RANDOMIZED CONTROLLED FEASIBILITY TRIAL OF A SELF-HELP BOOK
FOR HEALTH ANXIETY

A Thesis
Submitted to the Faculty of Graduate Studies and Research
In Partial Fulfillment of the Requirements
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by
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Abstract

The purpose of this feasibility study was to determine the efficacy of a cognitive-behaviour therapy (CBT) self-help book for health anxiety titled, *It’s Not All in Your Head* (Asmundson & Taylor, 2005) relative to a wait-list control. It was hypothesized that using a CBT self-help book would be a more efficacious treatment than wait-list control. Health anxiety is marked by anxious preoccupation about having a physical disease, based on the catastrophic misinterpretation of innocuous bodily sensations. It is associated with unpleasant physiological, behavioural, cognitive, and affective symptoms. When elevated, health anxiety affects an individual’s interpersonal relationships, especially with his or her doctor, and increases health utilization of primary care, diagnostic tests, and secondary care resources (Conradt, Cavanagh, Franklin, & Rief, 2006). Although once regarded as a chronic disorder resistant to treatment and often associated with a poor prognosis (Avia, Ruiz, Olivares, & Crespo, 1996; Barsky, Bailey, Fama, & Ahern), there are now several empirically-supported treatment options (Taylor, Asmundson, & Coons, 2005). In particular, CBT treatments that aim to identify maladaptive thoughts and behaviours and replace them with healthy and adaptive ones, have been proven effective, and are the treatment of choice for many (Furer, Walker, & Freeston, 2001). The development of CBT programs for treating elevated health anxiety has progressed to the point where widely accessible self-help options are available. In this trial, 14 volunteers experiencing health anxiety were recruited. Participants were
randomly assigned to either an 8-week self-help book treatment (SHB; \( n = 10 \)) during which they read the self-help book and received therapist guidance sessions or an 8-week wait-list control group (WLC; \( n = 4 \)). Health anxiety, depression, and general health symptoms were assessed at pre-, mid-, and post-treatment. \( T \) tests were used for statistical analyses and intention-to-treat analyses were employed. Relative to WLC, SHB participants reported minor reductions in health anxiety symptoms after 3 weeks of treatment and significant reductions in health anxiety and depression symptoms post-treatment. Unfortunately, due to the small sample size and lack of statistical power, some analyses could not be performed. These findings provide preliminary support the trial hypothesis and can be used to inform a future, large-scale, randomized controlled trial. Participants had mostly positive feedback about the treatment, but reported difficulty completing treatment in 8 weeks and a poor therapeutic alliance. Procedural difficulties were encountered during the trial that limit the generalizability of the results. A clinically supported, CBT-based, self-help treatment for health anxiety will potentially improve the psychological and social lives of many individuals and reduce the financial and time expenditures of mental health care providers.
Acknowledgement

This research was funded by a Canadian Institutes of Health Research and Saskatchewan Health Research Foundation CIHR-SHRF Doctoral Research Award, funding through the Faculty of Graduate Studies and Research, and a scholarship from Breast Cancer Action Saskatchewan.
Dedication

I would like to give special thanks to my Ph.D. Supervisor, Gordon Asmundson, Ph.D., for giving me the opportunity to work in a world-class research lab with amazing research opportunities and fantastic graduate students. I will forever be grateful for his mentorship and the continued support that I needed so much to improve my writing and research skills.

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1. INTRODUCTION AND LITERATURE REVIEW

Health anxiety is a psychological construct that ranges on a continuum from normal health awareness to hypochondriasis in its extreme form (Taylor & Asmundson, 2004). Individuals with health anxiety believe they are physically ill, are often hypervigilant to bodily sensations and changes, and experience recurrent thoughts about serious disease (Taylor & Asmundson, 2004). Until recently, there were no effective treatments for health anxiety (Avia, Ruiz, Olivares, & Crespo, 1996; Barsky, Bailey, Fama, & Ahern, 2000; Barsky, Geringer, & Wool, 1988; Taylor & Asmundson, 2004); however, a number of empirically supported treatment options such as cognitive-behavioural therapy (CBT) are now available (Taylor, Asmundson, & Coons, 2005).

During a typical CBT protocol for health anxiety, individuals learn about the nature of health-related anxiety, are exposed to health and disease-related stimuli, endure the associated anxiety, and learn that the outcomes of anxiety will not be catastrophic (Taylor & Asmundson, 2004). Most recently, efforts have been directed at translating therapist-delivered CBT treatments into more accessible self-help programs for health anxiety and a spectrum of related disorders (i.e., the health anxiety disorders). However, these approaches have not received much empirical scrutiny and warrant further investigation. The purpose of this feasibility trial was to determine the efficacy (capacity for beneficial change) of a CBT self-help book for health anxiety (i.e., It’s Not All in Your Head, Asmundson & Taylor, 2005), relative to a wait-list control group. The findings of
this study will inform a future, large-scale randomized controlled trial of the self-help book.

1.1. Health anxiety

Health is an important source of security so most people occasionally experience health anxiety (Furer & Walker, 2005). Cognitive-behavioural researchers and clinicians state health anxiety encompasses any worry people may have about their health (Furer & Walker, 2005). Maladaptive expressions of health anxiety may take the form of disorders such as hypochondriasis, illness phobia, somatic delusions, panic disorder, and some somatoform disorders (Taylor & Asmundson, 2004). Health anxiety ranges on a continuum from healthy and adaptive to excessive and maladaptive (Taylor & Asmundson, 2004). Symptoms of health anxiety may be assessed with individual-difference measures such as the Whiteley Index (WI; Pilowsky, 1967). For the most part, health anxiety is adaptive when it prompts us to seek medical care for symptoms of a true medical problem; if an individual’s health is at risk, a lack of anxiety about the symptoms can be maladaptive (Taylor & Asmundson, 2004). Sometimes a degree of health consciousness and concern is socially encouraged (Taylor & Asmundson, 2004).

Health anxiety has a long history. It is noteworthy that the term hypochondria was first used in 350 BC (Ladee, 1966). In fact, a disorder called hypochondrium was hypothesized by Hippocrates (470 BC to 410 BC) as being caused by the mental and physical effects of the humors excreted from the hypochondrium — a hypothetical area
below the ribs (Kellner 1986). Hundreds of years later, in 1968, hypochondriacal neurosis was first introduced in the Diagnostic and Statistical Manual of Mental Disorders-Second Edition (DSM-II; American Psychiatric Association [APA], 1968). Until the previous decade, health anxiety was regarded as a chronic, self-perpetuating, and self-validating disorder that was resistant to treatment, and resulted in a poor prognosis or disability (Avia et al., 1996; Barsky et al., 1988; Barsky et al., 2000).

Recently, there has been argument that the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision (DSM-IV-TR; APA, 2000) diagnostic criteria for hypochondriasis are too stringent and result in few correct diagnoses (Creed & Barsky, 2004; Looper & Kiramayer, 2001). Due to this issue, the DSM-IV-TR criteria are often not used in hypochondriasis research and an abridged or subclinical definition of health anxiety is employed instead (Creed, 2006; Creed & Barsky, 2004). This latter approach is used in the current study. Strict use of the DSM-IV-TR criteria represents a categorical view of hypochondriasis wherein one either does or does not have the disorder (Furer & Walker, 2005). In comparison, a dimensional view of health anxiety that conceptualizes health anxiety symptoms on a normal continuum of severity, allows for the identification of individuals who may endorse fewer symptoms but nonetheless have clinically significant levels of distress and disability (Furer & Walker, 2005). New dimensional diagnoses and diagnostic criteria have been proposed to replace hypochondriasis in the upcoming fifth edition of the DSM. The Somatic Symptoms
Disorders Draft (APA, 2010) proposes the new diagnosis of complex somatic symptom disorder (CSSD) with predominant health anxiety to replace hypochondriasis. A brand new diagnosis of illness anxiety disorder (IAD) is proposed for health anxiety with mild somatic symptoms.

1.1.1. Cognitive-behavioural model of health anxiety

The constellation of cognitive, somatic, affective, and behavioural symptoms of health anxiety prompted development of a comprehensive explanatory model. Beck’s cognitive theory of anxiety (1985) was used to create the cognitive-behavioural formulation of health anxiety and to guide theory and treatment development specific to health anxiety (see Figure 1; Salkovskis, Warwick, & Deale, 2003; Wattar et al., 2005). For example, when one notices bodily sensations, they are usually perceived to be unpleasant (Asmundson et al., 2005; Asmundson, Taylor, Bovell, & Collimore, 2006). This unpleasantness sometimes leads to worry or anxiety about what the sensations mean.

The worry and anxiety experienced are associated with physiological arousal. Individuals may also increase bodily checking and avoidance behaviours. This increases the likelihood of noticing unpleasant bodily sensations and the vicious cycle begins again. The cognitive-behavioural model of health anxiety is the most established, comprehensive, and useful model of the cycle of health anxiety symptom development and maintenance (Asmundson & Taylor, 2005).
Figure 1. The Cognitive-Behavioural Model of Health Anxiety (Asmundson & Taylor, 2005, p. 32).
The cognitive symptoms of health anxiety comprise various mistaken beliefs called, *cognitive distortions* (Taylor & Asmundson, 2004; see Table 1). Individuals with health anxiety experience *disease conviction* (i.e., the belief they are physically ill), hypervigilance to bodily sensations and changes, and recurrent thoughts about serious disease. These misinterpretations are maintained by selective attention in that people with health anxiety may have a memory bias for pain words, a bias towards social and illness threats, and a tendency to misinterpret health information (Hadjistavropoulos, Hadjistavropoulos, & Quine, 2000; Owens, Asmundson, Hadjistavropoulos, & Owens, 2004). They also tend to have negative estimates of health outcomes and expect to be at higher risk for medical complications (Avia & Ruiz, 2005). Individuals with health anxiety may have increased *somatosensory amplification* (i.e., a tendency to focus attention on bodily sensations and misinterpret those sensations; Bleichhardt, Timmer, & Rief, 2005). Therefore, health anxiety has a pervasive impact on many areas of a person’s cognitive functioning.

The primary somatic feature of health anxiety is the tendency to overestimate the seriousness of bodily sensations, fluctuations, and symptoms of general medical conditions (Taylor & Asmundson, 2004; see Table 1). As a result, these symptoms are not attributed to common causes such as age, changes in diet, overwork, or fatigue (Barsky et al., 1988) and people with health anxiety become preoccupied with the meaning general health symptoms (Taylor & Asmundson, 2004). People with
Table 1

*Clinical features of health anxiety*

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>• Disease conviction: Belief that one has a serious disease</td>
</tr>
<tr>
<td></td>
<td>• Disease preoccupation: Selective attention, recurrent thoughts,</td>
</tr>
<tr>
<td></td>
<td>and intrusive images of disease and death</td>
</tr>
<tr>
<td></td>
<td>• Hypervigilance to bodily sensations and changes</td>
</tr>
<tr>
<td></td>
<td>• Difficulty accepting medical reassurance</td>
</tr>
<tr>
<td></td>
<td>• Somatosensory amplification: Benign bodily changes and</td>
</tr>
<tr>
<td></td>
<td>sensations (e.g., blemishes, mild aches and pains) that are</td>
</tr>
<tr>
<td></td>
<td>misinterpreted</td>
</tr>
<tr>
<td>Somatic</td>
<td>• Anxiety-related bodily reactions (e.g., palpitations)</td>
</tr>
<tr>
<td>Affective</td>
<td>• Fear of currently having a harmful disease</td>
</tr>
<tr>
<td></td>
<td>• Fear of contracting a harmful disease in the future</td>
</tr>
<tr>
<td></td>
<td>• Fear or anxiety of exposure to disease-related stimuli</td>
</tr>
<tr>
<td>Behavioural</td>
<td>• Repeatedly checking one’s body</td>
</tr>
<tr>
<td></td>
<td>• Reassurance seeking (e.g., from physicians or significant others) that</td>
</tr>
<tr>
<td></td>
<td>one does not have serious symptoms or disease</td>
</tr>
<tr>
<td></td>
<td>• Repeated requests for medical tests</td>
</tr>
<tr>
<td></td>
<td>• Checking other sources of medical information (e.g., Internet searches</td>
</tr>
<tr>
<td></td>
<td>of medical websites)</td>
</tr>
<tr>
<td></td>
<td>• Avoiding or escaping disease-related stimuli</td>
</tr>
</tbody>
</table>

*Note.* Adapted from Taylor & Asmundson, 2004.
somatosensory amplification have a lower threshold for physical discomfort, focus more on bodily sensations, and perceive normal bodily sensations to be intensified and unpleasant (Barsky et al., 1988). Recent research has suggested that some people may have a genetic predisposition for these somatic symptoms (Taylor, Thordarson, Jang, & Asmundson, 2006).

People with health anxiety experience health-related fears (see Table 1). The dominant fear is that of having a harmful disease (Taylor & Asmundson, 2004). Another related fear is the fear that one may contract a harmful disease (Taylor & Asmundson, 2004). For example, when people with health anxiety are exposed to bodily sensations or other disease-related stimuli (e.g., sick people, hospitals, health professionals, the Internet, health programs, newspaper and magazine articles), they often become anxious and exhibit anxiety symptoms (Taylor & Asmundson, 2004; Wattar et al., 2005). Fear and anxiety specific to having or contracting a disease are distinguishing features of health anxiety.

When someone with health anxiety experiences health-related fear there is usually a behavioural reaction (Taylor & Asmundson, 2004; see Table 1). These reactions can include seeking reassurance from other people, repeatedly checking or examining the body, or seeking medical help and other remedies. This can lead to doctor shopping (finding and visiting various doctors), numerous tests, over-the-counter remedies, self-diagnosis, and do-it-yourself treatments. Individuals with health anxiety increase health
care consumption when they overuse primary care, pathology testing, and secondary care resources (Conradt, Cavanagh, Franklin, & Rief, 2006). In fact, the economic costs of the disorder have been estimated at 10% to 20% of the medical budget of the United States (Hollifield, Paine, Tuttle, & Kellner, 1999). People with health anxiety may assume the ‘sick role’, avoid daily activities and employment, and repeatedly discuss their health concerns (Taylor & Asmundson, 2004). They may also avoid all situations or stimuli related to disease such as hospitals, hospital staff, and sick individuals (Taylor & Asmundson, 2004). Reassurance seeking, repeated bodily checking, seeking medical treatments, and avoidance are the key behavioural reactions to health-related fear.

There are notable similarities between health anxiety, panic disorder, and obsessive disorders (Salkovskis, Warwick, & Clark, 1993; Warwick & Salkovskis, 1990; Wattar et al., 2005). Panic disorder tends to involve the fear that a catastrophic health event is occurring when bodily sensations are experienced; health anxiety involves the fear that a serious medical disease is gradually developing when bodily sensations are experienced or when illness information is encountered (Wattar et al., 2005). Obsessive compulsive disorder (OCD) is another disorder characterized by catastrophic beliefs. Individuals with OCD believe they can prevent catastrophic events from happening if they perform physical or mental rituals (Wattar et al., 2005), which is not the case for health anxiety. Despite the similarities, the presence of disease phobia (as opposed to bodily preoccupation and disease conviction) is the factor that can usually discriminate
clients with health anxiety from clients with somatization, depression, or anxiety (Furer & Walker, 2005).

1.1.2. Epidemiology

Negative health experiences and health anxiety are common in community studies of the general population and in primary care (Furer & Walker, 2005). Based on cross-sectional studies, the current prevalence of health anxiety ranges from 1.3% to 10.7% in general population samples (Faravelli et al., 1997; Looper & Kimayer, 2001; Noyes, Happel & Yagla, 1999; Rief, Hessel, & Braehler, 2001) and ranges from 2.2% to 13.8% in primary care samples (Barsky, Ettner, Horsky, & Bates, 2001; Barsky, Wyshak, Klerman, & Latham, 1990; Escobar et al., 1998; Fink, Sorensen, Engberg, & Holm, 1999; Gureje, Ushtun, & Simon, 1997; Kirmayer & Robbins, 1991; Kroenke et al., 1997; Noyes et al., 1994; Noyes et al., 2000; Peveler, Kilkenny, & Kimmonth, 1997). The studies used various measures and procedures to diagnose health anxiety, such as the WI, interviews, or fear of illness questionnaires; therefore, the disorders had unique definitions in each study. When cut-off scores for the WI, Somatic Symptom Inventory (SSI; Barsky et al., 1992), or the Illness Behavior Questionnaire (IBQ; Pilowsky & Spence, 1983) are used, the prevalence estimate increases to between 7.7% and 13.8% (Asmundson, Taylor, Sevgur, & Cox, 2001). Health anxiety can present at any age but the onset is often in early adulthood (Asmundson et al., 2001). The course of health anxiety remains unknown. However, being female, being young, not being Caucasian,
having less education, and having a lower income are risk factors for unexplained somatic symptoms (Escobar, Swartz, Rubio-Stipec, & Manu, 1991). Studies of monozygotic (identical twins with the same DNA) and dizygotic twins (fraternal twins with approximately 50% identical DNA) have shown that there are genetic precursors (e.g., predispositions for disease conviction, fear of illness, and frequency of treatment seeking) for health anxiety (Taylor et al., 2006). The precursors are moderately heritable, affected by a common set of genes, and strongly influenced by environmental factors (Taylor et al., 2006).

