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An Investigation of Excessive Reassurance Seeking in OCD

Chris L. Parrish

A Thesis  
in  
The Department  
of  
Psychology

Presented in Partial Fulfillment of the Requirements  
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## ABSTRACT

## An Investigation of Excessive Reassurance Seeking in OCD

Chris L. Parrish, Ph.D.  
Concordia University, 2009

Excessive reassurance-seeking (ERS) is a common problem among individuals dealing with emotional and/or psychological difficulties. Prior research on ERS has focused almost exclusively on the potential consequences of this behaviour in the contexts of Depression and Hypochondriasis, and this research has shown that ERS contributes to interpersonal difficulties and emotional distress. Despite anecdotal evidence that ERS is a hallmark feature of Obsessive-Compulsive Disorder (OCD), comparatively few studies have examined OCD-related ERS. The goal of the present research was to examine various cognitive, behavioural and affective processes that may be involved in the perpetuation of ERS, specifically within the contexts of OCD and Depression. Given the purported functional equivalence between OCD-related reassurance seeking and compulsive checking (Rachman, 2002), the current investigations also aimed to compare ERS and repeated checking activity across a number of important domains (i.e., content, precipitating factors, function and termination criteria). Toward these goals, Study 1 employed a semi-structured interview with clinical (OCD and Depression) and non-clinical individuals to examine factors involved in the onset, maintenance and termination of ERS and repeated checking. Results revealed that individuals with OCD tend to seek reassurance about perceived *general* threats (e.g., fire, theft), whereas ERS tends to be focused on perceived *social* threats (e.g., abandonment, loss of support) among depressed individuals. Clinical participants reported greater anxiety, sadness and perceived threat

in association with ERS and repeated checking than healthy control participants. Study 2 examined how manipulations of threat, responsibility, and ambiguity of feedback impacted upon non-clinical participants' anxiety and compulsive urges (to seek reassurance and to check) in a series of experimental vignettes. Consistent with hypotheses, higher levels of perceived threat, responsibility and ambiguity of feedback were associated with greater anxiety and compulsive urges. Results also suggested that perceived threat and responsibility partially mediated the effects of ambiguity of feedback on anxiety, urges to check, and (for threat) urges to seek reassurance. The collective results of these studies are discussed in terms of cognitive and behavioural models of OCD, and directions for future research are suggested.

## ACKNOWLEDGEMENTS

First of all, I would like to thank my lovely and talented wife, Jennifer, for patiently enduring the many late nights and weekends I have spent on this project during the past two years. I truly feel that I could not have completed this endeavour successfully without your consistent love, support and encouragement. I would also like to express thanks to my parents for always encouraging me to be my best, teaching me the value of hard work, and validating my efforts throughout every stage of my life. I love you both dearly and I am very proud to be your son.

I would also like to thank Stefanie Lavoie, Greg Mendelson and Priscilla Morin for all of their hard work and dedication, which were essential to the successful completion of this dissertation. In addition, I thank Andrea Ashbaugh for her helpful advice regarding statistical procedures and Stella Marie Paradis for her help with recruitment. I would also like to acknowledge the important contributions of Dr. Michel Dugas and Dr. Mark Ellenbogen, whose valuable comments and suggestions helped to shape this investigation.

Finally, I would like to extend my sincerest gratitude to my Ph.D. thesis supervisor, Adam Radomsky. Adam, you have been an amazing mentor and role model, and your dedication to my development as a researcher and clinician are greatly appreciated. As I embark on my own career, I will undoubtedly continue to bear your influence, and I will always look back on my time in the lab with fond memories.

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## CONTRIBUTIONS OF AUTHORS

The following thesis is comprised of two manuscripts:

*Study 1 (See Chapter 2)*

Parrish, C.L., & Radomsky, A.S. (2009). Why do people seek reassurance and check repeatedly? An investigation of factors involved in compulsive behaviour in OCD and Depression. Manuscript submitted for publication.

*Study 2 (See Chapter 3)*

Parrish, C.L., & Radomsky, A.S. (2009). The effects of threat, responsibility and ambiguity on reassurance seeking and compulsive checking behaviour. Manuscript submitted for publication.

In terms of contribution, I developed the overall research focus and chose the specific topic of each study in consultation with my research supervisor, Dr. Adam Radomsky. I was responsible for overseeing all aspects of the research described herein, including study design, participant recruitment, data collection, statistical analyses, and the interpretation and written communication of findings. Dr. Radomsky provided ongoing consultation and feedback throughout all stages of the research. In addition, Dr.'s Michel Dugas and Mark Ellenbogen, my other committee members, provided feedback and approval of an outline of the procedures to be employed in this research at a dissertation proposal meeting that was held prior to beginning the studies.

I created the interview and coding guide, and developed the research assistant training procedures for Study 1. Stefanie Lavoie, the Senior Research Assistant in the Fear and Anxiety Disorders Laboratory, administered all of the interviews that provided

the primary data for this study, while I conducted all of the diagnostic interviews. Greg Mendelson and Priscilla Morin, who were completing an undergraduate thesis and Psych 311 project, respectively, coded the responses provided by participants and entered data for this study. Stella Marie Paradisis, a research assistant, helped with the recruitment of clinical participants. Dr. Radomsky proposed the idea of utilizing vignettes in Study 2, and I referred to sample vignettes provided by Dr. Michele Haring and Dr. Karina Wahl when creating the vignettes that were used in this study. My fellow laboratory members assisted in the testing and refinement of these vignettes, and Stefanie Lavoie helped to set up the online software used for Study 2. For both studies, I completed all of the data analyses and was responsible for preparing the manuscripts.

## CHAPTER 1

### General Introduction

In recent years, there has been a rising interest in research aimed at elucidating factors involved in the onset, maintenance, and consequences of excessive reassurance seeking (ERS). Articles devoted to this topic have appeared predominantly in the depression literature (e.g., Burns, Brown, Plant, Sachs-Ericsson, & Joiner, 2006; Coyne, 1976; Haeffel, Voelz, & Joiner, 2007; Joiner, Alfano, & Metalsky, 1992; Joiner & Metalsky, 2001; Joiner, Metalsky, Katz, & Beach, 1999; Starr & Davila, 2008), although examinations of the short and long-term impact of reassurance provision are also found in writings on Hypochondrias / health anxiety (Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998; Kellner, 1992; Warwick, 1992; Salkovskis & Warwick, 1986), chronic pain (de Jong et al., 2005; Linton, McCracken, & Vlaeyen, 2008), and various other medical issues (e.g., Howard et al., 2005; Lucock, Morely, White, & Peake, 1997; Salmon, 2006).

The importance of ERS as a potential contributor to interpersonal and emotional difficulties was first highlighted by Coyne (1976), who posited that mildly depressed individuals tend to seek excessive reassurance regarding issues related to self-worth (e.g., “Do you still love me?”; “Do you think I am a failure?”), thereby alienating others and unwittingly confirming their negative self-perceptions (and thus, increasing their vulnerability to depression). A growing body of evidence has supported this theory, as depressotypic ERS has been demonstrated to lead to interpersonal rejection (e.g., by causing others to become frustrated with repeated demands for reassurance) and increased depressive symptoms (see Starr & Davila, 2008, for a meta-analytic review).

Similarly, ERS in other contexts has been demonstrated to contribute to unnecessary health costs (e.g., due to increased and unnecessary medical consultation in the case of health anxiety; Salkovskis & Warwick, 1986), and the long-term exacerbation of compulsive behaviour (i.e., increased demands for additional reassurance; Hadjistavropoulos et al., 1998; Salkovskis & Warwick, 1986; Warwick, 1992). In fact, evidence suggests that feedback aimed at reassuring health anxious individuals and other medical patients can paradoxically exacerbate physical and/or psychological symptoms (e.g., Howard et al., 2005; Lucock et al., 1997; Salkovskis & Warwick, 1986; Salmon, 2006), which has led some authors to question the utility of repeated reassurance provision under these circumstances (Linton et al., 2008; Salkovskis & Warwick, 1986; Warwick, 1992).

Notably, ERS is one of the most frequent and problematic strategies used by individuals with Obsessive-Compulsive Disorder (OCD) to (temporarily) diminish anxiety induced by their obsessions (e.g., Abramowitz, Franklin & Cahill, 2003; Clark, 2004; Freeston & Ladouceur, 1997; Rachman, 2002; Salkovskis, 1985, 1996; Steketee, 1993; Tolin, 2001). Accordingly, cognitive-behavioural treatments for OCD (e.g., Clark, 2006; Salkovskis, 1999; Steketee, 1993) often include deliberately withholding reassurance from clients during exposure to anxiety-provoking situations, in order to promote increased tolerance of uncertainty. Such interventions are based on the widely-accepted hypothesis that ERS serves to maintain anxiety in the long run, by preventing fear extinction / habituation and reinforcing maladaptive beliefs (e.g., "If I am unable to obtain reassurance, something terrible is bound to happen") (Abramowitz et al., 2003; Clark, 2004; Rachman, 2002; Salkovskis, 1985, 1999). However, scant research has been

conducted to test this hypothesis, and the specific mechanisms underlying OCD-related ERS have yet to be examined. Therefore, a detailed investigation of reassurance-seeking behaviour, particularly in the context of OCD, is clearly warranted.

In relation to OCD, ERS can be defined as the repeated solicitation of safety-related information from other individuals about a threatening object, situation or interpersonal characteristic, despite having already received this information. Anecdotal evidence suggests that ERS is especially common among individuals with checking compulsions, whose concerns tend to focus on themes of perceived threat and responsibility for harm (Rachman, 2002; Rachman and Hodgson, 1980; Salkovskis, 1985, 1999). For example, they may repeatedly ask others to reassure them that they (or others) remembered to perform a threat-reducing task (“Are you sure you locked the door?”), that they performed a task correctly (“Did you hear the stove ‘click’ when I turned it off?”), or that they have not accidentally caused, or been responsible for, harm occurring to others (“Are you sure that I didn’t hit anyone when I was checking my rear-view mirror?”). Rachman (2002) conceptualizes reassurance seeking in this context as a form of “checking by proxy” (p. 627), and states that:

... neutralization, compulsive acts (*i.e.*, *checking*) and reassurance seeking share some common features and all can be construed as attempts to reduce the probability of a nasty event occurring or to reduce the effects of such an event. They also serve to reduce one’s responsibility for any such anticipated misfortune (p. 629; emphasis added).

Thus, ERS is hypothesized to be functionally equivalent to compulsive checking, as both acts are purportedly intended to achieve immediate (albeit temporary) reductions in



anxiety and perceived responsibility for harm (Rachman, 2002, Salkovskis, 1985, 1999). If correct, important theoretical and clinical implications follow from this hypothesis, as compulsive checking has been shown to exacerbate compulsive urges (e.g., to check) and doubt/uncertainty in the long run (Coles, Radomsky, & Horng, 2006; Hout & Kindt, 2003a, 2003b, 2004; Radomsky, Gilchrist, & Dussault, 2006), and OCD-related ERS may be similarly counter-productive.

Cognitive theories of compulsive checking (Rachman, 2002; Salkovskis, 1985, 1999) conceptualize this behaviour in terms of a self-perpetuating mechanism that stems from inflated perceptions of threat and responsibility. According to Rachman (2002), compulsive checking is precipitated by increases in anxiety/discomfort and urges to check, which stem from elevated levels of three “cognitive multipliers”: perceived responsibility for harm, perceived probability of harm and perceived seriousness of harm. As noted above, Rachman postulates that compulsive checking is usually intended to prevent future harm from occurring due to some perceived threat. However, such threats are often hypothetical, vague, and never-ending (e.g., individuals might believe that failure to check properly and consistently might lead to unspecified eventual harm to a loved one). Accordingly, individuals plagued with harm-related obsessions often feel compelled to check repeatedly, in order to temporarily alleviate obsessional anxiety. In addition, because compulsive checking prevents the disconfirmation of catastrophic beliefs (e.g., “If I do not check the stove [again], a fire might occur”), it serves to maintain these beliefs, thereby increasing the likelihood of further compulsions and safety behaviour. Rachman’s theory also stipulates that the act of repeated checking itself paradoxically increases one’s sense of personal responsibility for harm, as well as

one's estimation of threat, while also impairing meta-memory and increasing doubt (for supporting evidence, see Coles et al., 2006; Hout & Kindt, 2004; Radomsky et al., 2006). Thus, it is proposed that an exaggerated sense of responsibility for preventing harm in conjunction with biased threat appraisals plays a critical role in both the onset and maintenance of compulsive checking behaviour.

It is of theoretical and practical importance to determine whether the predictions derived from this theory also apply to OCD-related reassurance seeking. Given the proposed functional similarities between OCD-related reassurance seeking and compulsive checking, it is reasonable to hypothesize that both of these anxiety-neutralizing strategies may be motivated by similar threat-related concerns, and likewise, that similar processes may serve to maintain these behaviours and the maladaptive beliefs that underlie them (e.g., "Something terrible is bound to happen unless I seek reassurance / check again"). However, it is also apparent that reassurance seeking behaviour is distinct from compulsive checking in several respects. For example, reassurance seeking is generally an interpersonal process that involves the solicitation of anxiety-reducing feedback from other individuals, whereas compulsive checking is often carried out in isolation (Rachman, 1976, 2002). Notably, the interpersonal context in which reassurance seeking is typically carried out may serve to disperse the individual's perceived responsibility for preventing harm (Salkovskis, 1985, 1999), whereas compulsive checking has been proposed to actually increase OCD sufferers' perceived responsibility (Rachman, 2002). In addition, the impact of ERS may be broader than that of compulsive checking, as it necessarily affects not only the individual with OCD, but also those who are involved in the individuals' reassurance-seeking rituals (e.g., friends,

family, co-workers, etc.). Indeed, it is not uncommon for family members of OCD patients to be so profoundly affected by their repeated requests for reassurance that they break close family ties to escape the seemingly unending requests for reassurance (de Silva & Rachman, 2009). Secondly, some of the potential maintenance factors for ERS might not be relevant to compulsive checking. For example, the manner in which others respond to reassurance requests seems to be an important determinant of the long-term consequences of this behaviour; prior research has shown that repeatedly granting requests for reassurance can be counter-productive, leading to subsequent and further increases in reassurance seeking (Salkovskis & Warwick, 1986; Tolin, 2001; Warwick, 1992). Likewise, ambiguous feedback may perpetuate OCD-related reassurance seeking, given that ambiguity leads to heightened perceptions of threat in clinically anxious individuals and is likely to foster increased doubt and uncertainty (Beck & Clark, 1997; Eysenck, MacLeod, & Mathews, 1987; Eysenck, Mogg, May, Richards, & Mathews, 1991; Warwick, 1992). Thus, both the quantity and quality of individuals' responses to persistent requests for reassurance might influence subsequent reassurance seeking behaviour. Therefore, while compulsive checking and reassurance seeking are purported to be functionally similar in the context of OCD, these two compulsive acts also appear to be distinct in several meaningful ways, and as such, it is important to study each of these behaviours in their own right. Furthermore, potentially important differences between compulsive checking and reassurance seeking with respect to content, precipitating factors, function, and termination criteria have yet to be examined empirically. Lastly, there have been no systematic investigations of whether and how ERS may differ in OCD relative to other psychological disorders, such as Depression or Hypochondriasis.

In an effort to address these questions, two novel investigations were conducted:

(i) a semi-structured interview conducted with both clinical (non-depressed individuals whose symptoms met criteria for OCD, and depressed individuals without OCD) and non-clinical (undergraduate students) participants, in order to compare ERS and compulsive checking across a number of theoretically and clinically important domains (e.g., content, function, precipitating and termination factors), and to elucidate the mechanisms underlying the onset and maintenance of each of these compulsions, and (ii) a vignette study designed to experimentally test hypotheses about the relative impact of perceived responsibility, threat and ambiguity of feedback on reassurance seeking and checking behaviour, as well as associated constructs, in a sample of non-clinical undergraduate students. These studies represent an initial attempt to increase our understanding of factors that contribute to OCD-related ERS, with the goal of eventually enabling researchers and clinicians to develop more specific and effective treatments for this problematic behaviour.

## CHAPTER 2

### Why do people seek reassurance and check repeatedly? An investigation of factors involved in compulsive behavior in OCD and Depression

Research examining the role of excessive reassurance seeking (ERS) in perpetuating emotional distress and interpersonal difficulties has flourished over the past two decades. The majority of these studies have appeared in the depression literature, where ERS has been defined as “the relatively stable tendency to excessively and persistently seek assurances from others that one is loveable and worthy, regardless of whether such assurance has already been provided” (Joiner, Metalsky, Katz & Beach, 1999, p.270). Through this line of research, ERS has been implicated as a central process in the onset and maintenance of depression, and has been shown to predict interpersonal rejection and severity of depressive symptoms (see Starr & Davila, 2008, for a meta-analytic review). These findings provide support for Coyne’s (1976) interactional model of depression, which posits that depressed individuals tend to seek reassurance regarding the security of their relationships and their value to others (i.e., whether others “truly care” about them). An important tenet of this theory is that ERS behavior irritates others, thus increasing the likelihood of social rejection and reinforcing negative depressive cognitions. Perceived (or real) decreases in social support over time purportedly lead to ever increasing feelings of insecurity and urges to seek additional reassurance, thereby creating a vicious cycle.

Despite the attention that ERS has received in depression research, comparatively few studies have examined the role of reassurance seeking in maintaining anxiety disorders. Yet, anecdotal and empirical evidence suggest that ERS is a common problem

in clinically anxious populations, particularly among individuals diagnosed with Obsessive-Compulsive Disorder (OCD), Generalized Anxiety Disorder (GAD), and/or Hypochondriasis / health anxiety (Clark, 2004; Dugas & Robichaud, 2006; Freeston & Ladouceur, 1997; Hadjistavropoulos, Craig & Hadjistavropoulos, 1998; Morillo, Belloch, & García-Soriano, 2007; Salkovskis & Warwick, 1986). Within the context of these disorders, ERS may be more broadly defined as the repeated solicitation of safety-related information from others about a threatening object, situation or interpersonal characteristic, despite having already received this information. Although there is a paucity of research examining the specific factors that promote ERS in anxiety disorders, evidence suggests that it is among the most common strategies used by OCD patients to try to diminish their obsessional thoughts and images (Freeston and Ladouceur, 1997), and that individuals diagnosed with OCD are significantly more likely than clinically depressed, non-obsessional anxious, and non-clinical individuals to seek reassurance regarding negative intrusive thoughts (Morillo et al., 2007). Therefore, an investigation of factors that contribute to OCD-related reassurance seeking is clearly warranted.

Clinical descriptions of ERS in the OCD literature (Freeston and Ladouceur, 1997; Morillo et al., 2007; Rachman, 2002; Rachman & Hodgson, 1980; Salkovskis, 1985, 1999; Salkovskis & Warwick, 1985) have generally equated this behavior to other compulsive or “neutralizing” acts, particularly in terms of its hypothesized function. For example, Rachman (2002) has postulated that ERS is a variant of compulsive checking, and that both of these behaviors are aimed at reducing anxiety by attempting to minimize the likelihood of negative outcomes, and to decrease perceived responsibility for such outcomes. Similar to compulsive checking, ERS is hypothesized to prevent the

disconfirmation of catastrophic beliefs (e.g., “If I don’t do everything possible to make sure things are safe [such as seeking reassurance and/or checking], then a disaster is bound to occur”), and to be reinforced by temporary reductions in anxiety and perceived responsibility when requests for reassurance are granted (Parrish & Radomsky, 2006; Rachman, 2002; Rachman & Hodgson, 1980; Salkovskis, 1985). Hence, like checking behavior, ERS is routinely targeted in response prevention treatments for OCD (see Clark, 2004; Marks, 1981; Salkovskis & Warwick, 1985; Steketee, 1993; Tolin, 2001). However, examinations of whether ERS and compulsive checking might be perpetuated via similar mechanisms or serve comparable functions are scarce.

In a recent study conducted by Parrish and Radomsky (2006), non-clinical participants performed a complex manual classification task (i.e., pill-sorting) under conditions of high or low responsibility/threat, using a variation of Ladouceur and colleagues’ (1995) responsibility manipulation protocol. In the high responsibility/threat condition, participants were told that their results would be used to develop a safe and reliable system for sorting and distributing medications in a third-world country. Participants in the low responsibility/threat condition were told that the study sought to determine how quickly and accurately people could sort pills according to their color and shape. Consistent with Rachman’s (2002) theory, participants reported greater urges to check *and* to seek reassurance under conditions of high (vs. low) responsibility/threat, which was taken to suggest that these two behaviors may be functionally equivalent and/or driven by similar processes. However, this study did not directly enquire about the function of these behaviors, and its use of a non-clinical sample limited the potential generalizability of results. Of equal import, no published studies known to the authors

have compared factors that promote ERS in OCD vs. depression, thus highlighting the need to elucidate the unique and shared factors that contribute to this behavior among obsessive-compulsive and depressed individuals.

Reassurance seeking may arise from distinct concerns and/or serve different functions among obsessive-compulsive and depressed individuals, as different cognitive biases and beliefs are associated with OCD (e.g., perceived threats of physical harm/illness, inflated sense of responsibility, perfectionism, need for control, intolerance of uncertainty; OCCWG, 2005) and depression (e.g., preoccupations with potential loss, abandonment, worthlessness/guilt, hopelessness, rejection, and failure; Beck, 1967, 1976; Beck, Rush, Shaw & Emery, 1979). Likewise, the factors that maintain ERS in depression and OCD may differ according to each population's unique set of concerns and biases. For instance, the potential interpersonal consequences of ERS (e.g., social rejection, loss of social support) that are hypothesized to perpetuate this behavior among depressed individuals (Coyne, 1976) may instead persuade OCD patients to terminate this behavior. Meanwhile, certain catastrophic beliefs about the potentially harmful consequences of not seeking reassurance (e.g., being held responsible for illness, injury or other harms) may be specifically related to the maintenance of ERS in OCD.

Cognitive (Beck, 1967, 1976) and interpersonal (Coyne, 1976; Haefel, Voelz & Joiner, 2007; Joiner & Metalsky, 2001) theories of depression suggest that depressive reassurance seeking is likely to focus primarily on themes of low self-worth (e.g., "Do you think I'm boring?", "Are you sure I fit in?"), perceived threats of social loss or rejection (e.g., "Are you sure you're not mad at me?", "Do you still love me?"), and/or the potential for failure due to personal incompetence (e.g., "Do you think I can handle



this job/activity?"). Coyne's theory further implies that depressed individuals' reassurance seeking episodes are likely to be triggered by depressed mood, doubts regarding personal worth, and/or perceived or real loss (e.g., of social support). According to this framework, ERS is used by depressed individuals to determine whether others "truly" care about them and to attempt to secure their relationships. Thus, it follows that reassurance seeking episodes should cease once the depressed individual feels that they have gained sufficient evidence of caring from others that their mood improves and/or the perceived likelihood of (further) social rejection or abandonment is minimized.

In contrast, cognitive-behavioral models of OCD emphasize the key roles of inflated perceptions of responsibility and over-estimations of threat in the maintenance of this disorder (e.g., Salkovskis, 1985, 1999; Rachman, 1998, 2002; see also OCCWG, 2005). Thus, individuals with OCD may tend to seek reassurance about perceived threats of harm resulting from accidents or mistakes (e.g., "Did you see me lock the door?", "Are you sure I didn't run over anybody?"), health- or contamination-related concerns (e.g., "Is this soap anti-bacterial?", "Did you wash your hands before preparing dinner?"), and/or their personal competence/abilities (e.g., "Would you tell me if I made the wrong choice?", "Is my work OK?"). Common triggers of ERS among OCD patients may include anxious mood, perceived threats to their own or others' physical integrity (e.g., due to risk of fire, flood, contamination-related illness, etc.), and/or doubts or worries about their personal competence or decision-making abilities. As noted above, it is hypothesized that ERS is primarily intended to decrease anxiety by reducing the risk of potential harm (general or health-related) and dispersing responsibility for such harm to

others (Rachman, 2002). Therefore, OCD-related reassurance seeking should presumably stop (and anxiety should decrease) once the perceived potential for harm has been reduced, perceived responsibility for any such negative occurrences is diminished, or both. However, individuals with OCD have been shown to utilize elevated evidence requirements when deciding whether or not to terminate a compulsive episode (Wahl, Salkovskis, & Cotter, 2008), thus they may feel driven to obtain evidence that the above conditions have been met from several different *interpersonal* and *intrapersonal* (i.e., emotional) sources.

To address the above questions, we developed a semi-structured interview to ask about the content, triggers, function and termination criteria that are involved in ERS and repeated checking among individuals with OCD vs. depression. The central aims of this study were as follows: (i) to examine similarities and differences between ERS and repeated checking with respect to content, triggers, function, and termination factors, and (ii) to examine these questions across groups of obsessive-compulsive, depressed, and healthy control individuals.

## Method

### *Participants*

The present study included three groups of participants: (i) 15 individuals whose symptoms met criteria for OCD according to the *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition* (DSM-IV; APA, 2000) and who were not currently depressed (OCD group), (ii) 15 individuals whose symptoms met DSM-IV criteria for Major Depressive Disorder (with an episode occurring within the past month) and who did not suffer with OCD (MDD group), and (iii) 20 healthy control participants (HC

group). All participants were assessed using the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, Di Nardo, & Barlow, 1994; see below for description).

Non-clinical participants were volunteer undergraduate psychology students from Concordia University, in Montréal, Canada. They were recruited via classroom visits and an internet-based Psychology Department participant pool. Participants were excluded from the HC group if they reported any current or prior psychiatric disorders, or if they denied engaging in *any* reassurance-seeking or checking behavior during the previous six months. As a result, 4 of 24 potential HC participants were excluded from the study after completing the ADIS-IV, due to current substance dependence ( $n = 1$ ), a history of OCD and GAD ( $n = 1$ ), or a total absence of reassurance seeking and checking activity during the previous six months ( $n = 2$ ).

Clinical participants were recruited through advertisements in local newspapers (see Appendix A), and by contacting members of a clinical participant registry who indicated interest in research. One-hundred-forty-three candidates were screened using a brief telephone interview adapted from the ADIS-IV (Brown et al., 1994). Individuals were excluded from the study if they met diagnostic criteria for Bipolar or Psychotic Disorders, co-morbid OCD and MDD, or current alcohol and/or substance dependence, while those who met the appropriate diagnostic criteria and who reported persistent reassurance-seeking and/or checking ( $n = 34$ ; 23.8%) were invited to the laboratory to complete the ADIS-IV. Following the diagnostic interview, 30 of these individuals (15 OCD, 15 MDD) qualified to participate in the study. Clinical participants were remunerated for their time, and HC participants received course credit or entry in a draw for a cash prize.

Participants' diagnoses and demographic information are displayed in Table 2.1. One (6.7%) participant in the OCD group and 3 (20.0 %) participants in the MDD group were currently receiving psychotherapy. The number of participants taking psychotropic medications in the OCD and MDD groups was 4 (26.7 %) and 8 (53.3%), respectively. In the OCD group, the mean Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989) total score was 19.40 (SD = 3.31), while the mean subscale scores for obsessions and compulsions were 9.13 (SD = 1.81), and 10.27 (SD = 1.91), respectively. The three groups did not differ with respect to their marital status,  $\chi^2$  (df = 2) = 3.82, *n.s.*, their sex ratio,  $\chi^2$  (df = 2) = 6.02, *n.s.*<sup>1</sup>, or their education level,  $F(2, 47) = 0.45$ , *n.s.* However, there was a significant difference between groups with respect to age,  $F(2, 47) = 13.27$ ,  $p < .001$ . Participants in the HC group were significantly younger than those in the OCD group,  $p < .001$ , and the MDD group,  $p < .01$ , whereas participants in the two clinical groups did not differ. In addition, participants in the MDD group reported a longer duration of illness than those in the OCD group,  $F(2, 45) = 5.56$ ,  $p < .001$ .

### *Instruments*

*Anxiety Disorders Interview Schedule for DSM-IV* (ADIS-IV; Brown, Di Nardo, & Barlow, 1994).

This semi-structured interview was used to assess participants' diagnostic status. It assesses a variety of current and lifetime symptoms associated with anxiety and other (e.g., mood, somatoform, substance abuse, psychotic) disorders, according to DSM-IV (APA, 2000) criteria. The ADIS-IV has been widely used in both clinical and research contexts and it has been demonstrated to possess good to excellent inter-rater reliability

Table 2.1.

*Participants' demographic information and co-morbid diagnoses.*

	OCD ( <i>n</i> = 15)	MDD ( <i>n</i> = 15)	HC ( <i>n</i> = 20)
Sex			
Percent female	53.3 (8)	66.7 (10)	90.0 (18)
Age			
<i>M</i> (S.D.)	41.4 (15.2)	37.4 (10.3)	24.1 (5.0)
Years of education			
<i>M</i> (S.D.)	16.4 (3.8)	16.4 (3.3)	15.6 (2.2)
Marital status			
Percent married <sup>a</sup>	26.7 (4)	26.7 (4)	5.0 (1)
Duration of illness <sup>b</sup> (years)			
<i>M</i> (S.D.)	1.7 (3.7)	4.7 (6.7)	---
Co-morbid diagnoses <sup>†</sup> (percent)			
Panic Disorder	6.7 (1)	13.3 (2)	---
Agoraphobia <sup>c</sup>	---	13.3 (2)	---
Social phobia	20.0 (3)	33.3 (5)	---
Generalized Anxiety Disorder	13.3 (2)	46.7 (7)	---
Post-traumatic Stress Disorder	---	33.3 (5)	---
Dysthymic Disorder	---	6.7 (1)	---
Alcohol Abuse	---	6.7 (1)	---

*Note:* Means are reported with standard deviations in parentheses. Where percentages are reported, frequencies are shown in parentheses. OCD = Obsessive-Compulsive Disorder group; MDD = Major Depressive Disorder group; HC = healthy control group.

