Study Protocol

Title: Evaluating the Use of Mindfulness Meditation Utilizing a Consumer-Grade EEG Biofeedback Device for Patients Awaiting Treatment For Obsessive Compulsive Disorder

Principal Investigator: Dr. Lance Hawley, C.Psych.

Co-Investigators: Dr. Neil Rector, C.Psych., Dr. Peggy Richter

Institution: Sunnybrook Health Sciences Centre

Address: 2075 Bayview Avenue, Suite K3W46, Toronto, Ontario, Canada, M4N3M5

Email: lance.hawley@sunnybrook.ca

Abstract

The Frederick W. Thompson Anxiety Disorders Centre has experienced significant demand for services related to the treatment of Obsessive Compulsive Disorder (OCD), resulting in a significant wait time for service. Although Cognitive Behavior Therapy (CBT) is the most efficacious treatment intervention for OCD (McKay et al., 2015), there is a growing literature indicating the mindfulness based approaches can be beneficial in terms of managing acute mood and anxiety symptoms as well as reducing relapse risk following treatment (e.g., Huijbers et al., 2016). The National Institute for Health and Care Excellence (NICE) guidelines provide a framework for health professionals who provide integrated, comprehensive treatments for the management of mood and anxiety disorders. These guidelines suggest that clinicians provide clients with accessible, low intensity, low risk interventions as they await treatment. It may be that having clients engage in low intensity interventions while they wait for CBT treatment can prevent symptom exacerbation and improve their motivation to engage in subsequent hospital based treatments. Although past research has demonstrated the benefits of engaging in guided mindfulness meditation practice in terms of psychological symptom improvement, it is unclear whether self-guided meditation practice incorporating biofeedback could promote symptom alleviation for individuals experiencing OCD. The goal of this study is to examine the potential benefits of using a consumer grade EEG-based biofeedback device that allows clients to engage in home based mindfulness meditation practices while they are waiting to receive clinical services. Specifically, this study will investigate the effects of meditation home practice on symptom alleviation, as related to specific OCD related cognitive processes. Patients who are waiting to receive clinical services will engage in an initial clinical assessment prior to being offered service, which is standard clinical practice. Following a clinical assessment, the patient will be offered the opportunity to participate in the current study – regardless of their decision to participate, they will still receive treatment recommendations and be considered for an upcoming clinical treatment service as usual, as determined by the assessor. If they choose to be involved in this study, they will be randomized to one of two groups: either an eight week waitlist control condition, or an eight week mindfulness treatment condition. Participants in the mindfulness condition will receive a commercially available wireless EEG headset and a software package that provides guided meditation practices with auditory feedback. Participants will attend three sessions during the eight week protocol – each session involves completing a self-report questionnaire package (evaluating OCD symptoms, mindfulness and thought control strategies) and they will complete a brief open monitoring meditation practice using the Muse EEG headset. Participants in the meditation condition will engage in regular mindfulness practice during each week, and complete a brief online survey regarding their experience during the mindfulness practice, once per week.

1 Specific Aims

This study will examine the potential benefits of engaging in mindfulness practices, for patients experiencing OCD who are waiting for clinical services to be offered. Patients will be offered a low intensity, low risk mindfulness intervention that is delivered by a consumer grade wireless EEG biofeedback device that provides guided mindfulness practices with biofeedback. Specifically, we will examine whether engaging in guided mindfulness meditation home practices can promote symptom alleviation, as related to variables which may influence treatment response (mindfulness, OCD beliefs, thought control strategies). If this intervention is found to be helpful, patients who are waiting for clinical services to be offered may experience symptom alleviation, which may, in turn, help them to optimally benefit from subsequent services offered by our clinic. If we determine that this intervention is efficacious, this approach could be further disseminated to other hospital based clinical programs, particularly those services in which wait times may be excessive.

2 Background and Significance

2.1 Background

Obsessive Compulsive Disorder (OCD) is a chronic and debilitating disorder known to have reported lifetime prevalence in the range of 2% (Kessler et al., 2005). OCD is most commonly treated with Cognitive Behavioral Therapy (CBT) and/or pharmacotherapy. Although Cognitive Behavior Therapy (CBT) is the most efficacious treatment intervention for OCD (McKay et al., 2015), there is often a substantial wait time for patients awaiting CBT services. The National Institute for Health and Care Excellence (NICE) guidelines provide a framework for health professionals who provide integrated, comprehensive treatments for the management of mood and anxiety disorders. These guidelines suggest that it can be beneficial for patients to be provided with easily accessible, low intensity, low risk interventions as they await treatment. It may be that engaging in low intensity interventions can prevent symptom exacerbation and improve patients' motivation to engage in subsequent hospital based treatments.

The existing research literature indicates that mindfulness based approaches can be beneficial in terms of managing mood and anxiety symptoms as well as reducing relapse risk following treatment (e.g., Huijbers et al., 2016). There is a substantial treatment efficacy literature indicating that engaging in mindfulness strategies can lead to psychological symptom alleviation (Segal et al., 2002; Brown & Ryan, 2003; Keng, Smoski & Robins, 2011) in a broad range of clinical populations (Baer, 2003; Chisea & Serretti, 2010; Strauss, Cavanagh, Oliver, & Pettman, 2014), as well as having a prophylactic effect in terms of reducing depression relapse risk following CBT treatment (e.g., Teasdale et al., 2000; Kuyken et al, 2016). For patients who have been diagnosed with an anxiety or mood disorder, mindfulness interventions are associated with effect sizes (Hedges' g) of 0.97 and 0.95 for improving anxiety and mood symptoms, respectively (Hofmann, Sawyer, Witt & Oh, 2010). Further, there is an emerging literature examining the potential benefits of utilizing mindfulness techniques for individuals experiencing OCD (e.g., Strauss, Rosten, Hayward, Lea, Forrester & Jones, 2015). These individuals experience difficulties with managing intrusive, disturbing, obsessive thoughts that produce considerable distress and anxiety (Abramowitz, Taylor & McKay, 2009). As a result, they engage in strategies that promote experiential avoidance, involving compulsive, problematic thought control strategies in order to neutralize their obsessive thoughts (e.g., Abramowitz et al., 2009). Essentially, these thought control strategies run counter to mindfulness strategies which promote experiential awareness. Considering this, there are several reasons why engaging in mindfulness strategies may promote OCD symptom alleviation. By cultivating improved experiential awareness, patients may become capable of adopting a more accepting approach to managing their problematic obsessive thoughts, feelings, and physical sensations, thereby developing a "decentered", non-reactive attitude towards these experiences (Bieling et al., 2012). To date, there have been no studies that have examined whether engaging in weekly guided mindfulness meditation practices (using an EEG based biofeedback device) may be effective for individuals experiencing OCD. Therefore, this study sets out to examine the potential benefits of offering an easily accessible, low intensity intervention in order to promote OCD symptom alleviation, as related to OCD beliefs, mindfulness, mind wandering, motivation, and engagement in thought control strategies.