1.1.3. Comorbidity and prognosis

Individuals with health anxiety tend to have lower thresholds, tolerance, and sensitivity for pain, high self-consciousness, and increased attention to somatic sensations (Barsky et al., 1988). The presence of depression can increase an individual’s preoccupation with suffering, illness, death, and the perception of bodily sensations. There is also evidence that individuals with health anxiety are more likely to have experienced physical and sexual abuse, childhood illnesses, inadequate and inattentive parenting, and rewards for maintaining the sick role (Taylor et al., 2006). These factors are associated with most DSM-IV Axis I mental disorders.

The majority of individuals with health anxiety have a comorbid mental disorder (88% based on the Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised [DSM-III-R, APA, 1987] and the National Institute of Mental Health Diagnostic
Interview Schedule [Robins, Helzer, Croughan & Ratcliff, 1981]; Barsky, Wyshak, & Klerman, 1992). Health anxiety is associated with anxiety disorders (e.g., panic disorder, specific phobia, and OCD; Barsky, Cleary, Looper & Kirmayer, 2001; Noyes et al., 1994; Robbins & Kirmayer, 1996; Sarnie & Klerman, 1993; Simon, Gureje, & Fullerton, 2001), depressive mood disorders (Barsky et al, 1993; Looper & Kirmayer, 2001; Noyes et al., 1994; Robbins & Kirmayer,1996; Sarnie & Klerman, 1993; Simon et al., 2001), and neurotic personality disorders (Noyes et al., 1994; Noyes et al., 2003).

Knowledge of the negative and positive prognostic factors is vital to the appropriate understanding and treatment of health anxiety (Barsky et al., 2000). The prognosis for individuals with health anxiety can vary depending on several factors. A poor prognosis often results if an individual has a greater tendency to amplify bodily sensations, attribute symptoms to disease, and somaticize (Barsky et al., 2000). Conversely, people with health anxiety have a better prognosis when they do not have comorbid DSM-IV-TR Axis I or Axis II disorders, stressful life events and medical disorders, if they have had health anxiety for only a short time period, and if they are employed and married (Barsky et al., 2000). Despite popular belief, there is no evidence for secondary gain in the presentation of health anxiety symptoms (Warwick & Salkovskis, 1990). When health care providers hold this misconception, it can actually maintain health anxiety because the presenting individual may think he or she is not being taken seriously.
1.1.4. Treatment

In the past many clinicians believed health anxiety was difficult to treat, treatment resulted in only slight improvement in symptoms, and that it was challenging to establish a therapeutic alliance with health anxious individuals (Martínez & Botella, 2005). This belief may have arisen because early treatment techniques, such as psychoanalysis, were mostly ineffective for treating the disorder (Asmundson & Taylor, 2004). Some clients may have also been resistant to psychological treatments because they believed their condition was purely somatic (Barsky et al., 1988). It was sometimes difficult for clinicians to develop a therapeutic alliance with clients because, although the clients wanted help, they often rejected or were skeptical of treatments and the professionals who could not find the cause of their symptoms (Salkovskis et al., 2003). Some health care providers also believed health anxiety was similar to factitious disorder or malingering, and therefore, a waste of their valuable time (Salkovskis et al., 2003). Furthermore, after a medical treatment had been administered, occasionally people with health anxiety developed complications, worse symptoms, or new symptoms (Barsky et al., 1988). This may be due to somatosensory amplification and a tendency to misinterpret any new somatic sensations after medical treatment (Bleichhardt et al., 2005). The 1980s and 1990s saw the development of several behavioural and cognitive-behavioural psychotherapies for health anxiety (Asmundson & Taylor, 2004).
Today, effective clinically-supported treatments have been established for health anxiety. Individuals with health anxiety are often referred to psychological practitioners when the biomedical health care system cannot find medical causes or treatments for presenting symptoms (Taylor & Asmundson, 2004). Randomized controlled studies and other research have provided evidence that psychological treatments are efficacious for health anxiety (see Taylor & Asmundson, 2004 for review). For example, cognitive therapies are used to restructure distorted thoughts and attributions about physiological sensations into healthier and less catastrophic thoughts. Behavioural techniques such as graded in vivo exposure, desensitization, and response prevention, are helpful for controlling illness related behaviours and disability. Methods including relaxation training, biofeedback, and behavioural stress management (BSM) help reduce physiological arousal and anxiety. Physiologically-based techniques such as attention training, distraction methods, hypnosis, or environmental manipulations are useful for decreasing individuals’ attention to their somatic symptoms. Effective treatments for the social aspects of health anxiety may include physician consultations, the involvement of significant others and family members, and the modification of environmental situations that support a client’s sick role. Accordingly, a multimodal treatment approach may be needed to address the factors involved in the development and maintenance of the various health anxiety symptoms. Many case studies, uncontrolled studies, and randomized
controlled trials have been completed that show health anxiety responds well to treatments.

1.1.5. Cognitive behavioural therapy

CBT is the most promising psychological treatment for health anxiety and there is evidence that it is well tolerated and accepted by clients (Taylor et al., 2005). CBT is the treatment of choice for reducing maladaptive health anxiety and the only theoretical orientation with empirically supported efficacy (Furer, Walker, & Freeston, 2001). Looper and Kirmayer (2002) conducted a thorough review of treatments for health anxiety based on randomized clinical trials and outlined the efficacious cognitive, behavioural, physiological, and social techniques. The results of their review indicate CBT is efficacious for the treatment of health anxiety. It is also noteworthy that specific treatments for health anxiety tended to be more helpful than general anxiety therapies such as relaxation training or BSM. CBT treatments produced moderate to large effect sizes across studies and the effects were often maintained at follow-up. The efficacy of CBT treatments will be discussed in upcoming sections.

CBT is beneficial for reducing health-related fear, somatization symptoms, maladaptive body and health ideas, depression, and interpersonal difficulties associated with health anxiety (Hiller, Fichter, & Rief, 2003). It is also helpful in reducing medication usage and anxiety in individuals with health anxiety (Lidbeck, 2003). According to Asmundson and Taylor (2004) CBT for health anxiety results in:
decreased disease conviction, without necessarily reducing “symptoms” (bodily changes or sensations); decreased health-related worry; decreased medical utilization, including reduced frequency of doctor shopping and reassurance seeking; decreased reassurance seeking from significant others; decreased bodily checking; reduction in comorbid mental health problems (e.g., depression); increased ability to cope with the occurrence of new ‘symptoms’; strengthened adaptive beliefs about health and disease (e.g., strengthening of the conviction that even healthy people frequently have bodily sensations); improved occupational and role functioning; improved social relations (e.g., social interactions should no longer be centered on the patient’s health concerns); improved health habits; [and] improved overall quality of life. (p. 120)

CBT treatment for health anxiety is effective because it helps clients to understand their disorder and learn to effectively manage their symptoms (Asmundson & Taylor, 2004). In an effective CBT treatment for health anxiety, the cognitive-behavioural model of health anxiety is explained along with its cognitive, somatic, affective, and behavioural symptoms (see Figure 1). The goal of this treatment is to expose people with health anxiety to health and disease-related stimuli, allow them to experience the associated anxiety, and prevent avoidance and escape responses. Avoidance responses are reduced once it is realized that negative bodily sensations and stimuli do not indicate the presence of disease. CBT treatments for health anxiety are
relatively brief, ranging from 8 to 16 sessions (Avia & Ruiz, 2005). Asmundson and Taylor (2005) described CBT as a collection of techniques such as psychoeducation, cognitive restructuring, relaxation exercises, and exposure with response prevention (ERP). Each technique will be described below. All of the interventions are expected to be influenced by nonspecific treatment factors such as the expectations of the client and placebo effects, the therapeutic alliance, and the credibility of the treatment. It is also expected that the interventions will be provided after thorough medical and psychological assessments (Taylor et al., 2005). A thorough medical examination would be provided by a general practitioner (GP) or specialist to rule out biological disease as a cause of health anxiety symptoms (Bouman & Visser, 1998). A thorough psychological evaluation would be provided by a clinical psychologist or psychology practitioner to screen participants for mental conditions such as somatoform, anxiety, and mood disorders.

Cognitive therapy involves altering catastrophic interpretations of bodily sensations and health information; it is a key beneficial component of CBT for health anxiety (Furer & Walker, 2005). The cognitive components of CBT are effective because they help individuals to identify catastrophic thoughts and to replace them with more accurate appraisals (Furer & Walker, 2005). Cognitive therapy for health anxiety includes assessment and engagement, problem formulation, self-monitoring, identification and reattribution of negative automatic thoughts, modification of maintaining factors,
identification and reattribution of dysfunctional assumptions, and relapse prevention (Warwick & Salkovskis, 2001).

CBT treatments for health anxiety include behavioural therapies that help clients to identify maladaptive behaviours and replace them with healthy and adaptive ones (Furer & Walker, 2005). The behavioural components of CBT involve techniques such as *in vivo* exposure, systematic desensitization, and ERP that are effective for changing maladaptive behaviours (Bouman & Visser, 1998). There is ample evidence that exposure to feared stimuli can reduce anxiety (Furer & Walker, 2005). In the treatment of health anxiety, individuals are exposed to various disease- and death-related stimuli and various somatic sensations. Behavioural experiments are used to establish that some feared catastrophe will not happen and to understand the importance of maintaining factors and negative thinking identified during assessment (Warwick & Salkovskis, 2001). They are also used to test alternative strategies and distorted beliefs about health and disease (Warwick & Salkovskis, 2001).

Psychoeducation is an integral part of CBT in that it provides information to people that challenge their irrational beliefs and faulty knowledge. *Psychoeducation* is “the provision of information about the client’s disorder and its treatment, presented clearly in verbal, written, or video formats” (Asmundson & Taylor, 2004, p. 69). Psychoeducation may include lectures, demonstrations, focused group discussions, brief exercises, and optional homework assignments (Taylor et al., 2005). This method of
treatment has been successful in treating health anxiety and general medical conditions because psychoeducation provides new information to clients (e.g., symptoms of the disorder, coping strategies, relaxation training, etc.; Asmundson & Taylor, 2004). Psychoeducation alone may be a good treatment for health anxiety especially when an individual has a good prognosis (Taylor et al., 2005). Psychoeducation is an attractive treatment to practitioners because it is easy to administer to individuals or small groups.

ERP is a useful component in CBT for health anxiety because it helps reduce phobic avoidance (Asmundson & Taylor, 2004). Exposure may be provided in three forms. *In vivo* exposure for health anxiety usually involves exposure to disease-related objects or situations that are harmless yet anxiety provoking (e.g., sick people, hospitals, physicians, videos; Asmundson & Taylor, 2004). *Interoceptive exposure* refers to the induction of feared bodily sensations that are thought to be indicators of disease (e.g., heart palpitations, shortness of breath; Asmundson & Taylor, 2004). *Imaginal exposure* involves having clients imagine feared health-related situations (e.g., imagining having a disease; Asmundson & Taylor, 2004). When the client is prevented from responding – usually by delaying or refraining from bodily checking or reassurance-seeking – the anxiety response is reduced (Taylor et al., 2005). Anxiety is reduced because the client comes to understand that the disease-related object or situation is not harmful. ERP is a useful component of CBT treatments for health anxiety and it appears to be effective both
within treatment sessions and as homework assignments (Asmundson & Taylor, 2004; Taylor et al., 2005).

BSM is a component of CBT that has been used on its own to successfully treat health anxiety. BSM was initially used as a placebo-control condition to control for nonspecific treatment factors in efficacy studies (Clark et al., 1998). It was used because researchers noted that people often worry about their health when they are under stress. The advanced stress management capabilities that came with BSM had the unanticipated effect of reducing somatic symptoms and health-related fears (Furer & Walker, 2005). BSM was developed to teach participants how to manage stress and although it does not focus specifically on health anxiety, it involves several interrelated features including the identification of stressors, physical and psychological reactions to stress, as well as training in stress management procedures, applied relaxation techniques, problem solving, time management, and assertiveness training (Furer & Walker, 2005; Visser & Bouman, 2001). BSM treatments include exposure to feared stimuli, a central component of anxiety treatments such as ERP (Furer & Walker, 2005).

In general, BSM is a beneficial treatment for health anxiety with efficacy comparable to CBT (Furer & Walker, 2005; Visser & Bouman, 2001). CBT and BSM have comparable mean credibility ratings and some people actually prefer BSM (Taylor et al., 2005). Studies have shown that although CBT tends to be more efficacious than BSM post-treatment, both interventions have comparable outcomes at 12-month follow-
up (Taylor et al., 2005). BSM may also be especially useful for individuals with comorbid disorders that are aggravated by stress. More research is needed to determine if BSM is as efficacious as CBT and to distinguish the clinically important components that are common to both therapies.

The efficacy of treatments for health anxiety (e.g., psychoeducation, cognitive therapy, behavioural therapy, ERP, CBT, and BSM) has been compared in many studies (e.g., Avia et al., 1996; Bouman & Visser, 1998; Clark et al., 1998; Fava, Grandi, Rafanelli, Fabbri, & Cazzaro, 2000; Lidbeck, 1997; Speckens et al., 1995; Stern & Fernandez, 1991; Visser & Bouman, 2001; Warwick et al., 1996). In these studies, effect sizes of treatments were calculated based on participants’ scores on global measures of health anxiety, anxiety, and depression (e.g., WI, Beck Anxiety Inventory [BAI], Beck Depression Inventory [BDI]) and have been expressed as Cohen’s $d$ statistic (1998). A small effect size or $d$ is 0.20, a medium effect size is 0.50, and large effect size is 0.80 or higher (Cohen, 1988). Most of the treatments examined were 6 to 21 weeks in duration and had small sample sizes (6 – 79 participants). In these studies, more participants tended to drop out of the psychosocial treatment groups (2% - 13%) compared to the control groups (0%).

Psychosocial treatments (e.g., Avia et al., 1996; Bouman & Visser, 1998; Clark et al., 1998; Fava et al., 2000; Lidbeck, 1997; Sorensen et al., 2010; Speckens et al., 1995; Stern & Fernandez, 1991; Visser & Bouman, 2001; Warwick et al., 1996) appear to be
more efficacious than wait-list control with effect sizes of $d = 0.83 – 2.05$ for treatments and an average $d = 0.29$ for wait-list controls. CBT appears to be the superior treatment because of the greater acceptability, strength, breadth, and durability of the treatment effects ($d = 0.83 – 2.05$ and average $d = 1.74$ at follow-up; Clark et al., 1998; Speckens et al., 1995; Stern & Fernandez, 1991; Visser & Bouman, 2001; Warwick et al., 1996).

Psychoeducation alone (average $d = 1.05$) may be a sufficient treatment for individuals with mild health anxiety without depression (Avia et al., 1996; Bouman, 2002; Lidbeck, 1997). CBT may be the superior treatment for individuals with health anxiety and comorbid depression or generalized anxiety (average depression $d = 1.36$; average generalized anxiety $d = 1.90$; Clark et al., 1998; Speckens et al., 1995; Stern & Fernandez, 1991; Visser & Bouman, 2001; Warwick et al., 1996). Based on the results of the CBT studies above and more recent studies reviewed below (e.g., Barsky & Ahern, 2004; Bleichhardt et al., 2005; Bouman, 2002; Buwalda, Bouman, & Van Duijn, 2008; Martínez & Botella, 2005; Seivewright, Green, Salkovskis, Barrett, Nur, & Tyrer, 2008; Sorensen, Birket-Smith, Wattar, Buemann, & Salkovskis, 2010; Wattar et al., 2005), CBT was chosen as the focus of the current research as it appears to be more efficacious than other psychosocial treatments and acceptable to individuals with health anxiety.