<sup>a</sup> includes married and common-law participants, <sup>b</sup> time elapsed since official diagnosis received, <sup>c</sup> both participants who met criteria for Agoraphobia were also diagnosed with Panic Disorder.

<sup>†</sup> not all diagnostic categories that were assessed are shown.

when assessing depression ( $K = .67$ ) and OCD ( $K = .85$ ), respectively (Brown, DiNardo, Lehman & Campbell, 2001).

*Yale-Brown Obsessive-Compulsive Scale* (Y-BOCS; Goodman et al., 1989).

This 10-item clinician-administered measure consists of two subscales, which assess the severity of participants' obsessions and compulsions, respectively. Subscale scores are summed to derive a total Y-BOCS score. The Y-BOCS has been shown to possess excellent inter-rater reliability (all intra-class correlations  $> 0.85$  for the total Y-BOCS score and for each item), as well as good convergent and divergent validity (Goodman et al., 1989).

*Interview for Compulsive Checking and Reassurance-Seeking Behavior* (ICCRS).

The ICCRS is a semi-structured interview that was developed for the current study (see Appendix B). It was designed to elucidate factors that may contribute to the onset, maintenance and termination of reassurance-seeking and checking episodes, as well as to clarify the functions of these behaviors. Two primary sections examine factors associated with respondents' reassurance-seeking and repeated checking behavior, respectively. Each of these sections includes sub-sections that utilize open-ended questions and subjective ratings (see below).

#### *Development of the ICCRS*

The first step in developing the ICCRS was to create a series of open-ended questions to examine similarities and differences between compulsive checking and reassurance seeking across a number of theoretically important domains. Thus, questions were developed to examine content (e.g., "What sorts of things do you check/seek reassurance about most frequently?"), episode triggers (e.g., "What usually prompts you

to check/seek assurance in the first place?”), function (e.g., “What is your main motivation for checking/seeking reassurance?”) and termination criteria (e.g., “What causes you to stop checking/seeking reassurance within a given episode?”). The inclusion of standardized open-ended questions in the ICCRS helped to reduce the likelihood that participants’ responses would be influenced by researcher bias or expectations.

In addition, a series of subjective ratings were collected using the ICCRS, to facilitate quantitative comparisons across groups and types of coping response (checking vs. reassurance seeking). Participants were asked to rate (using 0-100 scales) the following in reference to a recent episode of coping behavior: (1) anxiety, (2) sadness, (3) perceived threat, (4) perceived responsibility, (5) ambiguity of feedback/checking-related information, and (6) doubt regarding assurance (for reassurance section only).

ICCRS questions and ratings were formulated by the two co-authors of this paper and were revised through laboratory team meetings and pilot testing with both clinical and nonclinical individuals, in order to maximize the efficiency and clarity of the interview. Two versions of the ICCRS were developed to allow administration of the reassurance seeking and repeated checking sections in a counterbalanced, randomized fashion.

#### *Self-report measures*

In addition to the ADIS-IV and ICCRS (and the Y-BOCS for participants in the OCD group), participants completed a battery of online self-report measures. These included individual measures of OCD symptoms (the Vancouver Obsessional Compulsive Inventory [VOCI]; Thordarson et al., 2004) and beliefs (the Obsessional

Beliefs Questionnaire-44 [OBQ]; OCCWG, 2005), as well as measures of intolerance of uncertainty (Intolerance of Uncertainty Scale [IUS]; Buhr & Dugas, 2002), anxiety symptoms (Beck Anxiety Inventory [BAI]; Beck & Steer, 1993), and depressive symptoms (Beck Depression Inventory-II [BDI]; Beck, Steer, & Brown, 1996). All of these measures have been widely used in both research and clinical contexts, and possess good to excellent psychometric properties (see above citations for detailed descriptions).

### *Study procedure*

#### *Overview*

Participants were tested individually. All interviews were video-recorded using a Sony DCR-SR82 digital camera, and were transferred to DVD for subsequent reliability checks and coding of participants' responses (see below). Testing took approximately 3-4 hours, and participants took brief (10-15 minute) breaks following each interview.

#### *Diagnostic assessment*

The primary author (C.P.) administered the ADIS-IV (Brown et al., 1994) to all participants to establish their current diagnostic status. Participants whose symptoms met criteria for OCD were also administered the Y-BOCS (Goodman et al., 1989) to assess OCD symptom severity. Individuals who were eligible for the study were invited to complete the ICCRS, while those who did not meet the inclusion criteria were debriefed and compensated for their time.

#### *Administration of the ICCRS*

All ICCRS interviews were administered by a senior graduate-level research assistant. The interviewer had extensive experience in semi-structured interviewing, and received approximately 30 hours of additional training prior to the study, which included:



(i) observing 1 mock and 2 pilot interviews conducted by C.P., (ii) co-conducting 3 pilot interviews (with C.P.), and (iii) conducting 1 mock and 1 pilot interview alone. All pilot interviews were video-recorded, and portions of each interview were subsequently viewed and discussed. In addition, the interviewer was given a detailed set of ICCRS guidelines and trouble-shooting instructions (see Appendix C) to promote adherence to the standardized ICCRS protocol and reduce potential interviewing errors (e.g., using leading questions or statements, making inferences, inappropriate use of prompts and probes, etc.). Lastly, to reduce potential bias effects, the interviewer was neither informed of the study hypotheses, nor of participants' diagnostic status prior to the completion of the study.

The interview began by providing participants with definitions of reassurance-seeking and repeated checking. For the purpose of the interview, reassurance seeking was defined as "*asking other people to reassure you that things will be 'OK', even though you have already received this information in the past ... reassurance seeking can be more subtle, such as tentatively stating that things will be 'OK' and feeling reassured if others do not tell you otherwise*". It was stressed that reassurance seeking involves seeking *additional* feedback after having already received assurance about a given topic at least once. Repeated checking was defined as "*visually and/or physically checking that something is/will be 'OK' more than once*". Participants were also provided with OCD- and MDD-relevant examples of reassurance-seeking (e.g., "Did you see me lock the door?", "Do you still love me?", "Is my work OK?", etc.) and checking (e.g., stove, school/work assignment, appearance, etc.), and were administered a series of brief comprehension questions to ensure they understood these concepts.

Each main section of the interview initially asked participants to describe and form a detailed mental image of a recent episode in which they had used the coping strategy of interest (i.e., reassurance seeking or repeated checking), and to refer to this image while answering subsequent questions, in order to increase the validity of their responses. Participants were next asked the open-ended questions listed above. To ensure that participants' answers were complete, they were prompted for additional responses following each question until they had provided at least three responses, or they could not think of any additional responses. The interviewer then asked participants to specify which of their responses applied most frequently, to arrive at their 'principal' response. Next, while re-visualizing the episode they had described earlier, participants provided a number of subjective ratings (on a 0-100 scale, see above) regarding the feelings and thoughts they experienced during the episode.

#### *Completion of self-report measures*

After completing the interview, participants were asked to fill out a brief online questionnaire package which included the self-report measures listed above. Finally, they were debriefed, compensated, and thanked for their participation.

#### *Interview integrity*

An integrity check was performed to ensure consistency in the administration of the ICCRS, and to measure adherence to the interview protocol (see Appendix D for integrity check scoring system). Ten (20%) of the interviews were randomly chosen and scored (by C.P.) for: adherence to ICCRS scripts for participant instructions and feedback, proper usage of prompts and probes, and adherence to other ICCRS guidelines. Adherence to the protocol was 97.55% for the scored interview sample. All deviations

from the script were minor (e.g., omitting a few non-essential words to shorten questions), and the interviewer did not make any inappropriate inferences or misrepresent any of the participants' responses.

### *Coding*

All ICCRS interviews were coded for subsequent analyses, following recommendations outlined by Gillham (2000). Two undergraduate research assistants who were blind to participants' psychiatric status viewed the recordings independently and transcribed participants' responses to the open-ended questions onto coding sheets (see Appendix E). The coders were trained to categorize participants' responses by viewing and coding 3 pilot interviews, using guidelines provided in a coding manual created by the first author (see Appendix F). Coders were required to obtain a minimum of 95% agreement with both the interviewer and each other on all 3 pilot interviews before they could begin coding for the study.

Categories for participants' responses were initially developed based on cognitive-behavioral theory and were refined through team research meetings and pilot testing. Additional categories were created as necessary, according to participants' responses during the interview (i.e., when responses did not fit neatly within the initial categories). In cases of disagreement between coders, a consensus was reached by consulting the interviewer's response classification.

## Results

### *Symptom measures*

Participants' mean scores and group comparison statistics for the self-report measures are displayed in Table 2.2. A series of one-way independent ANOVA's was conducted,

Table 2.2.

*Participants' scores on self-report measures.*

	<i>M (S.D.)</i>			<i>F (2, 47)</i>
	OCD	MDD	HC	ANOVA
BAI	12.60 (7.41) <sup>a</sup>	19.00 (10.34) <sup>a</sup>	4.30 (3.63) <sup>b</sup>	17.68**
BDI	10.40 (7.42) <sup>a</sup>	29.20 (8.94) <sup>b</sup>	4.55 (3.59) <sup>c</sup>	59.90**
OBQ	149.87 (56.41) <sup>a</sup>	170.73 (40.0) <sup>ab</sup>	119.55 (32.44) <sup>ac</sup>	6.27*
VOCI	62.14 (34.86) <sup>a</sup>	49.93 (33.67) <sup>a</sup>	14.80 (9.35) <sup>b</sup>	14.64**
VOCI check	16.13 (6.31) <sup>a</sup>	6.40 (7.64) <sup>b</sup>	2.15 (3.79) <sup>b</sup>	24.36**
IUS	69.87 (29.33) <sup>a</sup>	94.60 (13.03) <sup>b</sup>	57.10 (19.68) <sup>a</sup>	13.13**

*Note:* Group means with differing subscripts differed significantly at the 0.01 level.

\* =  $p < .01$ , \*\* =  $p < .001$  (Bonferonni-adjusted for multiple comparisons).

BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, OBQ = Obsessive Beliefs Questionnaire, VOCI = Vancouver Obsessional Compulsive Inventory, VOCI check = checking subscale of the Vancouver Obsessional Compulsive Inventory, IUS = Intolerance of Uncertainty Scale.

where group (OCD vs. MDD vs. HC) served as the between-participants factor and participants' scores on each measure served as the outcome variable. Participants in the MDD group reported the most severe depressive symptoms (BDI) followed by participants in the OCD and HC groups, respectively. Depressed participants also reported significantly greater intolerance of uncertainty (IUS) than those in the OCD and HC groups, whose scores did not differ significantly from each other. In addition, participants in the MDD group scored significantly higher on a measure of maladaptive obsessional beliefs (OBQ) than those in the HC group, while neither the MDD or HC groups differed from the OCD group.

Participants in the OCD group reported significantly more checking behavior (VOCI checking subscale) than both the depressed and non-clinical participants, who did not differ from each other. However, participants in both the OCD and MDD groups scored significantly higher on measures of total obsessive-compulsive symptomatology (VOCI) and anxiety symptoms (BAI) than those in the HC group.

### *Reliability checks*

#### *Diagnostic reliability*

In order to assess the reliability of participants' diagnoses, 12 (24%) of the 50 ADIS-IV interviews were randomly selected and reviewed on DVD by a research assistant who had extensive experience with diagnostic assessment. The rater was blind to the diagnoses assigned by the primary assessor and was asked to provide a complete Axis I diagnostic profile for each participant. The principal and additional diagnoses assigned by the assessor (C.P.) and the independent rater were compared for the sample, and 100% inter-rater agreement was found.<sup>2</sup>

### *Coder reliability*

To assess ICCRS and coder reliability, the categorization of participant responses was compared between coders for 14 (28%) of the 50 interviews. Inter-rater agreement was excellent (95.81%) in the comparison sample.

### *Descriptive analyses*

Tables 2.3-2.6 display the different themes (i.e., categories) represented by participants' responses to the open-ended questions on the ICCRS (a detailed description of response categories is available upon request). Each table indicates for each group: (i) the percentage of participants who endorsed each category as their principal (i.e., most frequently applicable) response, and (ii) the percentage of participants who endorsed each category at *any* point during their response. For the sake of clarity and conciseness, only categories endorsed by at least 10% of participants in any group are displayed (complete results available upon request), and the following analyses focus solely on participants' principal responses. Sample participant responses are provided throughout for illustrative purposes.

### *Content*

As shown in Table 2.3, participants in the OCD group reported that they most frequently seek reassurance about potential general threats: "I'll ask [my husband], 'Are you sure you checked the fire alarm? ... Are you sure the stove is off?' ... even though I've already asked"; "Germs, sharp objects ... things that go into your body I guess or ... things that can happen". In addition, several OCD participants reported that they most frequently seek reassurance about perceived social threats: "That someone's not mad at

Table 2.3.

*Content of participants' reassurance-seeking and checking episodes.*

Content	OCD	MDD	HC
Reassurance-seeking	<i>n</i> = 14	<i>n</i> = 15	<i>n</i> = 17
Perceived threat (health/contamination)	7.7 [28.6]	6.7 [33.3]	--- [5.9]
Perceived threat (general safety/harm)	46.2 [50.0]	20.0 [60.0]	23.5 [47.1]
Perceived threat (social)	23.1 [42.9]	40.0 [73.3]	52.9 [76.5]
Personal responsibility for harm	--- ---	--- [13.3]	--- ---
Personal performance/competence	15.4 [57.1]	26.7 [80.0]	11.8 [41.2]
Concerns about self-worth	7.7 [21.4]	6.7 [60.0]	11.8 [35.3]
Checking	<i>n</i> = 15	<i>n</i> = 15	<i>n</i> = 16
Perceived threat (health/contamination)	6.7 [13.3]	--- ---	--- ---
Perceived threat (general safety/harm)	86.7 [100.0]	33.3 [66.7]	50.0 [56.3]
Appearance	--- [6.7]	13.3 [20.0]	12.5 [25.0]
Performance / correctness on task.	6.7 [20.0]	40.0 [66.7]	37.5 [68.8]

*Note:* Principal response percentages are shown with percentage of respondents endorsing each category at all in brackets.

me”; “Whether a person still cares”. Similar to reassurance seeking, compulsive checking was also most often associated with perceived general threats: “The door in the back being locked, the heat being normal temperature or off ... that my alarm clock is off, the toaster and the rice maker are unplugged, that the stove and the oven are off, that the water is not dripping in the kitchen”; “Whenever I mail letters or cheques or bills ... making sure that it went down the box, so I have to open it at least 5 times”.

In contrast to the OCD group, the most common focus of reassurance seeking reported by both MDD and HC group participants was social threats: “Asking my fiancé if they love me” (MDD); “Do you love me; are you angry?” (MDD); “Do I still make you happy?” (HC); “Do I do anything that bothers you? ... Do I say wrong things in front of your friends?” (HC). In addition, several participants in the MDD group reported seeking reassurance mainly about personal performance and/or competence: [Doubts regarding] “competence in everything from my work to my ability to run my household”; “I’m constantly ... trying to find out if I’m meeting that standard, if I’m doing things fast enough”. However, similar to the OCD group, a significant minority of participants in both the MDD and HC groups reported that they primarily seek reassurance about a variety of potential general threats: “Did you see me take my bus pass?” (MDD); “... are we OK with money and for the future?” (HC); “... if I hear (my sister) come in at 3am ... I’ll ask her ‘Did you lock the door?’ ... and I’ll keep asking her” (HC).

The primary checking themes in both the MDD and HC groups were perceived general threats: “I check to make sure my hair straightener is off ... I’m always a little paranoid about fire” (HC); “... the stove, the kettle, the iron, the lock” (HC); “The windows, and to make sure the door is locked” (MDD); “If I’m leaving the apartment,



things like leaving the light or the oven on” (MDD); and doubts regarding performance and/or correctness on tasks: “School work I tend to check over quite a few times” (HC); “... the correctness of written things” (MDD).

### *Triggers*

Table 2.4 displays the main triggers of participants’ reassurance seeking and checking behavior. OCD group participants reported that the principal triggers of both their reassurance seeking and checking behavior were anxious mood and doubts regarding the reduction of general threats: “I’m doubting whether or not there will be a safety issue that will arise from having not done something” (reassurance seeking); “I’m doubting ... whether I actually did it and also whether it was properly performed ... let’s say for a tap, whether I turned it off all the way or I left it dripping or not” (checking); “[I’m thinking] that it’s not locked and I’ll be robbed” (checking); “I’ll check the stove just to make sure it’s off... I’m usually afraid that something will catch on fire” (checking). Additionally, several OCD participants reported that perceived social threats are the primary trigger of their reassurance seeking episodes: “... I was super insecure about our relationship”; “Is he cheating on me?”, whereas their compulsive checking episodes were also often triggered by doubts regarding personal competence and/or task performance: “People will ask me; ‘Are you incompetent?’”; “... the fear of making a mistake”.

Similar to the OCD group, checking behavior in the MDD and HC groups was commonly triggered by perceived general threats: “I have lost my wallet more than once ... I always have the urge to make sure I haven’t lost it again” (HC); “the stove ... I think

Table 2.4.

*Triggers related to the onset of participants' reassurance-seeking and checking behavior.*

Trigger	OCD	MDD	HC
	<i>n</i> = 14	<i>n</i> = 15	<i>n</i> = 17
Reassurance-seeking			
Unwanted thoughts	---	6.7 [13.3]	---
Anxious mood	38.5 [64.3]	13.3 [60.0]	17.6 [29.4]
Depressed mood	---	6.7 [26.7]	---
Perceived health threat/physiological symptom	7.7 [14.3]	13.3 [13.3]	---
Doubt regarding removal of general threat	30.8 [35.7]	6.7 [40.0]	5.9 [29.4]
Doubt regarding performance/competence	---	26.7 [66.7]	23.5 [47.1]
Perceived social threat (loss/rejection)	15.4 [35.7]	20.0 [73.3]	35.3 [70.5]
Doubt regarding personal worth	---	6.7 [33.3]	11.8 [47.1]
Doubt memory	---	---	5.9 [11.8]
Doubt perception	---	---	---
Physical environment / location	7.7 [21.4]	---	---
Checking	<i>n</i> = 15	<i>n</i> = 15	<i>n</i> = 16
Anxious mood	20.0 [46.7]	13.3 [20.0]	6.3 [25.0]
Depressed mood	---	---	---
	[13.3]	[6.7]	---

Perceived health threat/physiological symptom	---	[13.3]	---	---	---
Doubt regarding removal of general threat	40.0	[86.7]	33.3	[73.3]	43.8 [62.5]
Perceived responsibility for harm	6.7	[26.7]	6.7	[6.7]	6.3 [6.3]
Doubt regarding performance/competence	13.3	[20.0]	20.0	[40.0]	31.3 [62.5]
Perceived social threat (loss/rejection)	---	---	13.3	[20.0]	6.3 ---
Doubt regarding personal worth	---	---	6.7	[20.0]	6.3 [12.5]
Doubt memory	6.7	[6.7]	6.7	[13.3]	6.3 [6.3]
Doubt perception	---	[13.3]	---	[13.3]	---
Physical environment / location	6.7	[20.0]	---	[6.7]	---

*Note:* Principal response percentages are shown with percentage of respondents endorsing each category at all in brackets.

it is on and there will be a fire” (HC); “... feeling maybe vulnerable or unsafe... I worry if I’m going to be at home and somebody is just going to just walk in” (MDD), and doubts regarding personal performance and/or competence: “... I’m not sure if I’ve done it correctly” (in regard to school work) (MDD); “Uncertainty or lack of confidence ...” (HC). However, relative to the OCD group, MDD and HC group participants reported that reassurance seeking was more frequently triggered by perceived social threats: “... a feeling that someone doesn’t like me or they’re angry at me or frustrated or something” (HC); “[I’m afraid of] him leaving me” (HC); “the doubt or insecurity I’m experiencing at the time with the relationship” (MDD), and doubts regarding personal performance and/or competence: “[I] just don’t feel ... competent; that I can’t make that decision on my own”(MDD); “... if I’m not sure I did it [a work project] properly” (HC).

#### *Function*

Participants’ motivations for engaging in reassurance seeking and checking behavior are displayed in Table 2.5. Among OCD respondents, the main functions of both behaviors were to reduce anxiety and to prevent general harm (i.e., ensure safety), as illustrated by the following reasons provided for reassurance seeking: “... [to ensure] they’re not out to fire me”; “to make sure that the consequences [e.g., fire, theft] won’t happen”; and for checking: “... [to get] assurance about ... my safety [and] others’ safety”; “I don’t want my house to burn down ... [or] to get broken into”.

Similar to individuals with OCD, a majority of participants in the MDD and HC groups reported that their principal reasons for checking were to decrease anxiety and to prevent general harm: “... to make sure that I get a good grade” (HC); “I just want to know that the door is closed so that nobody can get into the house easily” (HC); “for

Table 2.5.

*Function of participants' reassurance-seeking and checking behavior.*

Function	OCD	MDD	HC
Reassurance-seeking	<i>n</i> = 14	<i>n</i> = 15	<i>n</i> = 17
Decrease anxious mood	28.6 [71.4]	26.7 [73.3]	11.8 [35.3]
Decrease depressed mood	---	---	5.9 [5.9]
Prevent harm (health / contamination)	7.1 [28.6]	---	5.9 [5.9]
Prevent harm (general safety)	28.6 [50.0]	6.7 [40.0]	11.8 [47.1]
Prevent harm (social)	7.1 [35.7]	20.0 [66.7]	47.1 [64.7]
Prevent harm (minor matters)	---	6.7 [20.0]	---
Decrease responsibility for harm	7.1 [14.3]	---	---
Increase self-esteem / receive affection	14.3 [35.7]	33.3 [53.3]	17.6 [41.2]
Checking	<i>n</i> = 15	<i>n</i> = 15	<i>n</i> = 16
Decrease anxious mood	20.0 [66.7]	26.7 [46.7]	18.8 [37.5]
Prevent harm (general safety)	73.3 [86.7]	26.7 [53.3]	31.3 [62.5]
Prevent harm (social)	---	6.7 [20.0]	---
Prevent harm (minor matters)	---	6.7 [46.7]	12.5 [18.8]
Decrease responsibility for harm	---	---	12.5 [18.8]

Reduce doubt regarding memory	---	[20.0]	---	[13.3]	12.5	[12.5]
Increase perceived control	---	[6.7]	6.7	[13.3]	---	---
Increase confidence / self-esteem	6.7	[6.7]	13.3	[20.0]	12.5	[18.8]
To please others	---	[6.7]	---	---	---	[12.5]

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*Note:* Principal response percentages are shown with percentage of respondents endorsing each category at all in brackets.

harm, or for people getting in a fire in my house ... just to stop it" (MDD). Likewise, a considerable number of MDD participants stated that the main function of ERS was to reduce anxiety. However, in comparison to the OCD group, a noticeably higher percentage of participants in the MDD and HC groups indicated that their reassurance seeking was primarily intended to prevent social harm; "I want the correct answer for what I'm asking ... [that] he's not going to leave me" (HC); "[to be reassured that they] are not mad at me" (MDD), or to increase self-esteem and/or receive attention: "... (to) boost my self-esteem"(HC); "I'm hoping that they will convince me that I look nice" (HC); "I would like to get some confidence back; I would like to feel better about myself" (MDD).

#### *Termination Factors*

As shown in Table 2.6, the primary factors involved in the termination of reassurance seeking episodes among OCD respondents were interpersonal concerns: "I pick up social cues, like somebody is getting fed up"; "I think it's partly embarrassment, or the feeling that if I ask one more time ... this person is going to wonder what's going on", rationalization: "I know that they cannot give me any solution except talking to me"; "... feeling that it's ridiculous to keep on asking ... you know the answer", and reduced anxiety. While interpersonal concerns also contributed to the termination of checking in this group, the most common reason for stopping was a perceived reduction in general threat: "I realize it's off"; "Remembering that it has been checked or that it has been double checked and there's no reason to go back".

Similar to the OCD group, a large portion of participants in the MDD group reported that their reassurance seeking episodes typically end due to interpersonal

Table 2.6.

*Factors leading to the termination of participants' reassurance-seeking and checking.*

Termination factors	OCD	MDD	HC
Reassurance-seeking	<i>n</i> = 14	<i>n</i> = 15	<i>n</i> = 17
Interpersonal concerns	28.6 [50.0]	20.0 [46.7]	6.3 [35.3]
Anxiety subsides	21.4 [35.7]	20.0 [46.7]	--- [17.6]
Rationalization	21.4 [50.0]	20.0 [40.0]	12.5 [29.4]
Achieve sense of control	--- ---	6.7 [13.3]	--- ---
Perceived reduction of health threat	7.1 [7.1]	--- [13.3]	--- 5.9
Perceived reduction of threat (general safety)	--- [7.1]	--- [46.7]	18.8 [41.2]
Perceived reduction of social threat	7.1 [21.4]	26.7 [40.0]	43.8 [52.9]
Time pressure	--- [14.3]	--- [13.3]	--- ---
Believe feedback	--- [14.3]	--- [6.7]	18.8 [35.3]
Checking	<i>n</i> = 15	<i>n</i> = 15	<i>n</i> = 16
Physical / mental exhaustion	--- ---	--- [13.3]	--- [6.3]
Interpersonal concerns	26.7 [53.3]	--- ---	--- ---
Anxiety subsides	13.3 [20.0]	6.7 [40.0]	6.3 [12.5]
Rationalization	6.7 [40.0]	26.7 [40.0]	6.3 [25.0]



Perceived reduction of threat (general safety)	33.3	[53.3]	40.0	[73.3]	75.0	[93.8]
Effort/rules	13.3	[20.0]	---	---	---	---
Time pressure	6.7	[33.3]	6.7	[33.3]	6.3	[18.8]
Distraction	---	[6.7]	6.7	[13.3]	---	---

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*Note:* Principal response percentages are shown with percentage of respondents endorsing each category at all in brackets.

concerns: “Fear ... like you’re becoming a turn-off ... fear of rejection altogether”; “Usually I stop because the person is getting more angry because I’m asking if they’re angry”, rationalization: “... no matter how many times I hear it, I still won’t believe it ... so it’s that sense of pointlessness”, or reduced anxiety. However, the most common single factor contributing to the termination of depressive reassurance seeking was a perceived reduction in *social* threats: “If my friend calls me ... then it feels like I don’t have to call her [to see if we’re still friends]”; “I’m satisfied with the reassurance ... that they like me and appreciate me”. In contrast, checking behavior was most likely to stop in the MDD group following a perceived reduction of *general* threats: “When I’m satisfied that it’s in order and the work is good”; “When I know that it’s off, I stop, because it’s very easy to see”. Additionally, several participants reported that rational self-statements allow them to stop checking: “[I] shouldn’t be putting so much effort into something that’s not the end of the world”; “... the realization that you just have to stop at some time”.

Lastly, HC group participants most commonly reported that perceived social threat reduction is the principal factor in terminating their reassurance seeking episodes: “When I see that everything [in our relationship] goes back to normal”; “... [when] I know that ... they will be my friends no matter what”. Other common themes were a perceived reduction in general threats: “[When I am sure] ... that everything is going as planned ... we have enough money”; “If they’re confident that I locked it, I will feel more confident that I locked it”, and believability of previous assurance: “... [Feeling reassured that] what [was] said couldn’t be interpreted in any other way”; “... it’s more than the initial answer ... it clears up the ambiguity”; “I’ll probe until I get an explanation

that is believable to me ...”. With respect to checking, the majority of HC group participants reported that they typically stop when they perceive a decrease in general threats: “Once I become convinced that it’s OK ... it’s a good time to stop”; “... seeing the door locked when I re-check”.

#### *Comparative analyses of subjective ratings*

Participants’ mean subjective ratings of anxiety, sadness, perceived threat and responsibility, and ambiguity (of prior feedback and checks) are shown separately for each coping behavior (reassurance seeking and checking) in Table 2.7. A series of one-way independent ANOVA’s was performed in order to compare ratings across groups. Participant group served as the independent variable, while each of the above-listed ratings served as the dependent variable for each analysis. Effect sizes are reported as Cohen’s *d*, with small, medium and large effects represented by values of 0.2, 0.5, and 0.8, respectively (Cohen, 1988).

#### *Reassurance seeking episodes*

There was a significant difference between groups with respect to the amount of anxiety experienced at the onset of reassurance-seeking episodes,  $F(2, 42) = 4.11, p < .05, d = 0.63$ . As recommended by Field (2005), planned contrasts were conducted, which revealed that participants in the OCD and MDD (i.e., clinical) groups experienced significantly greater anxiety than HC participants,  $t(43) = 2.86, p < .01, d = 0.87$ . However, the anxiety reported by OCD and MDD participants did not differ,  $t(43) = 0.07, n.s.$  Significant group differences also emerged with respect to the amount of sadness experienced when deciding to seek reassurance,  $F(2, 42) = 5.53, p < .01, d = 0.72$ .

Table 2.7.