2.2 Significance

As a result of an increasing demand for specialized mental health services, wait lists for treatment are more the norm than the exception. It is plausible to assume that providing clients with an EEG based biofeedback device that provides guided meditation practices will impact on symptom alleviation while clients are awaiting treatment. In addition, this research protocol has the potential to provide us with additional valuable information about the nature and course of OCD, providing insight into mechanisms underlying treatment response, thereby adding to our understanding of this disorder and its' treatment. By learning more about factors that are involved in the disorders' presentations such as clients' use of thought control strategies, OCD related beliefs, the quality of their mindfulness practice, and their motivation to engage in CBT in the future, we can improve our

understanding of the mechanisms underlying the disorder and help improve the quality of treatment for these individuals.

It is hypothesized that clients participating in the meditation group (in comparison to the wait list control group) will see greater reductions in self-reported measures of symptom severity and improvement in their use of problematic thought control strategies, as well as their readiness to engage in subsequent treatment. If this study can demonstrate that engaging in eight sessions of guided mindfulness practice can provide benefits for those suffering with OCD, then it provides another route by which patients can experience symptom improvement while waiting for a more structured, evidence-based CBT treatment. If this intervention is found to be helpful, patients who are waiting for clinical services to be offered may experience symptom alleviation, which may, in turn, help them to optimally benefit from subsequent services offered by our clinic. Further, if we determine that this intervention is efficacious, this approach could be further disseminated to other hospital based clinical programs, particularly those services in which wait times may be excessive.

3 Research Design and Methods

3.1 Research Design and Methods

Recruitment and Procedure

Patients referred for consultation and treatment services at the Frederick W. Thomspon Anxiety Disorder Centre will be eligible for participation. Patients presenting with OCD who are currently awaiting services at the Centre will be recruited for participation in this study. However, those with active substance abuse/dependence, suspected organic pathology as listed on the referral form, recent suicide attempt/active suicideality, active bipolar disorder, psychotic disorder or post-traumatic stress disorder will be excluded from participation.

Outcome measures will assess OCD symptom severity, OCD beliefs, the quality of their mindfulness practice, OCD thought control strategies, and whether they experience spontaneous or deliberate "Mind Wandering" during their mindfulness practice. OCD symptom measures will include the self-report Yale-Brown Obsessive Compulsive Scale (YBOCS), and the Obsessive Compulsive Inventory-Revised (OCI-R). OCD beliefs will be measured by the Obsessive Beliefs Questionnaire (OBQ-44). The Five Factor Mindfulness Questionnaire (FFMQ) will be used to measure the quality of participants' mindfulness practice. The Acceptance and Action Questionnaire (AAQ-II) will be used to measure psychological flexibility. The Thought Control Questionnaire (TCQ) will measure participants' tendency to engage in efforts to control intrusive thoughts. The Metacognitions Questionnaire (MCQ) will measure participants' beliefs about their thinking. The Mind Wandering Scale (MW) will be used to determine the extent to which participants experienced spontaneous or deliberate mind wandering during their mindfulness practice. Motivation and readiness to engage in subsequent CBT treatment will be measured using the Readiness Ruler (RR). Daily practice data from the EEG headsets will be automatically uploaded to an encrypted server.

At baseline, mid treatment (session 4), and post intervention, participants will complete the YBOCS, OCI, OBQ, FFMQ, TCQ, AAQ, MW and MCQ. Once per week, participants in the mindfulness condition will complete the YBOCS, TCQ, and MW. This weekly data will be collected online using the "Survey Monkey" web portal.

Experimental Design

The study will be a randomized trial where subjects (N=100 Total, N=50 assigned to Group 1 (Mindfulness condition) or Group 2 (Control condition) will be randomly assigned to receive either 1) an eight week meditation program involving use of an EEG-based biofeedback device, or 2) wait list as per usual. The experimental design is a 2 (treatment condition) by 3 (assessment phase: baseline (week 0), mid treatment (week 4), and post-treatment (week 8)) repeated measures factorial design. Randomization will be completed

by staff separate from the research team using numerical randomization for consecutive referrals.

Data Analyses

A repeated measures multivariate analysis of variance (MANOVA) will be conducted with the two groups (guided mindfulness meditation or control wait list group) as the between-group variable and OCD symptom scores as the dependent variables. A mediation analysis will examine whether obsessive beliefs, engagement in thought control strategies, psychological flexibility, and mind wandering mediates treatment related changes in OCD symptom scores (YBOCS, OCI). A Latent Difference Score (LDS) analysis will examine longitudinal temporal relationships between OCD symptoms and each of the above mentioned variables. Daily practice data from the EEG headsets will be automatically uploaded to an encrypted server. These data will be made anonymous from the start of the study; subjects will be identified using their subject I.D. EEG data will be preprocessed and analyzed using EEG Lab (Delorme & Makeig, 2004). Mean ERP amplitudes will be measured in latency windows selected according to prior research and determined from visual inspection of the waveforms. Analyses of variance (ANOVAs) will be computed on peak and mean amplitude using group as a between-subjects factor and session (pre or post), task condition, and electrode as within-subject factors.

