>
<td>.25</td>
<td>.09</td>
</tr>
</tbody>
</table>

*LEGEND
URGE TO CHECK
DISCOMFORT EXPERIENCED
RESPONSIBILITY
LIKELYHOOD OF THREAT
SEVERITY OF THREAT
TIME TO FINISH CHECKING
REPORTED PANIC
CONTROL OVER THREAT
LIKELIHOOD OF CRITICISM
SEVERITY OF CRITICISM
CONTROL OVER CRITICISM
TIMING OF THREAT
TIMING OF CRITICISM
FIGURE 1
SCHEMATIC REPRESENTATION OF RESULTS

RESPONSIBILITY

INCREASES
URGE TO CHECK
DISCOMFORT
PANIC
LIKELIHOOD OF CRITICISM
SEVERITY OF CRITICISM

DECREASES
URGE TO CHECK
DISCOMFORT
LIKELIHOOD OF THREAT
SEVERITY OF THREAT
TIME TO FINISH CHECKING
PANIC
LIKELIHOOD OF CRITICISM
SEVERITY OF CRITICISM
TIMING OF CRITICISM
Summary of Results

Hypotheses and Predictions

Hypothesis 1

There is a causal relationship between perceived responsibility and intended compulsive checking.

Prediction 1a. An increase in perceived responsibility will be followed by an increase in perceived discomfort.

This prediction was partially confirmed. There was a trend for an increase in perceived responsibility to lead to an increase in perceived discomfort (t=1.66, p <.10).

Prediction 1b. An increase in perceived responsibility will be followed by an increase in the urge to complete a check.

This prediction was partially confirmed. There was a trend for an increase in perceived responsibility to
lead to an increase in the urge to check \( (t=1.39, p < 0.10) \).

**Prediction 1c.** An increase in perceived responsibility will be followed by an increase in the estimated length of time needed to complete a check.

This prediction was not confirmed \( (t=.88, p=n.s.) \).

**Prediction 1d.** A decrease in perceived responsibility will be followed by a decrease in perceived discomfort.

This prediction was confirmed \( (t=4.74, p < .01) \).

**Prediction 1e.** A decrease in perceived responsibility will be followed by a decrease in the urge to check.

This prediction was confirmed \( (t=4.35, p < .01) \).

**Prediction 1f.** A decrease in perceived responsibility will be followed by a decrease in the estimated length of time needed to check.

This prediction was confirmed \( (t=2.07, p < .05) \).
Hypothesis 2

Estimations of the timing of anticipated threat influence the probability of perceived panic.

Prediction 2a. The more immediate the anticipated threat, the greater the probability of perceived panic.

This prediction was not confirmed.

Prediction 2b. The less immediate the anticipated threat, the lower the probability of perceived panic.

This prediction was not confirmed.

Hypothesis 3

Variations in perceived responsibility do not alter estimations of the probability of anticipated harm.

Prediction 3a. An increase in perceived responsibility will be followed by no change in the probability of anticipated harm.

This prediction was confirmed (t=.89, p=n.s.).
**Prediction 3b.** A decrease in perceived responsibility will be followed by no change in the estimated probability of anticipated harm.

This prediction was not confirmed ($t=4.34$, $p<.01$).

**Hypothesis 4**

Variations in perceived responsibility do not alter estimations of the seriousness of anticipated harm.

**Prediction 4a.** An increase in perceived responsibility will be followed by no change in the estimated seriousness of anticipated harm.

This prediction was confirmed ($t=1.11$, $p=n.s.$).

**Prediction 4b.** A decrease in perceived responsibility will be followed by no change in the estimated seriousness of anticipated harm.

This prediction was not confirmed ($t=3.91$, $p<.01$).
Hypothesis 5

Variations in perceived responsibility do not alter estimations of when perceived harm will occur.

Prediction 5a. An increase in perceived responsibility will be followed by no change in when perceived harm will occur.

This prediction was confirmed.

Prediction 5b. A decrease in perceived responsibility will be followed by no change in when perceived harm will occur.

This prediction was confirmed.

Hypothesis 6

Perceived responsibility for anticipated harm is independent of a sense of control over the pertinent anticipated threat.
Prediction 6a. An increase in perceived responsibility will not alter estimations of amount of controllability.

This prediction was confirmed.

Prediction 6b. A decrease in perceived responsibility will not influence estimations of amount of controllability.

This prediction was confirmed.

Hypothesis 7

Variations in perceived responsibility will alter estimations of the likelihood of anticipated criticism.

Prediction 7a. An increase in perceived responsibility will be followed by an increase in the likelihood of anticipated criticism.

This prediction was confirmed ($t=2.19, p<.05$).

Prediction 7b. A decrease in perceived responsibility will be followed by a decrease in the likelihood of anticipated criticism.
This prediction was confirmed ($t=4.95$, $p<.01$).

Hypothesis 8

Variations in perceived responsibility will alter estimations of the severity of anticipated criticism.

Prediction 8a. An increase in perceived responsibility will be followed by an increase in the severity of anticipated criticism.

This prediction was partially confirmed ($t=1.50$, $p<.10$). There was a trend for increases in perceived responsibility to be followed by an increase in the severity of anticipated criticism.

Prediction 8b. A decrease in perceived responsibility will be followed by a decrease in the severity of anticipated criticism.

This prediction was confirmed ($t=4.47$, $p<.01$).

Hypothesis 9

Variations in perceived responsibility will alter estimations of the timing of anticipated criticism.
**Prediction 9a.** An increase in perceived responsibility will be followed by a decrease in the estimated length of time before anticipated criticism.

This prediction was not confirmed \((t=.72, \ p=n.s.)\).

**Prediction 9b.** A decrease in perceived responsibility will be followed by an increase in the estimated length of time before anticipated criticism.

This prediction was confirmed \((t=3.01, \ p<.01)\).

**Hypothesis 10**

Perceived responsibility for anticipated harm is independent of a sense of control over anticipated criticism.

**Prediction 10a.** An increase in perceived responsibility will not alter estimations of amount of controllability over anticipated criticism.

This prediction was confirmed.
**Prediction 10b.** A decrease in perceived responsibility will not influence estimations of amount of controllability over anticipated criticism.

This prediction was confirmed.
DISCUSSION

Results confirm there was a very powerful manipulation of responsibility in this study. There was approximately a 74/100 point difference in the mean perceived responsibility score reported in the high responsibility condition versus the low responsibility condition.

Decreases in perceived responsibility produced decreases in perceived discomfort, urge to check, probability of anticipated harm, severity of anticipated harm, estimated length of time needed to finish checking, perceived panic, likelihood of anticipated criticism, timing of anticipated criticism and severity of anticipated criticism. The only variables not significantly affected by decreases in perceived responsibility had to do with control and timing of anticipated harm: control over the bad thing happening, control over anticipated criticism and timing of anticipated harm.
On the other hand, increases in perceived responsibility lead to increases in perceived panic and likelihood of anticipated criticism. Several trends were present. There were trends for increases in perceived responsibility to lead to increases in perceived discomfort experienced, urge to check, and severity of anticipated criticism. Increases in perceived responsibility did not effect the estimated probability of anticipated harm occurring, nor severity of anticipated harm, estimated length of time needed to complete a check, timing of anticipated harm, timing of anticipated criticism, control over anticipated harm nor control over anticipated criticism (See Figure 1).