*Participants' cognitive and affective variable ratings for reassurance-seeking and checking sections.*

Rating	M (S.D.)				ANOVA (group effects)
	Total	OCD	MDD	HC	
Reassurance Seeking		<i>n</i> = 14	<i>n</i> = 15	<i>n</i> = 17	<i>F</i> (2, 42)
Anxiety / discomfort	57.39 (26.22)	65.00 (21.56) <sup>a</sup>	65.67 (22.98) <sup>a</sup>	43.82 (26.55) <sup>b</sup>	4.11*
Sadness	31.96 (35.20)	28.57 (33.42) <sup>ac</sup>	53.33 (35.64) <sup>b</sup>	15.88 (27.46) <sup>c</sup>	5.53**
Threat / danger	40.00 (31.18)	46.07 (31.69) <sup>a</sup>	56.33 (28.31) <sup>a</sup>	20.59 (23.11) <sup>b</sup>	7.16**
Responsibility	58.74 (30.51)	53.21 (32.79) <sup>a</sup>	67.13 (34.04) <sup>a</sup>	55.88 (25.08) <sup>a</sup>	0.87
Feedback ambiguity	43.59 (29.84)	37.86 (31.42) <sup>a</sup>	52.00 (31.61) <sup>a</sup>	40.88 (26.94) <sup>a</sup>	0.92
Checking		<i>n</i> = 15	<i>n</i> = 15	<i>n</i> = 16	
Anxiety / discomfort	48.83 (26.32)	58.67 (20.57) <sup>a</sup>	54.33 (28.28) <sup>a</sup>	34.44 (24.26) <sup>b</sup>	4.33*
Sadness	15.67 (21.91)	12.00 (21.45) <sup>ac</sup>	28.33 (23.20) <sup>b</sup>	7.25 (16.09) <sup>c</sup>	4.50*
Threat / danger	32.74 (30.43)	42.33 (30.64) <sup>a</sup>	44.00 (30.83) <sup>a</sup>	13.19 (19.70) <sup>b</sup>	6.26**
Responsibility	71.72 (27.81)	73.33 (31.26) <sup>a</sup>	73.60 (26.69) <sup>a</sup>	68.44 (26.94) <sup>a</sup>	0.16
Ambiguity	40.33 (27.44)	37.67 (29.45) <sup>a</sup>	45.00 (31.79) <sup>a</sup>	38.44 (21.74) <sup>a</sup>	0.32

*Note:* Means are reported with standard deviations in parentheses. Group means with differing superscripts differed significantly at the 0.05 level.

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

Contrasts showed that clinical participants reported significantly more sadness than those in the HC group,  $t(43) = 2.56, p < .05, d = 0.78$ , and depressed respondents reported significantly more sadness than those in the OCD group,  $t(43) = 2.07, p < .05, d = 0.63$ . Lastly, the amount of perceived threat reported by participants differed according to group,  $F(2, 42) = 7.16, p < .01, d = 0.83$ , such that the clinical group participants reported significantly higher threat than those in the HC group,  $t(43) = 3.63, p < .05, d = 1.11$ . However, the perceived threat experienced by MDD and OCD respondents did not differ significantly,  $t(43) = 1.00, n.s.$  Participants in the three groups did not differ with respect to their ratings of perceived responsibility,  $F(2, 42) = 0.87, n.s.$ , ambiguity of feedback,  $F(2, 42) = 0.92, n.s.$ , or believability of feedback,  $F(2, 42) = 0.03, n.s.$

#### *Checking episodes*

With respect to checking, there was a significant difference between groups in terms of anxiety,  $F(2, 42) = 4.33, p < .05, d = 0.64$ . Participants in the clinical groups experienced significantly higher anxiety than those in the HC group,  $t(43) = 2.90, p < .01, d = 0.88$ , whereas OCD and MDD participants' anxiety ratings did not differ,  $t(43) = -0.48, n.s.$  Significant group differences also emerged with respect to sadness experienced during checking,  $F(2, 42) = 4.50, p < .05, d = 0.65$ . Specifically, clinical participants reported significantly greater sadness than HC participants,  $t(43) = 2.05, p < .05, d = 0.62$ , and depressed respondents experienced significantly greater sadness than those in the OCD group,  $t(43) = 2.19, p < .05, d = 0.67$ . Furthermore, there was a significant difference between groups in terms of perceived threat,  $F(2, 42) = 6.26, p < .01, d = 0.77$ , such that clinical participants reported significantly higher perceived threat than those in the HC group,  $t(43) = 3.53, p < .01, d = 1.08$ , although the two clinical groups did not

differ,  $t(43) = 0.17, n.s.$  There were no group differences with respect to perceived responsibility,  $F(2, 42) = 0.16, n.s.$ , or ambiguity of previous checks,  $F(2, 42) = 0.32, n.s.$

### Discussion

The present study sought to clarify factors involved in the onset, maintenance, and termination of reassurance seeking and checking behavior, particularly within the contexts of OCD and depression. A summary and discussion of findings is presented below.

#### *Content and Triggers*

Participants' ERS and checking behavior was focused on a number of distinct areas. As expected, individuals with OCD reported that they primarily seek reassurance about perceived *general* threats (and to a lesser degree, social threats), whereas depressed individuals reported that they tend to seek reassurance about perceived *social* threats, as well as their performance/competence on various tasks. Although HC respondents were most likely to seek reassurance about various social threats, many individuals in this group reported that they primarily seek reassurance about general threats. Similar to ERS, the vast majority of OCD respondents reported that their checking is principally focused on perceived general threats, whereas checking behavior was relatively equally associated with general threats vs. task performance/correctness in the MDD and HC groups.

Similarly, the most commonly reported triggers of both ERS and repeated checking among OCD respondents were elevated anxiety and perceived threats of *general* harm. In contrast, these behaviors were primarily triggered in the MDD and HC groups by doubts about personal performance/competence, perceived *social* threats (in

the case of ERS), and perceived *general* threats (in the case of repeated checking), suggesting that episode triggers are highly consistent with the content of ERS/checking within each group.

It is evident from these findings that reassurance requests tend to differ among individuals with OCD vs. depression; individuals with OCD mainly seek reassurance about perceived *general* threats, whereas depressed individuals are most frequently concerned about perceived *social* threats or their performance/correctness on tasks. These results are consistent with cognitive-behavioral and interactional models which emphasize the importance of biased threat perceptions and responsibility beliefs in OCD (e.g., OCCWG, 2005; Rachman, 2002; Salkovskis 1985, 1999), and concerns about potential abandonment, loss and failure among depressed individuals (e.g., Beck, 1967, 1976; Coyne, 1976; Haefel et al., 2007).

In addition, the data suggest that routine checking behavior is performed in relation to a greater variety of concerns among MDD and HC vs. OCD groups (see Table 2.3). Whereas OCD respondents reported checking perceived general threats almost exclusively, the percentage of participants in the MDD and HC groups who primarily checked their performance/correctness or appearance (combined) was comparable to those who typically checked perceived general threats. Likewise, participants in the OCD group reported a greater variety of concerns in association with their reassurance seeking vs. their checking behavior, as ERS commonly focused on perceived social threats and personal performance/competence in addition to general threats. One potential explanation for this finding is that people may choose to seek reassurance about concerns that are impractical or inconvenient to personally check. It is presumably more

difficult to engage in physical or visual checking of some types of concern (e.g., about potential social loss or abandonment ["Do you still love me?"], personal responsibility for harm ["Will you blame me if there is an accident?"], self-esteem, etc.) than others (e.g., general and/or health threats involving visible signs of risk, appearance-related concerns). Consistent with this interpretation, only 1 participant in the entire sample reported checking in relation to perceived social threats, whereas such threats were the focus of ERS for a large percentage of respondents. Likewise, individuals may be more inclined to seek reassurance about performance/correctness (as opposed to checking) if they are concerned about others' *opinions* regarding their abilities, whereas it may be more convenient and/or less socially disruptive to check visually/physically in cases where the individual can confidently evaluate their own performance (e.g., checking for simple grammar or spelling mistakes, checking the stove, locks, etc.). However, further research is required to explicitly assess the reasons why individuals choose one coping strategy (i.e., reassurance seeking vs. checking) over another in a given situation.

#### *Function*

As predicted, OCD respondents reported that their main reasons for seeking reassurance were to reduce anxiety and to prevent general harm. In contrast, the majority of MDD and HC participants indicated that their ERS is primarily intended to prevent social harm or to increase self-esteem / elicit affection from others, although several depressed respondents also reported seeking reassurance to reduce anxiety. All 3 groups endorsed anxiety reduction and general harm prevention as the principal functions of checking.



In line with Rachman's (2002) theory, these findings suggest that compulsive checking and ERS are functionally equivalent in the context of OCD, as both behaviors are primarily intended to decrease anxiety and/or prevent general harm. These results are also consistent with interactional models of depression (e.g., Coyne, 1976; see also Haeffel et al., 2007; Joiner & Metalsky, 2001; Potthoff, Holahan, & Joiner, 1995), which implicate ERS in the perpetuation of rejection/abandonment fears and low self-esteem via unintentional reinforcement of negative self-schematic beliefs.

However, not all of our predictions were confirmed. For instance, diminishing responsibility for harm was rarely endorsed as a principal function of either ERS or repeated checking in any of the groups. This finding appears to contradict cognitive-behavioral accounts of OCD (e.g., Salkovskis, 1985, 1999; Salkovskis et al., 2000), which propose that inflated responsibility is central to the onset and maintenance of compulsive behavior. However, given that experimental manipulations of responsibility have consistently been shown to affect anxiety levels, compulsive urges, and/or checking behavior in prior research (Ladouceur et al., 1995; Lopatka & Rachman, 1995; Parrish & Radomsky, 2006; Salkovskis et al., 2000; Shafran, 1997), it is proposed that our data collection methods (i.e., a semi-structured interview) may have contributed to this counter-theoretical finding. Indeed, even if many individuals' ERS/checking behavior is in fact intended (at least in part) to diminish their personal responsibility for harm, they may have been more likely to spontaneously report the salient goal of preventing harm, due to social desirability and/or a lack of insight into the core function of their coping behaviors.

*Termination factors*

Clinical participants frequently reported that they terminate ERS due to interpersonal concerns (e.g., fears of embarrassment, causing others to become angry/frustrated, etc.), reductions in anxiety, or rational self-talk. However, the most common reason for terminating ERS among depressed respondents was a perceived reduction in social threats. Similar to the MDD group, HC participants reported that they primarily terminate reassurance seeking due to a reduction in social threats, although general threat reductions and eliciting *believable* feedback were also commonly endorsed as termination criteria. In all 3 groups, checking behavior was most commonly terminated due to a perceived reduction in general threat. However, several OCD respondents reported that they stop checking primarily due to interpersonal concerns, while a number of depressed individuals reported using rational self-talk to stop checking.

These findings provide mixed support for our hypotheses. As expected, depressed individuals reported that they tend to stop ERS once social threats appear diminished, consistent with their fears of social rejection/abandonment. This lends support to Coyne's (1976) interactional model, which implies that depressive reassurance seeking is intended to secure relationships and/or increase self-worth. However, contrary to prediction, perceived decreases in general threat were not instrumental in OCD respondents' decisions to stop ERS behavior according to self-report. This contrasts with our findings that (i) OCD-driven ERS is frequently focused on, triggered by, and intended to reduce general threats, (ii) OCD *checking* stops primarily due to a perceived reduction in general threats, and (iii) depressive ERS was principally related to social threats across *all* the domains of content, triggers, function and termination. This might

be explained by the fact that individuals seeking reassurance (as opposed to checking) are often unable to personally verify that a general threat has been reduced, either because of their inability to check or the hypothetical nature of the threat. Thus, general threat reduction may be an inappropriate criterion for termination under these circumstances. In contrast, the reassurance provider is often the *source* of perceived threat among depressed individuals (e.g., due to the possibility of rejection/abandonment), thus it may be more feasible for them to utilize perceived decreases in (social) threat as a primary criterion for termination, as was found in this study. However, these ideas are speculative, and further research will be required to examine these hypotheses.

Another notable finding is that interpersonal concerns were endorsed as an important termination factor for ERS in both clinical groups (as well as for checking in the OCD group), suggesting that these individuals are acutely aware of the potential negative consequences of their maladaptive coping behaviors on their relationships (e.g., Joiner, Alfano & Metalsky, 1992). This finding is interesting in light of Coyne's (1976) proposal that negative feedback from others (e.g., verbal criticism, displays of anger or frustration, etc.) in relation to ERS undermines depressed individuals' self-esteem, and therefore *increases* their likelihood of seeking additional reassurance. While our results do not directly contradict this theory, they suggest that individuals might experience an approach/avoidance conflict in relation to ERS, such that they feel the urge to approach and seek reassurance from others in an attempt to secure their relationships, while at the same time, wish to avoid interpersonal rejection due to their persistent requests for this feedback.

Lastly, several HC respondents indicated that the *quality* of feedback (believable vs. insincere, clear vs. ambiguous) they receive influences whether they will continue to seek reassurance. Thus, future studies might examine the relative impact of *quality* vs. *quantity* of feedback in determining individuals' subsequent reassurance seeking behavior.

#### *Cognitive and affective variable ratings*

Consistent with cognitive-behavioral theories of compulsive behavior (Rachman, 2002; Salkovskis, 1985, 1999), the onset of both ERS and repeated checking was associated with higher anxiety and threat estimations among clinical vs. non-clinical participants. Depressed individuals reported similar levels of anxiety and perceived threat as OCD respondents, suggesting that biased threat appraisals (see Beck & Clark, 1999; Beck, Emery & Greenberg, 1985) may not be specific to anxiety-disordered populations. Rather, our findings suggest that the primary *type* of threat (i.e., general vs. social) that triggers compulsive behavior may differ between OCD and MDD groups. However, this finding must be interpreted with caution, since the MDD group included a number of individuals with comorbid anxiety (particularly GAD).

Not surprisingly, depressed individuals reported greater sadness at the onset of reassurance seeking and checking episodes than both OCD and HC participants. This suggests that depressed mood may have served as a trigger and/or maintaining factor for perseverative behavior, as proposed by mood-as-input theory (e.g., Davey, Startup, Zara, MacDonald, & Field, 2003; MacDonald & Davey, 2005). Alternatively, this result may have simply been due to higher baseline levels of depression among MDD group

participants, given that increased sadness was rarely endorsed as a principal trigger of ERS or repeated checking in this group.

Lastly, participants in all 3 groups reported fairly high levels of perceived responsibility and ambiguity in relation to both ERS and checking. Although no significant group differences emerged with respect to these variables, this suggests that both perceived responsibility and the quality of feedback (i.e., clear vs. ambiguous) received from others may be important factors in the onset of compulsive behavior. Accordingly, future investigations might examine how experimental manipulations of these variables affect subsequent reassurance seeking and checking behavior, in order to elucidate the various processes that underlie these compulsions.

#### *Study limitations*

The present study had several limitations. First of all, the sample size was relatively small, which limited statistical power and the generalizability of our findings. Thus, replication in a larger sample will be required before any firm conclusions can be drawn based on our results. Secondly, we relied exclusively on participants' self-report to assess factors involved in the onset, maintenance, and termination of ERS and repeated checking episodes. Problems with this approach include potential issues surrounding the validity of participants' responses, as well as the assumption that participants possess sufficient insight to recognize (and report) the factors that underlie their maladaptive coping strategies. In anticipation of these problems, focused imagery was used throughout the ICCRS to enhance participants' recollection of relevant ERS and repeated checking episodes. Nonetheless, our findings must be interpreted with caution. Studies which include experimental manipulations of factors that may influence ERS and

repeated checking (e.g., perceived threat, responsibility, ambiguity, etc.), and which employ other data collection methods (e.g., behavioral observation, interviews with significant others, physiological tests, etc.), will be instrumental in further advancing our understanding of these maladaptive processes. Lastly, despite the exclusion criteria used in this study, a large proportion of individuals in the clinical (particularly the MDD) groups presented with diagnostic comorbidity. Although it is common in real-world practice to encounter high comorbidity rates among clinical populations (Kessler et al., 1994), the absence of ‘pure’ MDD and OCD groups limited our ability to draw firm conclusions about the specific effects of depression vs. anxiety on participants’ ERS and repeated checking behavior. In particular, it is difficult to ascertain whether our findings in the MDD group resulted from the effects of depression, generalized anxiety, or both, given the high rate of GAD symptoms in this group. Accordingly, it is recommended that future investigations in this area recruit and compare “pure” anxious and depressive groups, in order to assess the specific effects of each symptom domain on the constructs of interest.

### *Conclusion*

The present study was the first to compare factors involved in ERS and repeated checking in OCD vs. depression. Notwithstanding the above limitations, it provided empirical evidence to support leading cognitive-behavioral and interactional models of these disorders. In line with predictions from these theories, our findings indicate that compulsive behavior is highly related to the unique cognitive and behavioral processes that are characteristic of OCD and depression. In addition, our results suggest some promising avenues for future work in this area, such as examining how quality of

reassurance (e.g., clear vs. ambiguous, believable vs. insincere) might impact upon subsequent compulsive urges and behavior. Continued research in this area will be instrumental in guiding both theory and practice, as researchers and clinicians strive to better understand the optimal methods for reducing patients' compulsive behavior.

## CHAPTER 3

Study 1 employed a semi-structured interview to enquire about factors involved in the onset, maintenance and termination of ERS and repeated checking in the lives of people suffering from OCD or Depression, and in non-clinical controls. This investigation was relatively unique in that it compared the similarities and differences between these behaviours across clinical (OCD and MDD) and non-clinical populations. In line with Rachman's (2002) proposal, the results from this study revealed that OCD-related ERS and compulsive checking are highly related in terms of content, triggers and function. In addition, participants' ratings in the quantitative portion of the interview indicated that the onset of both of these behaviours is associated with elevated levels of anxiety, perceived threat, perceived responsibility and ambiguity of feedback/information. However, although interview methods provide a rich source of data from which new and testable theories can be developed, the limitations associated with this approach precluded our ability to infer causality from this study. That is, though OCD participants indicated that the variables listed above were elevated at the onset of reassurance seeking and checking, we cannot conclude that changes in these variables lead to or cause changes in compulsive urges and/or behaviour. According to Field and Davey (2005), the sole means by which causal direction can be established is through the experimental manipulation of variables purported to influence the outcome(s) of interest. Thus, Study 2 used a series of vignettes to manipulate experimentally those variables that were implicated in the onset of reassurance seeking and/or checking episodes in Study 1 (i.e., perceived threat, perceived responsibility and perceived



ambiguity of feedback), and to examine the impact of these variables on participants' anxiety and compulsive urges.

## CHAPTER 4

An Experimental Investigation of Factors Involved in Excessive Reassurance Seeking:  
The Effects of Perceived Threat, Responsibility and Ambiguity on Compulsive Urges and  
Anxiety

Excessive reassurance seeking (ERS) has been reported to be a hallmark feature of Obsessive-Compulsive Disorder (OCD) by several researchers (e.g., Clark, 2004; Morillo, Belloch & Garcia-Soriano, 2007; Rachman & Hodgson, 1980; Salkovskis, 1985, 1999; Steketee, 1993; Tolin, 2001). In the context of OCD, reassurance seeking can be defined as the repeated solicitation of safety-related information from others about a threatening object, situation or interpersonal characteristic, despite having already received this information. For example, individuals with OCD commonly report seeking reassurance about the completion and/or accuracy of anxiety-provoking tasks (e.g., “Did you see me lock the door?”; “Are you sure you turned the stove off completely?”, etc.), decision-making (e.g., “Are you *sure* I won’t regret buying this item?”), the meaning of their obsessions (e.g., “Does having these thoughts mean that I am going crazy?”), and the potential for contamination (e.g., “Has this hospital room been sterilized?”), among other concerns. The following statement made by an OCD sufferer provides a clear illustration of this process:

It started 3 years ago when we were running late for lunch with friends. I didn’t have time to check everything as I usually do; I could only check each thing once. I asked my boyfriend if the stove was off, and he said “yeah”, but I didn’t trust his answer completely. Through the rest of the evening, I kept asking and he kept saying “don’t worry; it’s probably fine”. Now, I won’t let him get away with that

anymore. Now, whenever I ask, he has to say, “I saw it; I heard it; I know it; and I promise”.

This example clearly highlights the highly ritualized form that OCD-driven reassurance seeking can take, such that reassurance may not be ‘accepted’ unless it is provided a certain way or a certain number of times. This also suggests that reassurance seeking may not always be motivated by the desire to solicit *novel* information. Importantly, these repeated pleas for assurance can place considerable strain on interpersonal and romantic relationships, as friends and significant others may become irritated with the unrelenting requests for reassurance (de Silva & Rachman, 2009; see also Benazon, 2000; Coyne, 1976; Joiner, Alfano & Metalsky, 1992; Joiner & Metalsky, 2001; Prinstein, Borelli, Cheah, Simon, & Aikins, 2005). In turn, these individuals may be more likely to provide feedback which is perceived to be ambiguous or insincere, which might *increase* the recipient’s anxiety and urges to seek further reassurance within a given episode, thereby creating a vicious cycle (*cf.* Coyne, 1976). At the same time, the occasional provision of assuring and believable feedback is likely to (temporarily) decrease anxiety, and thus, to maintain reassurance seeking behaviour over the long term via negative reinforcement.

Prior research on ERS has primarily focused on its potential consequences in the contexts of depression (e.g., Benazon, 2000; Joiner et al., 1992; Joiner & Metalsky, 2001; Joiner, Metalsky, Katz & Beach, 1999; Prinstein et al., 2005; Starr & Davila, 2008) and health anxiety/Hypochondriasis (e.g., Abramowitz & Moore, 2007; Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998; Haenen, de Jong, Schmidt, Stevens & Visser, 2000; Salkovskis & Warwick, 1986). Despite its temporary anxiolytic effects (Abramowitz &

Moore, 2007; Salkovskis & Warwick, 1986), ERS has been found to breed further reassurance seeking behaviour and to contribute to interpersonal rejection, as well as increase one's vulnerability to depressive symptoms (Benazon, 2000; Joiner et al., 1992, 1999; Joiner & Metalsky, 2001; Prinstein et al., 2005). Anecdotal evidence suggests that similar problems may arise from OCD-related ERS (e.g., Clark, 2004; Rachman, 2002; Salkovskis, 1985), yet there is clearly a paucity of research in this area, and much remains to be discovered about the mechanisms that underlie this problematic behaviour.

Rachman (2002) proposes that OCD sufferers may engage in ERS as a means of checking "by proxy", and that both checking and reassurance seeking can be conceptualized as "attempts to reduce the probability of a nasty event occurring or to reduce the effects of such an event" (p. 629). He also noted that both of these acts serve to (temporarily) decrease perceived responsibility for preventing harm, thus highlighting the shared functions of these two behaviours. Given these proposed functional similarities, one might predict that factors involved in the onset and maintenance of compulsive checking may also serve to perpetuate ERS.

For example, cognitive-behavioural theories of compulsive behaviour (e.g., Rachman, 2002; Salkovskis, 1985, 1989) posit that exaggerated threat appraisals (e.g., over-predictions of the likelihood and seriousness of potential threats), in conjunction with maladaptive responsibility beliefs, lead to heightened levels of anxiety and urges to check. Notably, Rachman (2002) has postulated that *repeated* checking will only occur if increases in perceived threat are accompanied by an inflated sense of responsibility, defined as "the belief that one possesses pivotal power to provoke or prevent subjectively crucial negative outcomes" (Salkovskis, Rachman, Ladouceur, & Freeston, 1992).

Rachman has also suggested that repeated checking within a given episode results in paradoxical (further) increases in perceived threat and responsibility, as well as decreased confidence in memory for previous checks (see also Hout & Kindt, 2003a, 2003b; Radomsky, Gilchrist & Dussault, 2006; Tolin et al., 2001). Therefore, compulsive checking is purported to activate a “self-perpetuating mechanism” (Rachman, 2002, p.629), in which each successive check leads to ever-increasing anxiety and urges to check (again). In line with these theories, a number of investigations have demonstrated that higher levels of perceived responsibility/threat are associated with greater checking behaviour and/or urges to check (e.g., Arntz, Voncken, & Goosen, 2007; Foa, Sacks, Tolin, Prezworski, & Amir, 2002; Ladouceur et al., 1995; Lopatka & Rachman, 1995; Parrish & Radomsky, 2006; Shafran, 1997). Thus, it is reasonable to suspect that cognitive biases involving exaggerated perceptions of threat and responsibility may also play an important role in triggering and/or maintaining OCD sufferers’ reassurance seeking behaviour.

Although the primary factors responsible for the *onset* of compulsive checking and reassurance seeking (e.g., increases in perceived threat and responsibility) may be similar, at least some of the mechanisms by which these behaviours are *maintained* within an episode may differ. For example, Rachman’s (2002) model of compulsive checking asserts that decreased memory confidence is a key element of the “self-perpetuating mechanism” described above. Consistent with this theory, research has shown that repeated checking leads to increased doubt regarding the accuracy/effectiveness of previous checks and greater urges to re-check, as such repetitive acts are subsequently recalled with less confidence, vividness and detail (Coles,

Radomsky, & Horng, 2006; Hout & Kindt, 2003a, 2003b, 2004; Radomsky, Gilchrist, & Dussault, 2006). However, meta-memory declines seem less likely to play a major role in the maintenance of ERS. Although OCD sufferers may solicit reassurance habitually, repeating this behaviour should not distort their memories regarding the prior performance of actions (i.e., repeatedly asking whether one has properly turned off the stove should not (or at least not directly) affect the vividness or detail of one's memory for the physical act of turning it off). Granted, repeated requests for reassurance might lead to increased doubt regarding the content of previous feedback (e.g., "Was it today or yesterday that s/he reassured me that the door was locked?"). However, given that (i) significant decreases in meta-memory do not emerge until a large number of action repetitions have been performed (Coles et al., 2006), and (ii) OCD patients may be reluctant to seek reassurance more than a few times within a given episode due to fears of social rejection (Parrish & Radomsky, 2009), meta-memory decreases are presumably less likely to exacerbate reassurance seeking vs. checking behaviour.

The inherent differences between compulsive checking and reassurance seeking imply further possible distinctions between factors that are likely to maintain these two behaviours. For example, reassurance seeking is an interactive process that involves the solicitation of feedback from other people, whereas compulsive checking is often performed in isolation (Rachman, 1976, 2002). Thus, interpersonal aspects of feedback provision are likely to play a key role in the maintenance of reassurance seeking, whereas their influence on checking behaviour may be less relevant, direct and/or powerful. For example, the manner in which feedback is communicated to those seeking assurance may directly influence subsequent reassurance seeking behaviour. Feedback which is

perceived as ambiguous or uncertain (e.g., due to omission of important information, use of vague or unclear language, hesitant tone of voice, etc.) may ultimately exacerbate this behaviour in the short and/or long term, particularly if it is not part of a planned treatment strategy (e.g., exposure to uncertainty).

Several converging lines of evidence provide indirect support for this hypothesis, particularly in the context of OCD and other anxiety disorders. First of all, it has been shown that individuals who are clinically anxious (Eysenck, MacLeod, & Mathews, 1987; Eysenck, Mogg, May, Richards, & Mathews, 1991), as well as those who are highly intolerant of uncertainty (Dugas et al., 2005), are more likely to interpret ambiguous information as threatening than healthy controls and individuals who are more tolerant of uncertainty, respectively. Secondly, an increasing number of studies have found that intolerance of uncertainty (IU) plays a central role in OCD, particularly among individuals with checking compulsions (e.g., Holaway, Heimberg, & Coles, 2006; Obsessive Compulsive Cognitions Working Group [OCCWG], 2005; Steketee, Frost, & Cohen, 1998; Tolin, Abramowitz, Brigidi, & Foa, 2003; however, see Norton, Sexton, Walker, & Norton, 2005; Sexton, Norton, Walker, & Norton, 2003, for contrasting results); in turn, IU leads to increased information-seeking in response to ambiguity (Ladouceur, Talbot, & Dugas, 1997). Lastly, recent evidence suggests that first-time mothers with high state and trait anxiety are more likely than less anxious mothers to exhibit a threat bias when interpreting ambiguous information, and to want to seek reassurance in response to these perceived threats (Challacombe, Feldmann, Lehtonen, Craske, & Stein, 2007). Taken together, these findings suggest that individuals with OCD (and perhaps Generalized Anxiety Disorder; see Dugas et al., 2005) may be

especially likely to interpret ambiguous stimuli and events (such as unclear feedback) in a threatening manner, and to exhibit ERS in these situations.

In summary, several cognitive factors including biased perceptions of threat, inflated responsibility beliefs, and biased (i.e., threatening) interpretations of ambiguous feedback, may contribute to the onset and maintenance of OCD-related reassurance seeking. The purpose of the current study is to examine how manipulations of perceived threat, responsibility, and ambiguity of feedback in a series of experimental vignettes impact upon participants' anxiety and compulsive urges (to seek reassurance and to check).

### Hypotheses

Based on the above, the following hypotheses are proposed: 1) Individuals should report higher levels of anxiety and compulsive urges (to seek reassurance and to check) under conditions of (a) high (vs. low) perceived threat and (b) high (vs. low) responsibility, and 2) individuals who are provided with ambiguous feedback regarding potentially threatening situations should report subsequent increases in their anxiety, urges to check, and (especially) urges to seek reassurance, compared to those who receive low-ambiguous feedback.

### Method

#### *Participants*

One hundred seventy-six volunteer undergraduate students from the Psychology Department at Concordia University in Montréal, Canada, participated in this study. Participants' mean age was 22.95 ( $SD = 5.37$ , range = 17-54) years, and 83.0% of participants were female. Participants were compensated for their time with either course



credit or entry in a draw for a cash prize. Participants' scores on relevant self-report symptom (and other) measures (see below) are displayed in Table 4.1.