3.2 Participant Information

Participant information will be stored electronically within the FWT Anxiety Disorder Centre. To ensure anonymity, all documents containing participant names and/or contact information will be stored separately from the data. The data will be kept separately from any identifying info, anonymized and giving a coded ID number for matching purposes only.

a) All electronic personal health information will be stored on an encrypted password protected USB key. All physical copies of the data will be stored in a secure area and access will be restricted to research investigators.

b) Participant information will be stored for a period of 10 years

3.3 Data Collection and Statistical Considerations

Clinical data will be collected and entered into a computerized database. Confidentiality of subjects will be protected by maintaining data in locked files in locked offices. Data are maintained in computer files that are accessible only to FWT Anxiety Disorders Centre staff. All data will be coded and subsequently stripped of personal identifiers. Information linking the codes with subject identifiers will be maintained in a secure manner separate from the data. Sunnybrook policy requires that research records be kept for a period of no less than 5 years.

4 Study Measures and Materials

Participants will complete pre, mid and post-intervention self-report measures assessing OCD symptom severity, OCD beliefs, the quality of their mindfulness practice, engagement in OCD thought control strategies, and whether participants experience spontaneous or deliberate "Mind Wandering" during their mindfulness practice. OCD symptom measures will include the self-report Yale-Brown Obsessive Compulsive Scale (YBOCS), and the Obsessive Compulsive Inventory-Revised (OCI-R). OCD beliefs will be measured by the Obsessive Beliefs Questionnaire (OBQ-44). The Five Factor Mindfulness Questionnaire (FFMQ) and the Mindfulness Practice Questionnaire (MPQ) will be used to measure the quality of participants' mindfulness practice. The Acceptance and Action Questionnaire (AAQ-II) will be used to measure psychological flexibility. The Thought Control Questionnaire (TCQ) will measure participants' tendency to engage in efforts to control intrusive thoughts. The Metacognitions Questionnaire (MCQ) will measure participants' beliefs about their thinking. The Mind Wandering Scale (MW) will be used to determine the extent to which participants experienced spontaneous or deliberate mind wandering during their mindfulness practice. Daily practice data

from the EEG headsets will be automatically uploaded to an encrypted server.

5 Human Subjects

5.1 Characteristics of subject population

Patients included for participation are those with a referral for FWT Anxiety Disorder Centre services.

5.2 Inclusion

All inclusion and exclusion criteria are consistent with the established guidelines for our service – there are no additional study specific criteria. Potential subjects are referred to the service with a query of OCD. Due to the nature of the assessment procedures, which include English-language self-report questionnaires and scales, the ability to communicate in written and spoken English is an inclusion criterion.

5.3 Exclusion

a) those with active substance abuse/dependence
b) suspected organic pathology
c) recent suicide attempt/active suicidality
d) active bipolar, psychotic disorder or post-traumatic stress disorder

5.4 Consent Procedures

The FWT Clinic secretary will call patients to book their psychological assessment appointments. At the end of the assessment appointment, participants will be introduced to the study at that time and they will be asked if they are interested in participating. Participants interested in hearing a detailed study explanation will be contacted by the study co-ordinator who will review the study details with the participant. For eligible and interested participants, a mail out package including applicable measures will be sent out along with the consent form. Participants will be asked to bring the consent form unsigned with them to the first information session. Written consent will be obtained in person by the study co-ordinator at that time who will address any questions or concerns before the first session.

5.5 Risks

There are no significant risks associated with the study. The only potential risk for participation is possible breach of confidentiality. However, the Frederick W. Thompson Anxiety Disorders Centre's staff will take extensive precautions to maintain the participants' confidentiality. Additionally, given that much of this information is already collected for clinical purposes, the risk to confidentiality should not be any greater than that of standard clinical care. There could also be a risk of some mild discomfort in answering some of the questionnaires. Again, this is not over and beyond the standard care and further, participants are explained that they may withdraw from the study at any time.

5.6 Benefits

The benefit of participating in this study involves the likelihood of improving significantly in both symptom measures as well as measures demonstrated to underlie treatment response in OCD.

6 Intervention:

MUSE Guided Meditation Practices: The guided meditation intervention will be administered using

Interaxxon's Muse device. Muse is a wireless EEG headset with an accompanying mobile device software application. The headset has 4 dry sensors (2 mastoid and 2 forehead sensors) and fits over the ears and extends at an angle over the middle of the forehead when properly fitted. Data are sampled at 220 Hz and referenced to Fpz channel. The data is communicated wirelessly to the mobile device application.

Participants are asked to engage in a daily mindfulness practice, with each practice lasting for a minimum of 20 minutes, once per day. Participants may engage in additional practices if they feel motivated to do so. To provide high-fidelity neurofeedback during meditation practice, Interaxxon has established an algorithm that involves a combination of frequency bands that have been associated with meditative states (Kerr, Sacchet, Lazar, Moore, & Jones, 2013). When the application determines that the participant's "mind wandered", biofeedback is provided in order to assist the participant with refocussing their attention on their meditation practice. The software application provides a guided pre-session calibration to customize neurofeedback to match participant experience prior to each training session. Calibration involves two brief exercises: in the first exercise, participants are asked to perform a word association task to simulate a period of mind-wandering. In the second exercise, participants are asked to relax and clear their minds as a brief induction of a focused attention state. These two calibration conditions are then entered into a machine learning algorithm to generate a session-specific signature of concentration and distraction customized to the participant. Calibration lasted 1 minute. Following calibration, guided meditation instructions were delivered through the paired smartphone/iPad, directing participants attention towards sensations of the breath, body, and/or cognition. Neurofeedback is delivered through auditory cues of wind and storm sounds, which increase in intensity with greater estimated distraction, and subsided towards calm with greater estimated stability of attention.

7 Costs and Payments

7.1 Research study payments

At the end of the study, participants will receive a stipend of $40 for their involvement.

7.2 Costs

Costs associated with the implementation and maintenance of the study shall be supported by the FWT Anxiety Disorder Centre.

APPENDICES

8 Qualifications of Investigators

8.1 Principal Investigator:

Dr. Lance Hawley, PhD is a psychologist and Co-Director of Training for the Frederick W. Thompson Anxiety Disorders Centre at Sunnybrook Health Sciences Centre and an Assistant Professor in the Department of Psychiatry at the University of Toronto. He will oversee all aspects of the proposed study including data collection, analyses and dissemination of findings.