Recent studies have examined individual CBT sessions (e.g., Barsky & Ahern, 2004; Seivewright et al., 2008; Sorensen et al., 2010), group CBT sessions (e.g., Bouman 2002; Martínez & Botella, 2005), combined individual and group sessions (e.g.,
Bleichhardt et al., 2005; Wattar et. al., 2005), and psychoeducational groups (e.g., Buwalda et al., 2008). Some studies provided participants with psychoeducational booklets and other media (e.g., Buwalda et al., 2008; Seivewright et al., 2008). Study designs included randomized controlled trials with wait-list control groups (e.g., Barsky & Ahern, 2004; Buwalda et al., 2008; Seivewright et al., 2008), comparison of CBT to another treatment (e.g., Sorensen et al., 2010), CBT for health anxiety and a comorbid disorder (e.g., Bleichhardt et al., 2005), or a single-group design (e.g., Bouman, 2002; Martínez & Botella, 2005; Wattar et. al., 2005). Most of these studies did not provide effect sizes and when possible, they were calculated using the *Effect Size Calculator* (Becker 1999) and presented below.

The latest individual CBT for health anxiety studies included many of the previously explained components (e.g., cognitive and behaviour therapy, ERP, BSM, psychoeducation) while some also included mindfulness training (a form of cognitive therapy; e.g., Sorensen et al., 2010; Wattar et. al., 2005) and assertiveness training (Bleichhardt et al., 2005). Sorensen and colleagues (2010) evaluated the relative efficacy of CBT (*n* = 20) and short-term psychodynamic psychotherapy (STPP; *n* = 20) compared to a wait-list control (*n* = 40). The CBT component involved eight individual sessions (45 minutes each) followed by eight group sessions (5-9 participants per group; 90 minutes each). STPP involved 16 weekly sessions (50 minutes each) focusing on the influence of the unconscious, the therapeutic relationship, interpersonal interactions, and themes in
participants’ functioning. The CBT effect size (health anxiety \(d = 1.42\); depression \(d = 0.85\)) was higher than that of STPP (health anxiety \(d = 0.19\); depression \(d = 0.08\)).

Seivewright and colleagues (2008) provided six, 1-hour sessions of CBT at a genitourinary medicine clinic (treatment \(n = 23\); wait-list \(n = 26\)): The treatment was beneficial (effect size unavailable). Bleichhardt and colleagues (2005) provided individual CBT, problem-focused group therapy, and assertiveness training to inpatients with health anxiety and comorbid somatization syndrome. Participants with health anxiety and somatization syndrome \((n = 27)\) were matched to a group of participants with somatization syndrome alone \((n = 27)\): The treatment effect size was higher for health anxiety \((d = 1.15)\) than somatization syndrome \((d = 0.31)\). Barsky and Ahern, (2004) provided CBT in six, 90-minute sessions over the course of 6 weeks (treatment \(n = 187\), control \(n = 191\)): There were medium effect sizes \((d = 0.60\) at 6 months and \(d = 0.60\) at 12 months).

The results of these studies demonstrate the efficacy of individual CBT for reducing health anxiety (Barsky & Ahern, 2004; Seivewright et al, 2008; Sorensen et al., 2010), somatoform symptoms (Bleichhardt et al., 2005), bodily complaints (Bleichhardt et al., 2005), depression (Seivewright et al, 2008; Sorensen et al., 2010), general anxiety (Seivewright et al, 2008; Sorensen et al., 2010), and general psychopathology (Bleichhardt et al., 2005). Results also included improved social function (Barsky & Ahern, 2004; Seivewright et al, 2008), reduced impairment in activities of daily living.
(Barsky & Ahern, 2004), and reduced health service consultations (Seivewright et al., 2008). These results were often maintained at follow-up (e.g., Barsky & Ahern, 2004, at 6- and 12-month follow-up; Bleichhardt et al., 2005 at 12-month follow-up; Sorensen et al., 2010, at 6- and 12-month follow-up).

Several recent health anxiety studies delivered CBT in a group format. Buwalda and colleagues (2008) provided a 6-week psychoeducational course (six, 2-hour sessions) about hypochondriacal metacognition (treatment n = 20; wait-list n =15): The effect sizes were large (hypochondriacal complaints $d = 0.90$; depression $d = 0.90$). Wattar and colleagues (2005) examined the effectiveness of group (10 - 15 sessions) and individual CBT (6 - 8 sessions) in a clinical setting (n = 16): The treatment was beneficial (effect size unavailable). Martínez and Botella (2005) provided 10 sessions of group CBT (n = 12): The treatment effects were large (health anxiety $d = 1.00$; depression $d = 1.95$).

Bouman (2002) administered six, 2-hour sessions of group cognitive-educational therapy (n = 21): The effect sizes were large (health anxiety $d = 1.05$; depression $d = 0.89$).

These group treatment studies showed substantial and clinically significant improvements in symptoms of health anxiety (Bouman, 2002; Buwalda et al., 2008; Martínez & Botella, 2005; Wattar et al., 2005), depression (Buwalda et al., 2008; Wattar et al., 2005), and general anxiety (Buwalda et al., 2008; Wattar et al., 2005). Sometimes there was not a complete reduction in symptoms compared to healthy control groups (e.g., Martínez & Botella, 2005). The improvement in symptoms were often maintained
at follow-up (e.g., Bouman, 2002, at 4-week and 6-month follow-up; Martínez & Botella, 2005, at 2- and 6-month follow-up; Wattar et al., 2008, at 6- and 12-month follow-up).

Based on the review above and prior research, there is empirical evidence for the efficacy of CBT treatments for health anxiety and there is evidence that CBT treatments are more efficacious than alternative treatments. CBT is now an established treatment for health anxiety in the psychological community (Furer et al., 2001). More, better designed (i.e., designs that include larger sample sizes and control groups), and empirical studies and replications will add further support for the use of CBT as a clinically sanctioned treatment for health anxiety.

Treatment for health anxiety may be more effective if it is provided in a time and cost-effective manner, and if it is widely available (van Boeijen et al., 2005). Health care centers have limited capacities, funds, therapists, and treatment hours; therefore, many people suffering from anxiety disorders are unable to receive treatment (van Boeijen et al., 2005). Although CBT has been effective in the treatment of health anxiety and other disorders, therapists must undergo intensive training to learn CBT, and the actual treatment is time-consuming (e.g., 10 - 20 sessions of 50 minutes each; van Boeijen et al., 2005). Unfortunately, spontaneous remission is rare for anxiety disorders (van Boeijen et al., 2005) so people with health anxiety are in great need of treatment despite the time and financial constraints of health care providers.
CBT has been modified to make the treatment more efficient, inexpensive, and expedient. *Minimal contact therapies* (MCs) are effective treatments that reduce the need for therapy hours with health providers (Mead et al., 2005; Newman, Erickson, Przeworski, & Dzus, 2003). *Guided self-help* is an MC where a therapist introduces bibliotherapy materials and the effective use of those materials (Mead et al., 2005; Newman et al., 2003). Clinical psychologists routinely provide or suggest self-help materials to their clients and self-help exists for a multitude of personal, social, and behavioural problems including DSM-IV-TR mental disorders (Norcross, 2000). Individuals can utilize materials alone, with the guidance of trained professionals, or the materials can be deliberately incorporated into psychotherapy interventions (Campbell & Smith, 2003). For example, psychoeducation, a key component of CBT treatments for health anxiety, can be addressed in part using self-help books or similar materials (Barsky et al., 2004; Bleichhardt et al., 2005; Bouman, 2002; Wattar et al., 2005).

The research literature supports the use of guided self-help in the treatment of several anxiety disorders (Gould & Clum, 1993; Marrs, 1995). Self-help treatments have medium to large effect sizes for the reduction of fear and anxiety (average $d = 0.74$) and the effect sizes may be maintained post-treatment and at follow-up (Gould & Clum, 1993; Marrs, 1995). Despite the various methods used, self-help and MCs appear to be valid and beneficial treatments for anxiety disorders such as specific phobia, OCD, generalized anxiety disorder (GAD), panic disorder, and mixed anxiety states (Newman.
et al., 2003). Self-help treatments were comparable to therapist-administered treatments and more therapist contact had a positive effect on treatment outcomes (Newman et al., 2003). Greater therapist guidance and explanation of materials lead to the greater impact of treatment with self-help manuals (van Boeijen et al., 2005). In anxiety studies the effect sizes ranged from small to large ($d = 0.38 - 1.74$) primarily due to differences in therapist contact (van Boeijen et al., 2005). The treatment gains can be maintained at 12-month and 3-year follow-up (van Boeijen et al., 2005). Guided self-help anxiety studies have reported small to large effect sizes ($d = 0.10 - 1.52$) with larger effect sizes in studies that used media campaigns instead of recruitment from mental health professionals (Coull & Morris, 2011). Guided self-help may be used as a first line treatment for anxiety problems. However, there have been no randomized controlled trials of existing self-help treatments for health anxiety.

Self-help has the potential to reduce the financial and time expenditures of mental health care providers whose services are in high demand. If self-help resources are incorporated into more clinical health settings this may reduce treatment costs and the time health care providers spend explaining concepts (Campbell & Smith, 2003; van Boeijen et al., 2005). Self-help would also allow for different learning modalities and treatment can continue outside of therapy sessions. Self-help can also increase the effectiveness of the clinically sanctioned treatments health care professionals already provide. The fact that there are numerous commercially available self-help materials on
the market raises ethical concerns about their usefulness, appropriateness for particular clients, and the effect of reduced therapist contact on treatment outcomes (Newman et al., 2003). There is a need for research to investigate the appropriateness of self-help approaches for clients and treatment efficacy in light of their minimal contact format. A randomized controlled trial of a brief, inexpensive, and easy to administer treatment for health anxiety, such as guided self-help CBT, would support the use of this efficient treatment to help individuals with health anxiety.
1.2. Statement of purpose

The purpose of this feasibility trial was to determine the efficacy of a CBT self-help book for health anxiety (It's Not All in Your Head by Asmundson & Taylor, 2005) when compared to a wait-list control group. The findings of this study will be used in a future, large-scale randomized controlled trial of the self-help book. It was hypothesized that the self-help book treatment (SHB) would be a more efficacious treatment than wait-list control (WLC). It was expected that, relative to WLC, SHB would be more efficacious in reducing health anxiety as evidenced by reductions in scores on measures of health anxiety and related constructs.
2. METHOD

2.1. Participants

Previous randomized controlled trials for health anxiety were consulted in order to determine an adequate sample size for this feasibility trial. Based on the samples of those studies (e.g., Martínez & Botella, 2005, 12 participants; Bouman, 2002, 21 participants; Bleichhardt, Timmer, & Rief 2005, 27 participants; and Wattar et al., 2005, 16 participants), a sample of 20 participants was chosen. A sample of 20 could produce a large effect size ($d = 2.00$; power = 1.00, high power) based on the study’s primary outcome measure, the Short Health Anxiety Inventory (SHAI; Salkovskis, Rimes, Warwick, & Clark, 2002). Ethical clearance was sought and received from the University of Regina Research Ethics Board (see Appendix E). Twenty participants meeting the inclusion criteria described below were recruited from the city of Regina, Saskatchewan, Canada.

The study was advertised on the Internet using fee-based and free online classified websites, free classified newspapers, and posters distributed across the University of Regina campus, local physicians’ offices, gyms, and community bulletin boards (see poster in Appendix E). Initially, a research assistant or the Head Researcher prescreened participants by telephone from the Anxiety and Illness Behaviours Laboratory (AIBL) at the University of Regina and informed consent was obtained prior to asking any questions. After using this method with some participants the screening was changed to
an Internet format because it was more efficient and convenient for participants and research staff. This method also allowed participants to read the consent form at their leisure prior to being screened (see Appendix E). Internet screening was done via an Internet link on the AIBL website that led participants to a secure website, SurveyMonkey.com, where they could read the consent form and complete the screening questionnaire. The WI was the eligibility screening measure. All participants who met the inclusion criteria below were scheduled for an in-person or telephone appointment with the Head Researcher or research assistants at AIBL to obtain informed consent.

2.2. Measures

2.2.1. Demographics variables

Demographic information was collected regarding the age, ethnicity, gender, marital status, education level, employment status, and medication usage. Participants were asked about mental disorder diagnoses and history of psychological treatment during the initial assessment interview.

2.2.2. Initial assessment

The WI (Pilowsky, 1967) is a screen for the core components of health anxiety (Taylor & Asmundson, 2004). This 14-item questionnaire is scored categorically (yes vs. no; Pilowsky, 2000). A sample question is, “Are you afraid of illness?” (Pilowsky, 2000, p. 605). The maximum score is 14 (1 point is given for each yes response). A cut-off score of 8 was used and individuals with scores greater than or equal to 8 were
considered to have elevated health anxiety. The WI has good internal consistency ($r = .85$; Speckens, 2001). This measure was used for screening individuals for participation in the study.

The Health Anxiety Interview (HAI; Taylor & Asmundson, 2004) is a 30-minute interview that provided an assessment for health anxiety, hypochondriasis, disease phobia, delusional disorder (somatic type), and details about the development of symptoms. The HAI provided a more detailed assessment of health anxiety disorders than the Structured Clinical Interview for DSM-IV (SCID-IV; First, Spitzer, Gibbon Miriam, & Williams, 2002). Psychometric properties of the HAI are unknown. In addition, the following questions recommended by Taylor and Asmundson were added in order to fully understand the history and development of symptoms:

- Is there anything that you avoid in order to protect your health?
- When you feel anxious about your health, what do you do?
- Follow-up questions:
  - Do you seek reassurance from others?
  - Do you check your body for signs of illness, such as by checking your pulse?
  - Do you check medical texts or the Internet for information about health and disease?
  - Do you carry anything with you in order to feel safe about your health?
- Follow-up questions:
• Do you carry things to use in the event of a medical emergency, such as a cell phone, a Medic Alert bracelet, or phone numbers and addresses of local hospitals? (p. 98).

The Charlson Comorbidity Questionnaire (CCQ; Katz, Chang, Sangha, Fossel, & Bates, 1996) is an 11-item interview measure of comorbid medical conditions that was used to provide an assessment of participants’ current medical health status. The CCQ is based on the widely validated and popular Charlson Comorbidity Index (CCI; Charlson, Pompei, Ales, & MacKenzie, 1987), a medical chart review-based comorbidity instrument. The CCI was developed as a predictor of 1-year mortality. A sample item from the CCQ is, “Have you had a stroke, cerebrovascular accident, blood clot or bleeding in the brain, or transient ischemic attack (TIA)?” (p. 83). A mean comorbidity score is calculated based on the scores on each item. Test-retest reliability is good ($r = .73$), construct validity (correlation with the CCI) is adequate ($r = .63$). The following question was added to assess medication usage: “What if any medications are you currently taking?”

The Structured Clinical Interview for DSM-IV Axis I Disorders: Clinician Version Screen Patient Questionnaire (SSPQ; First, Gibbon, Williams, & Spitzer, 1999) is a 76-item, computerized, self-report, diagnostic screening instrument constructed in an adaptive testing format. It is a questionnaire based on the clinical version of the Structured Clinical Interview for DSM-IV (SCID) for Axis I Disorders (First, Spitzer,
Gibbon, & Williams, 1996). The SSPQ was used to screen participants for the exclusion criteria of the study, but the instrument was not designed to provide diagnoses. The SSPQ gathers information about participants’ history and symptoms related to six of the standard Axis I DSM-IV categories: Mood Disorders, Anxiety Disorders, Substance Use Disorders, Somatoform Disorders, Eating Disorders, and Schizophrenia and Other Psychotic Disorders. Test-retest reliability is adequate (r = .61 for current diagnosis and r = .68 for lifetime diagnosis), reliability is good (based on 84% diagnostic agreement), and validity is good based on Cohen’s Kappa value (κ = .77; Cohen, 1960).

2.2.3. Primary outcome measures

The SHAI (Salkovskis et al., 2002) is an 18-item self-report measure of health anxiety ranging from mild anxiety to hypochondriasis. Sample items include “As a rule I am not afraid that I have a serious illness”, and “If I hear about an illness I often think I have it myself” (p. 852). The items are scored from 0 - 3. A total score is calculated by summing the item scores and can range from 0 - 54 with higher scores indicating more severe health anxiety symptoms. Internal consistency is good (α = .89) and test-retest reliability is good (r = .76).