### *Materials*

#### *Experimental vignettes.*

In order to examine how manipulations of perceived threat, responsibility and ambiguity of feedback impact upon participants' anxiety and compulsive urges (to seek reassurance/check), a series of five (i.e., three target and two filler) vignettes were developed for this study. Each vignette was comprised of two sections: in the first section, participants imagined themselves in a hypothetical scenario that portrayed a potential threat (e.g., fire, theft, flood, wasted electricity/water, etc.), while the second section provided participants with hypothetical feedback (i.e., reassurance) regarding this potential threat (see Appendix G for sample vignette). In each of the target (as opposed to filler) vignettes, threat and responsibility for harm were manipulated within the body of the hypothetical scenario, while the ambiguity level of feedback was manipulated in the second section of the vignette. Thus, we constructed eight versions of each of the three target vignettes (i.e., high vs. low threat X high vs. low responsibility X high vs. low ambiguity of feedback), which resulted in eight participant conditions (each participant was assigned to only one condition). In addition, two filler vignettes were included in the study to reduce demand characteristics. The filler vignettes, which depicted somewhat commonplace scenarios (e.g., deciding which product to buy at the supermarket), were excluded from our analyses, as perceived threat, responsibility, and ambiguity were not manipulated in these vignettes.

Table 4.1.

Participants' Scores on the BAI, BDI-II, IUS, OBQ-44 and VOCI.

Measure	<i>M</i> ( <i>SD</i> )	Condition								Total	Max. possible
		HT-HR-HA	HT-HR-LA	HT-LR-HA	HT-LR-LA	LT-HR-HA	LT-HR-LA	LT-LR-HA	LT-LR-LA		
BAI	13.00 (18.41)	10.59 (7.63)	9.68 (7.47)	13.05 (10.53)	9.41 (5.97)	14.73 (10.04)	13.91 (9.23)	13.86 (7.38)	12.28 (8.51)	63.00	
BDI-II	12.36 (8.12)	9.50 (8.18)	8.68 (7.46)	9.45 (8.34)	9.36 (7.12)	12.64 (8.34)	12.23 (9.77)	13.18 (10.01)	10.93 (8.47)	63.00	
IUS	72.68 (18.57)	54.55 (17.05)	58.64 (19.08)	63.64 (23.55)	68.23 (18.32)	69.14 (22.31)	70.00 (20.04)	71.41 (22.15)	66.03 (20.75)	135.00	
OBQ	132.18 (38.48)	108.00 (35.42)	119.73 (38.67)	121.95 (43.92)	139.18 (40.40)	138.95 (56.87)	150.00 (45.21)	129.59 (45.19)	129.95 (44.35)	308.00	
VOCI	24.86 (17.88)	25.00 (25.00)	15.68 (11.48)	29.41 (39.03)	31.09 (23.95)	37.18 (31.82)	31.68 (21.75)	32.91 (29.47)	28.48 (26.48)	220.00	

Table 4.1 (continued).

Means with different superscripts differ according to Bonferroni-corrected post-hoc tests,  $p < .05$ . Where superscripts are not indicated, groups did not differ.

BAI = Beck Anxiety Inventory, BDI-II = Beck Depression Inventory-II, IUS = Intolerance of Uncertainty Scale, OBQ = Obsessive Beliefs Questionnaire-44 total score, VOCI = Vancouver Obsessive-Compulsive Inventory total score.  
 HT-HR-HA = high threat-high responsibility-high ambiguity condition ( $n=22$ ), HT-HR-LA = high threat-high responsibility-low ambiguity condition ( $n=22$ ), HT-LR-HA = high threat-low responsibility-high ambiguity condition ( $n=22$ ), HT-LR-LA = high threat-low responsibility-low ambiguity condition ( $n=22$ ), LT-HR-HA = low threat-high responsibility-high ambiguity condition ( $n=22$ ), LT-HR-LA = low threat-high responsibility-low ambiguity condition ( $n=22$ ), LT-LR-HA = low threat-low responsibility-high ambiguity condition ( $n=22$ ), LT-LR-LA = low threat-low responsibility-low ambiguity condition ( $n=22$ ). Total = total sample ( $n = 176$ ).

For each vignette, participants were asked to provide a series of subjective ratings at two points in time (i.e., pre- and post-feedback) using a 0-100 scale. The first three ratings served as manipulation checks for: (i) perceived threat (“How threatening/dangerous do you feel this situation would be?”), (ii) perceived responsibility for preventing harm (“How responsible would you feel for making sure that you \_\_\_ if you were in this situation?”), and (iii) perceived ambiguity of feedback (“How ambiguous would you feel the feedback from \_\_\_ was in this situation?”). The next two ratings (taken at time 1 and 2, respectively) assessed the ease with which participants were able to imagine the hypothetical scenario, and the feedback provided in each vignette, respectively. Finally, the last three ratings served as the main dependent variables: (i) subjective anxiety (“How anxious would you feel in this situation?”), (ii) urges to seek reassurance (“How strong would your urges to seek reassurance be in this situation?”), and (iii) urges to check (“How strong would your urges to check be in this situation?”), in relation to the hypothetical scenario. Urges to seek reassurance were defined as “*the urge to obtain anxiety-reducing information from other individuals about something you are concerned about*”; while urges to check were defined as “*the urge to check something related to your concern(s) yourself*”. For the purpose of statistical analyses, participants’ mean ratings (across the three target vignettes) were calculated for each dependent variable at both time 1 and time 2.

*Obsessive Beliefs Questionnaire – 44 (OBQ-44; OCCWG, 2005).*

This 44-item questionnaire measures respondents’ level of agreement with a number of maladaptive OCD-related beliefs. Items are rated on a scale of 1-7, with higher ratings indicating greater agreement with each belief. The OBQ includes 3

subscales that represent separate cognitive constructs hypothesized to be highly relevant to OCD: 1) responsibility and threat estimation (15 items), 2) perfectionism and intolerance for uncertainty (17 items), and 3) importance / control of thoughts (12 items). This scale possesses excellent internal consistency among individuals with OCD (Cronbach's  $\alpha = .95$ ), and comparable reliability was found in a student sample (OCCWG, 2005).

*Vancouver Obsessional Compulsive Inventory (VOCI; Thordarson et al., 2004).*

This 55-item self-report measure assesses a broad range of OCD symptoms. Respondents rate each item on a scale of 0-4, and higher scores indicate more severe symptoms. The VOCI includes 6 subscales, corresponding to the 6 factors revealed by factor analysis: checking, contamination, obsessions, hoarding, "just right", and indecisiveness. The VOCI possesses good inter-item reliability in student, community, OCD, and clinical control populations (Cronbach's  $\alpha = .96, .90, .94, \text{ and } .98$  respectively). Test-retest reliability for the VOCI total score is very high in student samples (Pearson's  $r = .91, p < 0.001$ ; Radomsky et al., 2006).

*Intolerance of Uncertainty Scale (IUS; Buhr & Dugas, 2002).*

This 27-item questionnaire assesses several aspects of intolerance of uncertainty (IU) that are commonly found among individuals suffering with Generalized Anxiety Disorder (GAD). Each item is rated on a 5-point Likert scale, and higher scores indicate greater IU. The IUS has demonstrated excellent internal consistency ( $\alpha = .94$ ), and good test-retest reliability ( $r = 0.74$ ) over a five-week period in a student sample (Buhr & Dugas, 2002).

*Beck Anxiety Inventory* (BAI; Beck, Epstein, Brown & Steer, 1988).

This 21-item self-report measure assesses the severity of respondents' somatic anxiety symptoms during the past week. The BAI is widely used in both research and clinical settings and has been demonstrated to be highly reliable in student populations (Cronbach's  $\alpha = .91$ ; Borden, Peterson, & Jackson, 1991).

*Beck Depression Inventory-II* (BDI-II; Beck, Steer, & Brown, 1996).

This 21-item self-report measure assesses the severity of respondents' depressive symptoms over the course of the previous two weeks. The BDI-II is a widely-used assessment tool, which has been shown to be highly reliable in a large student sample (Cronbach's  $\alpha = .91$ ; Dozois, Dobson, & Ahnberg, 1998).

#### *Procedure*

This study employed a 2 (time) x 2 (threat condition) x 2 (responsibility condition) x 2 (ambiguity condition) mixed design, in which threat, responsibility for harm and ambiguity of feedback were experimentally manipulated. Thus, eight experimental conditions were created, and the dependent variable ratings were collected at two points in time (pre- and post-ambiguity manipulation). In each of the eight randomly-assigned conditions, participants were administered five vignettes in total, including three target vignettes all within the same condition (e.g., high threat-low responsibility-high ambiguity) and two filler vignettes.

All of the study measures were completed online. Research has found that the online administration of self-report measures of OCD symptoms and beliefs (e.g., OBQ-44) and depressive symptoms (e.g., BDI), yields comparable results to traditional paper and pencil methods (Coles, Cook & Blake, 2007; Schulenberg & Yutrzenka, 2001).

Participants were asked to imagine themselves in each scenario as they read the experimental vignettes. For each vignette, participants read the first section (which contained the threat and responsibility manipulations), and provided time 1 ratings of anxiety, urges to seek reassurance, urges to check, ease of imagining the scenario, perceived threat, and perceived responsibility, based on how they felt while imagining themselves in the scenario. Next, participants imagined that they had asked for reassurance regarding the potential threat presented in the vignette (e.g., whether or not they remembered to extinguish a set of dinner candles before leaving the house). They were given hypothetical feedback that was either ambiguous (e.g., “I think you *might* have ... everything is *probably* fine.”) or unambiguous (e.g., “Don’t worry. I remember seeing you blow out the candles.”), depending upon their condition. Participants then completed each of the aforementioned ratings a second time (with “ease of imaging feedback” substituted for “ease of imagining scenario”), and rated the ambiguity of the feedback they received. Finally, participants filled out a brief questionnaire package which included the other study measures (i.e., OBQ, VOCI, IUS, BAI and BDI), and were debriefed about the purpose of the study.

## Results

### *Participant Characteristics*

Participants in the eight conditions did not differ with respect to age,  $F(7, 149) = .54, n.s.$ , nor did they differ in terms of their mean total scores on the OBQ, the VOCI, the BAI, or the BDI,  $F's(7, 168) < 2.04, n.s.$  However, there was a significant difference between groups with respect to scores on the IUS,  $F(7, 168) = 2.27, p < .05$  (see Table 4.1), although this group difference was absent when pairwise comparisons were conducted using a Bonferroni correction. A chi-squared analysis revealed that the

proportion of males to females did not differ significantly across the eight conditions ( $\chi^2$  [7, N = 176] = 8.84, *n.s.*).

### *Imagery ability*

Participants did not differ in their ability to imagine the hypothetical scenarios across threat conditions,  $F(1, 168) = 3.86$ , *n.s.* ( $M = 77.18$  [ $SD = 18.41$ ] vs.  $70.99$  [ $SD = 23.20$ ]), or responsibility conditions,  $F(1, 168) = 1.43$ , *n.s.* ( $M = 75.97$  [ $SD = 19.91$ ] vs.  $72.20$  [ $SD = 22.20$ ]), and did not differ in their ability to imagine the feedback they received across ambiguity conditions,  $F(1, 168) = 1.00$ , *n.s.* ( $M = 74.75$  [ $SD = 22.79$ ] vs.  $77.89$  [ $SD = 19.71$ ]). These group means indicate that participants were able to imagine the hypothetical scenarios and the feedback depicted in the vignettes with considerable ease.

### *Manipulation checks*

As predicted, participants in the high threat conditions rated the vignettes as significantly more threatening/dangerous than participants in the low threat conditions,  $F(1, 168) = 82.70$ ,  $p < 0.001$ ,  $r = .57$  ( $M = 63.62$  [ $SD = 23.24$ ] vs.  $34.52$  [ $SD = 18.90$ ], respectively). Likewise, participants in the high responsibility conditions reported feeling significantly more responsible for preventing a negative outcome than participants in the low responsibility conditions,  $F(1, 168) = 47.97$ ,  $p < 0.001$ ,  $r = .47$  ( $M = 77.28$  [ $SD = 17.34$ ] vs.  $56.50$  [ $SD = 23.39$ ], respectively). Lastly, participants in the high ambiguity conditions rated the feedback they received as significantly more ambiguous than participants in the low ambiguity conditions,  $F(1, 168) = 147.20$ ,  $p < 0.001$ ,  $r = .68$  ( $M = 66.44$  [ $SD = 19.56$ ] vs.  $28.50$  [ $SD = 23.44$ ], respectively). The medium-to-large effect



sizes associated with these results indicate that the threat, responsibility and ambiguity of feedback manipulations were all effective.

### *Main analyses*

To test our hypotheses, a 4-way mixed ANOVA was conducted. Time was the within-participants factor; while threat, responsibility and ambiguity conditions served as between-participants factors. For this analysis, the dependent variable was a composite rating that comprised the collective mean of participants' ratings of anxiety, urges to seek reassurance, and urges to check. Statistically significant results from the initial ANOVA were further explored by conducting follow-up univariate ANOVAs for each of the individual dependent variables. For the sake of brevity, we use the term 'compulsive urges' when referring collectively to urges to seek reassurance and urges to check in the remainder of the article.

Results revealed significant main effects of time,  $F(3, 166) = 61.04, p < .001, r = .52$ , threat condition,  $F(3, 166) = 11.59, p < .001, r = .26$ , responsibility condition,  $F(3, 166) = 6.38, p < .001, r = .19$ , and ambiguity condition<sup>3</sup>,  $F(3, 166) = 9.62, p < .001, r = .23$ , on participants' composite rating. In addition, significant interaction effects were found for time x threat condition,  $F(3, 166) = 4.98, p < .01, r = .17$ , time x ambiguity condition,  $F(3, 166) = 62.47, p < .001, r = .52$ , and time x threat condition x ambiguity condition,  $F(3, 166) = 3.94, p < .01, r = .15$ . However, the time x responsibility condition,  $F(3, 166) = .65, n.s.$ , and threat x responsibility condition interactions were not statistically significant,  $F(3, 166) = 1.31, n.s.$ , nor was the interaction between time, responsibility condition and ambiguity condition,  $F(3, 166) = 2.13, n.s.$  Likewise, the 4-

way interaction between time, threat condition, responsibility condition and ambiguity condition was not statistically significant,  $F(3, 166) = .26, n.s.$ <sup>4</sup>

#### *Follow-up analyses*

Participants' mean ratings across time and condition are presented in Table 4.2. There was a significant main effect of time on anxiety ratings,  $F(1, 168) = 126.60, p < .001, r = .66$ , urges to seek reassurance,  $F(1, 168) = 177.41, p < .001, r = .72$ , and urges to check,  $F(1, 168) = 123.98, p < .001, r = .65$ , such that ratings on all 3 variables decreased significantly from time 1 to time 2 when collapsing across all conditions. In addition, a significant main effect of threat condition was found for anxiety ratings,  $F(1, 168) = 34.82, p < .001, r = .41$ , urges to seek reassurance,  $F(1, 168) = 26.65, p < .001, r = .37$ , and urges to check,  $F(1, 168) = 24.73, p < .001, r = .36$ , such that ratings for all 3 variables were higher in the high vs. low threat conditions. Likewise, there was a significant main effect of responsibility condition on anxiety ratings,  $F(1, 168) = 5.14, p < .05, r = .17$ , and urges to check,  $F(1, 168) = 10.88, p < .001, r = .25$ , such that participants' ratings for both of these variables were higher in the high vs. low responsibility conditions. However, the effect of responsibility condition on urges to seek reassurance was not statistically significant,  $F(1, 168) = .76, n.s.$

The time x threat condition interaction was significant for anxiety ratings,  $F(1, 168) = 10.44, p < .01, r = .24$ , and urges to check,  $F(1, 168) = 4.48, p < .05, r = .16$ , but was not significant for urges to seek reassurance,  $F(1, 165) = .66, n.s.$  Specifically, the decrease in participants' anxiety and urges to check from time 1 to time 2 was significantly greater in the high vs. low threat conditions, when collapsing across responsibility and ambiguity conditions. In addition, the time x ambiguity condition

Table 4.2.

*Participants' mean ratings across time and condition.*

Rating (0-100) <i>M (SD)</i>	Threat condition				Responsibility condition				Ambiguity condition			
	Low		High		Low		High		Low		High	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Urge to seek reassurance	57.44 (22.37)	38.97 (25.78)	75.17 (23.06)	54.10 (30.55)	65.04 (25.42)	45.02 (30.71)	67.57 (23.27)	48.05 (27.68)	65.56 (24.88)	31.60 (24.80)	67.05 (23.88)	61.46 (25.46)
Urge to check	56.83 (23.38)	45.44 (26.11)	75.56 (23.29)	58.82 (30.81)	60.55 (26.63)	47.12 (30.81)	71.84 (22.20)	57.14 (26.86)	64.77 (25.57)	36.57 (25.71)	67.62 (24.67)	67.69 (23.89)
Anxiety	47.63 (20.18)	38.37 (24.80)	69.01 (21.19)	52.29 (29.01)	54.46 (24.27)	42.41 (29.06)	62.18 (21.64)	48.25 (26.33)	58.89 (23.75)	30.18 (23.18)	57.76 (22.86)	60.48 (23.52)

T1 = time 1 (pre-ambiguity manipulation), T2 = time 2 (post-ambiguity manipulation).

interaction was significant for anxiety ratings,  $F(1, 168) = 185.15, p < .001, r = .72$ , urges to seek reassurance,  $F(1, 168) = 91.31, p < .001, r = .59$ , and urges to check,  $F(1, 168) = 125.25, p < .001, r = .65$ . This indicates that the amount of change in participants' pre- to post-feedback ratings for each of the main dependent variables (i.e., anxiety and compulsive urges) differed according to the type of feedback (i.e., high vs. low ambiguity) they received. Specifically, participants in the low ambiguity conditions reported significantly greater decreases in their anxiety ratings and compulsive urges from time 1 to time 2 than those in the high ambiguity conditions (see Figures 4.1a-4.1c).

The 3-way interaction between time, threat condition and ambiguity condition was significant for anxiety ratings,  $F(1, 168) = 10.87, p < .01, r = .25$ , urges to seek reassurance,  $F(1, 168) = 9.45, p < .01, r = .23$ , and urges to check,  $F(1, 168) = 8.27, p < .01, r = .22$ . As illustrated in Figures 4.2a-4.2c, the ambiguity of feedback manipulation had a larger effect on participants' anxiety and compulsive urges in the high vs. low threat conditions.

#### *Mediation analyses*

Given that the ambiguity of feedback manipulation significantly influenced participants' ratings of perceived threat and responsibility in the hypothetical scenarios<sup>5</sup>, we performed a series of tests to determine whether perceived threat and responsibility might act as mediators of the effects of ambiguity on anxiety and compulsive urges (to seek reassurance/check). The predictor variable was participants' mean rating of perceived ambiguity of feedback, while the outcome variables (which were analyzed separately) were their (time 2) mean ratings of anxiety, urges to seek reassurance and urges to check, and the proposed mediating variables were participants' (time 2) mean

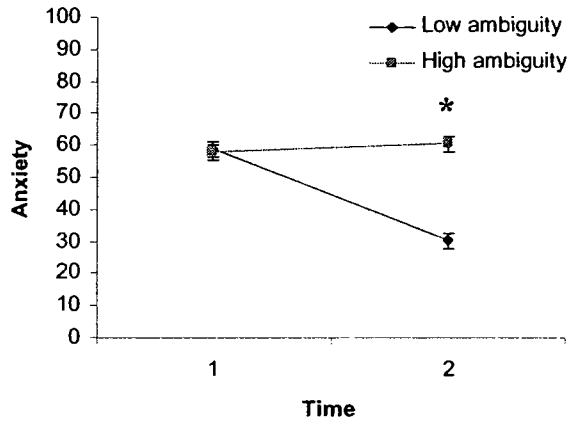


Figure 4.1a.

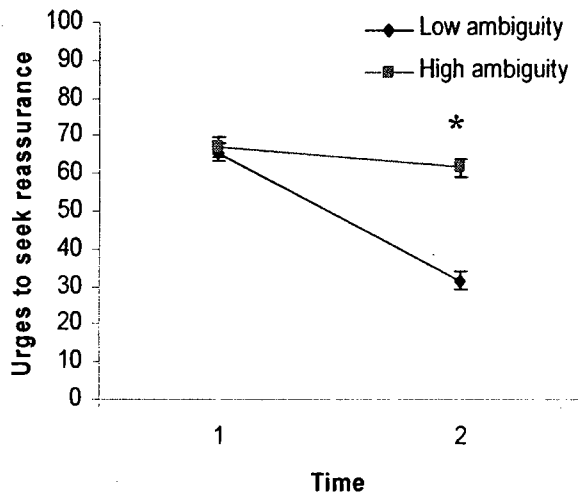


Figure 4.1b.

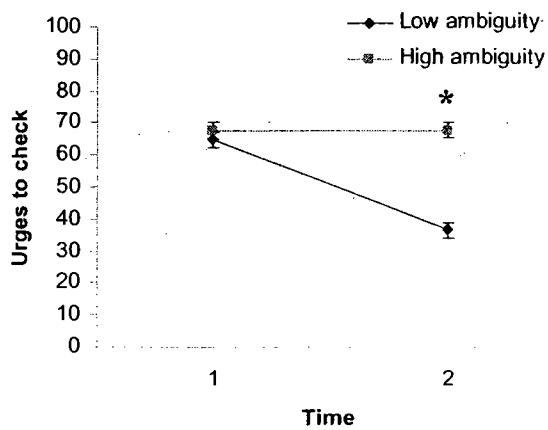


Figure 4.1c.

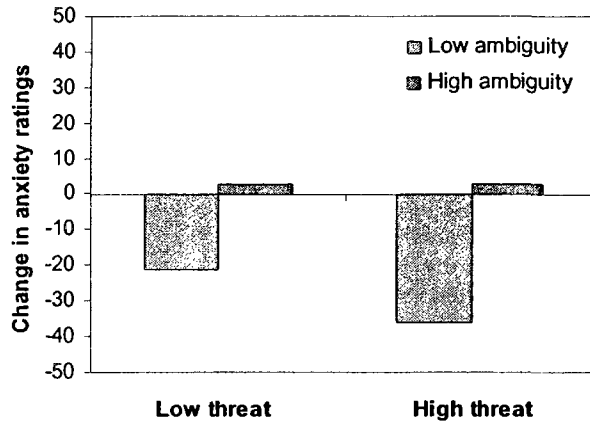


Figure 4.2a.

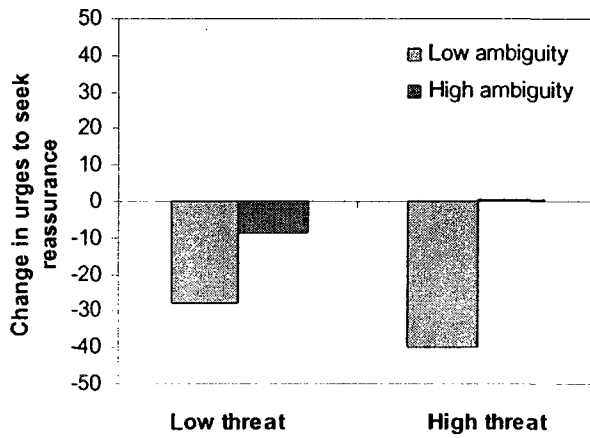


Figure 4.2b.

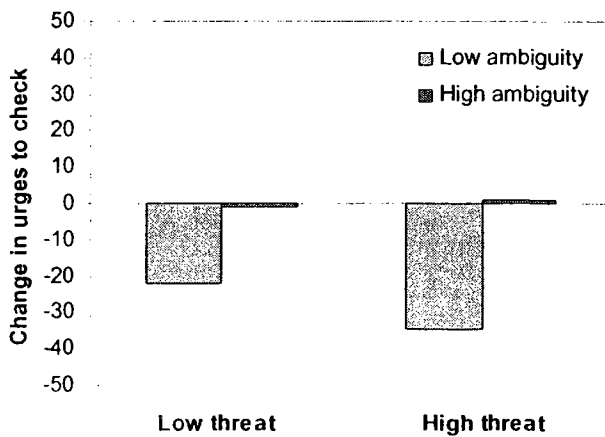


Figure 4.2c.

ratings of perceived threat and perceived responsibility. Although the study design did not allow us to determine the direction of causality in this analysis (as the proposed mediators and outcome variable ratings were collected at the same time), the proposed mediation model is most consistent with leading cognitive behavioural theories of OCD (e.g., Rachman, 1997, 2002; Salkovskis, 1985, 1989; van Oppen & Arntz, 1994).

A bootstrapping method was employed to assess the feasibility of the proposed multiple mediation effects (see Preacher & Hayes, 2008, for a thorough explanation of this technique). We used an SPSS macro developed by Preacher and Hayes to estimate and compare the *indirect effects* (i.e., for each mediator, the product of path coefficients from [i] the predictor to the proposed mediator and [ii] the proposed mediator to the outcome) in our multiple mediation model. This analysis allowed us to measure whether the total effect of the predictor (i.e., perceived ambiguity of feedback) on each outcome (anxiety, urges to seek reassurance, urges to check, respectively) was significantly reduced when the mediators were added to the model. In other words, it assessed whether the specific and total indirect effects of the mediators were statistically significant for each outcome variable. This was established by examining the 95% confidence intervals (CI's) for the size of the total and specific indirect effects that are produced by the macro commands; if the lower limit of the CI for a given effect was above zero, the null hypothesis was rejected and it was determined that the effect was significant.

Before conducting each analysis, it was first necessary to establish that the effect of perceived ambiguity on each outcome variable was significant when ignoring the effect(s) of perceived threat and responsibility (Preacher & Hayes, 2008). This pre-

requisite was satisfied in each case; significant total effects were found for perceived ambiguity of feedback on anxiety,  $B = .75$ ,  $SE = .05$ ,  $t(172) = 16.47$ ,  $p < .001$ , urges to seek reassurance,  $B = .73$ ,  $SE = .05$ ,  $t(172) = 13.539$ ,  $p < .001$ , and urges to check,  $B = .78$ ,  $SE = .05$ ,  $t(172) = 15.56$ ,  $p < .001$ .

*Mediation analysis 1: Anxiety*

The first mediation analysis was conducted with participants' anxiety ratings as the outcome variable. Results showed that the total indirect effect (i.e., the sum of both mediation pathways) was significantly different from zero at  $p < .05$ ,  $B = .45$ ,  $SE = .05$ , 95% bootstrap CI of 0.35 to 0.56, indicating that taken together, perceived threat and responsibility mediated the effect of perceived ambiguity of feedback on anxiety.

However, since the direct effect of perceived ambiguity on anxiety (after controlling for the proposed mediating effects) was significant,  $B = .30$ ,  $SE = .04$ ,  $t(172) = 6.65$ ,  $p < .001$ , complete mediation did not occur. Examining the specific indirect effects, both perceived threat,  $B = .40$ ,  $SE = .05$ , 95% bootstrap CI of 0.29 to 0.51, and perceived responsibility,  $B = .05$ ,  $SE = .03$ , 95% bootstrap CI of 0.08 to 0.12, were found to have significant partial mediating effects on the relationship between ambiguity and anxiety.

The positive direction of all of the above-listed coefficients is consistent with the hypothesis that low-ambiguous feedback led to decreases in perceived threat and responsibility, which, in turn, led to decreases in anxiety.

*Mediation analysis 2: Urges to seek reassurance*

Our second mediation analysis employed participants' urges to seek reassurance as the outcome variable. Again, the total indirect effect was significant,  $B = .39$ ,  $SE = .06$ , 95% bootstrap CI of 0.28 to 0.52, which indicates that together, participants'



perceived threat and responsibility in the hypothetical scenarios mediated the effect of perceived ambiguity of feedback on their urges to seek reassurance. The direct effect of perceived ambiguity on urges to seek reassurance was also significant,  $B = .34$ ,  $SE = .07$ ,  $t(172) = 5.09$ ,  $p < .001$ , indicating that only partial mediation occurred. Perceived threat was found to partially mediate the effect of ambiguity on urges to seek reassurance,  $B = .33$ ,  $SE = .06$ , 95% bootstrap CI of 0.22 to 0.46, whereas perceived responsibility was not a significant mediator,  $B = .06$ ,  $SE = .04$ , 95% bootstrap CI of 0.00 to 0.15. Thus, results suggested that lower levels of perceived ambiguity led to decreases in perceived threat and responsibility, which, in turn, may have (collectively) led to decreases in urges to seek reassurance.

#### *Mediation analysis 3: Urges to check*

In the third mediation analysis, participants' urges to check served as the outcome variable. Once again, the total indirect effect was significant,  $B = .44$ ,  $SE = .06$ , 95% bootstrap CI of 0.33 to 0.56, and the direct effect of ambiguity on urges to check was significant,  $B = .33$ ,  $SE = .05$ ,  $t(172) = 6.03$ ,  $p < .001$ , indicating incomplete mediation. Perceived threat,  $B = .27$ ,  $SE = .06$ , 95% bootstrap CI of 0.15 to 0.38, and perceived responsibility,  $B = .18$ ,  $SE = .04$ , 95% bootstrap CI of 0.10 to 0.28, were both found to be significant partial mediators of ambiguity on urges to check. Therefore, the hypothesis that lower perceived ambiguity led to decreases in perceived threat and responsibility, which, in turn, led to decreases in urges to check, was supported.

Notably, a comparison of indirect effect sizes revealed that the mediating effect of perceived threat was larger than that of perceived responsibility for anxiety ( $B = .40$  vs.  $B$

= .05, respectively), urges to seek reassurance ( $B = .33$  vs.  $B = .06$ , respectively), and urges to check ( $B = .27$  vs.  $B = .18$ , respectively).