8.2 Co-Investigator:

Dr. Neil Rector, PhD is a psychologist and senior research scientist at the Sunnybrook Research Institute (SRI) and Director of Research for the Frederick W. Thompson Anxiety Disorders Centre at Sunnybrook HSC. He is also a Full Professor in the Departments of Psychiatry and Psychological Clinical Science at the University of Toronto. He has participated in the conceptual design of the current study and will be actively involved in data collection, study monitoring, data analyses, and preparation of findings for dissemination.

Dr. Peggy Richter, M.D. is a psychiatrist with clinical and research expertise in the study and treatment of adults with anxiety disorders with particular emphasis on Obsessive Compulsive Disorder. She is head of the Frederick W. Thompson Anxiety Disorders Centre at Sunnybrook HSC and is an Associate Professor at the University of Toronto. She will participate in data collection, analyses and dissemination of findings.

9 Instruments

Please see attached for all instruments including:

1) Yale Brown Obsessive Compulsive Disorder Scale Self-Report (Y-BOCS-SR; Baer, Brown-Beasley, Sorce & Henriques, 1993)
2) Mindfulness Practice Questionnaire (MPQ; Hawley, Rector, Richter, 2015)
3) Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al., 2002)
4) Obsessive Beliefs Questionnaire (OBQ-44; OCCWG, 2005)
5) Five Factor Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer & Toney, 2006)
6) Thought Control Questionnaire (TCQ; Wells & Davies, 1994)
7) Mind Wandering Scale (MW (Carriere et al., 2013)
8) Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011)
9) Readiness Ruler (RR; Rollnick, 2002)
10) Metacognitions Questionnaire (MCQ; Wells, 1997)

Y-BOCS Part 2

Thank you for completing the Y-BOCS checklist. Please make sure that you circled the 2 most upsetting obsessions that you currently experience, and the 2 compulsions that cause you the most difficulty. Please enter them here:

2 most upsetting obsessions (thoughts or images):

2 most upsetting compulsive behaviors:

Remember the definitions of obsessions and compulsions and the examples of each that you may have noted on the checklist. Please place a check mark by the appropriate number from 0-4 beside each question below. If you are not currently experiencing any obsessions or compulsions, you may simply enter zeros for those questions, then continue to the next question.

OBSESSIVE THOUGHTS: Review the obsessions you checked on the Y-BOCS Symptom Checklist to help you answer the first five questions. Please think about the last seven days (including today), and check one answer for each question.

1. **TIME OCCUPIED BY OBSESSIVE THOUGHTS:** How much of your time was occupied by obsessive thoughts? How frequently did these obsessive thoughts occur?

- ☐ 0 = None
- ☐ 1 = Less than 1 hour per day, or occasional intrusions (occur no more than 8 times a day)
- ☐ 2 = 1-3 hours per day, or frequent intrusions (most of the day are free of obsessions)
- ☐ 3 = More than 3 hours and up to 8 hours per day, or very frequent intrusions.
- ☐ 4 = More than 8 hours per day, or near-constant intrusions.

2. **INTERFERENCE DUE TO OBSESSIVE THOUGHTS:** How much did these thoughts interfere with your social or work functioning? Is there anything that you didn't do because of them?

☐ 0 = No interference

☐ 1 = Mild, slight interference with social or occupational performance, but still performance not impaired.

☐ 2 = Moderate, definite interference with social or occupational performance, but still manageable.

☐ 3 = Severe interference, causes substantial impairment in social or occupational performance.

☐ 4 = Extreme, incapacitating interference.

3. **DISTRESS ASSOCIATED WITH OBSESSIVE THOUGHTS**: How much distress did your obsessive thoughts cause you?

☐ 0 = None

☐ 1 = Mild, infrequent, and not too disturbing distress.

☐ 2 = Moderate, frequent, and disturbing distress, but still manageable.

☐ 3 = Severe, very frequent and very disturbing distress.

☐ 4 = Extreme, near-constant, and disabling distress.

4. **RESISTANCE AGAINST OBSESSIONS:** How much effort did you make to resist the obsessive thought? How often did you try to disregard or turn your attention away from those thoughts as they entered your mind?

☐ 0 = I made an effort to always resist (or the obsessions are so minimal that there is no need to actively resist them).

☐ 1 = I tried to resist most of the time (e.g., more than half of the time I tried to resist).

☐ 2 = I made some effort to resist.

☐ 3 = I allowed all obsessions to fill my mind without attempting to control them, but I did so with some reluctance.

☐ 4 = I completely and willingly gave in to all obsessions.

5. **DEGREE OF CONTROL OVER OBSESSIVE THOUGHTS:** How much control did you have over your obsessive thoughts? How successful were you in stopping or diverting your obsessive thinking?

☐ 0 = Complete control

☐ 1 = Much control; usually I could stop or divert obsessions with some effort and concentration.

☐ 2 = Moderate control; sometimes I could stop or divert obsessions.

☐ 3 = Little control; I was rarely successful in stopping obsessions and could only divert attention with great difficulty.

☐ 4 = No control; I was rarely able to even momentarily ignore the obsessions.

OBSESSION SUBTOTAL (Add items 1-5) ☐☐

COMPULSIONS: Review the compulsions you checked on the Y-BOCS Symptom Checklist to help you answer these five questions. Please think about the last seven days (including today), and check one answer for each question.

6. **TIME SPENT PERFORMING COMPULSIVE BEHAVIORS:** How much time did you spend performing compulsive behaviors? How frequently did you perform compulsions?

☐ 0 = None

☐ 1 = Less than 1 hour per day was spent performing compulsions, or occasional performance of compulsive behaviors (no more than 8 hours per day).

☐ 2 = 1-3 hour per day was spent performing compulsions, or frequent performance of compulsive behaviors (most hours were free of compulsions).

☐ 3 = More than 3 hours and up to 8 hours per day were spent performing compulsions, or very frequent performance of compulsive behaviors (during most hours of the day).

☐ 4 = More than 8 hours were spent performing compulsions, or near-constant performance of compulsive behaviors (hour rarely passes without several compulsions being performed).

7. **INTERFERENCE DUE TO COMPULSIVE BEHAVIOR:** How much did your compulsive behaviors interfere with your social or work functioning?

☐ 0 = No interference.

☐ 1 = Mild, slight interference with social or occupational activities, but overall performance not impaired.

☐ 2 = Moderate, definite interference with social or occupational performance, but still manageable.