To summarize, the four main conclusions from this analysis were:

1) there is a connection between decreases in perceived responsibility and compulsive checking

2) decreases in perceived responsibility affect both the estimated probability of anticipated harm and its consequences
3) there is no relationship between variations in perceived responsibility and extent of controllability

4) there is a relationship between perceived responsibility and anticipated criticism.

Unexpected Findings

There were several unexpected findings in this study. First, the effects of variations in perceived responsibility appeared to be stronger in the low responsibility condition than in the high responsibility condition. Upon examination of the means for perceived responsibility, the weaker effects present in the high responsibility condition may in part be due to a ceiling effect. Perceived responsibility scores in the control condition were roughly 60/100 and therefore participants may be considered moderately responsible from the start. Attempting to increase perceived responsibility from this already high starting point was possible but quickly reached maximum scores (the mean was 90.17). Twenty-six of 30 participants scored 90/100 or above in this condition suggesting overall a high mode but there
was little room to move beyond a 90/100 point mean. Examination of the means on urge to check, discomfort experienced likelihood of bad thing happening, severity of anticipated harm, and estimated length of time to finish checking were all in the predicted direction. Due to the small sample size it was not possible to do a formal analysis on this group of 26 participants who responded more vs. the 4 participants who responded less to the manipulation. A rudimentary analysis found no differences between those participants who responded more and those who responded less to the manipulation on the dependent measures.

Means were computed for all variables from participants who scored 90 or above in the high responsibility condition and compared to the sample of 30 (see Table 8). Although not formally analysed, in comparison to the sample of 30, the means appeared to be even further in the predicted direction. Again, this rudimentary look at the data suggests ceiling effects may have been present.
One possible solution to this apparent ceiling effect would be to start with lower perceived responsibility scores in the control condition. However, this type of design may lead to floor effects in the low responsibility condition. A second possible solution would be to increase sample size and subsequent power. The feasibility of collecting a sample of greater than 30 with this population would be somewhat daunting and impractical.

Hence, the present design, despite its limitations appears to be the best possible option. Future research may consider examining solely increases in perceived responsibility or decreases in perceived responsibility to clarify whether the smaller effects found in this study in the high responsibility condition were mitigated by ceiling effects.

A second unexpected finding appeared upon analyzing the data pertaining to Hypothesis 2 which stated that estimations of the timing of anticipated threat would influence the probability of perceived panic. This hypothesis was not confirmed. In fact,
Table 8
Hi Responsibility Condition
Perceived responsibility >90/100
Means and Standard Deviations
(n=26)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urge to Check</td>
<td>86.15</td>
<td>(15.58)</td>
</tr>
<tr>
<td>Discomfort</td>
<td>76.92</td>
<td>(22.72)</td>
</tr>
<tr>
<td>Responsibility</td>
<td>97.69</td>
<td>(4.06)</td>
</tr>
<tr>
<td>Likely/Bad</td>
<td>63.54</td>
<td>(29.39)</td>
</tr>
<tr>
<td>Sev/Bad</td>
<td>78.27</td>
<td>(20.25)</td>
</tr>
<tr>
<td>Time/Bad</td>
<td>2.58</td>
<td>(1.36)</td>
</tr>
<tr>
<td>Finish Check</td>
<td>9.65</td>
<td>(13.26)</td>
</tr>
<tr>
<td>Control/Bad</td>
<td>37.15</td>
<td>(40.81)</td>
</tr>
<tr>
<td>Panic</td>
<td>2.12</td>
<td>(.91)</td>
</tr>
<tr>
<td>Lik/Criticism</td>
<td>78.19</td>
<td>(27.01)</td>
</tr>
<tr>
<td>Sev/Criticism</td>
<td>78.50</td>
<td>(26.40)</td>
</tr>
<tr>
<td>Control /Criticism</td>
<td>34.70</td>
<td>(33.02)</td>
</tr>
<tr>
<td>Time/Criticism</td>
<td>2.46</td>
<td>(1.07)</td>
</tr>
</tbody>
</table>
Pearson Correlations between timing of anticipated threat and all other variables collapsed on condition, as well as broken down by condition, failed to turn up any significant association. Examination of the distribution of scores on timing of anticipated threat produced no clear indication as to the negative finding. Scores on this variable appeared to be random with no clear pattern emerging.

It may be that this question was rather abstract for those with compulsive checking problems. The precise wording on this question was "When would the "bad thing" happen?" For example, if the "bad thing" was that their house would burn down, asking exactly when that would occur might seem too removed or abstract for individuals who compulsively check. Compulsive checkers may be too involved in preventing the negative event from occurring to consider exactly when it would occur. Future research may need to consider finding a different way of probing the immediacy of anticipated threat. Alternatively, it may be that the timing of anticipated threat has little to do with perceived panic. Perceived panic scores in
this investigation were more highly correlated with discomfort experienced, severity of anticipated harm, likelihood and severity of anticipated criticism. Perhaps the timing of when anticipated harm would occur is of little consequence for those with this disorder. Again, future research is needed to determine what association, if any, there is between immediacy of anticipated threat and perceived panic.

Theoretical Implications

The results of the current investigation provide support for Salkovskis' (1985) cognitive model of obsessions and compulsions. As Salkovskis' (1985) proposes, the results of this study suggest perceived responsibility does appear to play a central role in compulsive checking. The effects appear to be most striking when perceived responsibility is reduced. Salkovskis' (1985) position of influencing perceived responsibility in order to decrease compulsive rituals rather than attempting to modify beliefs of harm received support from this study. On a more clinical note, and as someone who has painstakingly implemented
behaviour therapy, the effects of a reduction in perceived responsibility using cognitive procedures were dramatic. With several participants, I observed a marked change in overt signs of anxiety such as fidgeting, eye contact and hypervigilance. Some spoke of the freedom they felt in transferring the responsibility, others were themselves surprised at how relaxed they felt, still others spoke of having a heavy burden removed from their shoulders albeit temporarily. Future research may need to examine these apparent noted changes more closely, but as a first attempt I was truly amazed at the verbal as well as non-verbal changes when perceived responsibility was reduced.

Results from this exploratory study help provide a basis for making more precise, clear hypotheses and predictions about how variations in perceived responsibility influence compulsive checking. Future research needs to examine whether an asymmetry exists in varying levels of perceived responsibility or whether the results obtained are due to a ceiling effect.
The results begin to provide explanation for some of the unexplained findings of earlier work. For example, Rachman and Hodgson (1980) noted that they were unable to provoke the urge to check in their laboratory. They correctly concluded that perceived responsibility may have been a central feature of this failure to provoke checking. The central role of responsibility also helps explain the lack of generalization in exposure plus response prevention. It may be that the effects of exposure were limited because we were working around the edges of the fear network rather than getting to the heart of the disorder, as influencing responsibility appears to do.

The results of this study begin to specify how depression may be linked to compulsive checking. Salkovskis' (1985) model suggests depression is connected to compulsive checking but does not specify the parameters of this relationship. This study suggests that the links between responsibility and controllability, and responsibility and probability and severity of harm occurring may play pivotal roles in modulating mood. I will elaborate on these
relationships later under the heading of cognitive biases and depression and compulsive checking.