The Multidimensional Inventory of Hypochondriacal Traits (MIHT) was created by Longley, Watson, and Noyes (2005) and it is a new 31-item measure created to address the shortcomings of other health anxiety and hypochondriasis measures. It assesses health anxiety on four theoretically-derived and structurally-analyzed
dimensional scales: (a) affective subscale-excessive worry about health, (b) cognitive subscale-alienation from others due to their disbelief that one is ill, (c) behavioural subscale-dependency on reassurance seeking from others to reduce illness fears, and (d) perceptual subscale-somatic absorption with body sensations. Sample items include “I wish others took my health complaints more seriously” and “I worry a lot about my health” (p. 6). The scale uses a five-point response format. It has good internal consistency ($\alpha = .80 - .89$ across various samples), good convergent validity (test-retest $r = .75 - .78$), and good external validity ($r = .86$).

2.2.4. Secondary outcome measures

The Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1997) is a 20-item measure of depression symptoms in community samples (Radloff & Locke, 2000). Sample items include, “I feel depressed”, and “I thought my life had been a failure” (p. 523). The items are rated on a scale of 0 - 4 based on symptoms over the past week. Total severity scores on the CES-D range from 0 - 60 with higher scores indicating more severe depression symptoms. Scores of 16 or greater may signify the presence of depressive illness. Internal consistency is good ($\alpha = .85$ in community samples), alternate-forms reliability over 2 to 8 weeks is moderate ($r = .51 - .67$), and convergent validity ranges from moderate to excellent ($r = .49 - .89$). The computerized version of the CES-D has good internal consistency ($\alpha = .93$; Smits, Cuijpers, & van Straten, 2011).
The Beck Anxiety Inventory (BAI; Beck et al., 1988) is a 21-item questionnaire that mainly assesses the somatic symptoms of anxiety (e.g., nervousness, inability to relax, dizziness, light-headedness, and heart pounding etc.; Beck, Epstein, Brown & Steer, 2000). Items are rated on a 4-point Likert scale ranging from 0 (not at all) to 3 (I could barely stand it) based on how much the respondent has been bothered by symptoms in the past week. Total scores on the BAI range from 0 - 63. Cut off scores are as follows: normal or no anxiety (0 - 9); mild to moderate anxiety (10 - 18); moderate to severe anxiety (19 - 29); and severe anxiety (30 - 63). The BAI has excellent consistency reliability (α = .90 - .94), moderate to excellent test-retest reliability over 1 week (r = .67-.93), and good convergent validity (r > .75). The BAI was used by several participants in the study but the use of the measure was discontinued due to study costs.

The Depression Anxiety Stress Scales 21 (DASS21; Lovibond & Lovibond, 1995) is a 21-item self-report measure of depression, anxiety, and stress factors that has been supported by confirmatory factor analysis (CFA; Crawford & Henry, 2003). It is a shortened version of the original 42-item DASS (Lovibond & Lovibond, 1995). A sample item is “I found it difficult to relax”. Items are scored on a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). An anxiety score is calculated by summing the anxiety subscale items and doubling the sum. The reliability of the DASS anxiety scale is excellent (α = .90; Crawford & Henry, 2003). Cut off scores are as follows: normal (0 - 7), mild (8 - 9), moderate (10 - 14),
severe (15 - 19), and extremely severe (20 or more). The DASS is in the public domain and the anxiety subscale has a strong correlation with the BAI ($r = .81$) which made it a good replacement for the BAI in this study.

The Short Form 36 Health Survey (SF-36; Ware et al., 1993) is a 36-item, self-report measure of perceived health status. An example question is, “How does your health now limit you in lifting or carrying groceries” (Ware, 2000, p. 128). It provides insight into the perceived behavioural functioning (limitations, bodily pain, physical activities, social activities, etc.) and psychological well being of clients (feeling stated, general mental health, pain, fatigue, etc). The SF-36 contains eight subscales including, Physical Functioning, Physical Role Functioning, Bodily Pain, General Health, Vitality (energy vs. fatigue), Social Functioning, Emotional Role Functioning, and Mental Health. The items are answered either yes or no or on Likert scales. Scores on each subscale range from 0 - 100 with higher scores indicating better health status. The subscales have moderate to excellent internal validity ($\alpha = .62 - .94$) and moderate to excellent two-week test-retest reliability ($r = .60 - .81$). A Physical Component Summary (PCS) score and a Mental Component Summary (MCS) score can be calculated from the individual subscales. A low PCS suggests limitations in self-care, physical, social, and role activities, pain, fatigue, and poor health. A low score on the MCS suggests psychological distress, limitations in social and role activities, emotional problems, and poor general
health. The Internet-based version of this test was used and data was collected and scored via a secure, password protected website, AmIHealthy.com.

The Client Satisfaction Questionnaire-8 (CSQ-8; Larsen et al., 1979) was used to assess participants’ satisfaction with the treatment conditions (Attkisson et al., 2000). The CSQ-8 is an 8-item measure of satisfaction with the quality, kind, and outcome of health or mental health services. Items are rated on a 4-point scale. An example question is, “Have the services helped you to deal more effectively with your problems” (p. 186). The measure also contains three open-ended questions about what participants liked, disliked, or would change about the service provided. Total scores on the CSQ-8 range from 8 - 32 with higher scores indicating greater satisfaction. The CSQ-8 has good to excellent internal consistency ($\alpha = .83-.93$) and moderate to good convergent validity ($r = .60 -.80$).

The Helping Alliance Questionnaire-II (HAq-II; Alexander & Luborsky, 1996) is a 19-item self-report questionnaire that was used to assess whether participants found the treatment, their facilitator, or the Head Researcher to be helpful. The measure consists of 19-items and a sample item is, “I feel the therapist understands me” (Luborsky et al., 1996, p. 271). Each item is rated on a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree; Luborsky et al., 1996). A total score is calculated by summing the values of each item. Higher scores indicate a better therapeutic alliance and participants found the treatment and treatment providers to be more helpful. Scores below
86 indicate a poor alliance. The HAq-II has excellent internal consistency ($\alpha = .90 - .93$) and test-retest reliability ($r = .78$).

Participants were asked the following open-ended questions to obtain their feedback about the feasibility trial:

1. What did you like most about the program?
2. What did you like least about the program?
3. What did you find easy about the program?
4. What did you find difficult about the program?
5. What would you change about the program?

2.3. Design

The trial used a randomized controlled clinical design. The design conformed to the recommendations of the Consolidated Standards of Reporting Trials (CONSORT; Moher, D., Schulz, K. F., & Altman, D., 2001). The CONSORT guidelines are standards used in randomized controlled clinical trials (see Figure 2). Treatment was the between-subjects factor and had two levels: (a) SHB and (b) WLC. Time was the within-subjects factor with four main levels: (a) pre-treatment--Time 1 (T1); (b) middle of treatment--Time 2 (T2); (c) end of treatment--Time 3 (T3); and (d) 4-month follow-up--Time 4 (T4). There were four dependent variables of interest. The primary variable of interest was health anxiety symptoms assessed using primary outcome measures. Other variables of interest
Enrollment

Telephone or Online Screening (WI)
Information Package
Informed Consent
Assessed for eligibility

Randomization

Allocated to Self-Help Book Group (SHB)
Duration = 8 weeks
-TI at 0 weeks (HAI, CCQ, SSPQ, MIHT, SHAI, BAI or DASS, CES-D, SF-36)
-T2 at 3 weeks (MIHT, SHAI, BAI or DASS, CES-D, SF-36)
-T3 at 8 weeks (MIHT, SHAI, BAI or DASS, CES-D, SF-36, CSQ-8, HAq-II)
Debriefing

Allocated to Wait-List Control Group (WLC)
Duration = 8 weeks
-TI at 0 weeks (HAI, CCQ, SSPQ, MIHT, SHAI, BAI or DASS, CES-D, SF-36)
-T2 at 3 weeks (MIHT, SHAI, BAI or DASS, CES-D, SF-36)
-T3 at 8 weeks (MIHT, SHAI, BAI or DASS, CES-D, SF-36, CSQ-8, HAq-II)
Debriefing

Follow-Up

-T4 at 4 months (MIHT, SHAI, BAI or DASS, CES-D, SF-36)

Analysis

ITT analysis with t-tests

ITT analysis with t-tests

Exclusion: severe psychotic disorders, schizophrenia & related disorders, primary alcohol or substance disorders, primary eating disorder, previous CBT treatment for health anxiety or hypochondriasis

Figure 2. Design of study

Note. T=Time; WI = Whiteley Index; HAI= Health Anxiety Interview; CCQ= Charlson Comorbidity Index, SSPQ= Structured Clinical Interview for DSM-IV Axis I Disorders Screen Patient Questionnaire, MIHT= Multidimensional Inventory of Hypochondriacal Traits; SHAI = Short Health Anxiety Inventory, CES-D= Centre for Epidemiologic Studies Depression Scale; BAI= Beck Anxiety Inventory; DASS= Depression, Anxiety Stress scale; SF-36= Short Form 36 Health Survey; CSQ-8= Client Satisfaction Questionnaire 8; HAq-II= The Helping Alliance Questionnaire-II; and ITT = Intention to treat analysis.
included depression symptoms, general anxiety symptoms, and general health appraisals assessed using secondary outcome measures.

2.3.1. Setting and apparatus

The setting of the experiment was the AIBL at the University of Regina, Regina, Saskatchewan, Canada. Online versions of the assessment questions were completed on computers at AIBL or at participants’ homes. SHB participants received a copy of It’s Not All in Your Head by Asmundson and Taylor (2005). Although other self-help books are available (e.g., An Introduction to Coping With Health Anxiety by Young, Charles, & Hogan, 2007; Feeling Better: A 6-Week Mind-Body Program to Ease Your Chronic Symptoms by Barsky & Ahern, 2007), there were no other books available at the time of this study. This book provides a comprehensive and easily accessible guide to CBT for health anxiety and is accompanied by a therapist manual. The therapist manual, Treating Health Anxiety by Taylor and Asmundson (2004), was used in addition to the workbook to provide the SHB treatment. Gordon Asmundson, Ph.D. is an author of both books and was available for guidance and supervision of the treatments. Lastly, in comparison with the few other self-help books on the market pertaining to health anxiety, the two manuals are more recent publications.

Clinical psychology graduate students served as the facilitators and they were blind to the trial hypotheses. The facilitators were required to read It's Not All in Your Head (Asmundson & Taylor; 2005) and the clinician manual Treating Health Anxiety
and they were provided with session outlines and presentation materials. Facilitators received clinical supervision by Ph.D. level supervisors.

2.3.2. Independent variables

The self-help manual is based on a cognitive-behavioural approach to the treatment of health anxiety (Asmundson & Taylor, 2005). It includes “psychoeducation, stress management, changing ways of thinking about bodily sensations, letting go of unhelpful behaviours, situational and interoceptive exposure, and guidance on active living” (p. 167; see Appendix A for a list of the book chapters and sections).

Part 1 of the self-help book introduced SHB participants to the concept of health anxiety. After reading this part of the book, participants were expected to understand the excessiveness of their health anxiety. Part II of the manual introduced participants to effective cognitive-behavioural techniques for managing their health anxiety. Part III of the manual detailed ways that participants could protect themselves from relapse and information to help them maintain treatment gains. The SHB treatment was eight weeks in duration. SHB participants were given a copy of the self-help book, a treatment outline describing what topics and chapters would be covered during each week of the study (see Appendix B), and instructions about when to complete the assessment packages. Initially, participants were given the entire book. Midway through the study participants were
mailed Part 1, Part 2, and Part 3 of the book separately in an effort to ensure treatment adherence and participant retention.

Participants in the SHB group were also provided with eight, weekly check-in sessions where a research facilitator or the Head Researcher checked the participants’ progress, motivated them, asked a set of standard questions, and answered any questions they had about the treatment. Initially, these check-in sessions were conducted in the AIBL with a research facilitator. However, participants found this inconvenient therefore, the check-in sessions were changed to a telephone format. Telephone check-ins were conducted by the Head Researcher.

The format of the in-person and telephone check-ins were similar in content; however, the in-person sessions tended to be longer and included practicing ERP and relaxation exercises. During each 10 - 30 minute session, participants rated their current level of anxiety on a 0 - 10 scale and stated how many chapters they read, homework from the last session was reviewed, and homework for the next session was discussed (Furer et al., 2001).

The WLC condition duration was also 8 weeks. WLC group participants were given a treatment outline detailing when to complete the assessment packages. After the wait-list period, participants were offered the same treatment as the SHB group.

2.4. Procedures

2.4.1. Random assignment
Before any contact was made with potential participants, a list of 100 random numbers in randomized blocks (Lipchick, Nicholson, & Pensien, 2005) was generated using *The Research Randomizer* (Urbaniak, & Plous, 2007). Research facilitators were available for a limited time to the SHB group therefore a randomization allocation ratio of 2:1 was chosen so that more participants would be assigned to the SHB group early in the study. Later in the study the randomization allocation was changed to a 1:1 ratio. Participants were assigned to the treatment condition symbolized by the next consecutive number in each block. After the eligibility assessment, participants were randomly assigned to the SHB group or WLC group according to this method.

2.4.2. Inclusion criteria

Participants were required to be over 18 years of age. Participants were prescreened by telephone using the WI and individuals with scores greater than or equal to 8 were eligible to participate. Eligible participants were allowed to be taking anxiety or depression medication because pharmacological treatment often reduces anxiety and depression to a manageable level that would facilitate participants’ ability to adhere to treatment (Furer & Walker, 2005). All eligible participants were asked to obtain a thorough medical examination after the prescreening to identify health problems that may have an impact on treatment. Participants’ family doctors were contacted to obtain consent for their clients’ participation in the study (see letter in Appendix E). However, three participants requested that their family doctor’s were not contacted and these
requests were honored. All randomized participants who completed T2 questionnaires, including participants who dropped out after T2, were included in intention to treat analysis (ITT; Wattar et al., 2005).

2.4.3. Exclusion criteria

Individuals were excluded from the study if they had severe psychotic disorders, schizophrenia and related disorders, primary alcohol or substance use disorders, or primary eating disorder according to the SSPQ, or if they had previously received CBT for health anxiety or hypochondriasis. Individuals with medical problems were not automatically excluded because they may have still experienced health anxiety that was excessive.

2.4.4. Treatment

The treatment and wait-list periods were both eight weeks. Health anxiety psychoeducation studies by Bouman (2002), Barskey & Ahern (2004), Lidbeck (1997) and Lidbeck (1997) had an average duration of seven weekly sessions and the treatments provided were similar to those of the current study. Eight weeks also provided enough time for SHB participants to read the 10 chapters in the book.

All participants were given a username and password in order to access online assessment packages at T1 - T4 on two secure, password protected websites: SurveyMonkey.com and AmIHealthy.com for the SF-36. Approximately seven days before packages were due participants were reminded to complete them. After random
assignment, participants from the SHB group received instructions and the self-help book. They also received four weekly check-in sessions. WLC participants received instructions detailing when to complete questionnaires during and after the wait-list period. At mid-treatment, participants completed Assessment Package 2 online. SHB participants then received an additional four weekly check-ins. At the end of treatment, all participants either returned to AIBL for debriefing and the completion of Assessment Package 3 online or debriefing was conducted by telephone. WLC participants began the SHB treatment after completion of Assessment Package 3. Four months after completing the program, SHB participants were contacted and asked to complete follow-up questionnaires online.

Treatment adherence was monitored during check-in sessions, brief telephone conversations (10 - 15 minutes), or email exchanges with facilitators or the Head Researcher if they encountered questions or difficulties during treatment. If participants were late in completing the assessment packages, facilitators or the Head Researcher contacted them to inquire about their progress.

2.4.5. Debriefing

At the end of treatment, participants were contacted and scheduled for a debriefing session at AIBL or via telephone with the Head Researcher. SHB participants were told that they had received a treatment that was expected to help them with their health anxiety. As described above, CBT and self-help are supported in the research
literature; therefore, we had reason to believe they received helpful treatment for their symptoms. The purpose of this particular experiment was to compare a self-help treatment for health anxiety and a wait-list control condition. The SHB treatment was expected to be helpful. WLC participants were informed that they were placed on a wait-list group in order to compare the treatment with a no-treatment control condition. They were given the option to begin the SHB treatment as soon as possible. All participants were given the opportunity to discuss the treatment, ask questions, and request information about the results of the study once it is completed.