☐ 3 = Severe interference, substantial impairment in social or occupational performance.

☐ 4 = Extreme, incapacitation interference.

8. **DISTRESS ASSOCIATED WITH COMPULSIVE BEHAVIOR:** How would you have felt if you were prevented from performing your compulsion(s)? How anxious would you have become?

☐ 0 = Not at all anxious.

☐ 1 = Only slightly anxious if compulsions prevented.

☐ 2 = Anxiety would mount but remain manageable if compulsions prevented.

☐ 3 = Prominent and very disturbing increase in anxiety if compulsions interrupted.

☐ 4 = Extreme, incapacitating anxiety from any intervention aimed at reducing the compulsions.

9. **RESISTANCE:** How much effort did you make to resist the compulsions? Or, how often did you try to stop the compulsions?

☐ 0 = I made the effort to always resist (or the symptoms were so minimal that there was no need to actively resist them).

☐ 1 = I tried to resist most of the time.

☐ 2 = I made some effort to resist

☐ 3 = I yielded to almost all compulsions without attempting to control them, but I did so with some reluctance.

☐ 4 = I completely and willingly yielded to all compulsions.

10. **DEGREE OF CONTROL OVER COMPULSIVE BEHAVIOR:** How much control did you have over the compulsive behavior? How successful were you in stopping the ritual(s)?

☐ 0 = I had complete control.

☐ 1 = Usually I could stop compulsions or rituals with some effort and willpower.

☐ 2 = Sometimes I could stop compulsive behavior but only with difficulty.

☐ 3 = I could only delay the compulsive behavior, but eventually it had to be carried out to completion.

☐ 4 = I was rarely able to even momentarily delay performing the compulsive behavior.

COMPULSIVE SUBTOTAL (Add items 6-10) ☐☐

Mindfulness Practice Questionnaire

This questionnaire is to be completed **based on the mindfulness practices you completed during the past week**

How many separate, planned mindfulness practices did you complete over the last seven days (**last week**)?

Describe the most important **obsessive thought** or image that you experience during these practices:

Describe the most important **ritual** that you resisted engaging in during these practices:

Section 1: Please rate each of the following statements using the scale provided. Write the number in the blank space beside each question that best describes your own opinion of what is generally true for you, considering all of the mindfulness practices you completed during the past week.

1	2	3	4	5
Never or very rarely true	**Rarely true**	**Sometimes true**	**Often true**	**Very often or always true**

1. I noticed that when I repeat the same mindfulness practice, the "peak" level of anxiety (the highest level of anxiety overall) I experienced decreased with each repetition.	
2. I was aware of physical sensations in my body and how thoughts and emotions are connected to my physical sensations.	
3. I learned something new about the connection between having obsessive thoughts and engaging in rituals.	
4. The mindfulness practices were completed without engaging in rituals (e.g., checking, washing, counting, cleaning, repeating, mental rituals).	
5. I was able to pay attention to new information that I wasn't previously aware of.	
6. I learned that I need to engage in rituals or safety behaviours in order to experience symptom relief.	
7. I was able to re-evaluate my appraisal (or interpretation) of the obsessive thought or image during each mindfulness practice.	
8. The mindfulness practices were completed without engaging in safety behaviours (e.g., checking, reassurance seeking, distraction, mental avoidance, using medications).	
9. I was not aware of distressing obsessive thoughts or images that I experienced during my mindfulness practices.	
10. I learned something new – the outcome of my mindfulness practices were worse than what I had expected.	
11. I learned that if I pay attention to my experience in the present moment, my anxiety will gradually decrease.	
12. Whenever my mind wandered, I was aware of how I felt about this and how I reacted to this experience	
13. I carefully planned to complete a formal, structured mindfulness practice that I decided on in advance.	
14. I considered how my experience during the mindfulness practice may apply to my everyday experiences	
15. I was able to generate an alternative understanding of my interpretation of the obsessive thought.	

OCI-R

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

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

1. I have saved up so many things that they get in the way	0	1	2	3	4
2. I check things more often than necessary.	0	1	2	3	4
3. I get upset if objects are not arranged properly.	0	1	2	3	4
4. I feel compelled to count while I am doing things.	0	1	2	3	4
5. I find it difficult to touch an object when I know it has been touched by strangers or certain people.	0	1	2	3	4
6. I find it difficult to control my own thoughts.	0	1	2	3	4
7. I collect things I don't need.	0	1	2	3	4
8. I repeatedly check doors, windows, drawers, etc.	0	1	2	3	4
9. I get upset if others change the way I have arranged things.	0	1	2	3	4
10. I feel I have to repeat certain numbers.	0	1	2	3	4
11. I sometimes have to wash or clean myself simply because I feel contaminated.	0	1	2	3	4
12. I am upset by unpleasant thoughts that come into my mind against my will.	0	1	2	3	4
13. I avoid throwing things away because I am afraid I might need them later.	0	1	2	3	4
14. I repeatedly check gas and water taps and light switches after turning them off.	0	1	2	3	4
15. I need things to be arranged in a particular way.	0	1	2	3	4
16. I feel that there are good and bad numbers.	0	1	2	3	4
17. I wash my hands more often and longer than necessary.	0	1	2	3	4
18. I frequently get nasty thoughts and have difficulty in getting rid of them.	0	1	2	3	4

(OBQ-44)

This inventory lists different attitudes or beliefs that people sometimes hold. Read each statement carefully and decide how much you agree or disagree with it.

For each of the statements, choose the number matching the answer that *best describes how you think*. Because people are different, there are no right or wrong answers.

To decide whether a given statement is typical of your way of looking at things, simply keep in mind what you are like *most of the time*.

Use the following scale:

1	2	3	4	5	6	7
Disagree very much	Disagree moderately	Disagree a little	Neither agree or disagree	Agree a little	Agree moderately	Agree very much

In making your ratings, try to avoid using the middle point of the scale (4), but rather indicate whether you usually disagree or agree with the statements about your own beliefs and attitudes.