### Discussion

Consistent with our predictions, high (vs. low) levels of perceived threat in a series of imagined scenarios were associated with greater self-reported anxiety and compulsive urges. Likewise, high (vs. low) levels of perceived responsibility for preventing harm were associated with higher ratings of anxiety and greater urges to check. However, contrary to prediction, manipulations of responsibility did not significantly affect participants' urges to seek reassurance. In partial support of our hypotheses, low-ambiguous feedback regarding potential threats led to immediate and sizeable decreases in anxiety and compulsive urges, whereas ambiguous feedback did not. Although ambiguous feedback did not lead to significant *increases* in participants' anxiety and compulsive urges, it appeared to prevent decreases in these ratings when compared to non-ambiguous feedback. Importantly, our findings were consistent with the hypothesis that differential changes in perceived threat and perceived responsibility following high- vs. low-ambiguous feedback partially mediated this effect.

The present findings are highly consistent with cognitive-behavioural conceptualizations of OCD (e.g., Rachman, 1997, 2002; Salkovskis, 1985, 1989; van Oppen & Arntz, 1994). As would be predicted by Rachman's (2002) model of compulsive checking, perceived threat and responsibility for preventing harm appeared to act as "cognitive multipliers" for compulsive urges, as manipulations of these variables significantly influenced participants' anxiety, urges to check, and (in the case of threat only) urges to seek reassurance. Thus, our findings generally supported our first

hypothesis. However, while manipulations of perceived threat significantly affected all three dependent variables (i.e., anxiety, urges to check and urges to seek reassurance), perceived responsibility did not influence participants' urges to seek reassurance. This non-significant finding appears to contradict the hypothesis that OCD-related reassurance seeking is intended to spread responsibility for preventing harm to others (e.g., Rachman, 2002; Salkovskis, 1985, 1989), and it is important to acknowledge this possibility.

However, there are several possible alternative explanations for this result.

First, even if inflated responsibility contributes to ERS behaviour, increases in responsibility for preventing harm may not play as large a role in eliciting urges to seek reassurance as urges to check. Following this reasoning, increases in perceived responsibility for harm may lead people to check potential sources of threat *themselves*, rather than to rely on reassurance from others. Particularly when perceived responsibility is high, reassurance seeking behaviour may be reserved for situations in which checking would be difficult (e.g., due to physical removal from the source of concern), and thus, reassurance seeking might be best understood as a 'backup-to-checking strategy'.

Consequently, our responsibility manipulation may have had a limited influence on participants' urges to seek reassurance, relative to their urges to check. However, our data do not fully support this contention, as participants' urges to seek reassurance were comparable in strength to their urges to check across responsibility conditions (see Table 4.2), suggesting that participants' preference for checking over reassurance seeking in threatening situations was slight.

A second possibility is that, unlike OCD sufferers, our non-clinical sample did not possess maladaptive/inflated responsibility beliefs, and thus, should not have been

expected to react to high levels of responsibility with greatly increased urges to seek reassurance. However, this explanation is problematic, since (i) the responsibility manipulation had significant effects on participants' ratings of anxiety and urges to check, and (ii) previous studies that have manipulated responsibility in non-clinical samples (e.g., Ladouceur et al., 1995; Parrish & Radomsky, 2006) have found reliable effects in terms of compulsive urges and/or behaviour.

A third potential explanation for this finding is that our responsibility manipulation was not as effective as our threat manipulation, thus limiting statistical power to detect the effect of responsibility on urges to seek reassurance. Consistent with this interpretation, the threat manipulation check yielded a large effect size, compared to a medium effect size for the responsibility manipulation check. In addition, while the main effect of perceived responsibility on urges to seek reassurance was not statistically significant, an inspection of means revealed that group differences were in the expected direction (i.e., participants in the high responsibility conditions reported higher urges to seek reassurance than those in the low responsibility conditions). This suggests that a more effective responsibility manipulation and/or a larger sample size may have yielded significant results. Yet, this interpretation still fails to explain why manipulations of perceived responsibility significantly influenced participants' self-reported anxiety and urges to check, but not their urges to seek reassurance. It is important to note that none of these potential explanations preclude the hypothesis that OCD-related reassurance seeking is (at least partially) intended to diminish responsibility for preventing harm. However, additional research is required to test whether a more salient manipulation of

responsibility (e.g., *very high vs. very low or no responsibility*) would lead to a significant effect in terms of participants' reassurance seeking urges and/or behaviour.

This study aimed to determine how manipulations of feedback ambiguity impact upon people's anxiety and compulsive urges. Importantly, our findings provide strong and novel evidence that ambiguity of (re)assurance may be an important factor in the perseveration of checking and reassurance seeking behaviour, particularly in the context of OCD-related fears. Consistent with our hypotheses, higher levels of ambiguity were associated with the maintenance of threat-induced anxiety and compulsive urges (as compared to a decrease in these variables under conditions of low ambiguity). These effects were especially apparent under conditions of heightened threat (see Figures 4.2a-4.2c), suggesting that a simultaneous increase in perceived threat and ambiguity may have a synergistic effect on compulsive urges and behaviour.

In addition, results were consistent with a model in which perceived threat and responsibility partially mediated the effects of ambiguity of feedback on anxiety and compulsive urges (although responsibility was not a significant mediator for urges to seek reassurance). Notably, participants' threat appraisal mediated the effects of ambiguity on anxiety and compulsive urges to a greater degree than their perceived responsibility for preventing harm. Therefore, threat appraisals may be more important than perceived responsibility in determining people's cognitive (and perhaps behavioural) reactions to receiving ambiguous (re)assurance. These findings also suggest that perceived responsibility may play a greater role in maintaining checking *vs.* reassurance seeking behaviour. However, it is important to note that perceived threat and responsibility are

likely not orthogonal in nature (OCCWG, 2005); it would therefore be necessary to replicate these findings before affirmatively drawing this conclusion.

Given recent evidence which suggests that IU may be highly relevant to OCD (Holaway et al., 2006; OCCWG, 1997, 2005; Steketee et al., 1998; Tolin et al., 2003), it is reasonable to suspect that OCD sufferers might respond to ambiguous/uncertain feedback regarding potential threats with greater anxiety and compulsive urges than did our non-clinical sample. Indeed, IU might exacerbate reassurance seeking and/or checking behaviour in OCD via three inter-related processes; individuals who demonstrate high IU (i) may be more likely than non-clinical individuals to interpret obsessional doubts regarding potential threats as indicative of *real* and *intolerable* risks (ii) might require that feedback regarding their fear-related doubts be clear and precise (i.e., non-ambiguous) in order to consider this reassurance “acceptable” (Constans, Foa, Franklin, & Mathews, 1995), and (iii) may be unable to tolerate the anxiety/discomfort evoked by feedback which is perceived as even slightly ambiguous or uncertain, thereby promoting ERS. Similarly, OCD sufferers may experience considerable distress if the reassurance provider displays any signs of irritation or annoyance with their repeated requests for reassurance (“How many times do I have to tell you ... I *always* lock the door before I leave the house! Why would I forget today?”), which may lead to further pleas for anxiety-reducing feedback (*c.f.*, Benazon, 2000; Coyne, 1976; Joiner et al., 1992, 1999). Consistent with this theory, recent evidence suggests that believability of feedback (due to a lack of perceived ambiguity and/or insincerity) is a common criterion for terminating reassurance seeking episodes (Parrish & Radomsky, 2009). Thus, it is possible that repeated reassurance seeking might lead to a “self-perpetuating mechanism”

akin to that described by Rachman (2002), whereby persistent requests for reassurance (driven in part by perceived threat, responsibility and/or IU) lead to increasingly dismissive and/or ambiguous feedback from others, which, in turn, leads to greater urges to seek (further) reassurance. However, further research is needed to test these predictions, and to further clarify the mechanisms by which ambiguity exerts its effects on anxiety and compulsive urges.

The present findings have a number of potential clinical implications. First, as proposed by Rachman (2002), our results suggest that the motivations underlying ERS and compulsive checking may be similar in the context of potential threats, since there was corresponding variance in participants' urges to seek reassurance and their urges to check in the hypothetical scenarios across the threat, responsibility and ambiguity conditions<sup>6</sup> (see Table 4.2). Accordingly, cognitive-behavioural interventions that are routinely employed to diminish compulsive checking in OCD (e.g., exposure and response prevention, behavioural experiments) should also be effective in reducing patients' persistent and maladaptive reassurance seeking (Clark, 2004; Salkovskis & Warwick, 1985; Steketee, 1993). In addition, our findings suggest that perceived threat, which has been established as a key factor in the onset and maintenance of compulsive checking (e.g., Arntz et al., 2007; Foa et al., 2002; Ladouceur et al., 1995; Lopatka & Rachman, 1995; Parrish & Radomsky, 2006; Shafran, 1997), may also contribute to the perseveration of reassurance seeking behaviour. Thus, therapists aiming to reduce their patients' ERS would be well-advised to employ strategies designed to decrease their exaggerated threat appraisals. Lastly, our results indicate that the tendency to interpret

reassurance in a biased fashion (e.g., as ambiguous, uncertain, threatening, etc.) may be important to target in treatments aimed at reducing compulsive behaviour.

Several limitations of this study warrant discussion. First, due to ethical and practical constraints, we employed a series of vignettes to examine how manipulations of threat, responsibility and ambiguity of feedback would affect non-clinical participants' anxiety and compulsive urges, rather than manipulating these variables in real-life situations. As such, the external validity of our results can be questioned, and hence, ecologically valid tests of the predictions outlined in this study are required to firmly establish the current findings in clinical (OCD) populations. Similarly, we relied solely on subjective ratings to test our hypotheses. It will be important for future research in this area to include behavioural and/or physiological indices of people's responses to increased threat, responsibility and ambiguity of feedback, as people's self-reported anxiety and compulsive urges may not always correspond with their actual behaviour.

In addition, the current study assessed only the immediate effects of providing participants with ambiguous *vs.* low-ambiguous feedback regarding potential threats. Given the importance of negative long-term effects (e.g., increases in anxiety and compulsive urges, reinforcement of maladaptive beliefs) in perpetuating compulsive checking and other neutralization behaviour (see Rachman, 2002; Rachman, Shafran, Mitchell, Trant, & Teachman, 1996, Salkovskis, 1985, 1999), additional research that examines the long-term effects of both ambiguous and non-ambiguous feedback on anxiety and compulsive urges is needed. It would be especially informative to examine the specific time course/durability of these effects, as well as to investigate additional factors that might moderate these effects (e.g., quantity and consistency of feedback, IU,



feedback expectancy, etc.). Furthermore, the mediation model proposed in this study (in which perceived threat and responsibility partially mediated the effects of feedback ambiguity on anxiety and compulsive urges) could not be established conclusively, as the mediating and dependent variable ratings were collected at the same point in time.

Therefore, it will be important for future investigations to measure these variables at different time points, in order to fully understand these effects and firmly establish the direction of causality. Likewise, in the absence of a no-feedback condition, it was impossible to determine whether ambiguous feedback served to *actively maintain* high levels of anxiety and compulsive urges as proposed, as these ratings might have remained elevated even without the provision of ambiguous feedback. Lastly, the current investigation did not assess whether gender, ethnic and/or cultural factors affected participants' anxiety and compulsive urges in the hypothetical scenarios. Since these variables may be influenced by such factors (e.g., due to socio-cultural norms and expectations), future investigations should examine the role that gender, culture and ethnicity might play in promoting (or limiting) compulsive urges and behaviour.

In summary, the present findings suggest that peoples' anxiety and compulsive urges in potentially threatening situations are influenced by a number of factors, including perceived threat, responsibility for preventing harm, and ambiguity of (re)assurance. Results also showed that perceived threat and ambiguous feedback might increase anxiety and compulsive urges in a synergistic manner, such that ambiguous (re)assurance may be particularly difficult to accept under conditions of high perceived threat. Taken together, these findings suggest that heightened perceptions of threat and responsibility play an important role in the onset and maintenance of checking and (for

threat only) ERS, while the provision of ambiguous feedback regarding potential threats may exacerbate these compulsive acts (via further increases in threat and responsibility) once they have already begun. Accordingly, cognitive-behavioural models of OCD would likely benefit from a greater focus on certain internal (e.g., IU) and external (e.g., others' responses to requests for reassurance) factors that are likely to influence OCD sufferers' anxiety and compulsive urges / behaviour. It is hoped that these findings will support future research aimed at gaining a better understanding of the mechanisms that underlie ERS and checking behaviour in OCD.

## CHAPTER 5

### General Discussion

The present research had several objectives. My preliminary aim was to enquire about the cognitive, behavioural and affective processes involved in the perpetuation of ERS, specifically within the contexts of OCD and Depression. Given the purported functional equivalence between OCD-related reassurance seeking and compulsive checking (Rachman, 2002), the studies herein also sought to examine similarities and differences between ERS and repeated checking activity across a number of clinically-relevant domains (i.e., content, precipitating factors, function and termination criteria). In addition, the current investigations were designed to test (both directly and indirectly) a number of theoretical predictions regarding cognitive and behavioural processes implicated in the onset and maintenance of these behaviours (e.g., Rachman, 2002; Salkovskis, 1985, 1999).

#### *Summary of findings*

Study 1 utilized a novel semi-structured interview (the ICCRS) to elucidate factors involved in the onset, maintenance, and termination of ERS and repeated checking in clinical (OCD and MDD) and non-clinical populations. This investigation was an initial attempt to bridge the gap between existing knowledge and theory regarding depressotypic ERS and the relatively less studied, yet commonly observed, OCD-related ERS using a mixed qualitative-quantitative approach. A component of the ICCRS required participants to provide ratings of cognitive and affective variables that were hypothesized as potential triggers of compulsive urges and behaviour (e.g., anxiety, sadness, perceived threat, perceived responsibility, perceived ambiguity, doubt). These

ratings, which were provided in relation to recalled episodes of ERS and repeated checking, were used to evaluate hypotheses derived from leading cognitive-behavioural theories of compulsive behaviour in OCD (e.g., Rachman, 2002; Salkovskis, 1985, 1999) using quantitative methods of analysis.

Importantly, this study found that OCD-related ERS and compulsive checking were highly similar with respect to content, triggers and function, in line with Rachman's (2002) assertion that these behaviours are functionally equivalent. In contrast, the principal focus of ERS differed in obsessive-compulsive *vs.* depressed individuals, who reported tendencies to seek reassurance about *general* threats *vs.* *social* or performance-related threats, respectively. Other notable findings included the following: (i) clinical participants recalled experiencing considerable anxiety, perceived threat, perceived responsibility and perceived ambiguity (of feedback or information) at the onset of recent ERS and checking episodes, respectively (ii) OCD respondents reported a greater variety of concerns and potential triggers of ERS than for repeated checking episodes, (iii) quality of feedback (i.e., clear *vs.* ambiguous, believable *vs.* insincere) was reported to influence individuals' subsequent reassurance seeking behaviour, and (iv) interpersonal concerns (e.g., fear of embarrassment and/or rejection) were found to contribute to the termination of ERS episodes in both clinical groups.

In Study 2, potentially threatening hypothetical scenarios were embedded in a series of vignettes to assess how manipulations of perceived threat, perceived responsibility and perceived ambiguity of feedback would impact upon non-clinical participants' anxiety and compulsive urges. Participants provided ratings of anxiety, urges to seek reassurance and urges to check in relation to each vignette (which contained

threat, responsibility and ambiguity of feedback manipulations). These ratings were collected at two points in time (i.e., pre- and post-ambiguity manipulation) in order to measure the unique effects of feedback quality (ambiguous *vs.* low-ambiguous) on the above-listed outcome variables. Consistent with leading cognitive-behavioural theories (e.g., Rachman, 2002; Salkovskis, 1985, 1999), higher levels of perceived threat and responsibility led to greater anxiety and urges to check. Similarly, higher perceived threat led to greater urges to seek reassurance. Additionally, it was found that low-ambiguous feedback led to significant decreases in anxiety and compulsive urges relative to ambiguous feedback, which appeared to maintain anxiety and urges evoked by the threatening scenarios. Lastly, our results revealed that the anxiogenic effects of ambiguity may be partially mediated by changes in perceived threat and (in the case of checking) perceived responsibility.

Several tentative conclusions can be drawn based on these collective results. First, the primary focus and function of ERS appears to differ in OCD *vs.* Depression according to the distinct cognitive and behavioural processes that characterize these disorders (e.g., inflated responsibility/threat appraisals *vs.* preoccupation with abandonment/loss/failure, respectively), as the *type* of threat (i.e., general *vs.* social) that elicited compulsive urges and behaviour reliably distinguished between these groups. Second, despite some apparent differences with respect to the range of triggering concerns and potential maintenance factors, it appears that OCD-related ERS can indeed be conceptualized as a functionally equivalent form of “checking by proxy” (Rachman, 2002, p.629), as both of these behaviours were found to be primarily motivated by attempts to decrease anxiety and/or prevent general harm. Lastly, ambiguity of feedback

appears to be an important contributor to the maintenance of ERS, as low-ambiguous feedback regarding potential threats was found to significantly decrease anxiety and compulsive urges relative to ambiguous feedback.

### *Clinical Implications*

In addition to the general conclusions outlined above, a number of clinical implications follow from the current findings. First, our results highlight the fact that although ERS is common among both OCD sufferers and depressed individuals, their primary motivation(s) for engaging in this behaviour tend to differ in subtle ways (e.g., to prevent *general vs. social* threats, respectively). Thus, clinicians might find it useful to enquire about the presence and function of ERS when formulating clients' difficulties, in order to effectively tailor treatment to their specific needs. Although some form of exposure and response prevention (ERP) would likely constitute a common element of any cognitive-behavioural interventions aimed at reducing ERS, supplemental treatment strategies employed in the contexts of OCD vs. Depression might differ in relation to the prominent concerns displayed by each group. For example, OCD sufferers may find cognitive strategies designed to reduce biased threat appraisals especially helpful, whereas depressed clients with social rejection fears may benefit from a particular focus on social skills training, given that these fears may be realistic (e.g., Coyne, 1976; Haeffel, Voelz, & Joiner, 2007; Joiner, Alfano, & Metalsky, 1992) and less amenable to cognitive restructuring than the general harm-related fears that characterize OCD.

Secondly, our findings indicate that the quality of feedback (i.e., clear vs. ambiguous) provided in response to requests for reassurance is likely to have a significant impact upon the recipient's subsequent anxiety and compulsive urges. Therefore,

individuals who are prone to ERS may respond to treatments that target potentially biased interpretations of feedback (e.g., as ambiguous or insincere), as well as those designed to increase tolerance of uncertainty (e.g., Dugas & Robichaud, 2006) and/or distress tolerance (e.g., Levitt & Cloitre, 2005; Linehan, 1993). Likewise, clinicians may find it helpful to collaborate with clients' family members and/or significant others, who could be advised to withhold reassurance from the client or to purposely provide ambiguous reassurance, with the explicit intent of facilitating exposure to uncertainty.

#### *Future directions*

Contrary to recent claims that ERS behaviour is uniquely associated with depression (Burns, Brown, Plant, Sachs-Ericsson, & Joiner, 2006; Joiner & Schmidt, 1998), the present findings, in conjunction with previous research (e.g., Freeston & Ladouceur, 1997; Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998; Salkovskis & Warwick, 1986; Tolin, 2001), suggest that ERS is better understood as a trans-diagnostic phenomenon. However, the only validated measure of ERS behaviour currently available is the *Depressive Interpersonal Relationships Inventory (DIRI; Metalsky, Joiner, Potthoff, et al., 1991)*, which includes a 4-item subscale that assesses respondents' tendency to seek reassurance as to whether others "truly care" about them. The narrow focus of this scale on one depressotypic manifestation of reassurance seeking (i.e., about one's "value" to others) is problematic, and has likely contributed to Joiner and colleagues' (Burns et al., 2006; Joiner & Schmidt, 1998) findings regarding the purported specificity of ERS to depression. Accordingly, there is a need for a valid and reliable measure of ERS that takes into account the broader contexts in which this behaviour is observed. Toward this aim, current efforts are underway to develop a novel self-report

measure of ERS behaviour. It is hoped that this scale will enable researchers to assess the presence and severity of respondents' reassurance seeking behaviour in relation to a broader array of concerns than was previously possible with the DIRI (Metalsky et al., 1991).

The present research suggests several additional directions for future work in this area. First, given the long-term detrimental effects associated with OCD-related compulsions and neutralizing behaviour (e.g., Rachman, 2002; Rachman, Shafran, Mitchell, Trant, & Teachman, 1996; Salkovskis, 1985, 1999), it will be important to study the long-term consequences of ERS (e.g., with respect to anxiety and compulsive urges) in the context of OCD and other anxiety disorders. Similarly, an examination of the long-term effects of ambiguous vs. non-ambiguous feedback on the above-listed variables would help to clarify the role of ambiguity in the perpetuation of ERS, and to guide interventions aimed at reducing this maladaptive behaviour. Studies which measure potential mediators of these effects (e.g., perceived threat and responsibility) across several time points would be particularly valuable in establishing the precise mechanisms by which interpersonal processes (e.g., feedback ambiguity) interact with cognitive, behavioural and affective variables to produce anxiety and compulsive urges over time.

Secondly, given that compulsive checking is exacerbated by increases in perceived responsibility which paradoxically occur following each check (Rachman, 2002), and reassurance seeking is purportedly intended to *decrease* or distribute responsibility for harm to others (Salkovskis, 1985, 1999), a more detailed comparison of factors involved in the maintenance of ERS vs. compulsive checking is warranted. It will



also be important to examine the prevalence of ERS in other anxiety disorders, and to compare the content, triggers and function(s) of this behaviour across these disorders.

In addition to the above enquiries, it would be interesting to examine how personality and other personal characteristics affect an individuals' choice of coping strategies. A prime example of this type of research is a recent study which found a positive relationship between attachment style and reassurance seeking behaviour in a non-clinical sample (Weardon, Perryman & Ward, 2006). Relatedly, future investigations could examine how reassurance seeking behaviour is influenced by stable factors such as sex and/or gender, personality, and culture vs. contextual/situational variables such as those employed in the current research (e.g., mood, perceived threat and responsibility). A final empirical question is how reassurance solicited from others differs from self-assurance in terms of onset, function and consequences. This could have important consequences for understanding the potential mechanisms underlying popular self-soothing statements and other 'self-talk' therapy techniques.

### *Conclusion*

In summary, the current set of investigations sought to elucidate the mechanisms by which ERS is triggered and maintained in OCD and Depression. Clinical and non-clinical participants were interviewed about their reassurance seeking and checking behaviour, and a series of experimental vignettes were utilized to examine how manipulations of perceived threat, perceived responsibility and perceived ambiguity of feedback impact upon individuals' anxiety and compulsive urges. It was concluded that OCD-related ERS and compulsive checking are highly related in terms of underlying concerns, precipitating factors (e.g., perceived threat) and motivations, whereas the

principal content and function of ERS appears to differ in OCD vs. Depression.

Furthermore, the present research provided novel evidence to suggest that the provision of ambiguous reassurance may contribute to the persistence of reassurance seeking behaviour. Future research in this area should focus on examining the protracted effects of various types (e.g., ambiguous vs. non-ambiguous) of reassurance provision, as well as the long-term consequences of ERS.

## Endnotes

<sup>1</sup> There was trend toward a higher percentage of females in the HC vs. the OCD and MDD groups,  $p < .10$ .

<sup>2</sup> Inter-rater agreement for diagnoses was defined as follows: a) for each participant, both raters agreed on the principal diagnosis and group assignment, and b) where a diagnostic category score of 4 or higher was given by either rater, the other rater provided a severity score within a range of 1 (i.e., +/-1) of the other rater.

<sup>3</sup> We do not report the main effect of ambiguity condition in our follow-up analyses, since participants' first set of ratings was collected prior to the ambiguity of feedback manipulation.

<sup>4</sup> A 4-way mixed MANCOVA was conducted controlling for IUS scores, given that participants' scores on the IUS differed across the eight conditions. Results remained nearly identical, except in this analysis the main effect of time was no longer significant,  $F(3, 164) = 1.78$ , *n.s.*, and there was a trend toward a significant time x responsibility x ambiguity condition interaction,  $F(3, 164) = 2.18$ ,  $p = .09$ . Thus, we did not control for IUS scores in any of the remaining analyses.

<sup>5</sup> Low-ambiguous (but not ambiguous) feedback led to immediate and significant decreases in perceived threat [time 1 = 49.22(26.65), time 2 = 26.57(22.92)],  $F(1, 174) = 85.83$ ,  $p < .001$ ,  $r = .57$ , and perceived responsibility for preventing harm [time 1 = 66.34(22.81), time 2 = 48.31(27.78)],  $F(1, 174) = 47.06$ ,  $p < .001$ ,  $r = .46$ .

<sup>6</sup> Participants' urges to seek reassurance and urges to check were also strongly and significantly correlated at time 1,  $r = .80, p < .001$ , and time 2,  $r = .85, p < .001$ .

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## Appendix A: Participant Recruitment Advertisements

## OBSESSIVE-COMPULSIVE DISORDER (OCD) RESEARCH

Do you have unwanted intrusive thoughts, images or impulses? Do you repeat (e.g., check) things over and over again and/or seek reassurance repeatedly to feel less anxious or uncomfortable? Have you been diagnosed with Obsessive Compulsive Disorder?

If you answered yes to any of these questions and you speak English on a daily basis, you may be eligible for a research study at the Fear and Anxiety Disorders Laboratory Psychology at Concordia University. Financial compensation will be offered.

For more information please contact Stefanie at the Fear and Anxiety Disorders Laboratory at Concordia University:

(514)848-2424 x.2199

This research is being conducted by Dr. Adam Radomsky, Department of Psychology, Concordia University.

## DEPRESSION RESEARCH

Have you been feeling sad, empty, or lost interest in your usual activities? Have you been diagnosed with Major Depressive Disorder? Do you often seek reassurance from other people?

If you answered 'yes' to these questions and you speak English on a daily basis, you may be eligible for a new time-limited research study at the Fear and Anxiety Disorders Laboratory at Concordia University. Financial compensation will be offered.

For more information please contact Stella or Chris at the Fear and Anxiety Disorders Laboratory: (514)848-2424 ext.2199, [c\\_parris@alcor.concordia.ca](mailto:c_parris@alcor.concordia.ca)

This research is being conducted by Dr. Adam Radomsky, Department of Psychology, Concordia University.

**Appendix B: Interview for Compulsive Checking and Reassurance-Seeking Behaviour  
(ICCRS)**

Participant ID#: \_\_\_\_\_

Date: \_\_\_\_\_

## ICCRS

### Introduction:

“Now I would like to ask you some questions about some behaviours that you may or may not engage in when you are feeling stressed, anxious, or depressed. Specifically, I would like to learn about some of the strategies you might use to cope with these feelings. Different sections of this interview focus on different types of coping behaviour and the order in which these will be covered has been randomly assigned.

In one of these sections, I will be asking you some questions related to reassurance seeking behaviour. It is important that you understand what I mean by this; when I say reassurance seeking, this could mean *asking other people to reassure you that things will be “OK”, even though you have already received this information in the past. Also, reassurance seeking can be more subtle, such as tentatively stating that things will be “OK” and feeling reassured if others do not tell you otherwise. It is important to note that reassurance seeking only refers to situations in which you have already received assurance or affirmation, and are seeking additional assurance.*

Some topics that people commonly seek reassurance about include the following:

- Whether they have done something to harm or offend someone else (e.g., “Did I say something wrong?”, “Are you sure I didn’t cause our dinner guests to be sick?”)
- Whether or not others truly care about them (e.g., “Do you still love me?”, “Are you mad at me?”)
- Whether or not they have completed an important task or duty properly, such as a work project, various home safety measures (e.g., “Did you see me lock the door?”, “Is my work OK?”)
- Whether or not an object, event or situation is “safe” (e.g., “Do you think it’s safe for us to be in this part of town?”, “Has this hospital room been sterilized?”)

Do you have any questions about what I am referring to when I say “reassurance seeking”?

→ *Answer any questions using variations of the definitions/examples provided above.*

### **Comprehension test:**

To ensure that I have been entirely clear in defining reassurance seeking for you, I would like you to tell me whether or not the following examples would constitute reassurance seeking, and if not, why not...

(a) You make a habit of asking your boss whether or not you are doing OK at work, even though your boss tells you each time that you are doing fine.

*Correct answer:* yes

(b) You notice a large mole on your arm after a day at the beach and go to the doctor to ask if it might be cancerous. She informs you that the mole is harmless, and you are satisfied with this response, so you don't worry about it anymore.

*Correct answer:* no, because you only asked for assurance once, and did not seek additional reassurance.

I will also be asking you some questions about repeated checking, which simply involves **visually and/or physically checking that something is "OK" more than once**. For example, some of the things that people say they check repeatedly include:

- Aspects of their appearance
- Whether or not they have completed a task or duty properly (e.g., locked the door, turned off the stove, completed a work/school assignment, etc.)
- Whether or not they have caused harm in some way
- Whether they have remembered to bring important objects or documents with them (e.g., passport, wallet, credit card, driver's license)

Do you have any questions about what I am referring to when I say "repeated checking"?

→ *Answer any questions using variations of the definitions/examples provided above.*

***Comprehension test:***

To ensure that I have been entirely clear in defining repeated checking for you, I would like you to tell me whether or not the following examples would constitute repeated checking, and if not, why not...

(a) You glance at the mirror on the way out the door to check that your hair looks OK

*Correct answer:* no, because you only checked your hair once

(b) After writing a letter, you check it 3 times for spelling and grammatical errors.

*Correct answer:* yes

Lastly, I will be asking you some questions about your exercise habits. For the purposes of this interview, exercise will be defined as **any activity that you engage in that involves**

*prolonged (i.e., > 5 minutes) and purposeful physical exertion. For the purposes of this interview, an activity is only considered to be exercise if part of the reason for engaging in the activity is to increase/maintain fitness. Examples include walking, running or jogging, playing sports, cycling, going to the gym, and swimming.*

Do you have any questions about what I am referring to when I say “exercise”?