2.4.6. Data analysis

Research data was downloaded from SurveyMonkey.com and AmIHealthy.com and then entered into SPSS Release 16.0. ITT analysis was carried out for all participants who were randomly assigned and remained in the study until T2. This included data from 4 participants who dropped out of the SHB group. Their data was included by employing the last observation carried forward procedure (LOCF) whereby the T2 scores of those participants were substituted for their T3 scores (Hollis & Campbell, 1999). This precluded any comparisons between T2 and T3 scores. Chi-square ($\chi^2$) analyses were conducted to identify group differences based on demographics. The sample size for the study was small; therefore, $t$ tests were used to analyze the data. Paired samples $t$ tests were used to identify significant changes in participant scores pre- and post-treatment.
Independent samples *t* tests were used to analyze differences between the SHB and WLC groups. Only *p* values less than .05 were considered statistically significant.

Power analyses were conducted using the *Power and Sample Size Calculation* program (Dupont & Plummer, 2009) to determine if there was sufficient power to justify conclusions based on the small sample; .80 is commonly used as the minimum acceptable level of power (Cohen, 1988). All power analyses were conducted for *p* = .05, 2-tailed tests of significance. Effect size (Cohen’s *d*) was also calculated for each measure using the *Effect Size Calculator* (Becker, 1999); effect sizes were rated as *small* (*d* = 0.20), *medium* (*d* = 0.50), and *large* (*d* = 0.80; Cohen 1988). A clinically significant treatment is one that brings an individual from the dysfunctional population (i.e., health anxiety population) into the functional population (Jacobson & Truax, 1991). Results were assessed for clinical significance and means that were brought within two standard deviations (*M* ± [2 x *SD]*) of the healthy normative sample mean were considered to be clinically significant (Jacobson & Truax, 1991). Open-ended questions were analyzed to identify common themes using deductive content analysis (Elo & Kyngäs, 2007).
3. RESULTS

3.1. Quantitative data analyses

3.1.1. Flow of participants through the study

Participants completed the WI screening test by telephone or online ($N = 48; M = 10.69, SD = 2.39$; see Figure 3). A small number of screened participants did not score 8 or higher ($n = 7; M = 6.14, SD = 1.46$) and were not eligible for the study. Of the eligible participants ($n = 41; M = 12.14, SD = 1.10$), only a portion completed the T1 assessment in-person or by telephone ($n = 19$). All participants who completed the T1 assessment met the inclusion criteria and 14 of these participants agreed to continue with the study. Participants were randomly assigned to the SHB group ($n = 10$) or the WLC group ($n = 4$). No participants completed the 4-month follow-up questionnaires. ITT analysis was conducted. Four participants dropped out of the SHB group and no participants dropped out of the WLC group. This means the dropout rates were 40% for the SHB group and 0% for the WLC group.

3.1.2. Demographics

There were 10 participants treated in the SHB group (7 females and 3 males) and there were 4 participants in the WLC group (3 females and 1 male; see Table 2). Participant ages ranged from 20 – 57 years, most participants in the study were
Figure 3. Flow of participants through study

Note. WI = Whiteley Index; SBH = self-help book group; WLC = wait-list control group, and ITT = Intention-to-treat analysis.
Table 2

### Demographic statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>SHB (n = 10)</th>
<th></th>
<th>WLC (n = 4)</th>
<th></th>
<th>Total (n = 14)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td></td>
<td>Frequency (%)</td>
<td></td>
<td>Frequency (%)</td>
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<tr>
<td>Mean age (SD)</td>
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<td>33.50 (15.84)</td>
<td></td>
<td>32.07 (9.08)</td>
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<td>Range</td>
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<td>24 - 57</td>
<td></td>
<td>20 - 57</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
<td>3 (30%)</td>
<td></td>
<td>1 (25%)</td>
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<td>4 (29%)</td>
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<tr>
<td>Female</td>
<td>7 (70%)</td>
<td></td>
<td>3 (75%)</td>
<td></td>
<td>10 (71%)</td>
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<td>Marital status</td>
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<tr>
<td>Single</td>
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<td>2 (50%)</td>
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<td>4 (29%)</td>
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<td>Married</td>
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<td>2 (50%)</td>
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<td>Ethnicity</td>
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<td>Caucasian</td>
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<td>Hispanic</td>
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<td>Education</td>
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<tr>
<td>Graduated high school or high school equivalent</td>
<td>3 (30%)</td>
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<td>0 (0%)</td>
<td></td>
<td>3 (21%)</td>
<td></td>
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<tr>
<td>Partial college education</td>
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<td>3 (21%)</td>
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<tr>
<td>Graduated 2-yr college program</td>
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<td>0 (0%)</td>
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<td>1 (7%)</td>
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<tr>
<td>Graduated 4-yr college program</td>
<td>3 (30%)</td>
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<td>1 (25%)</td>
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<td>4 (29%)</td>
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</tr>
<tr>
<td>Partial graduate/professional school</td>
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<td></td>
<td>2 (50%)</td>
<td></td>
<td>2 (14%)</td>
<td></td>
</tr>
<tr>
<td>Completed graduate or professional school</td>
<td>1 (10%)</td>
<td></td>
<td>0 (0%)</td>
<td></td>
<td>1 (7%)</td>
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<td>Employment status</td>
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<td>Student</td>
<td>0 (0%)</td>
<td></td>
<td>1 (25%)</td>
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<td>1 (7%)</td>
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<tr>
<td>Student, full-time employed</td>
<td>0 (0%)</td>
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<td>1 (25%)</td>
<td></td>
<td>1 (7%)</td>
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<tr>
<td>Student, part-time employed</td>
<td>2 (20%)</td>
<td></td>
<td>1 (25%)</td>
<td></td>
<td>3 (21%)</td>
<td></td>
</tr>
<tr>
<td>Part-time employed</td>
<td>1 (10%)</td>
<td></td>
<td>0 (0%)</td>
<td></td>
<td>1 (7%)</td>
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</tr>
<tr>
<td>Full-time employed</td>
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<td></td>
<td>1 (25%)</td>
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<td>7 (50%)</td>
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<tr>
<td>Full-time homemaker</td>
<td>1 (10%)</td>
<td></td>
<td>0 (0%)</td>
<td></td>
<td>1 (7%)</td>
<td></td>
</tr>
<tr>
<td>Psychotropic medication usage</td>
<td>4 (40%)</td>
<td></td>
<td>1 (25%)</td>
<td></td>
<td>5 (36%)</td>
<td></td>
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</tbody>
</table>

*Note. SHB = self-help group; WLC = wait-list group*
married (71%) and almost all participants were Caucasian (93%). All participants had completed high school and most had some post-secondary education (79%). The control group had an overrepresentation of individuals who were unmarried (50%), students (75%), having more than a high school education (100%), and not taking psychotropic medication (25%). Analyses (χ²) failed to show statistically significant group differences; however, the assumptions of χ² were violated (because of the small sample size) making the analyses invalid.

3.1.3. SHB results and within-group comparisons

ITT analyses and results for the SHB and WLC groups are reported below. Analyses were also conducted for participants who completed the entire study, excluding those who dropped out. Those results were very similar to the ITT analyses and they are reported in Appendix C.

SHB participants experienced significant reductions in health anxiety symptoms based on their SHAI and MIHT primary outcome measure scores (see Table 3). SHB scores on the SHAI were compared to the healthy normative mean reported in the Salkovskis et al., (2002) validation study (Table 3). The SHAI T1 scores were above average but they were reduced by T3; a statistically significant improvement (t = 3.68, df = 9, p = .003; power = .91 [high power]; see Table 3). A large effect size was detected (d = 1.75). These results are clinically significant because the SHAI scores were outside the healthy normative range at T1 (range M = 0.20 - 24.60) but they were within that range.
Table 3

Comparison of SHB pre- and post-treatment means using paired samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
<th>Norm sample</th>
<th>Paired correlation</th>
<th>t</th>
<th>df</th>
<th>Sig.(1-tailed) p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td>33.50 (6.10)</td>
<td>21.70 (7.33)</td>
<td>12.20 (6.20)</td>
<td>-.13</td>
<td>3.68</td>
<td>9</td>
<td>.003**</td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>22.80 (3.16)</td>
<td>21.40 (3.20)</td>
<td>15.12 (5.46)</td>
<td>.40</td>
<td>1.28</td>
<td>9</td>
<td>.117</td>
</tr>
<tr>
<td>Behaviour</td>
<td>30.60 (3.17)</td>
<td>25.80 (4.85)</td>
<td>25.51 (5.52)</td>
<td>.63</td>
<td>4.03</td>
<td>9</td>
<td>.002**</td>
</tr>
<tr>
<td>Perception</td>
<td>35.10 (3.07)</td>
<td>28.30 (6.04)</td>
<td>27.60 (6.20)</td>
<td>.53</td>
<td>4.19</td>
<td>9</td>
<td>.001**</td>
</tr>
<tr>
<td>Affect</td>
<td>25.10 (3.07)</td>
<td>23.20 (4.44)</td>
<td>17.32 (5.25)</td>
<td>.80</td>
<td>2.20</td>
<td>9</td>
<td>.028*</td>
</tr>
<tr>
<td>CES-D</td>
<td>23.00 (12.64)</td>
<td>11.60 (10.02)</td>
<td>9.25 (8.58)</td>
<td>.31</td>
<td>2.68</td>
<td>9</td>
<td>.013*</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>52.97 (7.58)</td>
<td>48.71 (10.68)</td>
<td>50.00 (10.00)</td>
<td>-.04</td>
<td>1.01</td>
<td>9</td>
<td>.169</td>
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<tr>
<td>MCS</td>
<td>34.69 (9.65)</td>
<td>32.50 (12.65)</td>
<td>50.00 (10.00)</td>
<td>-.02</td>
<td>0.43</td>
<td>9</td>
<td>.338</td>
</tr>
</tbody>
</table>

Note. SHB = self-help book group; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary. *p < .05. ** p < .01.
by T3 (see Table 3). Scores on the SHAI were the only SHB scores that were outside the healthy normative range at T1, therefore, the other study measures could not be assessed for clinical significance. Based on the SHAI results, treatment helped participants to decrease their cognitive (disease preoccupation, hypervigilance to bodily sensations, somatosensory amplification), somatic (anxiety-related bodily sensations), behavioural (reassurance seeking and bodily checking), and affective symptoms (excessive worry about health) of health anxiety. However, when compared to the Salkovskis et al., (2002) healthy normative sample, the participants’ health anxiety levels were still above the mean and they were not fully recovered from their excessive health anxiety. Above average scores on the SHAI may have remained because participants’ physical symptoms had not disappeared and they were still anxious about that or the possibility of becoming ill in the future. The beliefs about illness risks and indicators of disease may take longer to change and the physical symptoms of anxiety may remain until these beliefs are successfully altered.

SHB scores on the MIHT were compared to the healthy normative sample means reported in the Longley et al., (2005) validation study (Table 3). MIHT behavioural subscale scores were above average at T1 and by T3 they were approximately average ($t = 4.03, df = 9, p = .002$; power = .94 [high power]; see Table 3). Perception subscale scores were elevated at T1 and were also reduced by T3 ($t = 4.19, df = 9, p = .001$; power = .96 [high power]). On the cognitive subscale, scores at T1 were above average but there
was no significant change ($t = 1.28$, $df = 9$, $p = .117$); power = .18 [low power]. Affective subscale scores were also above average at T1 and were reduced by T3 ($t = 2.02$, $df = 9$, $p = .028$; power = .48 [low power]). The most robust findings were the reductions in scores on the behaviour and perception subscales because they had statistical significance and sufficient power, unlike the affect subscale. The effect sizes were large for perception ($d = 1.42$) and behaviour ($d = 1.42$) and small for cognition ($d = 0.49$) and affect ($d = 0.44$).

Based on the MIHT results, treatment helped participants to decrease their reassurance seeking from others (behavioural subscale), perceptual-somatic preoccupation with body sensations (perceptual subscale), and worry about health (affective subscale) but the treatment did not change their feelings of alienation due to their beliefs (cognitive subscale). Reassurance seeking, preoccupation with body sensations, and worry may have changed quickly due to the psychoeducation, behavioural exercises, and ERP treatment components. Participants may have continued to feel alienated by significant others because repairing these interpersonal relationships may take longer. The MIHT results are consistent with the SHAI results indicating that participants had fewer health anxiety symptoms after treatment but they had some residual symptoms.

The SHB T1 score on the CES-D was greater than 16, indicating the presence of depressive illness (Radloff, 1997); this was reduced by T3 ($t = 2.68$, $df = 9$, $p = .013$; power = .66 [low power]; see Table 3). This finding suggests treatment had a positive effect on participants’ moods, possibly because of the reduction in health anxiety
symptoms or new confidence and knowledge gained from successfully completing treatment. The finding is limited because of the low observed power. A large effect size was detected ($d = 0.99$)

There were no significant improvements in SHB participant’s appraisals of their physical or mental health according to the SF-36 (lower scores designate poorer health and scores range from 0 - 100; Ware et al., 2000; see Table 3). PCS composite scores (i.e., self-rated physical functioning, physical role functioning, bodily pain, general health, vitality) were close to average at T1 and did not show significant improvement by T2 ($t = 1.01, df = 9, p = .169$; power = .13 [low power]). MCS composite scores (i.e., self-rated social functioning, emotional role functioning, mental health) were below average at T1 and did not show any significant improvement either ($t = .43, df = 9, p = .338$; power = .06 [low power]). The effect sizes were small for the PCS ($d = 0.46$) and MCS ($d = 0.19$). The SF-36 results are understandable in light of the SHAI results. Some participants had unpleasant physical sensations that likely continued to have a negative impact on their’ functioning after treatment. Participants may have also had low scores because they continued to be limited in their interpersonal relationships and it will take more time to improve in this area. Differences may not have been found because of the small sample size and low power to detect differences.

Half of the SHB participants completed the BAI ($n = 5$); T1 $M = 22.60$ ($SD = 13.46$) and T3 $M = 10.80$ ($SD = 9.09$). The other half completed the DASS21anxiety
subscale \((n = 5)\); \(T1 M = 16.80 (SD = 8.32)\) and \(T3 M = 16.80 (SD = 4.00)\). Power analyses indicated that the differences between the T1 and T3 means were too small to draw any conclusions (minimal detectable BAI difference = 22.26; minimal detectable DASS21 anxiety subscale difference = 11.17) and it was unlikely that a \(t\) test would detect significant differences. This was because either the sample was too small or the treatment did not affect general anxiety (BAI \(d = 2.08\) [large effect], power = .43 [low power]; Dass21anxiety subscale \(d = -1.70\) [small effect], power = .08 [low power]). Therefore, no further analyses were conducted with the BAI or DASS21 anxiety subscale.