1.	I often think things around me are unsafe.	1	2	3	4	5	6	7
2.	If I'm not absolutely sure of something, I'm bound to make a mistake	1	2	3	4	5	6	7
3.	Things should be perfect according to my own standards.	1	2	3	4	5	6	7
4.	In order to be a worthwhile person, I must be perfect at everything I do.	1	2	3	4	5	6	7
5.	When I see any opportunity to do so, I must act to prevent bad things from happening.	1	2	3	4	5	6	7
6.	Even if harm is very unlikely, I should try to prevent it at any cost.	1	2	3	4	5	6	7
7.	For me, having bad urges is as bad as actually carrying them out.	1	2	3	4	5	6	7
8.	If I don't act when I foresee danger, then I am to blame for any consequences.	1	2	3	4	5	6	7
9.	If I can't do something perfectly, I shouldn't do it at all.	1	2	3	4	5	6	7

1	2	3	4	5	6	7
Disagree very much	Disagree moderately	Disagree a little	Neither agree or disagree	Agree a little	Agree moderately	Agree very much

10. I must work to my full potential at all times.	1	2	3	4	5	6	7
11. It is essential for me to consider all possible outcomes of a situation.	1	2	3	4	5	6	7
12. Even minor mistakes mean a job is not complete.	1	2	3	4	5	6	7
13. If I have aggressive thoughts or impulses about my loved ones, this means I may secretly want to hurt them.	1	2	3	4	5	6	7
14. I must be certain of my decisions.	1	2	3	4	5	6	7
15. In all kinds of daily situations, failing to prevent harm is just as bad as deliberately causing harm.	1	2	3	4	5	6	7
16. Avoiding serious problems (for example, illness or accidents) requires constant effort on my part.	1	2	3	4	5	6	7
17. For me, not preventing harm is as bad as causing harm.	1	2	3	4	5	6	7
18. I should be upset if I make a mistake.	1	2	3	4	5	6	7
19. I should make sure others are protected from any negative consequences of my decisions or actions	1	2	3	4	5	6	7
20. For me, things are not right if they are not perfect.	1	2	3	4	5	6	7
21. Having nasty thoughts means I am a terrible person.	1	2	3	4	5	6	7
22. If I do not take extra precautions, I am more likely than others to have or cause a serious disaster.	1	2	3	4	5	6	7
23. In order to feel safe, I have to be as prepared as possible for anything that could go wrong.	1	2	3	4	5	6	7
24. I should not have bizarre or disgusting thoughts.	1	2	3	4	5	6	7
25. For me, making a mistake is as bad as failing completely.	1	2	3	4	5	6	7
26. It is essential for everything to be clear cut, even in minor matters.	1	2	3	4	5	6	7
27. Having a blasphemous thought is as sinful as committing a sacrilegious act.	1	2	3	4	5	6	7

1	2	3	4	5	6	7
Disagree very much	Disagree moderately	Disagree a little	Neither agree or disagree	Agree a little	Agree moderately	Agree very much

28. I should be able to rid my mind of unwanted thoughts.	1	2	3	4	5	6	7
29. I am more likely than other people to accidentally cause harm to myself or to others.	1	2	3	4	5	6	7
30. Having bad thoughts means I am weird or abnormal.	1	2	3	4	5	6	7
31. I must be the best at things that are important to me.	1	2	3	4	5	6	7
32. Having an unwanted sexual thought or image means I really want to do it.	1	2	3	4	5	6	7
33. If my actions could have even a small effect on a potential misfortune, I am responsible for the outcome.	1	2	3	4	5	6	7
34. Even when I am careful, I often think that bad things will happen.	1	2	3	4	5	6	7
35. Having intrusive thoughts means I'm out of control.	1	2	3	4	5	6	7
36. Harmful events will happen unless I am very careful.	1	2	3	4	5	6	7
37. I must keep working at something until it's done exactly right.	1	2	3	4	5	6	7
38. Having violent thoughts means I will lose control and become violent.	1	2	3	4	5	6	7
39. To me, failing to prevent a disaster is as bad as causing it.	1	2	3	4	5	6	7
40. If I don’t do a job perfectly, people won’t respect me.	1	2	3	4	5	6	7
41. Even ordinary experiences in my life are full of risk.	1	2	3	4	5	6	7
42. Having a bad thought is morally no different than doing a bad deed.	1	2	3	4	5	6	7
43. No matter what I do, it won’t be good enough.	1	2	3	4	5	6	7
44. If I don't control my thoughts, I'll be punished.	1	2	3	4	5	6	7

5-FACET M QUESTIONNAIRE

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

1	2	3	4	5
never or very rarely true	**rarely true**	**sometimes true**	**often true**	**very often or always true**

_____ 1. When I'm walking, I deliberately notice the sensations of my body moving.

_____ 2. I'm good at finding words to describe my feelings.

_____ 3. I criticize myself for having irrational or inappropriate emotions.

_____ 4. I perceive my feelings and emotions without having to react to them.

_____ 5. When I do things, my mind wanders off and I'm easily distracted.

_____ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.

_____ 7. I can easily put my beliefs, opinions, and expectations into words.

_____ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.

_____ 9. I watch my feelings without getting lost in them.

_____ 10. I tell myself I shouldn't be feeling the way I'm feeling.

_____ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.

_____ 12. It's hard for me to find the words to describe what I'm thinking.

_____ 13. I am easily distracted.

_____ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.

_____ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.

_____ 16. I have trouble thinking of the right words to express how I feel about things

_____ 17. I make judgments about whether my thoughts are good or bad.

_____ 18. I find it difficult to stay focused on what's happening in the present.

_____ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.

_____ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.

_____ 21. In difficult situations, I can pause without immediately reacting.

_____ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.

1	2	3	4	5
never or very rarely true	**rarely true**	**sometimes true**	**often true**	**very often or always true**

_____ 23. It seems I am "running on automatic" without much awareness of what I'm doing.

_____24. When I have distressing thoughts or images, I feel calm soon after.

_____ 25. I tell myself that I shouldn't be thinking the way I'm thinking.

_____ 26. I notice the smells and aromas of things.

_____ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.

_____ 28. I rush through activities without being really attentive to them.

_____ 29. When I have distressing thoughts or images I am able just to notice them without reacting.

_____ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.

_____ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.

_____ 32. My natural tendency is to put my experiences into words.

_____ 33. When I have distressing thoughts or images, I just notice them and let them go.

_____ 34. I do jobs or tasks automatically without being aware of what I'm doing.

_____ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.

_____ 36. I pay attention to how my emotions affect my thoughts and behavior.

_____ 37. I can usually describe how I feel at the moment in considerable detail.

_____ 38. I find myself doing things without paying attention.

_____ 39. I disapprove of myself when I have irrational ideas.

THOUGHT CONTROL QUESTIONNAIRE (TCQ)

Most people experience unpleasant and/or unwanted thoughts (in verbal and/or picture form) which can be difficult to control. We are interested in the techniques that you *generally* use to control such thoughts. Below are a number of things that people do to control these thoughts. Please read each statement carefully, and indicate how often you use each technique by *circling* the appropriate number. There are **no right or wrong answers** to these questions. Do not spend too much time thinking about each one.