→ Answer any questions using variations of the definitions/examples provided above.

**Comprehension test:**

To ensure that I have been entirely clear in defining exercise for you, I would like you to tell me whether or not the following examples would constitute exercise, and if not, why not...

(a) You see a large spider in the bathroom and your startle response causes you to jump

*Correct answer:* no, because the activity (i.e., jumping) was not prolonged or purposeful

(b) You decide to go for a 10-minute jog after a long day at work/school

*Correct answer:* yes

Do you have any other questions before we continue? OK, let's begin..."

## SECTION I – REASSURANCE SEEKING

“Now I would like to ask you some questions about reassurance seeking. The questions in this section are focused specifically on reassurance seeking; the sections on checking and exercise will follow.”

### 1. Initial Inquiry

During the past 6 months, have you ever sought reassurance from another person, either directly or indirectly?

YES NO (please circle response)

If “yes”, proceed to open-ended questions.

If “no”, probe further (see below); if still “no”, proceed to checking section

**Probe example:** “Have you sought reassurance regarding the quality of your work? How about asking someone to reassure you that they care about you? ... or making sure that you have not disappointed someone, or forgotten something important? Are you sure you have not sought reassurance at all during the last 6 months?”

## IMAGINAL EXERCISE

“I would like you to take a minute to remember *the most recent* situation or set of situations in which you felt compelled to seek reassurance.”

*(Pause for a moment to allow participant to reflect...)*

“Let me know when you have a recent episode in mind ...”

→ *(Slowly cite the following verbatim...)* “*Before* you tell me about it, I’d like you to *close your eyes* and try to remember the specific details of this situation, including where you were, what you were doing, who you were with, what you were thinking and feeling, and the events that led up to your seeking reassurance under these circumstances. Once you have these details in mind, I’d like you to tell me how the situation(s) unfolded. Again, what was happening, who were you with, how were you feeling, and what was going through your mind **at that time?**”

→ *Allow participant to recount general details, then probe for any details listed above that were not specified by participant:*

**\*N.B. – Make sure that the participant is describing a reassurance seeking episode!**

Place / situation (w/ whom?):

---

Thoughts / feelings: \_\_\_\_\_

“OK, if I understood you correctly ... (provide general summary)

→ **BE CAREFUL NOT TO PROVIDE LEADING STATEMENTS! [i.e., try to use the participant’s exact words and do not make inferences!]**

“I’d like you to keep this episode in mind as we go through the next section.”

---

## OPEN-ENDED QUESTIONS

“Now I would like to ask you some more specific questions about what happens in situations where you *most frequently* decide to seek reassurance. When answering these questions, try to think about what *typically* happens in these situations. If you are having trouble doing this, you can refer back to the specific episode you just described to me instead.”

→ Check for understanding of instructions and proceed with interview:



## 1. Content

(i) First, I would like to know what sorts of things you seek reassurance about most frequently. Keeping in mind that reassurance seeking involves seeking out assuring information on a given topic *repeatedly* (i.e., more than just once), what are you especially likely to seek reassurance about?

*Possible categories:*

- a) Perceived threat (health / contamination)
- b) Perceived threat (safety / harm)
- c) Perceived threat (loss / rejection / abandonment)
- d) Personal responsibility for harm
- e) Personal performance / competence
- f) Personal worth (e.g., likeability / appearance / “normality”)
- g) Meaning of obsessions
- h) Other (please explain) : \_\_\_\_\_

*If participant is unsure, prompt:* When you are looking for reassurance, what are some of the things that you want to be reassured about?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other concerns you have that you often seek reassurance about?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize:**

“OK, so if I understood you correctly, you tend to seek reassurance about (*insert responses*) most frequently. Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the things you just mentioned, which would you say you seek reassurance about most frequently?  
→ (*If unsure, ask:* “which causes you the most distress?”)

Answer: \_\_\_\_\_

## 2. Onset / triggers

(i) What usually prompts you to seek assurance in the first place? In other words, what specific situations, thoughts and/or feelings typically trigger your urges to seek this initial assurance?

*Possible categories:*

- a) Unwanted thoughts / images / obsessions
- b) Negative mood (anxious)  
→ (specify: \_\_\_\_\_)
- c) Negative mood (depressive)  
→ (specify: \_\_\_\_\_)
- d) Perceived (health/contamination) threat / Physiology
- e) Doubt re: removal/reduction of perceived threat (safety/harm)
- f) Inability to check
- g) Perceived responsibility for preventing harm
- h) Doubt re: personal performance / competence
- i) Perceived threat of loss / rejection / abandonment
- j) Doubt re: personal worth (e.g., likeability, appearance, “normality”)
- k) Perceived loss of control
- l) Doubt re: memory
- m) Doubt re: perception
- n) Physical environment / location
- o) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What changes in your thoughts and feelings typically occur just before you feel the urge to seek assurance? How about changes in your environment or the situation?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other situations, thoughts or feelings that typically trigger your urges to seek assurance?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize:**

“OK, so if I understood you correctly, your reassurance seeking is typically preceded by (insert responses). Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the triggers you just mentioned, which would you say most frequently precedes your urges to seek reassurance?

→ (If unsure, ask: “which causes you the most distress?”)

Answer: \_\_\_\_\_

### 3. Function

(i) What is your main motivation for seeking reassurance in the situation(s) you mentioned earlier (*remind participant of answer(s) they gave to question 1, part i*)? In other words, what do you want to happen with regard to your mood, thoughts, and/or the situation when you seek reassurance in this/these situations?

*Possible categories:*

- a) Remove intrusive thought / reduce obsessions
- b) Decrease negative mood (anxious)  
→ (specify: \_\_\_\_\_)
- c) Decrease negative mood (depressive)  
→ (specify: \_\_\_\_\_)
- d) Prevent harm (health/contamination)
- e) Prevent harm (general safety)
- f) Prevent harm (loss/rejection/abandonment)
- g) Decrease responsibility for harm
- h) Achieve “just right” / completeness feeling
- i) Increase perceived control
- j) Receive attention / affection from others; increase self-esteem/self confidence
- k) To prevent checking
- l) To prevent harm (minor matters)
- m) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What do you hope will change if you get reassurance?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other reasons that you have for seeking reassurance with regard to your mood, thoughts, and/or the situation?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize:**

“OK, so if I understood you correctly, your primary reasons for seeking reassurance are (insert responses). Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the answers you just gave, what would you say is the main reason that you seek reassurance?  
→ (if unsure, ask: “what is the function most often served by reassurance seeking?”)

Answer: \_\_\_\_\_

#### 4. Termination

(i) Lastly, what causes you to *stop* seeking reassurance about something *within a given episode*? In other words, what thoughts, moods and/or situations tell you that you can or should stop?

*Possible categories:*

- a) Physical / mental exhaustion
- b) Interpersonal concerns (may annoy others / cause embarrassment)
- c) Mood improves (anxious): \_\_\_\_\_
- d) Mood improves (depressive): \_\_\_\_\_
- e) Rationalization
- f) Achieve sense of control
- g) Perceived reduction / removal of threat (health/contamination)
- h) Perceived reduction / removal of threat (safety)
- i) Perceived reduction / removal of threat (loss/rejection/abandonment)
- j) Reduction in perceived responsibility for harm
- k) Effort/rules (e.g., asked as many times as can)
- l) No longer feel like continuing / boredom
- m) Achieve “just right” feeling / sense of “completeness”
- n) Time pressure
- o) Believe feedback
- p) Distraction
- q) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What sorts of cues, such as thoughts, emotions or events, let you know that you can or should stop asking for reassurance?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other factors such as thoughts, moods or situations that cause you to stop seeking reassurance?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize**

“OK, so if I understood you correctly, you tend to stop seeking reassurance when (insert responses). Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the factors you just mentioned, which is the most important in influencing your decision to stop seeking reassurance?

Answer: \_\_\_\_\_

“Now I’d like to ask you a few more questions about your reassurance seeking; some of which will be multiple choice and some of which will ask you to provide ratings on a scale of 0-100. You may find that some of the options in the multiple choice questions do not apply to you or that they sound strange, and you can just ignore these. Also, you should know that there isn’t any right or wrong answer to these questions ... just answer with what you feel describes you best.”

### CLOSED-ENDED QUESTIONS

#### 1. Form

Which of the following options best describes how you typically go about obtaining reassurance?

- a) Ask for it directly (e.g., “Did I lock the door?”, “Are you mad at me?”)
- b) Seek it verbally, but indirectly (e.g., look for other’s responses after saying things like: “I don’t need to worry about you leaving me since you love me”, “I locked the door, so we can leave now”, “I noticed that we haven’t been spending as much time together lately”; and assume that others will let you know if things will not be “OK”)
- c) Derive reassurance through non-verbal means (e.g., by interpreting others’ body language, mood, etc)?
- d) Other (please explain)

#### 2. Source of reassurance

- a) Who do you seek reassurance from most frequently?
  - a) Spouse / romantic partner
  - b) Friend(s)
  - c) Authority figure(s) (e.g., expert(s) / boss)
  - d) Parent(s)
  - e) Child(ren)
  - f) Colleague(s) / co-worker(s)
  - g) Other (please give details): \_\_\_\_\_
- b) What leads you to seek reassurance most often from this/these individual(s)?
  - a) Convenience
  - b) Ability of individual to provide comfort

- c) Trustworthiness / ability of individual to provide valuable information
- d) Ability of individual to take on or share responsibility
- e) Other (please explain): \_\_\_\_\_

### 3. Frequency

On average, how many times per week do you seek reassurance? In other words, how many different *episodes* of reassurance seeking do you engage in each week?

- a) 0
- b) 1
- c) 2
- d) 3
- e) 4
- f) 5 or more (specify): \_\_\_\_\_

### 4. Redundancy

- a) When seeking reassurance, what percentage of the time (0-100%) do you feel you already know the answer to your question?

Answer: \_\_\_\_\_

- b) On average, how confident are you that you already know the answer to your question when seeking reassurance (on a scale of 0-100)?

Answer: \_\_\_\_\_

#### **Elicit recall of recent reassurance-seeking scenario:**

“Now I would like you to think back to the scenario you described earlier in which you sought reassurance. Again, try to remember the specific details of this situation, including where you were, what you were doing, who you were with, what you were thinking and feeling, and the events that led up to your seeking reassurance under these circumstances.”

“For each of the following questions, please use the scale in front of you when providing your ratings. You’ll notice that a 100-point scale is used, where 0 means none/not at all and 100 means the most/highest you could imagine. Feel free to use *any* number between 0 and 100; the numbers provided on the scale are just for your reference. Please answer each question according to how you **felt** in the moment, rather than what you currently **think** is *logical*.”

- 5. On a scale of 0-100, how much anxiety/discomfort did you feel about the situation you were in at the moment when you decided to seek reassurance?

Answer: \_\_\_\_\_

6. On a scale of 0-100, how much sadness did you feel about the situation you were in at the moment when you decided to seek reassurance?

Answer: \_\_\_\_\_

7. On a scale of 0-100, how threatening/serious would you have rated the situation you were in at the moment when you decided to seek reassurance?

Answer: \_\_\_\_\_

8. On a scale of 0-100, how **responsible** did you feel for making sure that everything would be "OK" when you decided to seek reassurance?

Answer: \_\_\_\_\_

9. On a scale of 0-100, how would you have rated your mood when you decided to seek reassurance, where 0 is as negative as you can imagine, 50 is neutral, and 100 is as positive as you can imagine.

Answer: \_\_\_\_\_

10. When you were **initially** given assurance about your concern, how ambiguous (or unclear) did that feedback seem to you, on a scale of 0-100?

Answer: \_\_\_\_\_

11. On a scale of 0-100, how much did you doubt the **sincerity/genuineness** of the assurance you **initially** received when you decided to seek **reassurance**?

Answer: \_\_\_\_\_

12. On a scale of 0-100, how much did you doubt your **memory** of the **initial feedback** you received when you decided to seek reassurance?

Answer: \_\_\_\_\_

13. On a scale of 0-100, how much anxiety/discomfort did you feel about the situation you were in at the moment when you decided to **stop** seeking reassurance?

Answer: \_\_\_\_\_

14. On a scale of 0-100, how much sadness did you feel about the situation you were in at the moment when you decided to **stop** seeking reassurance?

Answer: \_\_\_\_\_

15. On a scale of 0-100, how *threatening/serious* would you have rated the situation you were in at the moment when you decided to *stop* seeking reassurance?

Answer: \_\_\_\_\_

16. On a scale of 0-100, how *responsible* did you feel for making sure that everything would be "OK" when you decided to *stop* seeking reassurance?

Answer: \_\_\_\_\_

17. On a scale of 0-100, how would you have rated your mood when you decided to *stop* seeking reassurance, where 0 is as negative as you can imagine, 50 is neutral, and 100 is as positive as you can imagine.

Answer: \_\_\_\_\_

18. Which of the following options *best* describes how you sought reassurance?

- a) as much as you could
- b) until you didn't feel like seeking reassurance anymore
- c) both
- d) other (please provide details): \_\_\_\_\_

19. Which of the following do you think *best* describes your motivation for seeking reassurance?

- a) to prevent something bad from happening
- b) to feel less responsible if something bad happens
- c) to alleviate anxiety / worry
- d) to alleviate sadness / guilt
- e) to achieve the sense that things are "just right" (e.g., to make things "click")
- f) to get love and/or attention
- g) other (please provide details): \_\_\_\_\_

## SECTION II – CHECKING

"That concludes the section on reassurance seeking; now I would like to ask you some questions specifically about checking."

### 1. Initial Inquiry

During the past 6 months, have you ever repeatedly checked something?



YES NO (please circle response)

If “yes”, proceed to open-ended questions

If “no”, probe further (see below); if still “no”, proceed to final section

**Probe example:** “Have you repeatedly checked the quality of your work? How about checking your appearance repeatedly? ... or making sure that you haven’t caused harm in some way? Are you sure you have not repeatedly checked at all during the last 6 months?”

### IMAGINAL EXERCISE

“I would like you to take a minute to remember *the most recent* situation or set of situations in which you felt compelled to check something.”

*(Pause for a moment to allow participant to reflect...)*

“Let me know when you have a recent episode in mind...”

→ *(Slowly cite the following verbatim...)* “*Before* you tell me about it, I’d like you to *close your eyes* and try to remember the specific details of this situation, including where you were, what you were doing, who you were with, what you were thinking and feeling, and the events that led up to your checking under these circumstances. Once you have these details in mind, I’d like you to tell me how the situation(s) unfolded. Again, what was happening, who were you with, how were you feeling, and what was going through your mind at that time?”

→ *Allow participant to recount general details, then probe for any details listed above that were not specified by participant:*

Place / situation (w/ whom?):

Thoughts / feelings: \_\_\_\_\_

“OK, if I understood you correctly ... (provide general summary)

→ **BE CAREFUL NOT TO PROVIDE LEADING STATEMENTS!** *[i.e., try to use the participant’s exact words and do not make inferences!]*

“I’d like you to keep this episode in mind as we go through the next section.”

## OPEN-ENDED QUESTIONS

“Now I would like to ask you some more specific questions about what happens in situations where you *most frequently* decide to check. When answering these questions, try to think about what *typically* happens in these situations. If you are having trouble doing this, you can refer back to the specific episode you just described to me instead.”

→ Check for understanding of instructions and proceed with interview:

### 1. Content

I'd like you to tell me about some of these instances in which you've checked.

What sorts of things do you check most frequently? Keeping in mind that the type of checking we're interested in involves checking *repeatedly* (i.e., more than just once), what are you especially likely to check?

*Possible categories:*

- a) Perceived threat (health / contamination)
- b) Perceived threat (safety / harm)
- c) Appearance
- d) Personal performance / “correctness” on a task
- e) Perceived threat (social / loss / rejection)
- f) Order / symmetry
- g) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What are some of the things that you often check?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other concerns you have that you often check?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize:**

“OK, so if I understood you correctly, you tend to check (*insert responses*) most frequently. Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the things you just mentioned, which would you say you check most frequently?

→ (*If unsure, ask:* “which causes you the most distress?”)

Answer: \_\_\_\_\_

## 2. Onset / triggers

(i) What usually prompts you to check in the first place? In other words, what specific situations, thoughts and/or feelings typically trigger your urges to complete this initial check?

*Possible categories:*

- a) Unwanted thoughts / images / obsessions
- b) Negative mood (anxious)  
→ (specify: \_\_\_\_\_ )
- c) Negative mood (depressive)  
→ (specify: \_\_\_\_\_ )
- d) Perceived (health/contamination) threat / Physiology
- e) Doubt/uncertainty re: removal/reduction of perceived threat (safety/harm)
- f) Doubt re: memory
- g) Doubt re: perception
- h) Perceived responsibility for preventing harm
- i) Doubt re: personal performance / competence
- j) Perceived threat of loss / rejection / abandonment
- k) Perceived loss of control
- l) Doubt re: personal worth (perceived abnormality / inferiority)
- m) Physical environment / location
- n) Inability to seek reassurance
- o) Previous checks trigger ritual
- p) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What changes in your thoughts and feelings typically occur just before you feel the urge to check? How about changes in your environment or the situation?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other situations, thoughts or feelings that typically trigger your urges to check?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize:**

“OK, so if I understood you correctly, your checking is typically preceded by (*insert responses*). Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the triggers you just mentioned, which would you say most frequently precedes your urges to check?  
 → (If unsure, ask: “which causes you the most distress?”)

Answer: \_\_\_\_\_

### 3. Function

(i) What is your main motivation for checking in the situation(s) you mentioned earlier (*remind participant of answer(s) they gave to question 1, part i*)? In other words, what do you want to happen with regard to your mood, thoughts, and/or the situation when you check in this/these situation(s)?

*Possible categories:*

- a) Remove intrusive thought / reduce obsessions
- b) Decrease negative mood (anxious)  
→ (specify: \_\_\_\_\_ )
- c) Decrease negative mood (depressive)  
→ (specify: \_\_\_\_\_ )
- d) Prevent harm (health/contamination)
- e) Prevent harm (general safety)
- f) Prevent harm (loss/rejection/abandonment)
- g) Achieve “just right” / completeness feeling
- h) Reduce doubt / uncertainty re: memory
- i) Decrease responsibility for harm
- j) To increase perceived control
- k) To prevent reassurance seeking
- l) To increase self-esteem / confidence
- m) To please others
- n) To prevent harm (minor matters)
- o) To reduce doubt regarding perception
- p) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What do you hope will change if you check?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other reasons that you have for checking with regard to your mood, thoughts and/or the situation?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize:**

“OK, so if I understood you correctly, your primary reasons for checking are (*insert responses*). Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the answers you just gave, what would you say is the main reason that you check?  
 → (if unsure, ask: “what is the function most often served by checking?”)

Answer: \_\_\_\_\_

#### 4. Termination

Lastly, what causes you to **stop** checking *within a given episode*? In other words, what thoughts, moods and/or situations tell you that you can or should stop?

*Possible categories:*

- a) Physical / mental exhaustion
- b) Interpersonal concerns (may annoy others)
- c) Mood improves (anxious)
- d) Mood improves (depressive)
- e) Rationalization
- f) Achieve sense of control
- g) Perceived reduction / removal of threat (health/contamination)
- h) Perceived reduction / removal of threat (safety)
- i) Perceived reduction / removal of threat (loss/rejection/abandonment)
- j) Reduction in perceived responsibility for harm
- k) Effort/rules (e.g., checked as many times as can)
- l) No longer feel like continuing / boredom
- m) Achieve “just right” feeling / sense of completeness
- n) Time pressure
- o) Distraction
- p) Other (please explain): \_\_\_\_\_

*If participant is unsure, prompt:* What sorts of cues, such as thoughts, emotions or events, let you know that you can or should stop checking?

*\* Once the participant has finished providing his/her spontaneous responses, use the following probe:*

*Probe:* Are there any other factors such as thoughts, moods or situations that cause you to stop checking?

*\* If less than 3 response categories provided, probe until 3 categories provided, or until participant can think of no more.*

**\*Summarize**

“OK, so if I understood you correctly, you tend to stop checking when (*insert responses*). Is this correct?”

(ii) *If more than 1 response category provided (or if unsure), ask:* Of the factors you just mentioned, which is the most important in influencing your decision to stop checking?

Answer: \_\_\_\_\_

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“Now I’d like to ask you a few more questions about your repeated checking; some of which will be multiple choice and some of which will ask you to provide ratings on a scale of 0-100. You may find that some of the options in the multiple choice questions do not apply to you or that they sound strange, and you can just ignore these. Also, you should know that there isn’t any right or wrong answer to these questions ... just answer with what you feel describes you best.”

### CLOSED-ENDED QUESTIONS

#### 1. Frequency

On average, how many times per week do you check? In other words, how many different *episodes* of checking do you engage in each week?

- a) 0
- b) 1
- c) 2
- d) 3
- e) 4
- f) 5 or more (specify): \_\_\_\_\_

#### 2. Redundancy

a) When checking, what percentage of the time (0-100%) do you feel you already know what you will find?

Answer: \_\_\_\_\_

b) On average, how *confident* are you that you already know what you will find when checking (on a scale of 0-100)?

Answer: \_\_\_\_\_

#### Elicit recall of recent checking scenario:

“Now I would like you to think back to the checking scenario you described earlier. Again, try to remember the specific details of this situation, including where you were,

what you were doing, who you were with, what you were thinking and feeling, and the events that led up to your checking under these circumstances.”

“For each of the following questions, please use the scale in front of you when providing your ratings. You’ll notice that a 100-point scale is used, where 0 means none/not at all and 100 means the most/highest you could imagine. Feel free to use *any* number between 0 and 100; the numbers provided on the scale are just for your reference. Please answer each question according to how you felt in the moment, rather than what you currently think is *logical*.”

3. On a scale of 0-100, how much anxiety/discomfort did you feel about the situation you were in at the moment when you decided to re-check?

Answer: \_\_\_\_\_

4. On a scale of 0-100, how much sadness did you feel about the situation you were in at the moment when you decided to re-check?

Answer: \_\_\_\_\_

5. On a scale of 0-100, how threatening/serious would you have rated the situation you were in at the moment when you decided to re-check?

Answer: \_\_\_\_\_

6. On a scale of 0-100, how *responsible* did you feel for making sure that everything would be “OK” when you decided to re-check?

Answer: \_\_\_\_\_

7. On a scale of 0-100, how would you have rated your mood when you decided to check, where 0 is as negative as you can imagine, 50 is neutral, and 100 is as positive as you can imagine.

Answer: \_\_\_\_\_

8. When you *initially* checked, how ambiguous (or unclear) did the information gained from that check seem to you, on a scale of 0-100?

Answer: \_\_\_\_\_

9. On a scale of 0-100, how much did you doubt your *memory* of your *initial check* when you decided to check *again*?

Answer: \_\_\_\_\_

10. On a scale of 0-100, how much anxiety/discomfort did you feel about the situation you were in at the moment when you decided to *stop* checking?

Answer: \_\_\_\_\_

11. On a scale of 0-100, how much sadness did you feel about the situation you were in at the moment when you decided to *stop* checking?

Answer: \_\_\_\_\_

12. On a scale of 0-100, how threatening/serious would you have rated the situation you were in at the moment when you decided to *stop* checking?

Answer: \_\_\_\_\_

13. On a scale of 0-100, how *responsible* did you feel for making sure that everything would be "OK" when you decided to *stop* checking?

Answer: \_\_\_\_\_

14. On a scale of 0-100, how would you have rated your mood when you decided to *stop* checking, where 0 is as negative as you can imagine, 50 is neutral, and 100 is as positive as you can imagine.

Answer: \_\_\_\_\_

15. Which of the following options *best* describes how you checked?

- a) as much as you could
- b) until you didn't feel like checking anymore
- c) both
- d) other (please provide details): \_\_\_\_\_

16. Which of the following do you think *best* describes your motivation for checking?

- a) to prevent something bad from happening
- b) to feel less responsible if something bad happens
- c) to alleviate anxiety / worry
- d) to alleviate sadness / guilt
- e) to achieve the sense that things are "just right" (e.g., to make things "click")
- f) to get love and/or attention
- g) other (please provide details): \_\_\_\_\_

### SECTION III – EXERCISE

#### 1. Initial Inquiry



During the past 6 months, have you ever exercised?

YES NO (please circle response)

If “no”, probe further; if still “no”, proceed to final section

## CLOSED-ENDED QUESTIONS

### 1. Frequency

On average, how many times per week do you exercise?

- a) 0
- b) 1
- c) 2
- d) 3
- e) 4
- f) 5 or more (specify): \_\_\_\_\_

#### Elicit recall of recent exercising scenario:

“Now I would like you to think of *the most* recent time in which you exercised. Try to remember the specific details of this situation, including where you were, what you were doing, who you were with, what you were thinking and feeling, and the events that led up to you exercising under these circumstances. Once you have the image in mind, describe it to me.”

Note details: \_\_\_\_\_

“Again, for each of the following questions, please use the scale in front of you when providing your ratings. Feel free to use *any* number between 0 and 100; the numbers provided on the scale are just for your reference. Please answer each question according to how you felt in the moment that you were exercising, rather than what you currently think is *logical*.”

2. On a scale of 0-100, how much anxiety/discomfort did you feel about the situation you were in at the moment when you decided to exercise?

Answer: \_\_\_\_\_

3. On a scale of 0-100, how much sadness did you feel about the situation you were in at the moment when you decided to exercise?

Answer: \_\_\_\_\_

4. On a scale of 0-100, how threatening/serious would you have rated the situation you were in at the moment when you decided to exercise?

Answer: \_\_\_\_\_

5. On a scale of 0-100, how *responsible* did you feel for making sure that everything would be "OK" when you decided to exercise?

Answer: \_\_\_\_\_

6. On a scale of 0-100, how would you have rated your mood when you decided to exercise, where 0 is as negative as you can imagine, 50 is neutral, and 100 is as positive as you can imagine.

Answer: \_\_\_\_\_

7. On a scale of 0-100, how much anxiety/discomfort did you feel about the situation you were in at the moment when you decided to *stop* exercising?

Answer: \_\_\_\_\_

8. On a scale of 0-100, how much sadness did you feel about the situation you were in at the moment when you decided to *stop* exercising?

Answer: \_\_\_\_\_

9. On a scale of 0-100, how threatening/serious would you have rated the situation you were in at the moment when you decided to *stop* exercising?

Answer: \_\_\_\_\_

10. On a scale of 0-100, how *responsible* did you feel for making sure that everything would be "OK" when you decided to *stop* exercising?

Answer: \_\_\_\_\_

11. On a scale of 0-100, how would you have rated your mood when you decided to *stop* exercising, where 0 is as negative as you can imagine, 50 is neutral, and 100 is as positive as you can imagine.

Answer: \_\_\_\_\_

12. Which of the following options best describes how you exercised?

- a) as much as you could
- b) until you didn't feel like exercising anymore

- c) until you had finished your usual routine
- d) other (please provide details): \_\_\_\_\_

13. Which of the following do you think best describes your motivation for exercising?

- a) to prevent something bad from happening
- b) to feel less responsible if something bad happens
- c) to alleviate anxiety / discomfort
- d) to alleviate sadness / depression
- e) to achieve the sense that things are “just right” (e.g., to make things “click”)
- f) to get love and/or attention
- g) other (please provide details): \_\_\_\_\_

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#### SECTION IV – REFLECTION

Finally, is there anything important related to your reassurance seeking or checking that we have not yet discussed? Is there anything important related to the onset, maintenance or termination of your reassurance seeking or checking that we have not yet talked about?

Answer:

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**Appendix C: ICCRS guidelines and trouble-shooting instructions**

## ICCRS – Supplementary Instructions for Interviewer

### **Introduction:**

The aims of this section are to familiarize participants with the goals of the interview, as well as to ensure that they understand the concepts of interest (i.e., checking, reassurance seeking). It is essential that participants clearly understand what is implied by the terms “repeated checking” and “reassurance seeking”. The definitions and examples provided can be repeated and paraphrased as many times as necessary to ensure participants’ comprehension.

**Comprehension tests:** If participants answer a question incorrectly, correct them, explaining why they were incorrect, and test them with a second, similar example.

→ If a participant asks about the difference between repeated checking and reassurance seeking, you should respond by saying; “As you have noticed, there *are* some similarities between repeated checking and reassurance seeking. However, by definition, reassurance seeking involves soliciting feedback from another individual (either directly or indirectly), while checking is a physical act that can be completed in isolation. Does that help to clarify the difference between these behaviours?”

→ In the unlikely event that participants are unable to understand the meaning of reassurance seeking, repeated checking or exercise even after substantial efforts to explain these concepts, the interview should be terminated, and participants should be debriefed, thanked for their time and compensated.

### **I) Initial Inquiry:**

Please ensure that you probe participants if they respond negatively to the initial inquiry (i.e., say that they have not engaged in the behaviour of interest during the past 6 months). However, if a participant insists that they have not checked/sought reassurance even after probing, accept their response and proceed to the next section.

### **II) Imaginal Exercise:**

The aims of this section are to: (i) ensure that participants not only understand the concepts of interest (i.e., reassurance seeking, checking) on an intellectual level, but that they can also provide pertinent examples from their own lives, (ii) facilitate participants’ responses to the ensuing questions by reminding them of this/these pertinent example(s) which they can use as a point of reference, and (iii) enhance reliability of recall (i.e., decrease memory distortion) via imagery.

\* Encourage participants to recall a specific instance of a general scenario. For example, if a participant states that s/he usually re-checks whether or not s/he locked the door properly, ask them to try to recall the *most recent* time this occurred.