An interesting finding was that participants in the SHB group were already showing reductions in health anxiety symptoms and depression by mid-treatment (see Table 4). SHAI scores showed a significant reduction \((t = 2.11, df = 9, p = .032;\) power = .44 [low power]). There were significant reductions on the MIHT behaviour \((t = 2.24, df = 9, p = .026;\) power = .49 [low power]) and perception subscales \((t = 2.53, df = 9, p = .032;\) power = .60 [low power]). There was also a significant reduction on the CES-D \((t = 2.05, df = 9, p = .035;\) power = .42 [low power]). The effect size was large on the SHAI \((d = 0.88)\) and MIHT behaviour \((d = 0.80)\) and perception \((d = 1.03)\) subscales; medium on the MIHT affect subscale \((d = 0.71)\), CES-D \((d = 0.56)\), and PCS \((d = 0.51)\); and small on the MIHT cognition subscale \((d = 0.37)\) and MCS \((d = 0.17)\). By the mid-point in
Table 4

Comparison of SHB pre- and mid-treatment means using paired samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-treatment M (SD) n = 10</th>
<th>Mid-treatment M (SD) n = 10</th>
<th>Norm sample M (SD)</th>
<th>Paired correlation</th>
<th>t</th>
<th>df</th>
<th>Sig. (1-tailed) p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td>33.50 (6.10)</td>
<td>27.70 (6.99)</td>
<td>12.20 (6.20)</td>
<td>.13</td>
<td>2.11</td>
<td>9</td>
<td>.032*</td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>22.80 (3.16)</td>
<td>21.50 (3.89)</td>
<td>15.12 (5.46)</td>
<td>.29</td>
<td>0.97</td>
<td>9</td>
<td>.179</td>
</tr>
<tr>
<td>Behaviour</td>
<td>30.60 (3.17)</td>
<td>26.70 (6.09)</td>
<td>25.51 (5.52)</td>
<td>.44</td>
<td>2.24</td>
<td>9</td>
<td>.026*</td>
</tr>
<tr>
<td>Perception</td>
<td>35.10 (3.07)</td>
<td>30.40 (5.70)</td>
<td>27.60 (6.20)</td>
<td>.21</td>
<td>2.53</td>
<td>9</td>
<td>.016*</td>
</tr>
<tr>
<td>Affect</td>
<td>25.10 (3.07)</td>
<td>22.00 (5.33)</td>
<td>17.32 (5.25)</td>
<td>.24</td>
<td>1.79</td>
<td>9</td>
<td>.053</td>
</tr>
<tr>
<td>CES-D</td>
<td>23.00 (12.64)</td>
<td>16.80 (9.39)</td>
<td>9.25 (8.58)</td>
<td>.66</td>
<td>2.05</td>
<td>9</td>
<td>.035*</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>52.97 (7.58)</td>
<td>47.86 (12.11)</td>
<td>50.00 (10.00)</td>
<td>.21</td>
<td>1.25</td>
<td>9</td>
<td>.121</td>
</tr>
<tr>
<td>MCS</td>
<td>34.69 (9.65)</td>
<td>32.83 (11.81)</td>
<td>50.00 (10.00)</td>
<td>-.05</td>
<td>.38</td>
<td>9</td>
<td>.358</td>
</tr>
</tbody>
</table>

Note. SHB = self-help book group; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

* p < .05.
treatment participants would have only read the psychoeducational information about health anxiety and apparently that was enough to initiate some decreases in health anxiety, reassurance seeking, preoccupation with body sensations, and depression. However, because power was so low the confidence in these finding is limited.

Half of the SHB participants \((n = 5)\) received in-person check-ins with facilitators and were given the entire self-help book at the beginning of treatment. The remaining 5 received telephone check-ins with the Head Researcher and were mailed Part 1, Part 2, and Part 3 of the self-help book separately. Although independent samples \(t\)-tests had non-significant results, the small sample size made the results uncertain and open to Type II error (i.e., reporting that there were no differences when there actually were differences). Therefore, it could not be determined statistically if check-in format had an effect on treatment results.

3.1.4. SHB and WLC between-group comparisons

There were almost no differences between the SHB and WLC groups on the primary and secondary measures at T1 (see Table 5). The one exception was that the WLC group had higher scores on the SF-36 MCS than the SHB group \((t = -3.06, df = 12, p = .005; \text{power} = .99 \text{[high power]}\)). This suggests the WLC group believed they had better mental health at T1 than the SHB group. The absence of other significant differences may have occurred because of the small sample size and lack of statistical power. This makes it uncertain whether or not the two groups were equivalent at T1.
Table 5

Comparison of SHB and WLC pre-treatment and pre-wait-list means using independent samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>SHB at T1 M (SD) n =10</th>
<th>WLC at T1 M (SD) n = 4</th>
<th>Equality of variances</th>
<th>Sig. (1-tailed)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td>33.50 (6.10)</td>
<td>29.00 (9.42)</td>
<td>F 0.75</td>
<td>Sig. .404</td>
<td>t 1.08</td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td>df 12</td>
<td>Sig. .152</td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>22.80 (3.16)</td>
<td>25.50 (2.38)</td>
<td>F 0.21</td>
<td>Sig. .652</td>
<td>t -1.53</td>
</tr>
<tr>
<td>Behaviour</td>
<td>30.60 (3.17)</td>
<td>30.00 (2.71)</td>
<td>F 0.23</td>
<td>Sig. .643</td>
<td>t 0.33</td>
</tr>
<tr>
<td>Perception</td>
<td>35.10 (3.07)</td>
<td>37.75 (4.79)</td>
<td>F 0.86</td>
<td>Sig. .373</td>
<td>t -1.25</td>
</tr>
<tr>
<td>Affect</td>
<td>25.10 (3.07)</td>
<td>26.75 (1.50)</td>
<td>F 0.60</td>
<td>Sig. .454</td>
<td>t -1.01</td>
</tr>
<tr>
<td>CES-D</td>
<td>23.00 (12.64)</td>
<td>21.25 (10.43)</td>
<td>F 0.25</td>
<td>Sig. .628</td>
<td>t 0.24</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>52.97 (7.58)</td>
<td>50.45 (6.75)</td>
<td>F 0.13</td>
<td>Sig. .725</td>
<td>t 5.77</td>
</tr>
<tr>
<td>MCS</td>
<td>34.69 (9.65)</td>
<td>50.00 (10.28)</td>
<td>F 3.33</td>
<td>Sig. .093</td>
<td>t -3.06</td>
</tr>
</tbody>
</table>

Note. SHB= self-help book group; WLC = wait-list control group; T= time; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

**p < .01.
At T2 there were significant differences between groups on the MIHT perception subscale \((t = -3.71, df = 11, p = .002; \text{power} = 1.00 \text{[high power]}; \text{see Table 6 and Table 7})\). The T2 difference on the perception subscale likely occurred because the SHB group lowered their scores on that subscale and had less preoccupation with bodily sensations. Again, the lack of other significant differences may be due to the small sample size and lack of statistical power. The effect sizes were large for the SHAI \((d = 1.09)\), MIHT cognition \((d = 1.14)\), perception \((d = 1.72)\), and affect subscales \((d = 0.90)\); medium for the MIHT behaviour subscale \((d = 0.74)\) and CES-D \((d = 0.68)\); and small for the SF-36 PCS \((d = 0.23)\) and MCS \((d = 0.21)\).

At T3 there were significant differences between the WLC and SHB groups on the SHAI \((t = 4.30, df = 7, p = .004; \text{power} = .78 \text{[low power]})\) and MIHT cognition \((t = -2.58, df = 12, p = .024; \text{power} = .78 \text{[low power]})\), perception \((t = -4.46, df = 10, p = .001; \text{power} = 1.00 \text{[high power]})\), and affect subscales \((t = -1.98, df = 12, p = .036; \text{power} = .47 \text{[low power]}; \text{see Table 7 and Table 8})\). The differences on the SHAI and MIHT are understandable given the improvements the SHB group experienced on these measures. The most robust change was on the MIHT perception subscale which means the main difference between receiving and not receiving treatment was a reduction in preoccupation with bodily sensations. Due to the small sample size, there was inadequate power behind the other statistically significant results. It is very likely that with a larger
Table 6

Comparison of SHB and WLC mid-treatment and mid-wait-list means using independent samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>SHB at T2 M (SD) n = 10</th>
<th>WLC at T2 M (SD) n = 4</th>
<th>Equality of variance.</th>
<th>t</th>
<th>df</th>
<th>Sig. (1-tailed) p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
<td>df</td>
<td>p value</td>
<td></td>
</tr>
<tr>
<td>SHAI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>21.50 (3.89)</td>
<td>25.25 (2.50)</td>
<td>0.56</td>
<td>.471</td>
<td>-1.77</td>
<td>12</td>
</tr>
<tr>
<td>Behaviour</td>
<td>26.70 (6.09)</td>
<td>30.50 (3.87)</td>
<td>1.01</td>
<td>.335</td>
<td>-1.76</td>
<td>12</td>
</tr>
<tr>
<td>Perception</td>
<td>30.40 (5.70)</td>
<td>37.50 (1.29)</td>
<td>1.13</td>
<td>.308</td>
<td>-1.14</td>
<td>12</td>
</tr>
<tr>
<td>Affect</td>
<td>22.00 (5.33)</td>
<td>25.50 (2.38)</td>
<td>4.77</td>
<td>.050</td>
<td>-3.71</td>
<td>11</td>
</tr>
<tr>
<td>CES-D</td>
<td>16.80 (9.39)</td>
<td>22.25 (6.24)</td>
<td>0.26</td>
<td>.619</td>
<td>-1.06</td>
<td>12</td>
</tr>
<tr>
<td>SF-36</td>
<td>47.86 (12.11)</td>
<td>45.65 (5.63)</td>
<td>1.20</td>
<td>.296</td>
<td>0.35</td>
<td>12</td>
</tr>
<tr>
<td>PCS</td>
<td>32.83 (11.81)</td>
<td>35.90 (17.37)</td>
<td>1.14</td>
<td>.306</td>
<td>-0.39</td>
<td>12</td>
</tr>
<tr>
<td>MCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. SHB = Self-help book group; WLC = wait-list control group; T = time; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36= Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

*aUnequal variances assumed.

**p < .01.
### Table 7

SHB and WLC effect size and power estimates

<table>
<thead>
<tr>
<th>Measure</th>
<th>T1 - T2 Effect size $d$</th>
<th>Power $1 - \beta$</th>
<th>T1 - T3 Effect size $d$</th>
<th>Power $1 - \beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>1.14$^3$</td>
<td>.78</td>
<td>1.27$^3$</td>
<td>.78</td>
</tr>
<tr>
<td>Behaviour</td>
<td>0.74$^2$</td>
<td>.40</td>
<td>0.94$^3$</td>
<td>.40</td>
</tr>
<tr>
<td>Perception</td>
<td>1.72$^3$</td>
<td>1.00$^a$</td>
<td>2.02$^3$</td>
<td>1.00</td>
</tr>
<tr>
<td>Affect</td>
<td>0.90$^3$</td>
<td>.47</td>
<td>0.93$^3$</td>
<td>.47</td>
</tr>
<tr>
<td>CES-D</td>
<td>0.68$^2$</td>
<td>.35</td>
<td>0.95$^3$</td>
<td>.35</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>0.23$^1$</td>
<td>.08</td>
<td>0.01$^1$</td>
<td>.08</td>
</tr>
<tr>
<td>MCS</td>
<td>0.21$^1$</td>
<td>.09</td>
<td>0.46$^1$</td>
<td>.09</td>
</tr>
</tbody>
</table>

*Note.* SHB = self-help book group; WLC = wait-list control group; T = time; MIHT = Multidimensional Inventory of Hypochondriacal Traits; SHAI = Short Health Anxiety Inventory; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

$^a$Unequal variances assumed. $^1$small effect; $^2$medium effect; $^3$large effect.
Table 8

Comparison of SHB and WLC end of treatment and end of wait-list means using independent samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>SHAI at T3 M (SD) n = 10</th>
<th>WLC at T3 M (SD) n = 4</th>
<th>Equality of variances</th>
<th>Sig. (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>SHAI</td>
<td>21.70 (7.33)</td>
<td>38.00 (6.00)</td>
<td>0.19</td>
<td>.668</td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>21.40 (3.20)</td>
<td>24.50 (1.29)</td>
<td>7.41</td>
<td>.019a</td>
</tr>
<tr>
<td>Behaviour</td>
<td>25.80 (4.85)</td>
<td>29.25 (1.89)</td>
<td>3.95</td>
<td>.070</td>
</tr>
<tr>
<td>Perception</td>
<td>28.30 (6.04)</td>
<td>37.00 (0.82)</td>
<td>9.41</td>
<td>.010a</td>
</tr>
<tr>
<td>Affect</td>
<td>23.20 (4.44)</td>
<td>26.25 (1.26)</td>
<td>5.12</td>
<td>.043a</td>
</tr>
<tr>
<td>CES-D</td>
<td>11.60 (10.02)</td>
<td>23.25 (14.22)</td>
<td>0.49</td>
<td>.499</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>48.71 (10.68)</td>
<td>48.60 (10.45)</td>
<td>0.00</td>
<td>.979</td>
</tr>
<tr>
<td>MCS</td>
<td>32.50 (12.65)</td>
<td>26.55 (13.28)</td>
<td>0.02</td>
<td>.897</td>
</tr>
</tbody>
</table>

*Note. SHB = self-help book group; WLC = wait-list control group; T= time; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

*aUnequal variance assumed.

*p < .05. **p < .01.
sample size or greater effect size that the level of power would increase for the SHAI, MIHT, and CES-D. The effect sizes were large for the SHAI ($d = 2.43$), MIHT cognition ($d = 1.27$), behaviour ($d = 0.94$), perception ($d = 2.02$), and affect subscales ($d = 0.93$), and the CES-D ($d = 0.95$); and small on the SF-36 PCS ($d = 0.01$) and MCS ($d = 0.46$).

There were no significant differences in WLC scores when comparing T1 and T2. When comparing WLC scores between T1 and T3 there was a significant decline in participants’ ratings on the MCS ($t = 3.49$, $df = 3$, $p = .020$; power = .62 [low power]). However, the absence of significant differences in the WLC group may have been due to the small sample size and lack of statistical power. This made the analyses uncertain and it could not be confirmed whether or not changes occurred in the WLC group (analyses appear in Appendix C).

There were difficulties recruiting and enrolling enough participants in this study. There were not enough participants allocated to WLC therefore within group comparisons could not be made for this group. Due to the inability to determine if the SHB and WLC were equivalent at T1 or if there were significant changes in the WLC group, there is only preliminary evidence for the trial hypothesis that using a CBT self-help book is a more efficacious treatment than WLC. The reduction of SHB participants’ scores on the SHAI and the MIHT support the expectation that their scores would be lower than their baseline and WLC scores after treatment. It was promising that some positive results were obtained when no one actually finished the CBT treatment. As
expected due to the short duration of the study, SHB participants had not completed all the items on their ERP hierarchies. These items represented anxiety-provoking tasks that they were actively avoiding. ERP can take many weeks to complete and participants were expected to complete this after the study. Health anxiety and occupational and social functioning would have likely improved once the active avoidance was reduced.

Due to 4 participants dropping out of the study, client satisfaction and therapeutic alliance data was collected for only 6 SHB participants. The mean score for client satisfaction on the CSQ-8 was $M = 23.17$ ($SD = 5.78$). Although the score is below average, it is within one standard deviation of the CSQ-8 normative mean reported in the Nguyen, Attkisson, & Stegner (1983) validation study ($M = 27.09$, $SD = 4.01$). This suggests that client satisfaction with the treatment program was within the average range. The HAq-II was used to assess participants’ therapeutic alliance with their check-in providers. The mean score on the HAq-II was $M = 80.00$ ($SD = 6.13$; below the cut-off score of 86; Luborsky et al., 1996) indicating that the participants experienced a poor therapeutic alliance. This may be due to the brief nature of check-ins, the fact that 4 of the 6 participants surveyed only received telephone check-ins with no in-person contact, and the structured nature of the check-in sessions that were unlike traditional therapy sessions.
3.2. Qualitative data analysis

3.2.1. Content analysis

Participants answered open-ended questions to provide their feedback about the trial. The data was analyzed using the content analysis process described in detail by Elo and Kyngäs (2007). *Content analysis* can be used as a qualitative or quantitative method to analyze written and verbal information in a systematic and objective manner (Elo & Kyngäs, 2007; Osborne 1994). The goal of content analysis is to condense and classify a large amount of written or verbal information (e.g., words and phrases) into a small number of categories and sub-categories (Elo & Kyngäs, 2007; Osborne 1994). The words and phrases under each category and sub-category share a similar meaning (Elo & Kyngäs, 2007; Osborne 1994) and in this case, describe participants’ evaluation of the study.

For this study, deductive content analysis (Elo & Kyngäs, 2007) was used because data was collected on the basis of five specific open-ended questions (see Table 9) rather than a general information gathering question (e.g., “what did you think about the study”). These questions were asked to inform a future randomized controlled trial. Inductive content analysis was also employed by using open coding of the question responses (Elo & Kyngäs, 2007). *Open coding* is the process of creating sub-categories based on the collected data, rather than attempting to fit the data into pre-established sub-categories (Elo & Kyngäs, 2007). The combination of deductive and inductive content
Table 9

Participant feedback and recommendations based on open-ended questions

<table>
<thead>
<tr>
<th>Categories/Questions</th>
<th>Subcategories/Responses</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>What did you like most about the program?</td>
<td>1. Positive interaction with research staff</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>2. Learned new things/changed thinking</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>3. Changed behaviour</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4. Work was manageable</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5. Beneficial experience</td>
<td>1</td>
</tr>
<tr>
<td>What did you like least about the program?</td>
<td>1. Time constraint (e.g., exercises took a long time)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2. No counselling</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3. Questionnaires</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4. Lack of usability (e.g., needs to be more practical)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5. Setting (e.g., paying for parking)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6. Nothing</td>
<td>1</td>
</tr>
<tr>
<td>What did you find easy about the program?</td>
<td>1. Reading</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2. Convenience</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3. Social interaction (e.g., check-in sessions)</td>
<td>1</td>
</tr>
<tr>
<td>What did you find difficult about the program?</td>
<td>1. Exercises and skills practice</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Learning new things/new thinking</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3. Questionnaires</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4. Lack of counselling</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5. Nothing</td>
<td>1</td>
</tr>
<tr>
<td>What would you change about the program?</td>
<td>1. Change program timing (e.g., spread out chapters 6 and 7)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2. Provide more counselling</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3. Change treatment delivery (e.g., send whole book at once)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4. Questionnaires</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5. Nothing</td>
<td>1</td>
</tr>
</tbody>
</table>
analysis resulted in the description of five categories (based on the questions asked) and two to five sub-categories per category. Examples of the types of responses are reported in Appendix D. The deductive and inductive content analysis process included preparation, open coding, creating categories, and abstraction detailed below (Elo and Kyngäs, 2007). For preliminary analyses see Appendix D.