When I experience an unpleasant / unwanted thought:

	Never	Sometimes	Often	Almost always
I call to mind positive images instead	1	2	3	4
I tell myself not to be so stupid	1	2	3	4
I focus on the thought	1	2	3	4
I replace the thought with a more trivial bad thought	1	2	3	4
I don't talk about the thought to anyone	1	2	3	4
I punish myself for thinking the thought	1	2	3	4
I dwell on other worries	1	2	3	4
I occupy myself with work instead	1	2	3	4
I challenge the thought's validity	1	2	3	4
I get angry at myself for having the thought	1	2	3	4
I avoid discussing the thought	1	2	3	4
I shout at myself for having the thought	1	2	3	4
I analyze the thought rationally	1	2	3	4
I slap or pinch myself to stop the thought	1	2	3	4
I think pleasant thoughts instead	1	2	3	4
I find out how my friends deal with these thoughts	1	2	3	4
I worry about more minor things instead	1	2	3	4
I do something that I enjoy	1	2	3	4
I try to reinterpret the thought	1	2	3	4
I think about something else	1	2	3	4
I think about the more minor problems I have	1	2	3	4
I try a different way of thinking about it	1	2	3	4
I think about past worries instead	1	2	3	4
I ask my friends if they have similar thoughts	1	2	3	4
I focus on different negative thoughts	1	2	3	4
I question the reasons for having the thought	1	2	3	4
I tell myself that something bad will happen if I think the thought	1	2	3	4
I talk to a friend about the thought	1	2	3	4
I keep myself busy	1	2	3	4

Mind Wandering: Deliberate

For the following statements please select the answer that most accurately reflects your everyday mind wandering.

1. I allow my thoughts to wander on purpose.

Rarely						A Lot
1	2	3	4	5	6	7

2. I enjoy mind-wandering.

Rarely						A Lot
1	2	3	4	5	6	7

3. I find mind-wandering is a good way to cope with boredom.

Not At All True						Very True
1	2	3	4	5	6	7

4. I allow myself to get absorbed in pleasant fantasy.

Rarely						A Lot
1	2	3	4	5	6	7

Mind Wandering: Spontaneous

For the following statements please select the answer that most accurately reflects your everyday mind wandering.

1. I find my thoughts wandering spontaneously.

Rarely						A Lot
1	2	3	4	5	6	7

2. When I mind-wander my thoughts tend to be pulled from topic to topic.

Rarely						A Lot
1	2	3	4	5	6	7

3. It feels like I don't have control over when my mind wanders.

Almost Never						Almost Always
1	2	3	4	5	6	7

4. I mind-wander even when I'm supposed to be doing something else.

Rarely						A Lot
1	2	3	4	5	6	7

AAQ-II

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

Never true 1	Very seldom true 2	Seldom true 3	Sometimes true 4	Frequently true 5	Almost always true 6	Always true 7

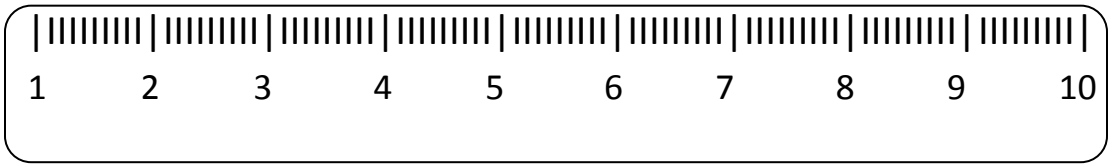
1.	It's OK if I remember something unpleasant	1	2	3	4	5	6	7
2.	My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
3.	I'm afraid of my feelings.	1	2	3	4	5	6	7
4.	I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
5.	My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
6.	I am in control of my life	1	2	3	4	5	6	7
7.	Emotions cause problems in my life.	1	2	3	4	5	6	7
8.	It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
9.	Worries get in the way of my success.	1	2	3	4	5	6	7
10.	My thoughts and feelings do not get in the way of how I want to live my life	1	2	3	4	5	6	7

RR

Instructions: Please circle the line on the ruler below that you feel appropriately captures your desire to change and your feelings about being capable of change:

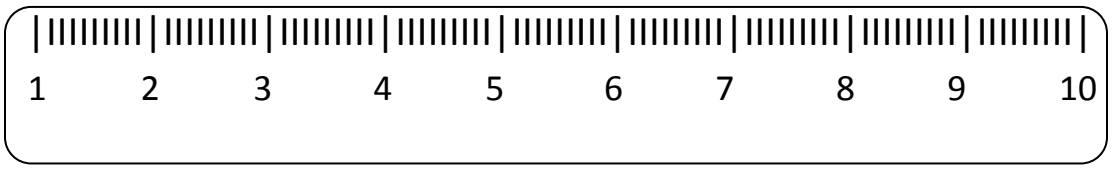
1. On a scale from 1 to 10, how <u>important</u> is it to you to improve your obsessive/compulsive symptoms?

Not at all Important — Somewhat Important — Extremely Important



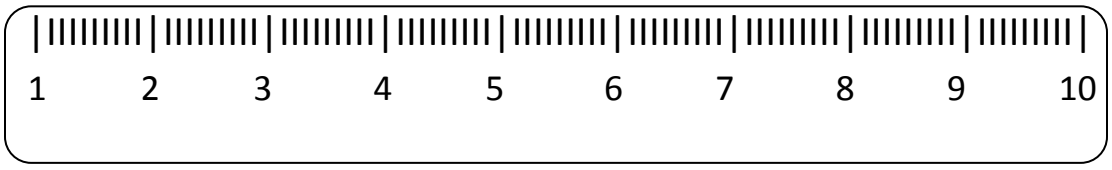
2. On a scale from 1 to 10, how <u>confident</u> do you feel that you can succeed in improving your obsessive/compulsive symptoms?