**Trouble-shooting:** If a participant is having a hard time recalling an episode, ask them to think back to the episode that they had in mind when they said “yes” to the initial inquiry.

**\*N.B.** – It is important to ensure that participants recall an episode in which they sought reassurance, rather than simply asking for information/assurance on a single occasion. Double-check this if in doubt.

**Summary:** When providing a summary of the participant’s recalled episode, recount all of the details that were probed for (place, situation, mood, thoughts, who participant was with), and use the participant’s own words whenever possible.

→ **IMPORTANT: Do not make inferences or provide leading statements in summary!** (For example, if the participant says that they checked after a long day at work, do not summarize by inferring that they were *stressed* from work ... unless you have probed and they have given you these details)

### III) Open-Ended Questions:

**Aims:** The goal of this section is to collect information about various aspects of reassurance seeking and checking behaviour *using open-ended questions* (**\*N.B.** – *closed-ended questions should not be used*). Each question focuses on a domain of interest (e.g., content, triggers, function, etc.). There are two parts to each question. In part (i), participants are encouraged to provide as many responses as they can think of. As such, multiple response categories may be provided. Part (ii) asks participants to indicate the most important (i.e., frequently occurring) factor identified in part (i) of each question.

After participants respond, circle each category that applies. If one or more of their responses does not fit one of the categories provided, circle “other” and write in a brief description of their response (attempting to use participants’ own words).

**Prompting guidelines:** Prompts are to be used if a participant is having trouble understanding the questions as stated. They basically just rephrase the same question.

In addition, if a participant’s response is **clearly inconsistent** with one or more responses provided on earlier questions, it is important to carefully (and tactfully) point this out to the participant in order to “ensure that you understand the participant clearly”.

Similarly, if a participant’s prior response(s) imply that their current responses may be incomplete, you are encouraged to remind them of their earlier response in an attempt to solicit a more complete response to the current question.

→ (e.g., if a participant states that they often seek reassurance about their *performance at work* in the “content” section, but then mention nothing about work in the “trigger” section, you should remind them of their earlier response and say “*earlier you mentioned that you often seek reassurance about your work performance; what prompts you to seek reassurance in these situations?*”)

**Probing guidelines:** After participants have answered part (i) of each question, they should be probed at least once using the probes provided in the interview (e.g., “Are there any other reasons you check?”) to ensure completeness of answers.

-If participants spontaneously provide **3 or more** response categories, it is only necessary to probe for further responses once.

-If participants provide **less than 3** response categories, probe until either: a) 3 response categories have been provided, or b) participants state that they cannot think of any other responses.

In addition, if a participant’s response implies that an affective state influences their behaviour, probe until you get a concrete emotional descriptor.

→ (e.g., if a participant states that their checking is prompted by “*feeling bad / uneasy*”, you could ask: “*Please be more specific ... what do you mean by feeling bad?*”)

Similarly, if a participant’s response seems broad, vague, or ambiguous, probe further and ask for clarification with examples (even if you can place their response in one of the broad categories). In the reassurance seeking section, ask for ***specific examples of what the participant actually said*** whenever appropriate (e.g., “*When you were on the phone with your friend seeking reassurance, what were some of the things you actually said / asked her?*”)

→ ***Final responses should be concrete and unambiguous*** (e.g., if a participant states that they check “*so that bad things won’t happen*”, you could ask: “*What bad thing(s) specifically are you trying to prevent?*”)

→ ***Golden rule: You (and coders) should only be able to interpret participants’ responses in 1 way!***

For the “**function**” question in the reassurance seeking and checking sections, make sure that the participant is referring to the function of reassurance / repeated checking, rather than initial feedback / checks.

→ (e.g., if a participant states that the function of reassurance seeking / checking is to “*obtain information*”, you could say to the respondent; “*Remembering that reassurance seeking / repeated checking occurs after you have already received assurance / checked once, what is the purpose of seeking additional reassurance / checking again?*”)

***\*N.B. – If a participant provides a response that implies that their earlier responses were incomplete, you should quickly go back and clarify whether another response should be recorded for the earlier question(s)***

→ (e.g., if a participant says that thoughts about her apartment burning down trigger her checking in the “Context/triggers” section, but did not mention checking any potential sources of fire in the “Content” section, you should point this out and ask what she checks in association with her fire prevention concerns (then add her response to the “Content” section))

#### IV) Closed-Ended Questions:

**Aims:** The goal of these sections is to test predictions regarding various mechanisms hypothesized to contribute to reassurance seeking and checking behaviour.

Questions in this section are presented in one of two formats: (i) forced-choice multiple choice, or (ii) subjective ratings. Participants should be encouraged to pick only one response for multiple choice questions; if they choose “other”, make sure to write their response in the space provided (using their words).

The “frequency” question should be posed as an open-ended question (i.e., do not present the choices; instead, allow participants to respond freely and circle the category that applies).

**\*N.B.- If a participant seems to be providing extreme/exaggerated ratings (e.g., ratings > 95 or < 5) , it is acceptable to query the participant:**

→ (e.g., If participant says their anxiety/discomfort was 100 when they checked, you might say; “*So when you decided to check, you were feeling the most anxiety/discomfort you could possibly imagine; just as much as you might expect to experience if you were in a life or death situation?*”)

#### IV) Reflection Questions:

**Aims:** The goal of this section is to allow participants to reflect on their responses to earlier questions and to let the experimenter know if there is anything important in relation to their checking and/or reassurance seeking that has not yet been discussed.

#### Additional Instructions

As the interviewer for this study, your primary role is to collect as much pertinent information as possible, while keeping participants focused on the questions of interest. It is essential that you follow the standardized protocol in the same manner for each participant in order to minimize the impact of potential confounds. In addition, it is very important that you utilize open-ended prompts and probes whenever appropriate, so that coders need not make any inferences while coding the interview data.

If, at any point during the interview, you notice that a participant is growing tired, impatient, etc., you should suggest taking a short (e.g., 5-min.) break before continuing with the study, in order to maximize the reliability and validity of participants’ responses.



**Appendix D: ICCRS Integrity Check**

Participant #: \_\_\_\_\_

*Interview Integrity Check Scoring System*

	Present	Absent
<b>INTRODUCTION</b>		
<b>Introduction script</b>		
→ <i>Deviation from script?</i>		
<b>Definition of reassurance seeking (RS)</b>		
→ <i>Deviation from script?</i>		
Examples of RS		
→ <i>Deviation from script?</i>		
Probe for understanding of RS definition?		
Comprehension test script for RS (part a)		
→ <i>Deviation from script?</i>		
<i>Deviation from scripted feedback?</i> If present, what was said:		
Comprehension test script for RS (part b)		
→ <i>Deviation from script?</i>		
<i>Deviation from scripted feedback?</i> If present, what was said:		
<b>Definition of repeated checking (CC)</b>		
Examples of CC		
→ <i>Deviation from script?</i>		
Probe for understanding of CC definition?		
Comprehension test script for CC (part a)		
→ <i>Deviation from script?</i>		
<i>Deviation from scripted feedback?</i> If present, what was said:		
Comprehension test script for CC (part b)		
→ <i>Deviation from script?</i>		
<i>Deviation from scripted feedback?</i> If present, what was said:		
<b>Definition of exercise (EX)</b>		
Examples of EX		
→ <i>Deviation from script?</i>		
Probe for understanding of EX definition?		
Comprehension test script for EX (part a)		
→ <i>Deviation from script?</i>		
<i>Deviation from scripted feedback?</i> If present, what was said:		

Comprehension test script for EX (part b)		
→ <i>Deviation from script?</i>		
<i>Deviation from scripted feedback?</i>		
If present, what was said:		
<b>CHECKING SECTION (open-ended)</b>		
<b>Introduction script</b>		
<i>Deviation from script?</i>		
<b>Initial inquiry script</b>		
<i>Deviation from script?</i>		
<i>Use of leading or coercive probes?</i>		
If present, what was said:		
<b>Imaginal exercise script (CC)</b>		
<i>Deviation from script?</i>		
<i>Use of leading or coercive probes?</i>		
If present, what was said:		
<i>Adding inferences or making assumptions?</i>		
If present, what was said:		
Provides summary of place/situation		
Provides summary of thought(s)/feeling(s)		
Provides summary of precipitant(s)		
<i>Adding inferences or making assumptions during summary?</i>		
If present, what was said:		
<b>Introduction to open-ended questions script</b>		
<i>Deviation from script?</i>		
<b>Content question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i>		
If present, what was said:		
<i>Deviation from prompt instructions?</i>		
If present, what was problematic:		
Probe for additional responses		
<i>Deviation from probe instructions?</i>		
If present, what was problematic:		

Provides summary of CC content area(s)		
<b>Content question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>Onset/trigger question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i>		
If present, what was said:		
<i>Deviation from prompt instructions?</i>		
If present, what was problematic:		
Probe for additional responses		
<i>Deviation from probe instructions?</i>		
If present, what was problematic:		
Provides summary of CC onset/trigger(s)		
<b>Onset/trigger question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>Function question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i>		
If present, what was said:		
<i>Deviation from prompt instructions?</i>		
If present, what was problematic:		
Probe for additional responses		
<i>Deviation from probe instructions?</i>		
If present, what was problematic:		
Provides summary of CC function(s)		
<b>Function question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>Termination question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i>		
If present, what was said:		
<i>Deviation from prompt instructions?</i>		
If present, what was problematic:		
Probe for additional responses		
<i>Deviation from probe instructions?</i>		
If present, what was problematic:		

Provides summary of CC termination factor(s)		
<b>Termination question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>CHECKING SECTION (closed-ended)</b>		
<b>Introduction script</b>		
<i>Deviation from script?</i>		
<b>Elicitation of recall script</b>		
<i>Deviation from script?</i>		
<b>REASSURANCE SEEKING SECTION (open-ended)</b>		
<b>Introduction script</b>		
<i>Deviation from script?</i>		
<b>Initial inquiry script</b>		
<i>Deviation from script?</i>		
<i>Use of leading or coercive probes?</i>		
If present, what was said:		
<b>Imaginal exercise script (CC)</b>		
<i>Deviation from script?</i>		
<i>Use of leading or coercive probes?</i>		
If present, what was said:		
<i>Adding inferences or making assumptions?</i>		
If present, what was said:		
Provides summary of place/situation		
Provides summary of thought(s)/feeling(s)		
Provides summary of precipitant(s)		
<i>Adding inferences or making assumptions during summary?</i>		
If present, what was said:		
<b>Introduction to open-ended questions script</b>		
<i>Deviation from script?</i>		
<b>Content question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i>		
If present, what was said:		
<i>Deviation from prompt instructions?</i>		
If present, what was problematic:		
Probe for additional responses		

<i>Deviation from probe instructions?</i> If present, what was problematic:		
Provides summary of RS content area(s)		
<b>Content question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>Onset/trigger question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i> If present, what was said:		
<i>Deviation from prompt instructions?</i> If present, what was problematic:		
Probe for additional responses		
<i>Deviation from probe instructions?</i> If present, what was problematic:		
Provides summary of RS onset/trigger(s)		
<b>Onset/trigger question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>Function question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i> If present, what was said:		
<i>Deviation from prompt instructions?</i> If present, what was problematic:		
Probe for additional responses		
<i>Deviation from probe instructions?</i> If present, what was problematic:		
Provides summary of RS function(s)		
<b>Function question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>Termination question script (part i)</b>		
<i>Deviation from script?</i>		
<i>Use of closed-ended question?</i> If present, what was said:		
<i>Deviation from prompt instructions?</i> If present, what was problematic:		

Probe for additional responses		
<i>Deviation from probe instructions?</i>		
If present, what was problematic:		
Provides summary of RS termination factor(s)		
<b>Termination question script (part ii)</b>		
<i>Deviation from script?</i>		
<b>REASSURANCE SEEKING SECTION (closed-ended)</b>		
<b>Introduction script</b>		
<i>Deviation from script?</i>		
<b>Elicitation of recall script</b>		
<i>Deviation from script?</i>		
<b>EXERCISE SECTION</b>		
<b>Initial inquiry script</b>		
<i>Deviation from script?</i>		
<i>Use of leading or coercive probes?</i>		
If present, what was said:		
<b>Elicitation of recall script</b>		
<i>Deviation from script?</i>		
<b>REFLECTION SECTION SCRIPT</b>		
<i>Deviation from script?</i>		

**Appendix E: ICCRS Coding Sheets**



Participant ID#: \_\_\_\_\_  
 Coder initials: \_\_\_\_\_

Date: \_\_\_\_\_

Question	Key phrase(s)	Time	Category(ies)	Rationale
Content				

<b>Question</b>	<b>Key phrase(s)</b>	<b>Time</b>	<b>Category(ies)</b>	<b>Rationale</b>
Triggers				

<b>Question</b>	<b>Key phrase(s)</b>	<b>Time</b>	<b>Category(ies)</b>	<b>Rationale</b>
Function				

<b>Question</b>	<b>Key phrase(s)</b>	<b>Time</b>	<b>Category(ies)</b>	<b>Rationale</b>
Termination				

## Appendix F: ICCRS Coding Guide

## Interview (ICCRS) Coding Guide

### Instructions for Coders – Interview Study

#### General Instructions:

It is essential that you become familiar with the categorization guides presented below before you begin coding data for the study.

A **response category** is a category in which participants' responses can be allocated, based on their thematic content. Each response category conveys a specific and unique theme that differentiates it from other categories.

A **coding unit** is a portion of a participant response that clearly falls within a given response category. It typically consists of a statement that conveys a single, thematic message or meaning.

\* If a participant's response contains 2 or more code-able units (i.e., if it's content falls under 2 or more categories) for part (i) of a given question, each category that applies should be coded.

\* If a single response (i.e., coding unit) simultaneously falls under 2 or more categories (based on the criteria outlined below), it is acceptable to code both categories for a single response (e.g., "I check to relieve my anxiety *and* sadness").

#### Coding process instructions:

Please use the following guidelines when coding participants' responses to open-ended questions on the ICCRS:

Please transcribe participants' responses using the coding sheets provided. **Key phrases** (i.e., non-redundant phrases that answer the question directly) from each coding unit should be transcribed **verbatim** on the coding sheets. If unsure, err on the side of transcribing too much of the participants' responses. Next to each key phrase (or set of related phrases), **please clearly mark the time stamp (displayed on the screen), the category to which it was assigned, and a brief (~ 5 - 10 words) rationale for your category choice** (e.g., "referred to a desire to alleviate sadness", "mentioned fear of rejection, but no concerns re: internal character flaws").

\*N.B. – Any responses (i.e., coding units) which do not clearly fit into the categories listed below should be assigned to the "other" category, and should be accompanied by a brief transcribed summary of the response.

If in doubt re: which of 2 or more categories to assign a key phrase to, transcribe the text **verbatim** (with the time marker) and mark "uncertain" in the "category" column of the

coding sheets with an indication of the categories considered and a rationale in the “rationale” column.

**I. *Guidelines for coding responses to questions on Reassurance Seeking:***

**1. Content**

***a) Perceived threat (health / contamination)***

Any reference to concerns re: **illness** / “cleanliness” of either oneself or others. This might be in response to anxiety/worry re: physical signs or symptoms, potential sources of contamination, etc. (e.g., “Do I have a disease?”, “Am I dirty?”, “You don’t look well, are you sure you are feeling OK?”, “I constantly look for more information on the internet to reassure myself that I’m not ill”, etc.)

***b) Perceived threat (safety / harm)***

Any reference to concerns re: **harm** occurring to either one's self or others, **which does not include concerns re: contamination/illness, or loss, rejection or abandonment**. This might include concerns re: the potential for physical injury, financial loss or other harms (including hassles), due to flood, fire, theft, negligence, etc. (e.g., “Did you lock the door?”, “Are you sure I didn’t run over anybody?”, “Did you remember your passport?”, etc.)

***c) Perceived threat (loss / rejection / abandonment)***

Any reference to concerns re: **personal** loss, rejection, or abandonment **within the context of relationships**. This might include worries re: social rejection, loss of affection from one’s partner/friends, or abandonment (e.g., “Are you mad at me?”, “Do you still love me?”, “Do you think I said something wrong to offend her?”, “Promise me you won’t leave me”, etc.)

***d) Personal responsibility for harm***

Any reference to concerns re: **personal responsibility for any type of harm** occurring (e.g., “Do you think it was my fault?”, “Are you sure I won’t get blamed if I make a mistake?”, etc.)

***e) Personal performance / competence***

Any reference to concerns re: **personal performance, competence or ability**, as measured by the **quality and/or wisdom of one’s decisions, observable actions or performance** (e.g., “Do you like my work?”, “Am I making the right decision?”, “Are you sure my speech was OK?”, “Do you think I can handle this job?”, etc.)

***f) Personal worth (e.g., likeability / appearance / “normality”)***

Any reference to concerns re: **personal worth / value**. This might include concerns that one is not likeable or is somehow **characteristically** flawed, defective and/or abnormal (i.e., not an “external” threat) (e.g., “Do I look OK?”, “Do you think I’m fat/ugly?”, “I guess you wouldn’t have stayed with me this long if I was really a freak, right?”, etc.)

*g) Meaning of obsessions*

Any reference to concerns re: the meaning of one’s unwanted thoughts, images and/or impulses (e.g., “Does having these thoughts mean I’m evil / going crazy, etc.?”)

**2. Onset / triggers**

*a) Unwanted thoughts / images / obsessions*

Any reference to **intrusive** thoughts, images or impulses that the respondent is distressed by, and which compels them to seek reassurance (e.g., aggressive, sexual and/or blasphemous obsessions, bizarre impulses towards inappropriate public displays; “Does having these thoughts mean I’m going crazy?”, etc.)

*b) Negative mood (anxious)*

Any reference to anxious moods, including fear, stress, worry, etc., that trigger reassurance seeking.

*c) Negative mood (depressive)*

Any reference to depressive moods, such as sadness, guilt, shame, helplessness, hopelessness, despair, etc., that trigger reassurance seeking.

*d) Perceived (health/contamination) threat / Physiology*

Any reference to perceived **present** threat to one’s health or physical well-being. This might include perceived indicators of illness (e.g., lumps, moles, cough), doubts/concerns about cleanliness/contamination (for fear of contracting an illness) and/or physiological sensations, such as heart palpitations, trembling, sweating, dizziness, etc. (e.g., “Is this mole cancerous?”, “Are you sure I’m not having a heart attack?”, etc.)

*e) Doubt re: removal/reduction of perceived threat (safety/harm)*

Any reference to concerns / doubts regarding potential threats to the safety (financial, physical, etc.) of oneself or others. This might include doubting whether one has



properly locked the door/windows, turned off the stove, remembered important documents, etc.

*f) Inability to check*

Any reference to one's constrained ability to physically and/or visually check a threatening object or situation.

*g) Perceived responsibility for preventing harm*

Any reference to concerns re: **personal** responsibility for preventing harm, and/or the **consequences** of one's failing to live up to their responsibilities.

*h) Doubt re: personal performance / competence*

Any reference to concerns / doubts that one has **performed** adequately enough on some task or duty (e.g., at work/school, parenting, sports, etc.) to satisfy others' and/or one's own personal standards, or doubts regarding one's capabilities (e.g., to make decisions, etc.).

*i) Perceived threat of loss / rejection / abandonment*

Any reference to concerns / doubts re: the possibility of **personal** loss, rejection, or abandonment **within the context of relationships**. This might include worries re: social rejection, loss of affection from one's friends/partner, or abandonment from a lover

*j) Doubt re: personal worth (e.g., likeability, appearance, "normality")*

Any reference to concerns / doubts re: one's **personal worth / value**. This might include concerns that one is not likeable, attractive, or is somehow **characteristically** flawed, defective and/or abnormal (i.e., not an "external" threat)

*k) Perceived loss of control*

Any reference to concerns / doubts re: the possibility of a loss of control (including fears of "going crazy", losing all sense of reality, etc.)

*l) Doubt re: memory*

Any reference to concerns / doubts that one's **memory** of previous events and/or assurances may be inaccurate (N.B. – this category only refers to doubts re: one's **memory**)

*m) Doubt re: perception*

Any reference to concerns / doubts re: the accuracy of one's **perception** (e.g., visual, auditory) of previous events and/or assurances

*n) Physical environment / location*

Any reference to a **particular place** (e.g., home, work, etc.) that serves as a **consistent and unique** trigger for compulsive urges.

**3. Function**

*a) Remove intrusive thought / reduce obsessions*

Any reference to desire to reduce and / or remove intrusive thoughts, images or impulses (e.g., "I seek reassurance to help me stop obsessing about things.")

*b) Decrease negative mood (anxious)*

Any reference to a desire to alleviate anxious mood(s) (e.g., anxiety, fear, doubt, worry, uncertainty)

*c) Decrease negative mood (depressive)*

Any reference to a desire to alleviate depressive mood(s) (e.g., sadness, guilt, hopelessness, despair)

*d) Prevent harm (health/contamination)*

Any reference to a desire to reduce / remove perceived threat to one's own or others' health (e.g., prevent illness from "contamination"; "I want to make sure that I / my family won't get cancer / hepatitis, etc.")

*e) Prevent harm (general safety)*

Any reference to a desire to reduce / remove perceived threat to the safety (financial, physical, etc.) to oneself or others (e.g., prevent theft, fire, flood, job loss, accidents, etc.; "I want to ensure that my house won't burn down / I won't get fired / I won't accidentally hurt anyone, etc.")

*f) Prevent harm (loss/rejection/abandonment)*

Any reference to a desire to reduce / remove perceived threat of **personal loss, rejection and/or abandonment** (e.g., "I want to make sure that my partner won't leave me")

*g) Decrease responsibility for harm*

Any reference to a desire to reduce or disperse one's personal responsibility for preventing something bad from happening (e.g., "I don't want people to blame me if something wrong happens).

***h) Achieve "just right" / completeness feeling***

Any reference to a desire to achieve an *internal feeling of "completeness"*, or a *"just right" feeling* ("I just have to keep asking until I feel like I have asked enough).

***i) Increase perceived control***

Any reference to a desire to increase one's perceived control over a situation and/or their own mental or physical state

***j) Receive attention / affection from others; increase self-esteem / self-confidence***

Any reference to a desire to receive positive attention or affection from others and/or increase self-esteem (e.g., "I just want him to show me that he cares", "It makes me feel better about myself when other people reassure me", "I want to get more attention from my partner", etc.).

***k) To prevent checking***

Any reference to a desire to substitute reassurance seeking for checking (e.g., "Because completing the check myself would take too long")

***l) Prevent harm (minor matters)***

Any reference to a desire to reduce the likelihood of minor hassles / inconveniences to oneself or others (e.g., to prevent wasting time, effort, or small sums of money, etc.)

**4. Termination**

***a) Physical / mental exhaustion***

Any reference to physical or mental exhaustion (e.g., "After a while, I just get too tired to keep seeking reassurance")

***b) Interpersonal concerns (may annoy others / cause embarrassment)***

Any reference to concerns re: social inappropriateness (e.g., "I don't want other people to see me constantly seeking reassurance", "I know that my partner will get angry if I keep on asking")

*c) Mood improves (anxious):*

Any reference to an alleviation of anxious mood (e.g., anxiety, fear, doubt/uncertainty, worry)

*d) Mood improves (depressive):*

Any reference to an alleviation of depressive mood (e.g., sadness, guilt, hopelessness, despair)

*e) Rationalization*

Any reference to *rational* self-talk re: the futility of reassurance seeking (e.g., “After a while, I realize that seeking reassurance isn’t helping, so I tell myself to stop”)

*f) Achieve sense of control*

Any reference to perceived sense of control over the situation/one’s emotions, etc. (e.g., “I stop seeking reassurance once I know that I’ve regained control over the situation/my emotions”)

*g) Perceived reduction / removal of threat (health/contamination)*

Any reference to the reduction or removal of a perceived threat to one’s own or others’ health. This might include feeling more certain that one has cleaned properly, is not having a heart attack, etc. (e.g., “I can stop once I’m **sure** that I’m not having a heart attack”, “I can stop once I know that I’ve taken all the precautions I can to *protect* myself from illness”)

*h) Perceived reduction / removal of threat (safety)*

Any reference to the reduction or removal of a perceived threat to the safety (financial, physical, etc.) of oneself or others. This might include feeling more certain that one has properly locked the door/windows, turned off the stove, remembered important documents, etc. (e.g., “I can stop once I’m **sure** that I’ve locked the door properly”, “I can stop once I know that I’ve taken all the precautions I can to avoid any hassles”)

*i) Perceived reduction / removal of threat (loss/rejection/abandonment)*

Any reference to the reduction or removal of a perceived threat re: the possibility of **personal** loss, rejection, or abandonment **within the context of relationships**. This might include feeling more certain that social rejection, loss of affection from one’s friends/partner, or abandonment from a lover will not occur (e.g., “I stop once I can be sure that my partner won’t leave, at least for now”, “I’m able to stop if people convince me that they care about me by showing me”)

**j) Reduction in perceived responsibility for harm**

Any reference to a reduction in one's perceived responsibility for preventing harm (e.g., "Once I have done everything I can to make sure that I won't be responsible for anything bad that might happen, I can stop asking for reassurance", "If someone else reassures me, they share the responsibility if something goes wrong, so I don't have to ask anymore")

**k) Effort/rules (e.g., asked as many times as can)**

Any reference to *internal* rules or criteria (e.g., re: amount of effort expended) (e.g., "I can only stop once I've sought reassurance from 3 different people")

**l) No longer feel like continuing / boredom**

Any reference to boredom or a lack of desire to continue seeking reassurance (e.g., "After a while, I just don't *feel* like seeking reassurance anymore")

**m) Achieve "just right" feeling / sense of "completeness"**

Any reference to an *internal* "just right" feeling or sense of "completeness" (e.g., "Something just 'clicks' in me, and lets me know that I can stop", "After a while, it just 'feels right'")

**n) Time pressure**

Any reference to time pressure from external sources (e.g., "I usually only stop when I'm rushed and have to go somewhere or do something else")

**o) Believe feedback**

Any reference to believing (re)assurance or ceasing to question the sincerity / genuineness of the (re)assurance.

**p) Distraction**

Any reference to terminating reassurance-seeking due to distraction (e.g., "I was asking my partner for reassurance when I got a phone call, and after I got off the phone, I was able to go on with my day")

**II. Guidelines for coding responses to questions on Checking:**

**1. Content**

**a) Perceived threat (health / contamination)**

Any reference to concerns re: **illness**/"cleanliness" of either oneself or others. This might be in response to anxiety/worry re: physical signs or symptoms, potential sources of contamination, etc. (e.g., Checking "cleanliness" of objects or environments, checking moles, rashes, pulse, etc.)

\* **N.B.** – searching for information re: illness on internet is better conceptualized as reassurance seeking than "checking" (unless it involves re-checking/re-reading info. already found), and should not be coded here.

**b) Perceived threat (safety / harm)**

Any reference to concerns re: **harm** occurring to either one's self or others, **which does not include concerns re: contamination/illness**. This might include concerns re: the potential for physical injury, financial loss or other harms (including hassles), due to flood, fire, theft, negligence, etc. (e.g., Checking locks, stove, windows, envelopes; checking whether one caused an accident, remembered important documents, etc.)

**c) Appearance**

Any reference to checking **personal appearance** (e.g., Checking hair, makeup, skin blemishes, etc.)

**d) Personal performance / "correctness" on a task**

Any reference to checking **personal performance, competence or ability**, as measured by the *quality of one's observable actions or performance* (e.g., Checking school and/or work assignments, spelling/grammar in letters, videotaping and reviewing speeches, performances, etc.)

**e) Perceived threat (loss / rejection / abandonment)**

Any reference to concerns re: **personal** loss, rejection, or abandonment **within the context of relationships**. This might include worries re: social rejection, loss of affection from one's partner/friends, or abandonment (e.g., checking for tangible signs of infidelity [e.g., lipstick on collar], letters, emails, etc.)

**f) Order / symmetry**

Any reference to checking items, objects and/or environments to ensure order and/or symmetry.

**2. Onset / triggers**

**a) *Unwanted thoughts / images / obsessions***

Any reference to **intrusive** thoughts, images or impulses that the respondent is distressed by, and which compel them to check (e.g., aggressive, sexual and/or blasphemous obsessions, catastrophic thoughts/images related to “making a mistake”/forgetting, etc.)

**b) *Negative mood (anxious)***

Any reference to anxious moods, including fear, stress, worry, etc., that trigger urges to check.

**c) *Negative mood (depressive)***

Any reference to depressive moods, such as sadness, guilt, shame, helplessness, hopelessness, despair, etc., that trigger checking.

**d) *Perceived (health/contamination) threat / Physiology***

Any reference to a perceived **present** threat to one’s (or someone else’s) health or physical well-being. This might include perceived indicators of illness (e.g., lumps, moles, cough), doubts/concerns about cleanliness/contamination (for fear of contracting an illness) and/or physiological sensations, such as heart palpitations, trembling, sweating, dizziness, etc. (e.g., “I constantly check my pulse when I feel hot or dizzy to make sure I won’t faint”).

**e) *Doubt re: removal/reduction of perceived threat (safety/harm)***

Any reference to concerns / doubts regarding potential threats to the safety (financial, physical, etc.) of oneself or others. This might include doubting whether one has properly locked the door/windows, turned off the stove, remembered important documents, etc.

**f) *Doubt re: memory***

Any reference to concerns / doubts that one’s **memory** of previous events and/or checks may be inaccurate (e.g., “I check when I can’t **remember** if I checked already”)

**N.B.** – this category only refers to doubts re: one’s **memory**

**g) *Doubt re: perception***

Any reference to concerns / doubts re: the accuracy of one’s **perception** (e.g., visual, auditory) of previous events and/or checks

***h) Perceived responsibility for preventing harm***

Any reference to concerns re: **personal** responsibility for preventing harm, and/or the **consequences** of one's failing to live up to their responsibilities.