Maintenance

Compulsive checking fueled by a heightened sense of responsibility serves to foster safety through preventing danger from occurring. The results of this study suggest compulsive checking may also be a means of preventing criticism. Seligman (1975) views successful extinction as a function of how likely the individual is to sample disconfirmation. For the individual who compulsively checks, the only way to expose oneself to disconfirmation is to not perform the avoidance behaviour, or in other words, to refrain from checking. Unfortunately, for individuals with this problem, disconfirmatory experiences of not anticipated criticism, and the absence of danger and harm cannot occur until the person risks not checking. If one has a heightened sense of responsibility and a propensity for compulsive checking the results of this study suggest several cognitive biases may contribute to the
individual not taking the necessary risk of not checking leading to discomformatory evidence.

The Role of Cognitive Biases in Maintenance

Compulsive checking, however futile, is ultimately a method of searching for faults or imperfections to prevent future danger, harm or criticism. Miller and Porter's (1983) interpretation of increased sense of control with self-blame infers that logically, there is a direct link between responsibility and controllability. Compulsive checkers may fail to experience this connection. The current study provides evidence to support the notion that compulsive checking may be tied to the faulty assumption that if one is responsible and checks repeatedly, control and safety will follow. This faulty belief may be open to modification through cognitive therapy and will be discussed below.

Cognitive biases may be central in maintenance of compulsive checking through decreasing safety and increasing a sense of failure and helplessness. Three main sources of bias have been uncovered in this
investigation. First, that the probability of a bad event occurring changes with the transfer of responsibility. For the compulsive checker, decreases in perceived responsibility result in decreases in the probability of the bad event. Second, that the seriousness of harm changes with the transfer of perceived responsibility. A similar pattern as with the probability of the bad event was found: decreases in perceived responsibility lead to decreases in the seriousness of harm. Third, that amount of control experienced does not change with variations in perceived responsibility. Therefore, regardless of extent of perceived responsibility, amount of control experienced was not influenced.

Taken together, these findings suggest a rather hopeless scenario for the person with compulsive checking: if one takes responsibility, then the belief is that something bad will be more likely to happen and the bad event will be more severe than if someone else had the responsibility. This heightened sense of something bad occurring and increased severity of harm when responsibility is taken is coupled with no changes
in perceived controllability. Notably, the sense of heightened responsibility is not open to question. Overall, it can be stated that the compulsive checker has an increased sense of responsibility, likelihood of harm, and severity of harm but no enhanced sense of control.

Compulsive Checking and Depression

The biases noted above readily bring to mind the literature on uncontrollable events and its effects on emotional processing. In particular, Seligman’s (1975) work suggesting that the effects of a history of uncontrollable events coupled with perceived danger will often lead to depression appears to be of significance in this analysis. If one takes into consideration the added feature of being highly responsible in concert with having little control, the situation is doubly stacked for experience of failure and helplessness. It seems reasonable that if compulsive checkers process negative events with the biases delineated above, depression may be one of the natural outcomes. That is, if one feels highly
responsible for danger or harm to others but has little control over preventing the catastrophic event, a sense of failure and overriding feeling of helplessness will follow.

The high co-morbidity rates between OCD and depression gives further credence to this formulation (Rachman & Hodgson, 1980). In fact, moderate levels of depression are a negative prognostic indicator for behavioural treatment of OCD (Foa, 1979). The enveloping sense of hopelessness and helplessness that is often linked with this problem may undermine the motivational factors and risk taking necessary for successful repeated trials of exposure and response prevention. Overall, it may be that the cognitive biases intimately linked to an exaggerated sense of responsibility are the critical factors in maintaining compulsive checking and associated depression.

**Compulsive Checking and Criticism**

This study provides support for the notion that compulsive checking may serve as means of preventing danger, or its emotional counterpart, criticism. More
specifically, we found that the likelihood and severity of anticipated criticism varied with levels of perceived responsibility for compulsive checkers. Increases in perceived responsibility lead to increases in the probability of anticipated criticism and in the severity of anticipated criticism. Decreases in perceived responsibility resulted in decreases in the likelihood of anticipated criticism and in the severity of anticipated criticism. According to the Just World Hypotheses (Lerner, 1977) if one were highly responsible, had maximum control and something bad happened, the chance that one would be blamed and to extrapolate, criticized by others may increase as well as the severity of anticipated criticism. The reverse holds true. However, the results of this investigation, point to the paradox of being highly responsible and yet experiencing little control. This potentially helpless scenario may be thwarted through compulsively checking. The result is that the compulsive checking may protect one from feeling highly vulnerable to criticism.
Rachman (1975) points to an intriguing relationship between inflated responsibility and criticism. He proposed that only acts for which one is deemed responsible is there likely to be feelings of guilt or criticism. That is, if the individual who compulsively checks is not held responsible for the act or the results of the act, then he/or she cannot be criticized for the action. He goes on to say that the reason most checking often occurs at home is that this situation is one where we would be most likely to have the highest level of responsibility. In addition it follows that the fear of criticism is strongest in relation to close friends and family who are often in our homes. Periods of depression serve to intensify sensitivity to criticism and feelings of responsibility.

According to Rachman (1975) a potential weakness of this analysis is that many family members ultimately criticize checking behaviour. He provides two explanations for the maintenance of checking despite the presence of criticism. First, punishment of any active avoidance behaviour such as compulsive checking
may in some instances led to a increase in the magnitude and resiliency of the avoidance behaviour. Therefore, being criticized may serve to increase rather than decrease the checking. Second, the checking behaviour may turn into stereotyped, active avoidance which is relatively independent from its original source (Rachman, 1975).

To summarize, compulsive checking may serve to provide safety through preventing future disaster or criticism. Cognitive biases surrounding controllability, probability and consequences of a negative event may undermine safety and keep compulsive checkers in a powerless, depressive state.

Limitations of Within Subject Design

One of the limitations associated with the choice of a within subject design is the possibility that participants responses may have changed systematically during the course of repeated testings. This type of change, commonly referred to as a practice effect could manifest itself through producing either positive (i.e. general improvement) or negative effects (e.g.
fatigue). Only the condition given first is not affected by practice effects. In order to minimize this problem in the current study the order of conditions was counterbalanced. In addition, analyses were conducted to examine the possible impact of such practice effects. Although, results suggest no significant influence, the possibility of some error being attributed to this effect cannot be ruled out.