It must be noted that the answers to the open ended questions were brief (only 1029 words) and there was not enough information provided for an in-depth analysis. In the preparation phase, answers to each question were read and broken down into individual sentences on a spreadsheet. Some participants responded in full sentences and provided more than one response to each question while others had one-word answers or indicated no response (e.g., responded “nothing”). Information that would identify the participant (e.g., mentioning a diagnosis) and personal remarks to the head researcher (e.g., thanking for help) were not included in analyses as they were not pertinent to the questions. Some of the longer responses answered more than one question. For example, there was some overlap in responses to “What did you find easy about the program” and “What did you like most about the program” and “What did you like least about the program” and “What did you find difficult about the program”. Responses that answered more than one question were separated and recoded under the appropriate question. Responses in the form of sentences were then broken down into the smallest units of information possible (i.e., short phrases, nouns, verbs, and adjectives). For example when
responding to the question “What did you like most about the program” a participant responded, “having to work on my health anxiety, being aware of it rather than it just happening to me, being open about it with myself and [head researcher]” and this was broken down into “work[ing] on health anxiety”, “aware[ness] of [health anxiety]”, and “being open about [health anxiety]”. This allowed for a better comparison of response units. A set of 61 units were identified consisting of 329 words (see Appendix D).

In the open coding phase, an unconstrained categorization matrix was developed (see Table 9) with each question presented as a category, under which subcategories were created using the inductive process (Elo & Kyngäs, 2007). Notes and key words were written beside each response unit on a spreadsheet that identified the key theme of each unit (e.g., “challenged thinking” and “felt rushed”). There is no systematic way to identify these themes (Elo & Kyngäs, 2007; Osborne 1994). The responses were then re-read multiple times to make sure that appropriate themes were identified for each response unit. The responses were then re-read and themes were compared and contrasted until similar themes could be grouped under a subcategory in the matrix (e.g., “exercises took a long time” and “felt rushed” were grouped together). Each subcategory was then numbered. For example, the first identified theme for each question was placed under “subcategory 1” and other themes were placed under the subsequent subcategories (e.g., “subcategory 2”).

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During the creating subcategories and abstraction phase, the themes and information units under each subcategory were examined and used to name each subcategory. For example, in responding to question 1, there were many responses indicating participants liked that they had learned new things in the study and had more knowledge and skills after treatment than they had before. This was subcategory 1 and it was labelled “learned new things/changed thinking”. Specific examples of this subcategory were learning relaxation techniques or completing exercises that helped participants understand their health anxiety (e.g., identifying thinking distortions or identifying triggers for their anxiety symptoms). Initially many subcategories were created. Subcategories were then examined and compared for each question. Based on their similarities some were combined and the number of subcategories was reduced. Subcategory names were also revised so that they could best describe the information units. This resulted in 21 subcategories (2 - 5 per question, some subcategories were used for multiple questions; see Table 9).

Beside each question category, a tally was made of the number response units which signified the number of times a response was given. As noted above, some participants provided more than one response to each question and this resulted in more responses than participants for some questions (e.g., eight responses for “learned new things/changed thinking”). The completed unconstrained categorization matrix with response tallies is presented in Table 9.
3.2.2. Inter-rater reliability coding

The Head Researcher and a graduate level volunteer conducted inter-rater reliability coding following the procedure outlined in Hruschka et al., (2004). After creating response units and subcategories the procedure involved: creating definitions (descriptions) of the subcategories; two or more coders independently coding a portion of the responses; comparing the coding results; making any necessary modifications to the theme subcategories; and then coding the entire data set. The Head Researcher created the theme subcategory definitions. Response units (i.e., phrases and words; 61 in total), subcategories (i.e., themes; three to seven per category), and categories (i.e., open-ended questions; five in total) were then compiled into a multiple choice online survey (using Survey Monkey.com). Each category was presented on a separate page (i.e., five pages for five questions) and each response unit was presented as a survey question. The subcategories identified for each question were presented as multiple-choice options with descriptions of the subcategory in parentheses beside each option. The coding task was to select one subcategory for each response unit. For each response unit (i.e., survey question) there was also a text box where an alternative subcategory could be entered if none of the presented options were appropriate.

Before coding began, the study and coding procedure were explained to the volunteer. The Head Researcher and volunteer individually completed a random selection of five questions and the coding responses were identical. Then each coder individually
coded the entire data set. There were six discrepancies. The survey data was downloaded and entered into SPSS Release 16.0. Inter-coder reliability was analyzed using Cohen’s kappa (κ; Cohen, 1960). The kappa value for the open ended questions was κ = .88, p = .000. This kappa value is considered “excellent” (κ ≥ 0.80 approaching 0.90; Hruschka et al., 2004; Miles & Huberman, 1994).

3.2.3. Results

Participants in the SHB group reported that what they liked the most about the program was learning and changing their thinking, the positive interaction with research staff, changes in their behaviour, having a beneficial experience, and that the work was manageable. What they liked the least was the time constraint of 8 weeks for the program, the lack of counseling, difficulty with the usability of techniques (e.g., some participants reported that interoceptive exposure was not appropriate for their symptoms), the questionnaires, and the setting (there was a complaint about parking at the AIBL). Participants found the reading and interaction with research staff to be easy and they appreciated the convenience of the program. Participants found the exercises and practicing newly learned skills to be difficult. The SHB group recommended that the program be changed in the future to include more in-person counseling, more time allocated to the treatment, and some changes to the treatment delivery.
3.3. Discussion

Health anxiety is an extreme form of health awareness. Individuals with health anxiety believe they are physically ill, have recurrent thoughts about illness, and are hypervigilant to sensations and changes in their bodies (Taylor & Asmundson, 2004). Numerous studies have indicated that CBT is a very efficacious treatment for health anxiety (e.g., Barsky & Ahern, 2004; Bleichhardt et al., 2005; Bouman, 2002; Bouman & Van Duijn, 2008; Buwalda et al., 2008; Martínez & Botella, 2005; Sorensen et al., 2010; Seivewright et al., 2008; Wattar et al., 2005) and it can be relatively brief (8 to 16 sessions; Avia, 2005). CBT for health anxiety includes cognitive therapy, behaviour therapy, ERP, BSM, and psychoeducation (Asmundson & Taylor, 2005; Bouman & Visser, 1998; Warwick & Salkovskis, 2001).

*It’s Not All in Your Head* by Asmundson and Taylor (2005) provides a multimodal health anxiety treatment that includes all of the efficacious components of CBT in a self-help format. Self-help is an MC therapy that can reduce the need for therapist contact (Mead et al., 2005; Newman et al., 2003). Previous research indicates self-help treatments are beneficial and more therapist contact can increase treatment efficacy (Mead et al., 2005; Newman et al., 2003).

The present randomized controlled feasibility trial was a pilot study that followed the CONSORT standards for randomized controlled clinical trials (Moher et al., 2001). It can be used to inform a future, large-scale trial of the efficacy of self-help for health
anxiety. After ethical clearance was obtained for the study, individuals with maladaptive levels of health anxiety were recruited in the city of Regina, Saskatchewan. Individuals completed telephone or online screening followed by an assessment interview and random assignment to one of two groups. Some were randomly assigned to the SHB group where they received CBT in book-form (It’s Not All in Your Head, Asmundson & Taylor; 2005) and weekly in-person or telephone check-ins with a trained facilitator or the Head Researcher ($n = 10$; 7 females and 2 males). The SHB treatment was a guided self-help MC because facilitators or the Head Researcher introduced the self-help book and helped participants to use it effectively (Mead et al., 2005; Newman et al., 2003).

Other participants were assigned to the WLC group waiting for the SHB treatment ($n = 4$; 3 females and 1 male). Both conditions had a duration of 8 weeks and all participants completed questionnaires pre-, mid-, and post-treatment to assess symptoms of health anxiety, general anxiety, depression, and self-reported physical and mental functioning.

It was hypothesized that using a CBT self-help book would be a more efficacious treatment than WLC. It was expected that relative to WLC, SHB would be more efficacious in reducing health anxiety as evidenced by reductions in scores on measures of health anxiety and related constructs. ITT analysis (LOCF procedure; Hollis & Campbell, 1999) was used for all participants who were randomly assigned, and remained in the study until T2 including 4 participants who dropped out of the SHB group. Paired samples $t$ tests were used to analyze within-group differences. Analyses
provided preliminary evidence that participants who read *It’s Not All in Your Head* by Asmundson and Taylor (2005) and had weekly check-ins with facilitators experienced reductions in health anxiety symptoms that participants on a wait-list did not experience.

SHB group participants reported slight reductions in symptoms on health anxiety (SHAI and MIHT) and depression measures (CES-D) after 3 weeks of treatment that was primarily psychoeducational. After reading the entire book and learning and practicing relaxation techniques, stress management, cognitive restructuring, behavioural exercises, and ERP, the SHB group reported further reductions in health anxiety (SHAI and MIHT) as well as depression symptoms (CES-D). There was not enough data collected to analyze scores on the BAI or DASS21 anxiety subscale. It must be noted that at the end of the study, no SHB participants had finished the tasks on their ERP hierarchies (this was expected due to the short duration of the program) and were expected to complete the tasks after the study. This means that participants were actively avoiding some anxiety-provoking stimuli and activities at the end of treatment. At that point they had just begun learning that they could endure the anxiety caused by the stimuli and that the outcomes of anxiety would not be catastrophic (Taylor & Asmundson, 2004). It was promising to see that there were significant reductions in health anxiety and depression symptoms despite this continued avoidance.

Analyses could not determine if the WLC group improved on any of the measures administered (within-group differences) but analyses revealed significant reductions in
SHB group symptoms when compared to the WLC group (between-group differences on the SHAI and MIHT). The most robust finding was that the SHB group had lower MIHT perception subscale scores after treatment. These findings provide preliminary support for the study hypotheses. In a larger sample, stronger differences are likely to be found on the SHAI, MIHT, and CES-D. Unfortunately, no participants completed the 4-month follow-up questionnaires. Follow-up data may have shown further improvements on health anxiety measures and participants’ self-reported physical and mental health that were not found at the end of treatment. These improvements may have been delayed because participants still had some avoidance behaviours to confront in ERP. Other studies of CBT for health anxiety have noted improvements in interpersonal problems caused by health anxiety, improved functioning at work and in social roles, and improved general quality of life (Taylor & Asmundson, 2004) that were not found in this study.

Decreased scores on the SHAI indicate that participants who received the SHB treatment experienced a significant reduction in the cognitive (disease preoccupation, hypervigilance to bodily sensations, somatosensory amplification), somatic (anxiety-related bodily sensations), behavioural (reassurance seeking and bodily checking), and affective (excessive worry about health) symptoms of health anxiety. Reduction of scores on the MIHT behaviour, perception, and affect subscales denote a significant decrease in dependence on reassurance seeking from others, perceptual-somatic preoccupation with body sensations, and worrying about health. The lack of improvement on the cognitive
subscale reveals that, at the end of treatment, participants continued to feel alienated from others because of their health anxiety.

Scores on the CES-D revealed a significant decline in depression symptoms after treatment. Health anxiety is often associated with depression (Barsky et al., 1993; Looper & Kirmayer, 2001; Noyes et al., 1994; Robbins & Kirmayer, 1996; Sarnie, & Klerman, 1993; Simon et al., 2001) and depression can increase one’s preoccupation with illness, death, and hypervigilance to bodily sensations. At the beginning of treatment, all participants were experiencing clinically significant levels of depression symptoms (Radloff, 1997) but treatment appeared to alleviate some of those symptoms for the SHB group. In previous studies, CBT for health anxiety was associated with significant decreases in depressive symptoms (Bouman, 2002; Buwalda et al., 2008; Clark et al., 1998; Hiller et al., 2003; Martínez & Botella, 2005; Sorensen et al., 2010; Speckens et al., 1995; Stern & Fernandez, 1991; Visser & Bouman, 2001; Warwick et al., 1996). The improvement in mood was likely caused by participants’ reduction in health anxiety symptoms, confidence gained by understanding their symptoms and completing the program, and some benefits of the therapeutic relationship. There was no significant difference on the CES-D when comparing SHB and WLC at T3. This again may be due to the small sample size.

The lack of improvement in the PCS score suggests that at the end of treatment participants still experienced limitations in self-care, physical, social, and role activities,
pain, fatigue, and poor health, that treatment did not change. The non-significant MCS scores may indicate that the participants continued to experience limitations in their social and emotional functioning due to physical symptoms or other mental health concerns. CBT for health anxiety is usually coupled with improved interpersonal relations, functioning in occupational and social roles, and quality of life (Taylor & Asmundson, 2004). As noted above, participants still had ERP tasks to complete at the end of treatment (e.g., exercising despite unpleasant physical sensations, visiting hospitals, reading about a feared illness, etc.) and their activity limitations may not improve until those tasks are completed and they are no longer anxiety-provoking.

The effect sizes were large on the SHAI (within-group $d = 1.75$, between-group $d = 2.43$); MIHT behaviour (within-group $d = 1.17$, between-group $d = 0.94$), perception (within-group $d = 1.42$, between-group $d = 2.02$), affect (between-group $d = 0.93$), and cognition subscales (between-group $d = 1.27$); and the CES-D (within-group $d = 0.99$, between-group $d = 0.95$). This is consistent with previous health anxiety CBT studies that reported medium to large effect sizes on health anxiety ($d = 0.60 - 2.05$; e.g., Barsky & Ahern, 2004; Bleichhardt et al., 2005; Bouman, 2002; Buwalda et al., 2008; Clark et al., 1998; Martínez & Botella, 2005; Sorensen et al., 2010; Speckens et al., 1995; Stern & Fernandez, 1991; Visser & Bouman, 2001; Warwick et al., 1996) and depression measures ($d = 0.85 - 1.95$; e.g., Bouman, 2002; Buwalda et al., 2008; Clark et al., 1998; Martínez & Botella, 2005; Sorensen et al., 2010; Speckens et al., 1995; Stern &
The health anxiety effect sizes were also larger than some of those reported in previous self-help for anxiety
($d = 0.38 \text{ - } 1.74$; van Boeijen et al., 2005) and guided self-help for anxiety studies ($d = 0.10 \text{ - } 1.52$; Coull & Morris, 2011). Sample size has no impact on effect size; therefore future examinations of the self-help book, with larger samples, may produce large effect sizes similar to the ones in this study. Clinical effectiveness was also assessed and the SHAI produced clinically effective results. SHB scores prior to treatment were outside the healthy normative range (healthy norm mean $M \pm [2 \times SD]$), but after treatment, scores were within that range. All other scores were within the healthy normative range prior to treatment and could not be assessed for clinical effectiveness.

Participants provided valuable feedback about the study. They provided positive evaluations of the treatment and reported that they valued the information they learned, appreciated the time they spent interacting with research staff, and found the book easy to read and understand. They reported having the most difficulty completing exercises, practicing newly learned techniques, and completing questionnaires during the brief 8-week period. Health anxiety may have been difficult to treat in the distant past (Martínez & Botella, 2005) but as seen in this study, CBT is usually well tolerated and accepted by clients (Taylor et al., 2005). Unfortunately, participants reported a poor therapeutic alliance, possibly because check-in sessions were brief and most were done by telephone. A better therapeutic alliance may have contributed to better results and fewer drop-outs.
3.4. Limitations

The results of this study are limited because of the nature of the treatment, the study design, the population examined, and the administrators of the treatment. The results must be considered in light of these limitations. There is evidence that computerized versions of questionnaires may have validity comparable to pencil-and-paper versions (Bartram & Bayliss, 1984), but most of the measures used in this study were not validated for computer use (except the CES-D; Smits et al., 2011); this may have affected the reliability and validity of the measures. Procedures used in the study were changed after the experiment had begun and this may have had some effect. There may have been nonessential components in the administered treatment; therefore, it cannot be determined which elements were the most responsible for the treatment effects. The treatment was likely influenced by nonspecific treatment factors such as client expectations, placebo effects, therapeutic alliance, and treatment credibility (Asmundson & Taylor, 2005). The design of the study also made it difficult to assess treatment adherence (i.e., participants may have varied in how much of the book they read and understood, how often they practiced exercises, and how many worksheets and exercises they completed).