***i) Doubt re: personal performance / competence***

Any reference to concerns / doubts that one has **performed** adequately enough on some task or duty (e.g., at work/school, etc.) to satisfy others' and/or one's own personal standards (e.g., doubting calculations, spelling, grammar, etc.), or doubts regarding one's capabilities (e.g., to make decisions).

***j) Perceived threat of loss / rejection / abandonment***

Any reference to concerns / doubts re: the possibility of **personal** loss, rejection, or abandonment **within the context of relationships**. This might include worries re: social rejection, loss of affection from one's friends/partner, or abandonment from a lover (e.g., doubting loyalty of others, etc.)

***k) Perceived loss of control***

Any reference to concerns / doubts re: the possibility of a loss of control (including fears of "going crazy", losing all sense of reality, etc.)

***l) Doubt re: personal worth (perceived abnormality, inferiority)***

Any reference to concerns / doubts re: one's **personal worth / value**. This might include concerns that one is not likeable, attractive, or is somehow **characteristically** flawed, defective and/or abnormal (i.e., not an "external" threat)

***m) Physical environment / location***

Any reference to a **particular place** (e.g., home, work, etc.) that serves as a **consistent and unique** trigger for compulsive urges.

***n) Inability to seek reassurance***

Any reference to one's constrained ability to seek reassurance about a threatening object or situation.

***o) Previous checks trigger ritual***

Any reference to previous checks triggering a ritual or "activating" a set of **internal** rules for checking (e.g., "Once I start checking, I have to do it *X* # of times before it feels 'complete'")



### 3. Function

#### *a) Remove intrusive thought / reduce obsessions*

Any reference to desire to reduce and / or remove intrusive thoughts, images or impulses (e.g., “I check to help me stop obsessing.”)

#### *b) Decrease negative mood (anxious)*

Any reference to a desire to alleviate anxious mood(s) (e.g., anxiety, fear, doubt/uncertainty, worry)

#### *c) Decrease negative mood (depressive)*

Any reference to a desire to alleviate depressive mood(s) (e.g., sadness, guilt, hopelessness, despair)

#### *d) Prevent harm (health/contamination)*

Any reference to a desire to reduce / remove perceived threat to one’s own or others’ health (e.g., prevent illness from “contamination”; “I want to make sure that I / my family won’t get cancer / hepatitis, etc.”)

#### *e) Prevent harm (general safety)*

Any reference to a desire to reduce / remove perceived threat to the safety (financial, physical, etc.) to oneself or others (e.g., prevent theft, fire, flood, job loss, accidents, etc.; “I want to ensure that my house won’t burn down / I won’t get fired / I won’t accidentally hurt anyone, etc.”)

#### *f) Prevent harm (loss/rejection/abandonment)*

Any reference to a desire to reduce / remove perceived threat of **personal loss, rejection and/or abandonment** (e.g., checking partner’s clothes for lipstick traces, etc.)

#### *g) Achieve “just right” / completeness feeling*

Any reference to a desire to achieve an *internal feeling of “completeness”*, or a **“just right” feeling** (“I just have to keep checking until I feel like I have checked enough).

#### *h) Reduce doubt/uncertainty re: memory*

Any reference to a desire to reduce doubts re: one's **memory** for previous checks and/or the events that led to checking (e.g., "I just can't **remember** if I've already checked or not")

*i) Decrease personal responsibility for harm*

Any reference to a desire to reduce or disperse one's personal responsibility for preventing something bad from happening.

*j) Increase perceived control*

Any reference to a desire to increase one's perceived control over a situation and/or their own mental or physical state

*k) To prevent reassurance seeking*

Any reference to a desire to substitute checking for reassurance seeking (e.g., "I check myself so that I don't have to bother other people with my worries")

*l) Increase self-esteem / self-confidence*

Any reference to a desire to increase self-esteem and/or confidence (e.g., "I just want to know for sure that I did a good job", etc.).

*m) To please others*

Any reference to a desire to ensure that others are pleased with one's actions and/or performance.

*n) Prevent harm (minor matters)*

Any reference to a desire to reduce the likelihood of minor hassles / inconveniences to oneself or others (e.g., to prevent wasting time, effort, or small sums of money, etc.)

*o) Reduce doubt regarding perception*

Any reference to a desire to reduce doubt regarding one's perception (e.g., "I had to check to make sure I saw / heard it correctly")

**4. Termination**

*a) Physical / mental exhaustion*

Any reference to physical or mental exhaustion (e.g., “After a while, I just get too tired to keep checking”)

**b) *Interpersonal concerns (may annoy others / cause embarrassment)***

Any reference to concerns re: social inappropriateness (e.g., “I don’t want other people to see me constantly checking”, “I know that my family will get angry if I keep on checking”)

**c) *Mood improves (anxious):***

Any reference to an alleviation of anxious mood (e.g., anxiety, fear, doubt/uncertainty, worry)

**d) *Mood improves (depressive):***

Any reference to an alleviation of depressive mood (e.g., sadness, guilt, hopelessness, despair)

**e) *Rationalization***

Any reference to *rational* self-talk re: the futility of checking (e.g., “After a while, I realize that repeatedly checking isn’t helping, so I tell myself to stop”)

**f) *Achieve sense of control***

Any reference to perceived sense of control over the situation/one’s emotions, etc. (e.g., “I stop checking once I know that I’ve regained control over the situation/my emotions”)

**g) *Perceived reduction / removal of threat (health/contamination)***

Any reference to the reduction or removal of a perceived threat to one’s own or others’ health. This might include feeling more certain that one has cleaned adequately, is not having a heart attack, etc. (e.g., “I can stop checking once I’m **sure** that I’m not having a heart attack”, “I can stop once I know that I’ve taken all the precautions I can to *protect* myself from illness”)

**h) *Perceived reduction / removal of threat (safety)***

Any reference to the reduction or removal of a perceived threat to the safety (financial, physical, etc.) of oneself or others. This might include feeling more certain that one has properly locked the door/windows, turned off the stove, remembered important documents, etc. (e.g., “I can stop checking once I’m **sure** that I’ve locked the door properly”, “I can stop once I know that I’ve taken all the precautions I can to avoid hassles”)

***i) Perceived reduction / removal of threat (loss/rejection/abandonment)***

Any reference to the reduction or removal of a perceived threat re: the possibility of **personal** loss, rejection, or abandonment **within the context of relationships**. This might include feeling more certain that social rejection, loss of affection from one's friends/partner, or abandonment from a lover will not occur (e.g., "I stop once I can be sure that my partner won't leave, at least for now", "I'm able to stop if people convince me that they care about me by showing me")

***j) Reduction in perceived responsibility for harm***

Any reference to a reduction in one's perceived responsibility for preventing harm (e.g., "Once I have done everything I can to make sure that I won't be responsible for anything bad that might happen, I can stop checking", "If someone else checks, they share the responsibility if something goes wrong, so I don't have to check anymore")

***k) Effort/rules (e.g., asked as many times as can)***

Any reference to **internal** rules or criteria (e.g., re: amount of effort expended) (e.g., "I can only stop once I've checked 3 times")

***l) No longer feel like continuing / boredom***

Any reference to boredom or a lack of desire to continue seeking reassurance (e.g., "After a while, I just don't *feel* like checking anymore")

***m) Achieve "just right" feeling / sense of "completeness"***

Any reference to an **internal "just right" feeling** or sense of **"completeness"** (e.g., "Something just 'clicks' in me, and lets me know that I can stop", "After a while, it just 'feels right'")

***n) Time pressure***

Any reference to time pressure from external sources (e.g., "I usually only stop when I'm rushed and have to go somewhere or do something else")

***o) Distraction***

Any reference to terminating checking due to distraction (e.g., "I was checking when I got a phone call, and after I got off the phone, I was able to go on with my day")

## Appendix G: Vignettes

## Vignette 1

### *High threat, high responsibility version*

You and your partner have planned a romantic evening to celebrate his/her recent promotion at work. As part of your plans, you enjoy a candle-lit dinner together at home before going out to the theatre. During dinner, you each have a few glasses of wine and lose track of the time. You soon realize that you will be late for your play if you do not hurry, so you rush to get your things together and ask your partner to call a taxi while you offer to turn off the lights and blow out the candles. As you are turning off the lights in the kitchen, your partner informs you that the taxi will be arriving in two minutes and he/she reminds you to blow out the candles before you go. When the taxi arrives, you run out the door to meet it and barely arrive to the theatre on time. On the way home from the theatre, the taxi driver has the local news on the radio and the reporter announces that there was a house fire in your neighbourhood. Suddenly, your heart begins to race, as you can't remember blowing out the candles after dinner and fear that the fire described on the radio may have occurred at your home.

### *Low threat, high responsibility version*

You and your partner have planned a romantic evening to celebrate his/her recent promotion at work. As part of your plans, you enjoy a candle-lit dinner together at home before going out to the theatre. During dinner, you each have a few glasses of wine and lose track of the time. You soon realize that you will be late for the play if you do not hurry, so you rush to get your things together and ask your partner to call a taxi while you offer to turn off the lights and blow out the candles. As you are blowing out the candles, your partner informs you that the taxi will be arriving in two minutes and he/she reminds you to turn off the lights before you go. When the taxi arrives, you run out the door to meet it and barely arrive to the theatre on time. On the way home from the theatre, the taxi driver has the local news on the radio and an energy conservation lobbyist is being interviewed. She claims that there is currently a local hydro shortage and is asking listeners to try to limit their use of electricity for the next couple of weeks. As you are listening, you realize that you can't remember turning off the lights in the living room and wonder if you wasted electricity while you were gone.

### *High ambiguity feedback*

Now, imagine that you ask your partner whether or not they saw you blow out the candles/turn off the lights, and they respond by hesitating for a moment, and saying: "I think I *might* have ... Anyways, everything is *probably* fine."

### *Low ambiguity feedback*

Now, imagine that you ask your partner whether or not they saw you blow out the candles/turn off the lights, and they respond by saying matter-of-factly: "Don't worry; I remember seeing you blow out the candles/turn off the lights."

*High threat, low responsibility version*

You and your partner have planned a romantic evening to celebrate his/her recent promotion at work. As part of your plans, you enjoy a candle-lit dinner together at home before going out to the theatre. During dinner, you each have a few glasses of wine and lose track of the time. You soon realize that you will be late for the play if you do not hurry, so you rush to get your things together and call a taxi while your partner offers to turn off the lights and blow out the candles. As your partner is turning off the lights in the kitchen, you inform them that the taxi will be arriving in two minutes and remind them to blow out the candles before you go. When the taxi arrives, you run out the door to meet it and barely arrive to the theatre on time. On the way home from the theatre, the taxi driver has the local news on the radio and the reporter announces that there was a house fire in your neighbourhood. Suddenly, your heart begins to race, as you wonder if your partner remembered to blow out the candles after dinner, and fear that the fire described on the radio may have occurred at your home.

*Low threat, low responsibility version*

You and your partner have planned a romantic evening to celebrate his/her recent promotion at work. As part of your plans, you enjoy a candle-lit dinner together at home before going out to the theatre. During dinner, you each have a few glasses of wine and lose track of the time. You soon realize that you will be late for the play if you do not hurry, so you rush to get your things together and call a taxi while your partner offers to turn off the lights and blow out the candles. As your partner is blowing out the candles, you inform them that the taxi will be arriving in two minutes and remind them to turn off the lights before you go. When the taxi arrives, you run out the door to meet it and barely arrive to the theatre on time. On the way home from the theatre, the taxi driver has the local news on the radio and an energy conservation lobbyist is being interviewed. She claims that there is currently a local hydro shortage and is asking listeners to try to limit their use of electricity for the next couple of weeks. As you are listening, you wonder if your partner remembered to turn off the living room lights, to avoid wasting electricity while you were gone.

*High ambiguity feedback*

Now, imagine that you ask your partner whether or not they remembered to blow out the candles/turn off the lights, and they respond by hesitating for a moment, and saying “I think I *might* have ... Anyways, everything is *probably* fine.”

*Low ambiguity feedback*

Now, imagine that you ask your partner whether or not they remembered to blow out the candles/turn off the lights, and they respond by saying matter-of-factly: “Don’t worry; I remember blowing out the candles/turning off the lights.”

## Vignette 2

### *High threat, high responsibility version*

You have been asked to house-sit for a wealthy friend while he is away on a business trip. Your friend insisted that you watch his home, as it contains some very valuable items, and he feels that you are the only person he can trust with this responsibility. Before leaving on his trip, he told you to make yourself at home while he is away and to feel free to entertain friends while enjoying the pool, backyard deck, etc. So, one evening, you have a couple of friends over for a barbeque before heading out to see a movie together. After enjoying dinner on the deck, you offer to wash the dishes while your friends relax outside for a few minutes. While you are cleaning up, one of your friends pops her head in the door to tell you that you will all be late for the movie if you don't leave soon. You tell her that you will meet the two of them at the car after you brush your teeth and lock up. You promptly rush upstairs to brush your teeth, and run outside to meet your friends. As you pull into the parking lot at the movie theatre, you suddenly get the feeling that you may have forgotten to lock the front door before leaving the house, which might result in the home being robbed of some very rare and expensive items (e.g., artwork, stereo, etc.).

### *Low threat, high responsibility version*

You have been asked to watch over a friend's apartment while he visits his family for a few days. Even though your friend's apartment is very small and cheaply furnished (e.g., he uses milk crates for furniture), he insisted that you watch over his place while he is away, as he feels that you are the only person he can trust to watch his home during his absence. Before leaving, he told you to make yourself at home while he is away and to feel free to entertain friends. So, one evening, you have a couple of friends over before heading out to see a movie together. It turns out to be a hot and humid night, and the apartment does not have air conditioning, so the three of you sit out on the steps of the fire escape and have a couple of drinks. You then tell your friends that you need to spend a couple of minutes cleaning up before you leave. While you are cleaning up, one of your friends pops her head in the door to tell you that you will all be late for the movie if you don't leave soon. You ask your friends to wait a minute while you empty the garbage and lock up. You promptly rush down the hall to empty the garbage, and meet up with your friends by the elevator next to the apartment. As you arrive at the movie theatre, you suddenly get the feeling that you may have forgotten to lock the front door before leaving the apartment. However, your friend does not really have any valuable possessions, and you can't think of anything in the apartment that anyone would want to steal.

### *High ambiguity feedback*

Now, imagine that you ask your friends whether or not they remember seeing you lock the door. They glance at each other briefly and one of them shrugs, saying: "Ummm ... I think so."



*Low ambiguity feedback*

Now, imagine that you ask your friends whether or not they remember seeing you lock the door. They look at each other affirmatively while nodding 'yes'. One of them adds: "Don't worry; I remember seeing you lock it".

*High threat, low responsibility version*

One of your friends has been asked to house-sit for a wealthy neighbour while he is away on a business trip. The neighbour insisted that your friend watch his home, as it contains some very valuable items, and he feels that your friend is the only person he can trust to watch his home during his absence. Before leaving on his trip, he told your friend to make herself at home while he is away and to feel free to entertain friends while enjoying the pool, backyard deck, etc. So, one evening, your friend invites you and a mutual companion over for a barbeque before heading out to see a movie together. After enjoying dinner on the deck, your friend offers to wash the dishes while the two of you relax outside for a few minutes. While your friend is cleaning up, your companion pops their head in the door to tell her that you will all be late for the movie if you don't leave soon. Your friend says that she will meet the two of you at the car after she brushes her teeth and locks up. She promptly rushes upstairs to brush her teeth, and runs outside to meet you. As you pull into the parking lot at the movie theatre, you suddenly get the feeling that your friend may have forgotten to lock the front door before leaving the house, which might result in the home being robbed of some very rare and expensive items (e.g., artwork, stereo, etc.).

*Low threat, low responsibility version*

One of your friends has been asked to watch over a neighbour's apartment while he visits his family for a few days. Even though the neighbour's apartment is very small and cheaply furnished (e.g., he uses milk crates for furniture), he insisted that your friend watch over the place while he is away, as he feels that your friend is the only person he can trust to watch his home during his absence. Before leaving, he told your friend to make herself at home while he is away and to feel free to entertain friends. So, one evening, your friend invites you and a mutual companion over before heading out to see a movie together. It turns out to be a hot and humid night, and the apartment does not have air conditioning, so the three of you sit out on the steps of the fire escape and have a couple of drinks. Your friend then tells you that she needs to spend a couple of minutes cleaning up before you leave. While she is cleaning up, your companion pops his head in the door to tell her that you will all be late for the movie if you don't leave soon. She asks you both to wait a minute while she empties the garbage and locks up. She promptly rushes down the hall to empty the garbage, and meets up with you by the elevator next to the apartment. As you arrive at the movie theatre, you suddenly get the feeling that your friend may have forgotten to lock the front door before leaving the apartment. However, your friend's neighbour does not really have any valuable possessions, and you can't think of anything in the apartment that anyone would want to steal.

*High ambiguity feedback*

Now, imagine that you ask your friend whether or not she remembered to lock the door, and she says: "Ummm ... I *think* so."

*Low ambiguity feedback*

Now, imagine that you ask your friend whether or not she remembered to lock the door, and she says: "Don't worry; I remember locking it"

### Vignette 3

#### *High threat, high responsibility version*

You and your partner decide to take a two-week winter vacation in the Caribbean. The day before your departure, you notice that the kitchen faucet has started dripping uncontrollably. You find that you are able to slightly reduce the amount of dripping if you shut off the taps very tightly, but you do not have time to get the faucet properly fixed before you leave. The next morning, as you are getting ready to go out the door, your partner comments that they can hear the faucet dripping. Although your partner reminded you to pull the plug out of the sink when you finished the dishes, you wonder if you remembered to do so, and imagine how terrible it would be to return from your vacation and find that your house was accidentally flooded because you forgot. To make matters worse, you just had an expensive new hardwood floor installed in the kitchen and it would be completely ruined in the event of a flood.

#### *Low threat, high responsibility version*

You and your partner decide to take a two-week winter vacation in the Caribbean. The day before your departure, you notice that the kitchen faucet has started dripping uncontrollably. You find that you are able to slightly reduce the amount of dripping if you shut off the taps very tightly, but you do not have time to get the faucet properly fixed before you leave. The next morning, as you are getting ready to go out the door, your partner comments that they can hear the faucet dripping. You wonder if you remembered to shut the taps as tightly as possible like your partner asked you to, as you would waste more water than necessary during your trip if you forgot to do so.

#### *High ambiguity feedback*

Now, imagine that you ask your partner whether or not you shut the taps tight enough/pulled the plug out of the sink, and he/she says: “Uhhh ... *probably* ... but you would know better than me...”

#### *Low ambiguity feedback*

Now, imagine that you ask your partner whether or not you shut the taps tight enough/pulled the plug out of the sink, and he/she says: “Yeah, I’m sure you did. I remember it clearly.”

*High threat, low responsibility version*

You and your partner decide to take a two-week winter vacation in the Caribbean. The day before your departure, you notice that the kitchen faucet has started dripping uncontrollably. You find that you are able to slightly reduce the amount of dripping if you shut off the taps very tightly, but you do not have time to get the faucet properly fixed before you leave. The next morning, as you are getting ready to go out the door, you can hear the faucet dripping. Although you reminded your partner to pull the plug out of the sink when they finished the dishes, you wonder if they remembered to do so, and imagine how terrible it would be to return from your vacation and find that your house was accidentally flooded because they forgot. To make matters worse, you just had an expensive new hardwood floor installed in the kitchen, and it would be completely ruined in the event of a flood.

*Low threat, low responsibility version*

You and your partner decide to take a two-week winter vacation in the Caribbean. The day before your departure, you notice that the kitchen faucet has started dripping uncontrollably. You find that you are able to slightly reduce the amount of dripping if you shut off the taps very tightly, but you do not have time to get the faucet properly fixed before you leave. The next morning, as you are getting ready to go out the door, you can hear the faucet dripping. You wonder if your partner remembered to shut the taps as tightly as possible like you asked them to, as he/she would waste more water than necessary during your trip if he/she forgot to do so.

*High ambiguity feedback*

Now, imagine that you ask your partner whether or not he/she shut the taps tight enough/pulled the plug out of the sink, and he/she says: "Uhhh ... I think I *probably* did."

*Low ambiguity feedback*

Now, imagine that you ask your partner whether or not he/she shut the taps tight enough/pulled the plug out of the sink, and he/she says: "Yeah, I'm sure I did. I remember it clearly."

**“Filler” vignette 1**

You decide to shop at a new supermarket that has opened up in your neighbourhood. As you pass by the dairy aisle, you remember that you need to buy some ricotta cheese for the lasagne you plan to make the next day. Since you are trying to eat healthy, you decide to buy the low-fat cheese. You are happy to find that the price of some of the cheese has been reduced. However, it is unclear whether the low-fat cheese is on special, or only the regular cheese. You are slightly annoyed that the sign is not clear, but grab a large container of low-fat ricotta anyways. Later, when you get to the cash, you notice that the person in front of you is buying regular-fat ricotta, and that they save \$1.50 because of the special. You start to wonder if the low-fat is also on special, and realize that if you ask the cashier now, you could run back and exchange the cheese without losing your place in line.

*Feedback for filler vignette #1*

Now, imagine you ask the cashier whether the low fat ricotta is on special, and he says: “Yep! All of the ricotta cheese has been reduced.”

**“Filler” vignette 2**

You are taking a difficult, but interesting, class as an elective in your academic program. A few weeks into the term, your professor informs the class that the upcoming midterm exam will count for 40% of the final grade, and that no make-up exams will be given. She also informs you that students’ marks on the test will be posted in the hallway outside of her office within four days following the exam. After taking the test, you feel fairly confident about your performance, but you are not sure that you managed to achieve a B+, which was your goal going into the exam. A couple of days following the test, you run into a classmate in the hallway, who suggests that you check to see if the grades have been posted yet. When you get to the professor’s office, there is a large group of students huddled around the billboard where the grades are posted. You gently push your way through the crowd to check how you did on the test. The grades are posted according to student numbers and are printed in a small font, so it is hard to tell if you are reading the correct grade from where you are standing, but there are several other students behind you waiting to check their grades. From where you are standing, it looks like you got an A-, but the grade above the one you are looking at is a B, and the one below it is a B-.

*Feedback for filler vignette #2*

Now, imagine you ask your friend what grade they think you got, and they say: “The class average was a B, and you generally do better than average, so you probably got an A-.”

## Appendix H: Consent forms

## **Study 1 Consent Form for Clinical Participants**

### **CONSENT FORM TO PARTICIPATE IN RESEARCH**

This is to state that I agree to participate in a program of research being conducted by Chris L. Parrish, M.A., of the Psychology Department at Concordia University, (514) 848-2424 x2199, c\_parris@alcor.concordia.ca. This research is supervised by Adam S. Radomsky, Ph.D., Associate Professor, adam.radomsky@concordia.ca .

#### **A. PURPOSE**

I have been informed that the purpose of this study is to examine psychological factors involved in reassurance seeking and checking behaviour.

#### **B. PROCEDURES**

If you agree to participate in this study, you will first be asked to complete an interview in order to assess your emotional state. The interview will consist of questions related to your overall mood, and should last about 1-2 hours. After a short break, you will then be asked to complete a second interview that focuses specifically on people's coping responses in anxiety-provoking situations. This interview will consist of several questions related to reassurance seeking and checking behaviour, and it will be videotaped for coding purposes. The interview should take approximately 60-80 minutes to complete.

Next, you will be asked to complete a brief questionnaire package which includes several measures of anxious and depressive symptomatology. Finally, you will be fully informed about the purpose of the study as well as our hypotheses. The entire study should take about 3-4 hours to complete. After you have finished filling out the questionnaires, you will be provided with an explanation of the purpose of this study, as well as our experimental hypotheses. For your participation, you will be paid \$50.

#### **C. CONDITIONS OF PARTICIPATION**

I understand that I am free to withdraw my consent and discontinue my participation in this study at any time, without any negative consequences whatsoever. I understand that a portion of the study will be videotaped. I understand that all information obtained will be kept strictly confidential and will be stored under lock and key for a period of seven years after which it will be shredded. Access to this information will be made available only to restricted members of Dr. Radomsky's research team. I understand that to ensure my confidentiality all data will be coded by number only and will be kept separate from my name. I understand that data from this study may be published, but that no identifying information will be released.

If you have any questions concerning the study, please feel free to ask the experimenter, or to contact our lab at Concordia University: (514) 848-2424, ext. 2199.

Adam S. Radomsky, Ph.D., Associate Professor, Concordia University  
Chris L. Parrish, MA, Concordia University

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) \_\_\_\_\_

SIGNATURE \_\_\_\_\_

Sex: M / F (please circle)                      AGE: \_\_\_\_\_

WITNESS SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

*If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Officer, Concordia University, at 514.848.2424, x.7481 or by email at Adela.Reid@Concordia.ca.*



## **Study 1 Consent Form for Non-Clinical Participants**

### **CONSENT FORM TO PARTICIPATE IN RESEARCH**

This is to state that I agree to participate in a program of research being conducted by Chris L. Parrish, M.A., of the Psychology Department at Concordia University, (514) 848-2424 x2199, c\_parris@alcor.concordia.ca. This research is supervised by Adam S. Radomsky, Ph.D., Associate Professor, adam.radomsky@concordia.ca .

#### **A. PURPOSE**

I have been informed that the purpose of this study is to examine psychological factors involved in reassurance seeking and checking behaviour.

#### **B. PROCEDURES**

If you agree to participate in this study, you will first be asked to complete an interview in order to assess your emotional state. The interview will consist of questions related to your overall mood, and should last about 30-50 minutes. You will then be asked to complete a second interview that focuses specifically on people's coping responses in anxiety-provoking situations. This interview will consist of several questions related to reassurance seeking and checking behaviour, and it will be videotaped for coding purposes. The interview should take approximately 40-70 minutes to complete.

Next, you will be asked to complete a brief questionnaire package which includes several measures of anxious and depressive symptomatology. Finally, you will be fully informed about the purpose of the study as well as our hypotheses. The entire study should take about 2-2.5 hours to complete. After you have finished filling out the questionnaires, you will be provided with an explanation of the purpose of this study, as well as our experimental hypotheses. For your participation, you will receive 3 credits for the Concordia University Psychology undergraduate participant pool. (Students who are ineligible for the participant pool will receive 3 entries into a draw for a cash prize).

#### **C. CONDITIONS OF PARTICIPATION**

I understand that I am free to withdraw my consent and discontinue my participation in this study at any time, without any negative consequences whatsoever. I understand that a portion of the study will be videotaped. I understand that all information obtained will be kept strictly confidential and will be stored under lock and key for a period of seven years after which it will be shredded. Access to this information will be made available only to restricted members of Dr. Radomsky's research team. I understand that to ensure my confidentiality all data will be coded by number only and will be kept separate from my name. I understand that data from this study may be published, but that no identifying information will be released.

If you have any questions concerning the study, please feel free to ask the experimenter, or to contact our lab at Concordia University: (514) 848-2424, ext. 2199.

Adam S. Radomsky, Ph.D., Associate Professor, Concordia University

Chris L. Parrish, MA, Concordia University

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) \_\_\_\_\_

SIGNATURE \_\_\_\_\_

Sex: M / F (please circle)                      AGE: \_\_\_\_\_

WITNESS SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

*If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Officer, Concordia University, at 514.848.2424, x.7481 or by email at [Adela.Reid@Concordia.ca](mailto:Adela.Reid@Concordia.ca).*

## Study 2 Consent Form

### CONSENT FORM TO PARTICIPATE IN RESEARCH

This is to state that I agree to participate in a program of research being conducted by Chris L. Parrish, M.A., of the Psychology Department at Concordia University, (514) 848-2424 x2199, c\_parris@alcor.concordia.ca. This research is supervised by Adam S. Radomsky, Ph.D., Associate Professor, adam.radomsky@concordia.ca .

#### A. PURPOSE

I have been informed that the purpose of this study is to examine psychological factors that are associated with fear, anxiety and related behaviour.

#### B. PROCEDURES

If you agree to participate in this study, you will be asked to read a series of vignettes that describe different hypothetical scenarios and to provide a number of subjective ratings regarding the emotions and thoughts that you would expect to experience if you were placed in the situations presented. You will also be asked to complete a number of questionnaires that assess your mood and beliefs. The whole study should take approximately 50-80 minutes to complete. After you have finished filling out the questionnaires, you will be provided with an explanation of the purpose of this study, as well as our experimental hypotheses. For your participation, you will receive 2 credits for the Concordia University Psychology undergraduate Participant Pool.

#### C. CONDITIONS OF PARTICIPATION

I understand that I am free to withdraw my consent and discontinue my participation in this study at any time, without any negative consequences whatsoever. I understand that all information obtained will be kept strictly confidential and will be stored under lock and key for a period of seven years after which it will be shredded. Access to this information will be made available only to restricted members of Dr. Radomsky's research team. I understand that to ensure my confidentiality all data will be coded by number only and will be kept separate from my name. I understand that data from this study may be published, but that no identifying information will be released.

If you have any questions concerning the study, please feel free to contact our lab at Concordia University: (514) 848-2424, ext. 2199.

Adam S. Radomsky, Ph.D., Associate Professor, Concordia University  
Chris L. Parrish, MA, Concordia University

**I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.**

*If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Officer, Concordia University, at 514.848.2424, x.7481 or by email at [Adela.Reid@Concordia.ca](mailto:Adela.Reid@Concordia.ca).*