A second potential source of systematic variance is the possibility of differential carry-over effects, which counterbalancing cannot control. In comparison to practice effects which affect all treatment conditions equally, carry-over effects produce specific effects. For example, administering one treatment may affect a participants responses on a later condition one way and on a different condition in another way. In order to reduce the effects of differential carry-over effects, time was given between conditions until approximate baseline conditions were once again established. No indications of carry-over effects were present in this investigation but one cannot completely rule out the potential influence.
Advantages of With-In Subjects Design

One of the main advantages of a within-subjects design is that each participant serves as her/his own control. Through reducing the error associated with each condition a direct increase in economy and power is noted with this type of design. Given the practical difficulties inherent in recruiting a sufficient number of participants who have clinically significant obsessive compulsive problems, a study which could examine the main questions of this study but still economize on number of participants was necessary. A between-groups design which would require a minimum of three groups with roughly twenty participants per group seemed infeasible with my level of resources. The current design appeared to provide the means to answer some key questions pertaining to the effects of responsibility on checking and also maximize the amount of data that could be obtained with a small sample size and thus, a within-subject design was chosen.
Strengths and Weaknesses of Self-Report Measures

The current investigation used self-report measures almost exclusively. The advantages of such measures are several fold. First, given that anxiety is often defined by how the client feels, a measure asking clients precisely this, is most fitting. However, according to Rachman and Hodgson (1974) anxiety may be best construed as a set of loosely coupled components involving behavioural, cognitive and physiological elements. In this study only the cognitive component was examined using self-report measures. One of the primary purposes of this exploratory investigation was to provide a cognitive analysis of compulsive checking. Thus, the use of self-report measures examining the cognitions of participants was warranted. Given the promising results of this investigation, it may be fruitful to look at other facets of responsibility (behavioural, physiological) and the correlations between these elements in future research.
Another reason that self-report measures were chosen for this investigation had to do with the level of secrecy inherent in compulsive checking. Behavioural monitoring through an observer being present may increase self-consciousness to the point that it may significantly alter the behaviour (Steketee & Foa, 1985). The primary purpose of this exploratory investigation was to manipulate responsibility and measure critical dependent measures in the most simple and straightforward manner. Now that some data has been gathered, future research may want to consider using a behavioural measure despite the potential confounds.

Third, self-report measures were chosen because many of our questions involved asking clients about their perceptions of future harm and danger - a central feature of compulsive checking. Compulsive checking involves preventing some future harm or danger rather than compulsive washing which is primarily conducted to restore safety. Behaviourally examining future danger is logistically difficult. However, assessing this component is quite simple using self-report measures.
Despite the strengths of self-report measures several limitations are worth mentioning. First, a range of biases on the part of the participant may come into play using these measures. According to Kadzin (1985) there is a tendency to agree with items, to endorse values on the far ends of a rating scale, to give qualified responses, and to be inconsistent across items when using self-report measures. In the present investigation, these biases were thought to be equal across conditions and there was no reason to believe there would be systematic differences between conditions. Thus, although this weakness is inherent with the use of self-report measures, these biases should not affect the main hypotheses of this study involving differences between conditions.

A second limitation of self-report measures is that they may result in socially desirable responding. That is, it may be that participants who are aware of being tested would respond differently than they would without this knowledge. In order to address this potential source of bias the current study ensured confidentiality, and indicated in the instructions that
there was no right or wrong answer to any test question. In addition, demand characteristics were held constant across conditions. Potential influence of demand characteristics will be discussed later under the heading entitled "limitations".

Upon examination of the costs and benefits of using self-report measures for this exploratory study, the strengths appeared to outweigh the weaknesses. The first necessary step was to attempt to manipulate responsibility and assess it as simply and clearly as possible. With this groundwork being laid it may now be timely to add complexity to the assessment procedures. Future research may consider using a host of measures to augment the use of self-report measures in this investigation including behavioural and physiological assessment.

Possible Sources of a Heightened Sense of Responsibility

Given the intriguing findings coming from this study it may be timely to begin to ask some of the major questions associated with this disorder. How
does compulsive checking develop? What factors maintain it? Why is compulsive checking often associated with depression? I will first speculate about the development of the disorder. As Rachman (1975) noted, discussion of origins of compulsive checking is purely speculative given that no prospective studies have been conducted. Difficulties associated with retrospective data and the impossibility of verifying most information are definite limitations. With this cautionary note in mind, I will briefly discuss some possible sources of a heightened sense of responsibility.

Cognitive theories of psychopathology concur that the formation of core maladaptive beliefs or assumptions often occur after significant life events in childhood. These core assumptions may lay dormant until a critical life event or stressor triggers this semantic network in late adolescence or early adulthood (Salkovskis & Warwick, 1990). I will argue that cognitive biases uncovered in this study serve to maintain the high levels of responsibility and associated depression. Treatment implications arising
out of this position will be then be explored. Finally, limitations of the present study will be considered.

As Tallis (in press) noted, with very few exceptions (Rachman, 1976; Leonard, Goldberger, Rapoport, Cheslow, & Swedo, 1990) little consideration has been given to how specific early experiences may influence later development of maladaptive core assumptions and compulsive behaviour. He cites case examples which suggests a very precise link between blurring between thought and action, early life loss and later obsessive compulsive behaviour. Rachman (1993) refers to such phenomena as psychological fusion. That is, the patient appears to regard the obsessional thought and the forbidden action as being morally equivalent. In the following case examples Tallis (in press) describes how critical early events may lead to later manifestation of the psychological fusion often associated with OCD:

The S was a 49 year old married, woman, employed as a caterer in an old people's home. Obsessional symptoms included intrusive thoughts, number rituals, and repeated checking of
household appliances. Typically, checking and ritualizing occurred in response to thoughts of being responsible for harm coming to others.

...the S had enormous difficulty distinguishing thought from action. For example, she would become extremely distressed after preparing meals for the elderly, thinking that she may have unwittingly mixed a poisonous substance into their food. These thoughts were particularly troublesome when the S was given more responsibility than usual, for example, when taking her wards on an outing. Exploration of the origins of this characteristic revealed a critical learning incident. As a child she had been continually sexually abused by her father. When she was 15 years of age, she recalled forming an intense wish that he would "go" or be "taken away", and prayed to this effect. Within a week, her father was involved in a rail "accident". He was instantly killed. There was some suspicion of suicide. This guilt was so unbearable that she reported wanting to die.

In later life, she experienced several occasions when she thought about "disasters" which were subsequently reported in the media. Although she did not feel that she was the cause of these disasters, they served to reinforce her belief that mental events and events in the real world bore a close relationship to each other.

Case B

The S was a 43 year old woman, employed as a training officer in a large company, married with three children. Obsessional symptoms included
intrusive thoughts, repeated checking of household appliances, and "retracing" journeys in order to investigate whether she had been the cause of harm to others. She described having low mood since childhood. Obsessional checking behaviour emerged when she was in her early 20's. She was admitted to hospital (aged 43 years) after attempting suicide. The suicide attempt was precipitated by an event at work. She was given responsibility for a trainee, who was dismissed because of misconduct. The S began to think that she had telephoned the trainee's parents, and informed them of a particularly embarrassing incident which the young man had been party to. She became convinced that her imaginary telephone call would lead to the young man being severely punished, and considered that he might take his own life as a direct result. Her guilt was so extreme, that she attempted to escape the aversive mood state by taking an overdose of drugs with suicidal intention.

