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

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Abstract

Excessive reassurance-seeking (ERS) is a common problem among both obsessive-compulsive and depressed populations. However, the content and cognitive processes involved in ERS may differ in these populations according to the unique cognitive and behavioral characteristics demonstrated by each group. To assess factors involved in the onset, maintenance and termination of ERS and repeated checking, the current investigation employed a semi-structured interview with non-depressed OCD respondents (n = 15), clinically depressed individuals without OCD (n = 15), and healthy control participants (n = 20). Results showed that whereas individuals with OCD reported seeking reassurance primarily about perceived *general* threats (e.g., fire, theft), the depressed group reported seeking reassurance primarily about perceived *social* threats (e.g., abandonment, loss of support). Clinical participants reported greater anxiety, sadness and perceived threat in association with ERS and repeated checking than healthy control participants. These findings are discussed in terms of cognitive-behavioral models of OCD and depression.

KEYWORDS: Obsessive-compulsive disorder; OCD; Major Depressive Disorder; Reassurance; Checking; Neutralization

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 has 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 & 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 & 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; Haefffel, 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 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 inquire 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. Given the novelty of these questions, detailed hypotheses were not made. However, the following general predictions were derived from the above-reviewed theories: (i) OCD-related ERS and checking will be primarily focused on and triggered by perceived general threat(s), whereas depressive ERS and checking will tend to be focused on and triggered by perceived social threat(s), (ii) the primary aims of OCD-related ERS and checking will be to prevent general harm and/or to reduce anxiety and perceived responsibility, whereas depressive ERS and checking will be primarily intended to prevent social harm and/or to increase self-esteem/receive affection, and (iii) OCD-related ERS and checking will primarily cease when perceived general threats and perceived responsibility have been reduced, whereas depressive ERS and checking will be most likely to terminate when perceived social threats have been reduced.

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, 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 1. One (6.7%) participant in the OCD group and 3 (20.0 %) participants in the MDD group were currently receiving psychotherapy. 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, χ^2 (df = 2) = 3.82, *n.s.*, their sex ratio, χ^2 (df = 2) = 6.02, *n.s.*¹, 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 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 (and is available from the corresponding author for public use). It was designed to elucidate factors that may contribute to 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 was 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, where 0 meant none/not at all and 100 meant the most/highest imaginable) 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 video camera, and were transferred to DVD for subsequent reliability checks and coding of participants' responses (see below for coding procedure).

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.

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 ($K = 1.00$)².

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 (available from the corresponding author upon request) 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.”* All participants were also provided with both 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.) (though the disorder-relevant examples were not explicitly labeled as such), 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 (scoring system is available from the corresponding author). 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 Procedure

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. 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 (available from the corresponding author by request). 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. The primary coders' categories provided the data that was used in 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.

To assess ICCRS and coder reliability, the categorization of participant responses was compared between coders for 14 (28%) of the 50 interviews (i.e., all of those which the second coder viewed at random). Inter-rater agreement was excellent (95.81%) in the comparison sample.

Results

Symptom measures

Participants' mean scores and group comparison statistics for the self-report measures are displayed in Table 2. A series of one-way independent ANOVA's was conducted, 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.

Descriptive analyses

Tables 3-6 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 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 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 considerable minority of participants in both the MDD (20.0%) and HC groups (23.5%) 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 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 its 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 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 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 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 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 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 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 reported at the onset of reassurance-seeking episodes, $F(2, 42) = 4.11, p < .05, d = 0.63$. Planned contrasts revealed that participants in the OCD and MDD (i.e., clinical) groups reported 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 reported in association with the decision to seek reassurance, $F(2, 42) = 5.53, p < .01, d = 0.72$. 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 reported 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 reported 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 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 behaviors were 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 a tendency to seek reassurance about perceived *social* threats and their task performance/competence. HC respondents resembled the MDD group, as they were most likely

to seek reassurance about social threats, although reassurance seeking about general threats was also common. 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 *general* threats. 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, our 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 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 was 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; Haefel et al., 2007; Joiner & Metalsky, 2001; Pothoff, 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 ERS 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 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. It would be particularly interesting to determine whether quality of feedback differentially affects clinical *vs.*

non-clinical individuals due to potential systematic biases (e.g., to misinterpret feedback) that may be present among clinical populations.

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 (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 (observed power was insufficient to detect medium sized effects in comparisons of the clinical groups) 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, whereas the clinical groups were recruited from the community, our HC group was recruited from an undergraduate population, thus it is possible that the clinical and non-clinical groups differed on several unmeasured variables in addition to the reported significant group difference in age. Perhaps future hospital-based research in this area could recruit non-clinical (and/or clinical control) participants from the community. Thirdly, 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.

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Footnotes

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

² 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.

Table 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 ^a	26.7 (4)	26.7 (4)	5.0 (1)
Duration of illness ^b (years)			
<i>M</i> (S.D.)	1.7 (3.7)	4.7 (6.7)	---
Co-morbid diagnoses [†] (percent)			
Panic Disorder	6.7 (1)	13.3 (2)	---
Agoraphobia ^c	---	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.

^a includes married and common-law participants, ^b time elapsed since official diagnosis received,

^c both participants who met criteria for Agoraphobia were also diagnosed with Panic Disorder.

[†] not all diagnostic categories that were assessed are shown.

Table 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) ^a	19.00 (10.34) ^a	4.30 (3.63) ^b	17.68**
BDI	10.40 (7.42) ^a	29.20 (8.94) ^b	4.55 (3.59) ^c	59.90**
OBQ	149.87 (56.41) ^a	170.73 (40.0) ^{ab}	119.55 (32.44) ^{ac}	6.27*
VOCI	62.14 (34.86) ^a	49.93 (33.67) ^a	14.80 (9.35) ^b	14.64**
VOCI check	16.13 (6.31) ^a	6.40 (7.64) ^b	2.15 (3.79) ^b	24.36**
IUS	69.87 (29.33) ^a	94.60 (13.03) ^b	57.10 (19.68) ^a	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.

Table 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 parentheses.

Table 4.

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

Trigger	OCD		MDD		HC	
Reassurance-seeking	<i>n</i> = 14		<i>n</i> = 15		<i>n</i> = 17	
Unwanted thoughts	---	---	6.7	(13.3)	---	---
Anxious mood	38.5	(64.3)	13.3	(60.0)	17.6	(29.4)
Depressed mood	---	(7.1)	6.7	(26.7)	---	(11.8)
Perceived health threat/physiological symptom	7.7	(14.3)	13.3	(13.3)	---	(5.9)
Doubt regarding removal of general threat	30.8	(35.7)	6.7	(40.0)	5.9	(29.4)
Doubt regarding performance/competence	---	(50.0)	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	---	(21.4)	6.7	(33.3)	11.8	(47.1)
Doubt memory	---	---	---	---	5.9	(11.8)
Doubt perception	---	(14.3)	---	(6.7)	---	(5.9)
Physical environment / location	7.7	(21.4)	---	(6.7)	---	(5.9)
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 parentheses.

Table 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	--- ---	--- (40.0)	5.9 (5.9)
Prevent harm (health / contamination)	7.1 (28.6)	--- (13.3)	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)	--- (13.3)	--- ---
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)	--- (6.3)
Prevent harm (minor matters)	--- (13.3)	6.7 (46.7)	12.5 (18.8)
Decrease responsibility for harm	--- (20.0)	--- ---	12.5 (18.8)
Reduce doubt regarding memory	--- (20.0)	--- (13.3)	12.5 (12.5)

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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)

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

Table 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)

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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)	---	---

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

Table 7.

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

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

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

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