Not at all Confident — Somewhat Confident — Extremely Confident



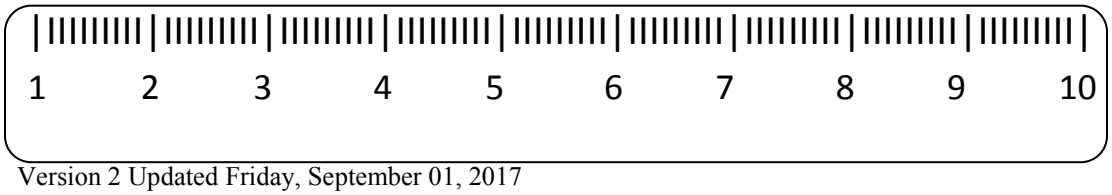
3. On a scale from 1 to 10, how <u>ready</u> are you to make changes in your life in order to improve your obsessive/compulsive symptoms?

Not at all Ready to change — Somewhat Ready to change — Extremely Ready to change



3. On a scale from 1 to 10, how <u>motivated</u> are you to engage in upcoming weekly Cognitive Behavior Therapy sessions for Obsessive Compulsive Disorder?

Not at all Motivated — Somewhat Motivated — Extremely Motivated



Metacognitions Questionnaire (MCQ)

This questionnaire is concerned with beliefs people have about their thinking. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you ***generally*** agree with it by ***circling the appropriate number***. Please respond to all the items; there are no right or wrong answers.

	Do not agree	Agree slightly	Agree moderately	Agree very much
1. Worrying helps me to avoid problems in the future	1	2	3	4
2. My worrying is dangerous for me.	1	2	3	4
3. I have difficulty knowing if I have actually done something, or just imagined it.	1	2	3	4
4. I think a lot about my thoughts.	1	2	3	4
5. I could make myself sick with worrying.	1	2	3	4
6. I am aware of the way my mind works when I am thinking through a problem	1	2	3	4
7. If I did not control a worrying thought, and then it happened, it would be my fault.	1	2	3	4
8. If I let my worrying thoughts get out of control, they will end up controlling me.	1	2	3	4
9. I need to worry in order to remain organized.	1	2	3	4
10. I have little confidence in my memory for words and names.	1	2	3	4
11. My worrying thoughts persist, no matter how I try to stop them.	1	2	3	4
12. Worrying helps me to get things sorted out in my mind.	1	2	3	4
13. I cannot ignore my worrying thoughts.	1	2	3	4
14. I monitor my thoughts.	1	2	3	4
15. I should be in control of my thoughts all of the time.	1	2	3	4
16. My memory can mislead me at times.	1	2	3	4
17. I could be punished for not having certain thoughts.	1	2	3	4
18. My worrying could make me go mad.	1	2	3	4
19. If I do not stop worrying thoughts, they could come true.	1	2	3	4
20. I rarely question my thoughts.	1	2	3	4
21. Worrying puts my body under a lot of stress.	1	2	3	4
22. Worrying helps me to avoid disastrous situations.	1	2	3	4
23. I am constantly aware of my thinking.	1	2	3	4
24. I have a poor memory.	1	2	3	4
25. I pay close attention to the way my mind works.	1	2	3	4
26. People who do not worry have no depth.	1	2	3	4
27. Worrying helps me cope.	1	2	3	4

	Do not agree	Agree slightly	Agree moderately	Agree very much
28. I imagine having not done things and then doubt my memory for doing them.	1	2	3	4
29. Not being able to control my thoughts is a sign of weakness.	1	2	3	4
30. If I did not worry, I would make more mistakes.	1	2	3	4
31. I find it difficult to control my thoughts.	1	2	3	4
32. Worrying is a sign of a good person.	1	2	3	4
33. Worrying thoughts enter my head against my will.	1	2	3	4
34. If I could not control my thoughts I would go crazy.	1	2	3	4
35. I will lose out in life if I do not worry.	1	2	3	4
36. When I start worrying, I cannot stop.	1	2	3	4
37. Some thoughts will always need to be controlled.	1	2	3	4
38. I need to worry in order to get things done.	1	2	3	4
39. I will be punished for not controlling certain thoughts.	1	2	3	4
40. My thoughts interfere with my concentration.	1	2	3	4
41. It is alright to let my thoughts roam free.	1	2	3	4
42. I worry about my thoughts.	1	2	3	4
43. I am easily distracted.	1	2	3	4
44. My worrying thoughts are not productive.	1	2	3	4
45. Worry can stop me from seeing a situation clearly.	1	2	3	4
46. Worrying helps me to solve problems.	1	2	3	4
47. I have little confidence in my memories for places.	1	2	3	4
48. My worrying thoughts are uncontrollable.	1	2	3	4
49. It is bad to think certain thoughts.	1	2	3	4
50. If I do not control my thoughts, I may end up embarrassing myself.	1	2	3	4
51. I do not trust my memory.	1	2	3	4
52. I do my clearest thinking when I am worrying.	1	2	3	4
53. My worrying thoughts appear automatically.	1	2	3	4
54. I would be selfish if I never worried.	1	2	3	4
55. If I could not control my thoughts, I would not be able to function.	1	2	3	4
56. I need to worry, in order to work well.	1	2	3	4
57. I have little confidence in my memory for actions.	1	2	3	4
58. I have difficulty keeping my mind focused on one thing for a long time.	1	2	3	4

	Do not agree	Agree slightly	Agree moderately	Agree very much
59. If a bad thing happens which I have not worried about, I feel responsible.	1	2	3	4
60. It would not be normal if I did not worry.	1	2	3	4
61. I constantly examine my thoughts.	1	2	3	4
62. If I stopped worrying, I would become glib, arrogant and offensive.	1	2	3	4
63. Worrying helps me to plan the future more effectively.	1	2	3	4
64. I would be a stronger person if I could worry less.	1	2	3	4
65. I would be stupid and complacent not to worry.	1	2	3	4