While exploring the nature of thought-action fusion during therapy, she volunteered the following information: as a child of approximately six years, she prayed to God that her grandfather would die. The day following this "death prayer", her grandfather suffered a fatal heart attack. The apparent relationship between thought and action was further secured at the age of 37, when she had a violent argument with her mother. The S rarely expressed anger, and attributes her behaviour at the time to increased emotional sensitivity (it being shortly after the birth of her third child). Two weeks after this argument the S's
mother was diagnosed as having a fatal cancer. Thereafter, obsessional symptoms worsened, ultimately leading to her attempted suicide and hospital admission. (Tallis, in press)

Tallis (in press) cogently argues that specific early life connections between wishing harm to others and it actually occurring shortly thereafter, lead in these case illustrations to an exaggerated sense of responsibility and guilt. He proposes that the blurring between thought and action which was present in these examples, contributed to the development of compulsive behaviour. However, the precise link between responsibility for thought and ultimate negative consequence as detailed above may be solely one way to arrive at a stable, high level of responsibility. There may be various pathways or avenues to arrive at a heightened sense of responsibility. The uncovering of these parallel systems awaits future research. Only longitudinal research can begin to address these interesting albeit difficult questions pertaining to etiology. I will briefly review two models of the socialization of moral responsibility in hopes that future research will
begin to integrate these models and perspectives when considering the etiology of a heightened sense of responsibility.

Bandura's (1971) social-learning model draws heavily on instrumental conditioning and imitation learning in hypothesizing that response patterns are learned and maintained by conditioning history. In some cases the learning involves some type of "behavioural deficit" which the individual fails to acquire responses that are adaptive. Bandura sees this type of failure to learn necessary skills arising from inadequate modelling and reinforcements. He also indicates that response patterns may also be as a result of an inability "to respond discriminately to important stimuli" (Bandura, 1969, p.299). For example, Bandura suggests that children may consistently receive approval (reinforcement) for eating at meal times and consistently receive disapproval (punishment) for snacking at other times. Through using this type of discriminable stimuli and the different schedules of reinforcement, the behaviour of snacking is brought under stimulus control.
Further, observing a model who is similar to the child in some way, or important in stature (such as a parent) being rewarded for not snacking may hold tremendous learning power. Through faulty learning or a break of previously acquired discriminative responses, behaviours that are inappropriate to the situation may occur.

In the case of someone with a heightened sense of responsibility, Bandura's model would suggest that a child may learn to be overly responsible through being rewarded for taking on increasing responsibility and through punishing instances when the child is not responsible. Further, a child may learn vicariously through observing a parent who may be responsible or through watching friends receive praise or approval for being responsible. The development of a non-adaptive sense of responsibility may be related to the child's inability to discriminate between instances when it is adaptive to be less responsible and instances when it is adaptive to be more responsible. It may be that faulty training (inconsistencies) in rewarding the child when s/he is not responsible that is pivotal.
Another pathway may be that the child is punished for being irresponsible which may also lead to an enhanced sense of responsibility.

A cognitive developmental model of the socialization of moral responsibility may be extrapolated from the area of moral reasoning. Kohlberg's (1967; 1969) model of the development of moral judgment is largely an extension of the earlier work of Piaget (Piaget and Inhelder, 1969) who held that morality could best be construed as a system of rules for conduct that a child develops from the influence of a child's caregivers, other significant adults and the child's own experiences.

According to Piaget, the interaction of individual growth factors and social experiences instrumental in the development of moral judgment may be distinguished by reference to four successive and invariant stages of emergence. These include a period of motor development, followed by an egocentric stage, leading to a period of cooperative effort, and, finally, terminating in the child's recognition of moral principle in the establishment of social order" (Cohen, 1976, pp. 177-178).

Kohlberg extends upon Piaget's (Piaget and Inhelder 1969) work through providing a more detailed
and complete account of moral development. Overall, Kohlberg proposes three levels and six stages of moral judgment. Each individual is thought to go through the same successive stages of development (Kohlberg, 1969). In Level one morality is external to the individual and there is primarily an obedience and punishment orientation. Individual standards are not important and objective responsibility is of importance. In Stage Two morally right action parallels satisfying the person's needs and occasionally another's needs. In Level Two moral value is viewed as maintaining conventional order and the expectancies of others. Stage 3 is exemplified by the "good girl/boy" orientation with approval seeking and pleasing others as being most critical. Stage 4 is construed as an authority and social order maintaining orientation. There is an emphasis on "doing one's duty" and showing respect for authority. In Level Three moral value rests in the self and shared standards, rights and duties. Stage 5 is viewed as a legal orientation. There is some awareness of an arbitrary element in rules. Duty is related to what is specified in the
contract and there is a general avoidance of violating the rights of others. In Stage 6 individual conscience and principal are of utmost importance. There is an emphasis on social rules and also to principles of choice ultimately residing in a sense of logical universality. There is also a sense of using one's conscience as a driving force and to mutual respect and trust.

Turning to the issue of a heightened sense of responsibility, Kohlberg's model would suggest that objective responsibility or a direct relationship between control and responsibility as suggested in this thesis as the equivalent of a "healthy" sense of responsibility would be construed as the lowest stage and level of moral judgment. Further, this model would suggest that the type of strict sense of conscience, often a defining feature of OCD, would be classified at level 3, stage 6, the highest stage and level of moral development. Thus, treatment focusing on influencing responsibility through appealing to a logical or objective sense of responsibility would be the equivalent of bringing the individual back to a lower
stage of moral development—such perils await the unsuspecting clinician.

What is evident is that this model does not account for the non-adaptiveness of an exaggerated sense of responsibility and strict conscience as noted with those with OCD. Kohlberg’s model may be more successful when applied to normal personality development rather than the development of emergence of unhealthy states such as compulsive checking. In addition, many researchers have raised serious questions about the validity of the stages (eg., Bandura, 1969; Hoffman, 1970). These learning theorists suggest that development is not a set of discrete and unchanging stages but rather, that development is construed as a dynamic interaction between maturational growth and learning.

Why then do not all individuals with a heightened sense of responsibility go on to develop compulsive checking?

Buffers and Alternate Ways of Coping.

First, many adults find more adaptive ways of coping. It may be the absence of/or poor alternative
methods of coping which increases the likelihood of developing compulsive checking. Factors such as having alternate sources of support and safety to turn to such as grandparents, teachers, neighbors etc. as a child may buffer the adult from developing compulsive checking. Notably, if the child has these resources in her/his environment, he/she may develop healthier early relationships, increasing the likelihood of an enhanced social support system as an adult.

Second, compulsive checking is seen as one of a number of non-adaptive ways an adult may cope in an environment. Various negative coping strategies such as extreme aggressiveness, drugs, alcohol, extreme passivity, or overworking may all be used. For example, in the case of the family with high expectations the child may become a overfunctioning high achiever who may be prone to burnout, stress illnesses etc.

Third, the presence of alternate healthy adult-child relationships where the child is told directly that s/he is not responsible for a negative event, and
then followed up through action, may go a long way in creating a more equitable sense of responsibility.

Fourth, some individuals may find alternate ways of coping such as choosing occupations where an inflated sense of responsibility is beneficial. Mental health workers, teachers, and supervisory positions all implicitly hold added responsibility. Ability to handle high levels of responsibility is rewarded in these occupations.

**Implications for Treatment**

**Transferring of Responsibility**

Limitations to the present study are addressed below and serve as precautionary reminder of the need to replicate and determine extent of generalizability, before treatment approaches can be employed. With these precautions in mind, the present study suggests a cognitive approach to treatment may be of benefit. As a start, examination of the extent of responsibility assumed in situations associated with compulsive checking is necessary. Once a baseline measure of
responsibility is obtained, exploring various pathways to sharing/transferring of responsibility for a given situation may be of value.

In the current study, responsibility was transferred through establishing an agreement between the client and the experimenter. The agreement for transferring responsibility included accepting responsibility for the catastrophic event, for damages incurred, through limiting the assignment of responsibility to one situation, and through adding any additional items to the contract that the individual requested. The only limit was that the experimenter would not check. Some participants requested that the experimenter agreed to prevent the catastrophic event at the first sign of danger. In addition, discussion of fairness in a job share analogy was used attempting to appeal to their strict moral conscience. For example, the behavioural test was discussed as a job share asking the client to imagine that it was the experimenter's day at the job versus the client's day at the job. In addition, clients were asked to imagine changing or switching roles with a less
responsible family member and to assume that role in the behavioural test. For others, the analogue of a "responsibility holiday" was used. Again imaginal techniques were employed with clients to envision packing their suitcases, going on vacation and leaving behind all their responsibilities for the given task. The experimenter was to take on the "job" while they were away.

It appeared that the experimenters’ assuming responsibility for the consequences of the perceived negative event was an important first step in shifting responsibility. That is, many indicated that they were concerned that the experimenter take responsibility for the damages incurred, criticism received etc. Rather than working specifically on transferring responsibility for the negative event itself, which appeared to a belief more rigidly held on to, most of the clinical work was first conducted on assuming responsibility for the consequences of the event. Once the experimenter assumed responsibility for the consequences of the event, the client’s responsibility for the actual negative significantly diminished.
These clinical impressions require further examination but overall, the method in this study was to first shift responsibility for the consequences of the event. The previous rigid hold on responsibility for the actual event then seemed to fall apart.

In addition, it appeared that the contract used in this study was of greater use for those individuals who were concerned with litigation following the negative event. For individuals who were not concerned with the legalities and more concerned with personal consequences of the negative event appealing to their high sense of morality regarding fairness was most useful. That is, using a starting point of sharing responsibility where the experimenter was responsible for 50% and the participant was responsible for 50% and then alternating into high or low responsibility based upon fairness proved to be useful. Generally, this group places high value on being fair and using this information to shift responsibility seemed to be of benefit.
Hawton, Salkovskis, Kirk, and Clark (1989) have suggested challenging the extent of responsibility assumed through using a pie-chart technique. In this method, estimates of personal responsibility are obtained, then additional factors contributing to the catastrophic event are listed. Finally, a pie chart is drawn and the client is asked to delineate portions of pie associated with each factor other than personal responsibility. According to these authors, personal responsibility is factored in last because the client will otherwise resort to the bias of increased responsibility for self. This method of reducing the amount of responsibility experienced is currently being empirically evaluated.

In addition, developing a hierarchy of situations where clients rate the extent of responsibility over the occurrence of a negative event from high levels to low levels may be of benefit. Working at transferring or sharing of responsibility with the therapist with low levels items leading to higher level items of responsibility may be a useful
method. This type of hierarchy ranging from low to high awaits empirical testing.

The methods described above could be readily incorporated into a therapeutic context. The first step may be to transfer responsibility for a given catastrophic event and its consequences to the therapist within session. The second goal could be to transfer the responsibility to a trusted companion or spouse, leading to transferring the responsibility to an imagined third party. Empirical validation of this approach is necessary.

In addition, given that responsibility implicitly shifts from location to location, home vs. away exercises could be conducted. Varying the venue may be one way to practically work at shifting levels of responsibility. It may be incorporated into treatment by noting that the probability of a negative event, severity, criticism etc. do not change through shifting the venue. Working at changing responsibility by varying the location may be of benefit.
Cognitive Biases

The second set of results coming from this study, involve the uncovering of cognitive biases that may contribute to the maintenance of compulsive checking. Seminal workers such as Beck, Shaw and Emery (1985) have stressed the importance and pervasiveness of a heightened perception of danger across the anxiety disorders. In the present study, this perception appears to shift with a transferring of responsibility. Notably, the probability of the occurrence of a negative catastrophic event decreases with decreases in perceived responsibility. The severity of the catastrophic event holds a similar pattern. Finally, controllability does not change with shifts in perceived responsibility.

As a result of these findings treatment may need to focus not solely on perceptions of dangerousness and perceptions of responsibility but how they work in concert with controllability. Treatment may need to explicitly focus on the connection between responsibility and controllability. A therapist could
begin by expressing the impossible task the client entertains - to be completely responsible with little control. Then working in collaboration with the client, situations where the client assumes responsibility with little control can be examined. Cognitive techniques to diminish or transfer responsibility in areas of low control, as described below, may then be appropriate. Second, examining the fallacy of the probability of a negative event and its consequences changing with who is held responsible, may be of use. It may be effective to employ similar strategies as used in the treatment of panic (e.g., Clark, 1989; Barlow, 1989) such as probability estimations of the bad event occurring with the added step of examining self vs. other probabilities. van Oppen et al. (1992) also discuss the usefulness of examining the formation of this double standard. According to these authors the double standard should be made explicit and then suggest exploring avenues such as "What makes you different from others so that different criteria should be employed?", as well as examining early experiences which lead to this standard
being developed. Finally, behavioural experiments as employed in the treatment of panic may also be of benefit.

Limitations

Several limitations of the present study warrant discussion. I will discuss the weaknesses of this study from what I consider to be the most important to least important. First, this study was comprised of a sample of volunteers from the community. It may be that the sample was not representative of all compulsive checkers. Characteristics other than those required for inclusion in this study (i.e., clinical severity, moderate urge to check, significant interference) may have biased this sample. For example, participants in this investigation may not be like other OCD clients in that they were not explicitly seeking treatment. Most of what we know about those with OCD comes from individuals who are requesting treatment. The individuals in the current study were given information about OCD but were not recruited with the enticement of treatment. They were also given
referral sources if requested. It may be that those seeking information but not treatment are different in some way from the general population of those experiencing compulsive problems.

Second, the participants in this investigation allowed the experimenter and assistant to come into his/her home. This ability to let outsiders into one’s home may not be typical of the general population of those with OCD. OCD often includes a high level of secrecy and in some instances an unwillingness to let others into their private space for fear that the individual(s) may intrude upon their highly controlled environment. Some unintentioned action such as sitting on a particular chair, touching an object etc. which is associated with a ritual may result in continuous checking by the individual. Some reported during the course of this study that if particular objects were touched it may trigger them into hours if not days of checking. In addition, replication of this study is necessary to rule out chance findings.
Third, the participants in this study were individuals who had at least a moderate urge to check in the presence of the experimenter and her assistant. Results of the present study may not generalize to compulsive checkers who do not experience urges to check in the presence of others. Future research is necessary to determine generalizability.

However, it is also important to note that there are several reasons to believe that the sample recruited for this investigation was like others with OCD. First, all participants indicated that compulsive checking significantly interfered with their life. Second, they indicated that they experienced a level of distress congruent with a clinical range as a result of compulsive checking. Third, scores obtained on the ADIS-R and MOC-I were within the range of scores reported by those seeking treatment at anxiety centers, hospitals etc.

In addition, demand characteristics may have contributed to the findings. The instructions given to participants were designed to hold demand constant as
well as maximize the urge to check regardless of the condition. The segment of the instructions given across conditions in which we attempted to do this is as follows:

"people who check sometimes worry that something bad will happen or what they do won’t be perfect. They sometimes worry that damage of some kind may occur, that someone will be hurt, or that they will have to undo any damage or harm. People who have these worries sometimes feel that something bad will happen or is not perfect when they are in situations like the one you are about to be in."

However, despite attempting to standardize demand through giving these instructions across conditions participants may have picked up on subtle cues and felt the need to be the "good participant". Thus, similar to all psychological experiments demand cannot be completely ruled out in this investigation. However, the very nature of the persistence and intensity of compulsive checking and the inability of our treatments to produce significant reductions in checking suggests that the results obtained are not likely to be the result of demand.
If demand is in fact responsible for the reported findings, we need to capitalize upon these effects in a therapeutic setting. That is, if demand produced the significant reduction in compulsive checking as noted in this investigation, we need to investigate its potential in a systematic fashion.

A further limitation of this study is that little is known about methods of transferring responsibility and its critical factors. We used a conglomerate of techniques to shift responsibility in the current investigation. Future research may begin to examine which factors are of importance in shifting responsibility.

Another potential source of bias was that we used a conglomerate of techniques to influence responsibility. With some individuals some techniques appeared to have an immediate effect and with others the same technique appeared to be less successful. In order to ensure that there were no differences between groups in use of the techniques all individuals received all of the techniques. Future research will
need to address which techniques were essential and perhaps which techniques were superfluous.

Last, this study looked at single trials of shifts in responsibility and short term consequences. We do not know whether the manipulation of responsibility employed herein would be successful on repeated trials, over a longer period of time or for long-term consequences. Again, these elements await empirical examination.

Contributions

This study is the first empirical based study to examine the influence of perceived responsibility on measures critical to compulsive checking. Its strengths include the use of a community based sample with participants whose checking is of clinical severity and use of an experimental design to examine the effects of perceived responsibility on checking. In addition, it may be argued that it has high external validity given the study was conducted in the homes of participants and focused on situations which were tailored to individual patterns of checking.
Conclusions

To summarize, enhanced sense of responsibility appears to be causally connected to compulsive checking. Various pathways to arriving at a heightened sense of responsibility have been discussed. Cognitive biases which may serve to reduce safety and maintain a depressive state have been explored. Finally, clinical implications of the current study as well its limitations have been considered.

Prior to this study, authors such as Rachman and Hodgson (1980) and Salkovskis (1985) discussed the possibility of responsibility being linked to OCD. However, little empirical work had been done to substantiate these theoretical speculations. With this investigation we are now much clearer that responsibility plays an important role in compulsive checking. This study will hopefully open the door to an area of research which should be pursued vigorously.
REFERENCES


anxiety disorder categories using a new structured interview. Archives of General Psychiatry, 40, 1070-1074.


England, S., and Dickerson, M. (1988). Intrusive thoughts: unpleasantness not the major cause of
uncontrollability. *Behaviour Research and Therapy, 26,* 277-279.


APPENDICES
APPENDIX A

VERBAL ANALOGUE SCALES
1. How strong is your urge to check?
   Using a scale ranging from 0% to 100% where 0% is not at all strong and 100% is extremely strong.
   (post- keeping in mind the agreement you have made).
   ____

2. How much discomfort are you currently experiencing?
   Using a scale ranging from 0% to 100% where 0% is no discomfort and 100% is extreme discomfort.
   (post- keeping in mind the agreement you have made).
   ____

3. If something bad happened right now or something was not perfect, how responsible would you feel?
   Using a scale ranging from 0% to 100% where 0% is not at all responsible and 100% is completely responsible.
   (post- keeping in mind the agreement you have made).
   ____

4. What is the likelihood that something bad would happen?
   Using a scale ranging from 0% to 100% where 0% is not at all likely and 100% is extremely likely.
   (post- keeping in mind the agreement you have made).
   ____

5. If something bad happened, how bad would it be?
   Using a scale ranging from 0% to 100% where 0% is not at all bad and 100% is extremely bad.
   (post- keeping in mind the agreement you have made).
   ____
6. When would something bad happen? (post-keeping in mind the agreement you have made).
   __ seconds __ minutes __ hours __days __weeks __months

7. How long will it take you to finish checking (insert task)? (before you could leave the house, area etc.)
   (post-keeping in mind the agreement you have made).
   _____ minutes

7b. How much control do you have over something bad happening? Using a scale ranging from 0% to 100% where 0 is no control and 100 is complete control. (post-keeping in mind the agreement you have made).
   _____%

We define a panic attack as an INTENSE RUSH OF FEAR/ANXIETY OR A FEELING OF IMPENDING DOOM.

8. Are you panicking? (please check) (post-keeping in mind the agreement you have made).
   Yes ____ No ____ Close to Panic ____

9. Given that you are not able to check, what is the worst thing that could happen? (post-keeping in mind the agreement you have made).

__________________________________________________________________________
__________________________________________________________________________
10. If (insert task) was not perfect, what is the likelihood that you would be criticized? Using a scale ranging from 0% to 100% where 0% is not at all likely and 100% is extremely likely. (post—keeping in mind the agreement you have made). 

_____%

11. If (insert task) was not perfect, when would you be criticized? (post—keeping in mind the agreement you have made).

__seconds __minutes __hours __days __weeks __months

12. If you were criticized, how bad would it be? Using a scale ranging from 0% to 100% where 0% is not at all bad and 100% is extremely bad. (post—keeping in mind the agreement you have made).

_____%

12b. How much contro do you have over being criticized if (insert task) is not perfect? Using a scale ranging from 0% to 100% where 0 is no control and 100 is complete control. (post—keeping in mind the agreement you have made).

_____%
Task # ______
Task description: ________________________________

_________________________________________________________________________________

1. How strong is your urge to clean?
Using a scale ranging from 0% to 100% where 0% is not at all strong and 100% is extremely strong.
(post—keeping in mind the agreement you have made)

_______% 

2. How much discomfort are you currently experiencing?
Using a scale ranging from 0% to 100% where 0% is no discomfort and 100% is extreme discomfort.
(post—keeping in mind the agreement you have made)

_______% 

3. If something bad happened right now/or was not perfect, how responsible would you feel?
Using a scale ranging from 0% to 100% where 0% is not at all responsible and 100% is completely responsible.
(post—keeping in mind the agreement you have made).

_______% 

4. What is the likelihood that something bad would happen?
Using a scale from 0% to 100% where 0% is not at all likely and 100% is extremely likely.
(post—keeping in mind the agreement you have made).

_______% 

5. If something bad happened, how bad would it be?
Using a scale ranging from 0% to 100% where 0% is not at all bad and 100% is extremely bad.
(post—keeping in mind the agreement you have made).

_______%
6. When would something bad happen?  
(post- keeping in mind the agreement that you have made).

____ seconds ___ minutes ___ hours ___days ___weeks ___months

7. How long will it take you to finish cleaning (insert task)?  
(before you could leave the house, area etc.)  
(post- keeping in mind the agreement you have made).

____ minutes

7b. How much control do you have over something bad happening?  
Using a scale ranging from 0% to 100% where 0 is no control and 100 is complete control.  
(post - keeping in mind the agreement you have made).

____

We define a panic attack as an INTENSE RUSH OF FEAR/ANXIETY OR A FEELING OF IMPENDING DOOM.

8. Are you panicking? (please check)  
(post- keeping in mind the agreement you have made).

Yes ___ No ___ Close to Panic____

9. Given that you are not able to clean, what is the worst thing  
that could happen?  
(post- keeping in mind the agreement you have made).

_________________________________________________________________

_________________________________________________________________
10. If (insert task) was not perfect what is the likelihood that you would be criticized? Using a scale ranging from 0% to 100% where 0% is not at all likely and 100% is extremely likely. (post- keeping in mind the agreement you have made).
   ____%

11. If (insert task) was not perfect when would you be criticized? (post- keeping in mind the agreement you have made).
   __seconds __minutes __hours __days __weeks __months

12. If you were criticized, how bad would it be? Using a scale ranging from 0% to 100% where 0% is not at all bad and 100% is extremely bad. (post- keeping in mind the agreement you have made).
   ____%

12b. How much control do you have over being criticized if (insert task) is not perfect? Using a scale ranging from 0% to 100% where 0 is no control and 100 is complete control. (post- keeping in mind the agreement you have made).
   ____%
APPENDIX B

CONSENT FORM
VOLUNTEERS NEEDED
RESEARCH ON COMPULSIVE CHECKING AND CLEANING

We are conducting research on compulsive checking and cleaning and would value your participation. You can assist us in finding out more about compulsive checking and cleaning by simply agreeing to volunteer approximately three to four hours of your time. If you are willing to participate, we will ask you to take part in a short interview. During this interview we will first ask you more about your individual pattern of checking or cleaning. Secondly, we will ask you to go into four anxiety provoking situations of your choice. These situations may result in your experiencing moderate levels of anxiety. Finally, we will ask you some questions about your experiences.

Participation in the study is entirely voluntary and you are free to change your mind and withdraw at any time if you so wish. The research project has no bearing on any treatment you may receive, but it may help others, like yourself, in the long run.

All the information collected during this study is strictly confidential. Participation in this research or unwillingness to participate, has no bearing on any treatment you may receive.

When the project is finished we would be pleased to send you a description of the results. If you have any questions about this study, please feel free to call:

C. Lopatka, M.A. or S. Rachman, Ph.D.
Department of Psychology
University of British Columbia
(604) 822-9028

Participants Only: I have read and understood this description of the study and agree to volunteer. I have received a copy of this description.

_________________________  __________________________
Name (please print)         Signature
STRUCTURED INTERVIEW

Trauma History

Before the age of 18, were you physically, emotionally and/or sexually abused by any person who was five or more years older than yourself?

I’ll give you some definitions of physical, sexual and emotional abuse.

Physical Abuse

Did anyone use excessive physical punishment in your family toward you? (ie. more than a spanking)

Sexual Abuse

Did anyone impose any sexually inappropriate act (for example, fondling, masturbation, oral, anal or vaginal intercourse) or acts with sexual overtones to meet their own sexual or emotional needs?
Emotional Abuse

Did anyone force you into performing cruel or degrading tasks or humiliate or criticize you repeatedly?

Responsibility

1. If you didn’t check ___ at all, and something bad happened would you be responsible for _____ occurring?

2. If you didn’t check ___ at all, and something good happened would you be responsible for _____ occurring?

3. If you didn’t check ___ at all, what is the likelihood that something good/bad would happen?
4. If you did check ____ completely, what is the likelihood that something good/bad would happen?

Good

Bad

5. Are you responsible solely for checking ____ or are you also responsible for ____ occurring?

6. If you check ____ completely how much control do you have over something bad happening?
7. If you don’t check _____ completely how much control do you have over something good happening?

8. Imagine for a moment that no one would ever know if you did or did not check _____, how responsible would you feel if something bad happened?

9. Describe two checks you can remember clearly and vividly.
Situation 1.
Description:

Whose fault was it?

How angry were you?

How guilty were you?

Situation 2.
Description:

Whose fault was it?

How angry were you?

How guilty were you?
9. If you didn’t check ____ at all and something bad happened/something was not perfect, who is to blame?

10. If you didn’t check ____ at all and something bad happened/something was not perfect, how angry would you be?

11. If you didn’t check ____ at all and something bad happened/something was not perfect, how guilty would you be?

12. If you didn’t clean ____ at all and something bad happened/something was not perfect, who is to blame?
APPENDIX D

RESPONSIBILITY CONTRACTS
AGREEMENT

I, ______________________________, of ______________________________ hereby agree to the following conditions:

1. I will try to treat this situation as I usually do.

2. I will try to treat this test like a realistic situation— the kind of situation I encounter regularly.

3. The behavioral test applies only to the situation noted below:

   ______________________________
   ______________________________

4. ______________________________

5. ______________________________

I hereby agree to all of the above conditions and solemnly swear to fulfill my obligation as noted above, dated this ______________ day in the month of ______________, Nineteen Hundred and Ninety One (1991) in the Province of British Columbia.

______________________________  ______________________________

(Witness)  (Signature)
RESPONSIBILITY AGREEMENT

I, __________________________, of __________________________ hereby agree to the following conditions:

1. I will take complete responsibility for anything that may happen as a result of not checking.

2. I will be to blame for any negative consequence as a result of not checking.

3. My responsibility applies only to the situation noted below:
   __________________________
   __________________________
   __________________________

4. I will undo any damage or harm that may occur as a result of not checking.

5. __________________________
   __________________________
   __________________________

6. __________________________
   __________________________

I hereby agree to all of the above conditions and solemnly swear to fulfill my obligation as noted above, dated this ______ day in the month of __________, Nineteen Hundred and Ninety One (1991) in the Province of British Columbia.

__________________________   __________________________
(Witness)                     (Signature)
RESPONSIBILITY AGREEMENT

I, ____________________________, of ____________________________ hereby agree to the following conditions:

1. I will take complete responsibility for anything that is not perfect as a result of not checking.

2. I will be to blame for anything that is not perfect as a result of not checking.

3. My responsibility applies only to the situation noted below:

4. I will undo any damage or harm that may occur as a result of not checking.

5. 

6. 

I hereby agree to all of the above conditions and solemnly swear to fulfill my obligation as noted above, dated this __________ day in the month of __________, Nineteen Hundred and Ninety One (1991) in the Province of British Columbia.

______________________________  ________________________________
(Witness)  (Signature)
APPENDIX E

DEBRIEFING FORM
DEBRIEFING FORM

The study that you kindly agreed to participate in examines the role of responsibility in compulsive checking. All participants were encouraged to increase, decrease and not change their sense of responsibility over negative events. We expect that when participants were asked to increase their sense of responsibility they would feel more anxious and spend more time checking than in situations when they were asked to decrease their sense of responsibility over negative events. In addition, we were interested in finding out more about your thoughts, feelings and bodily sensations during periods of anxiety.

Your participation is greatly valued and it may assist us in finding more effective treatment approaches for Obsessive Compulsive Disorder. We would be happy to provide you with our findings when the study is complete. If you have any further questions about this study, please feel free to contact:

C. Lopatka, M.A. or S. Rachman, Ph.D.
Department of Psychology
The University of British Columbia
822-9028

If you are interested in reading further about Obsessive Compulsive Disorder we recommend the following book: Steketee, G. (1990) Once is not enough. Harbinger Publications.