The sample size was very small and there were uneven numbers of participants in each group. The WLC group was too small to be analyzed and compared to the SHB group at the beginning of treatment making it difficult to confirm the study hypotheses.
(random assignment was intended to reduce between-group differences but the equivalence of the groups could not be confirmed statistically). Also, because of the small sample size, the results may have been influenced by outliers. There was no follow-up data collected so there was no evidence about the long-term effects of the treatment. The sample was from a small Western Canadian city and, therefore, the results may only be generalizable to similar populations.

Many participants dropped out or were unavailable after completing the initial screening \( (n = 22) \) and the assessment interview \( (n = 5) \). The drop-out rate for the treatment group was 40\% and this is higher than the 0\% - 38\% drop-out rates of other health anxiety trials (see van Boeijen et al., 2005 for review). Participants reported having a poor therapeutic alliance with the facilitators and Head Researcher and this may have contributed to the drop-out rate. In other health anxiety studies, eligible individuals chose not to participate or dropped out if they had less serious complaints (i.e., functioned well and thus had less motivation for treatment) and had full-time or part-time jobs (i.e., lacked free time; Visser & Bouman, 2001). The participants in this study appeared to be highly functioning (married, employed, most T1 scores elevated but not outside the healthy normative range). There are many reasons for the lack of interest in this study such as: preference for traditional psychotherapy instead of self-help, preference for a clinical setting and registered psychologists, intimidation by the long consent form, lack of readiness to change and motivation, lack of severe symptoms, inability to travel and
busy schedules, worry about reading a book in 8 weeks, dislike of homework exercises, fear of being placed on a wait-list, belief that psychological treatment was unnecessary because symptoms were due to medical illness, deciding to purchase and read the book alone, and desire to not involve family doctors.

Another limitation is that graduate students were used as facilitators (including the Head Researcher). They may have been less experienced than more seasoned therapists in their ability to administer CBT. Although no participants complained about the lack of contact with registered psychologists, some may have been reluctant to participate because of this. The Head Researcher also provided the check-ins for half the participants and this is not the ideal methodological practice. Due to the small sample size, it was not possible to determine if check-in format created any group differences.

3.5. Implications

A clinically supported, CBT-based, self-help treatment for health anxiety has the potential to improve the psychological and social lives of many individuals and reduce the financial and time expenditures of mental health care providers whose services are in high demand. Many individuals are unable to receive treatment for anxiety disorders because of the limited capacities of health care centers (van Boeijen et al., 2005). MCs such as guided self-help may be the solution to this problem because they reduce the need for therapy hours (Campbell & Smith, 2003; Mead et al., 2005; Newman et al., 2003; van Boeijen et al., 2005). It’s Not All in Your Head by Asmundson and Taylor (2005) would
be useful in clinical settings where a limited number of sessions are available to clients. It provides ample information to reduce the symptoms of health anxiety. In-person sessions could be focused on assisting clients with skills building and practice and telephone check-in sessions could be provided for client assistance and motivation between sessions.

Participants in this study reported they found the self-help treatment to be helpful and valued the learning experience. They experienced reduced symptoms even with limited therapist contact and many thought that the work was manageable. However, some participants had difficulty with the time constraints of the program and had trouble completing exercises without therapist guidance. Therefore, in a clinical setting the duration of treatment should be extended and sessions spaced out so that clients have enough time to read chapters and complete exercises. Important exercises such as relaxation training, interoceptive exposure, and ERP should be practiced during in-person sessions. This would ensure that clients are performing the exercises correctly, receiving motivational support, and developing a good therapeutic alliance. Clients can be provided with a flexible timeline for treatment so that they are not overwhelmed by the amount of work (perhaps 4 - 5 months instead of only 2 as provided in this study). Brief questionnaires, such as the SHAI and CES-D can be administered to clients pre-, mid-, and post-treatment so that they can review their progress and stay motivated. A long
battery of tests is not recommended as many participants in this study disliked the repetitive questionnaires.

The treatment provided significant reductions in health anxiety and depression symptoms and there was some preliminary evidence that it was more efficacious than WLC. At the end of treatment, although there were significant improvements, participants still had residual symptoms of health anxiety. In previous health anxiety studies there were often residual differences between the treatment and control groups or in comparison to questionnaire norms (e.g., Barsky & Ahern, 2006; Fava et al, 2000; Martínez & Botella, 2005) indicating that there should not be an expectation for the complete normalization of symptoms after treatment. In clinical settings, clients need to be provided with reasonable expectations for treatment and be informed that they will experience fewer health anxiety symptoms and be better equipped to manage those symptoms; but it may take months before their symptoms are reduced to a healthy range (reduction to a healthy range may not occur in some cases).

It was very apparent in this study that few individuals were interested in participating and many who passed the initial screening declined participation. Therefore effort has to be made to explain the benefits of the treatment and motivate clients to participate and remain in treatment.
3.6. Future Research Directions

In the future, the results of a large scale, well-designed randomized controlled trial may encourage health care professionals to adopt this clinically efficacious, brief, cost-effective, and easy to administer CBT treatment for health anxiety. The results of this feasibility trial identified many methodological difficulties and practical difficulties that should be considered in a future trial of *It’s Not All in Your Head* (Asmundson & Taylor, 2005). For example, brief questionnaires were sought out for this trial and future trials should attempt to use brief, reliable, and valid measures as well. Initial screening could be done using the Internet because it was more time efficient for the study and allowed participants to view the consent form prior to the assessment interview. If possible, computer-validated measures should be used. Facilitators must be available to assist participants with difficult parts of treatment and to answer questions promptly via email or telephone. In-person assessments are recommended so that a therapeutic alliance can develop. A combination of in-person and telephone check-ins are recommended because this would accommodate participants who are unable to travel or too busy to attend in-person sessions.

It is advised that more time be allotted to the chapters introducing relaxation training and stress management, cognitive restructuring, and ERP practice because these chapters (5 - 7) are the most important for skill building and practice. This will require spending less time on the other psychoeducational chapters of the book. It is not
recommended that the program is extended longer than 8 weeks as this duration is similar to that of previous studies that had positive results (e.g., Barsky & Ahern, 2004; Bleichhardt et al., 2005; Bouman, 2002; Buwalda et al., 2008; Martínez & Botella, 2005; Seivewright et al., 2008; Sorensen et al., 2010; Wattar et al., 2005). Future studies should attempt to generate larger sample sizes (e.g., 10 participants or more per group) and to allocate equal numbers of participants to treatment and control groups. Effect sizes may be increased by finding participants who have extreme health anxiety symptoms (Wilson et al., 2007). These participants would have higher scores on the health anxiety and depression measures prior to treatment and may have a greater reduction of symptoms after treatment (Wilson et al., 2007). This would increase the effect size, statistical power, and possibly the number of significant results; this would also allow for clinical significance testing (Jacobson & Truax, 1991). Lastly, more effort must also be placed on obtaining follow-up data to determine the extent and duration of treatment effects.

Many aspects of self-help for health anxiety need to be explored in future research. In addition to larger studies and replication studies using It’s Not All in Your Head (Asmundson & Taylor, 2005), studies are needed to test other self-help books (e.g., An Introduction to Coping With Health Anxiety by Young, Charles, & Hogan, 2007; Feeling Better: A 6-Week Mind-Body Program to Ease Your Chronic Symptoms by Barsky & Ahern, 2007). The studies can also be used to determine the critical components of self-help therapy (e.g., chapters, exercises, techniques) in order to develop the most simplified
yet efficacious treatments (Avia et al, 1996). The effectiveness of guided self-help must be tested in clinical settings because there is evidence that effect sizes are lower when participants are recruited from these settings (Coull & Morris, 2011). Research is especially needed to examine the cost-effectiveness of self-help for health anxiety relative to traditional CBT and BSM (Fletcher et al., 2005). Qualitative data was very useful in this study and it is recommended for future research to better understand what participants liked, disliked, found useful, and would improve about the treatments. There may be no other systematic way to obtain this information that is vital to creating a user-friendly and efficacious treatment.

Different treatment formats should be tested including comparisons of individual and group treatments because many of the reviewed studies used a group format (e.g., Barsky & Ahern, 2004; Bleichhardt et al., 2005; Bouman 2002; Buwalda et al., 2008; Martínez & Botella, 2005; Wattar et. al., 2005). Research could determine the most beneficial amount of therapist contact time (including no therapist contact) and compare the results using different treatment providers (e.g., graduate students, psychologists, nurses, etc.). Computerized versions of the treatment could be examined including online versions of the book exercises that can be reviewed by facilitators and allow participants to print out multiple forms. Some individuals may actually prefer a digital version of the book. This feasibility study was a first of its kind for health anxiety and there are numerous possibilities for future research.
4. REFERENCES


Appendix A

Contents of It’s not All in Your Head by Asmundson and Taylor (2005)

Part 1: Understanding Health Anxiety
In the four chapters of this section, clients learn about health anxiety and whether they are suffering from excessive health anxiety:

1. Do I Worry Too Much about My Health?
   - What is Health Anxiety?
     - Health
     - Anxiety
     - Health Anxiety
   - Are Your Bodily Sensations Imagined or Real?
   - The Health Anxiety Cycle
   - Common Health Anxiety Disorders
     - Hypochondriasis
     - Disease Phobia
     - Somatic Delusions
     - The Challenge
   - How Much is Too Much?
   - How This Book Can Help

2. Body and Brain: It’s Not All in Your Head
   - Why Do Bodily Sensations Occur?
     - Changes in Routine
     - Inactivity
     - Minor Ailments
     - Anxiety and Other Emotions
   - Trying to Understand Bodily Sensations: Symptom of Disease or Not?
     - On Signs and Symptoms
     - (Mis)Interpreting Signs and Symptoms
   - Selective Attention
     - Body versus External Focus
     - Influence on Others
     - Somatic Amplification
     - Beliefs about Health and Sickness
• The Vicious Cycle: Anxiety Revisited

3. Do I Have Some Other Anxiety Disorder?
• Common Overlapping Anxiety Disorders
  o Panic Disorder
  o Obsessive-Compulsive Disorder
  o Generalized Anxiety Disorder
  o Helpful Hint
• The Other Anxiety Disorders
• Health Anxiety and the Overlapping Anxiety Disorders
• Treatment Options for Anxiety Disorders
  o Medication
  o Cognitive-Behavioural Therapy
  o Other Forms of Psychotherapy
  o Self-Help
  o Combined and Sequential Treatments

Things to Remember

4. Sick and Sad: Am I Depressed, Too?
• Common Mood Disorders
• Links between Health Anxiety and Depression
• Treatment Options for Depression
  o Medication
  o Cognitive-Behavioural Therapy
  o Other Forms of Psychotherapy
  o Combined Treatments
• Things to Remember

Part II: Breaking the Health Anxiety Cycle
In the three chapters of this part of the book, clients learn effective cognitive-behavioural techniques for managing their health anxiety.

5. Understanding and Managing Stress
• Identifying and Understanding the Things That Stress You Out
• Learning to Relax: Weeks 1 to 3
  o Week 1
  o Week 2
  o Week 3
  o Things to Remember
• Retraining Your Breathing Patterns: Weeks 4 and 5
6. **Thoughts that Influence Your Anxiety and How to Change Them**

- **How You Think about Your Health:** Week 8
  - All-or-None Thinking
  - Negatively Biased Thinking
  - Jumping to Catastrophic Conclusions
  - Selective Attention
  - Superstitious thinking
  - Helpful Hint

- **What You Think about Your Health**
  - Helpful Hint

- **Ridding Yourself of Anxiety-Inducing Thoughts:** Weeks 9 and 10
  - Playing Medical Detective: Examining the Evidence
  - Building Emotional muscle: Challenging Your Need for Certainty
  - Putting Yourself in the Doctor’s Shoes: Taking Another’s Perspective
  - Evaluating the Costs: How Bad Is It?
  - Attention Focusing

- **Helpful Hints and Things to Remember**

7. **Behaviours That Influence Your Anxiety and How to Change Them**

- **Identifying Behaviours That Feed Health Anxiety:** Week 11
  - Repetitive Checking
  - Avoidance
  - Reassurance Seeking
  - Security Blankets
  - Things to Remember

- **Getting Rid of Behaviours That Feed Health Anxiety:** Weeks 12 and 14
  - Testing the Effectiveness of Checking and Reassurance Seeking
  - Confronting Feared Bodily Sensations and Situations
  - Letting Go of Security Blankets

- **Coping with Fear of Death**

- **Things to Remember**
Part III: Maintaining Your Gains

The final three chapters of the book will help clients to protect themselves from relapse and help them to maintain treatment gains.

8. Dealing with Doctors

- Diagnosing Your Doctor Problems
- Who’s to Blame?
  - Put Yourself in the Doctor’s Shoes
  - Getting the Most Out of Your Doctors
  - Things to Remember
- When Should I Seek Medical Attention?

9. Helping Friends and family Help You

- The Stressed-Out Loved One
- The Over-involved Loved One
- What Roles Do Your Loved Ones Play?
- How to Help them Help You
  - Specific Advice for Stressed-Out Family and Friends
  - Specific Advice for the Over-involved Caretaker
- Things to Remember
- Where to Turn for Further Help

10. Living Life and Maintaining Your Gains

- Handling Flare-Ups
  - Responses That Don’t Help
  - Helpful Responses
  - Preparing Your Personalized HARP Program
  - Things to Remember
- Specialist Treatments for Health Anxiety
  - Medication
  - Cognitive-Behavioural Therapy
  - Combined and Sequential Treatment
- Living Life to Its Fullest
- A Final Word
Appendix B

SELF-HELP PROGRAM FOR HEALTH ANXIETY: READING PLAN

This page outlines the activities that you will complete as a participant in this self-help program for health anxiety. Please read and complete all of the exercises in the self-help book, *Its Not All in Your Head* (2005; Asmundson & Taylor), according to the plan shown below. Once you have learned a new technique to manage your health anxiety, feel free to practice those techniques on a daily basis.

<table>
<thead>
<tr>
<th>WEEK OF PROGRAM</th>
<th>CHAPTER</th>
<th>CHAPTER TITLE</th>
<th>PAGE #S</th>
<th>CHECK-IN DATE &amp; TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>1</td>
<td>Do I Worry Too Much about My Health? Body and Brain: It’s Not All in Your Head</td>
<td>3 - 17</td>
<td>18 - 32</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>3</td>
<td>Do I Have Some Other Anxiety Disorder? Sick and Sad: Am I Depressed, Too?</td>
<td>33 - 45</td>
<td>46 - 55</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>5</td>
<td>Understanding and Managing Stress *Practice: Tense-Release Relaxation</td>
<td>59 – 66</td>
<td>66 - 68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 4</td>
<td>6</td>
<td>Thoughts That Influence Your Anxiety and How to Change Them (complete all exercises during one week instead of spacing them out weekly as the book says) *Practice: Release-Only Relaxation</td>
<td>80 – 103</td>
<td>66, 69, &amp; 70</td>
</tr>
<tr>
<td>Week 5</td>
<td>7</td>
<td>Behaviours That Influence Your Anxiety and How to Change Them *Practice: Rapid Relaxation</td>
<td>104 - 120</td>
<td>69 &amp; 71 - 72</td>
</tr>
<tr>
<td>Week 6</td>
<td>7</td>
<td>Behaviours That Influence Your Anxiety and How to Change Them *Practice: Retraining Your Breathing Patterns</td>
<td>120 - 132</td>
<td>72 - 74</td>
</tr>
<tr>
<td>Week 7</td>
<td>8</td>
<td>Dealing With Doctors *Practice: Problem-Solving Skills</td>
<td>135 – 145</td>
<td>74 - 77</td>
</tr>
<tr>
<td>Week 8</td>
<td>9</td>
<td>Helping Friends and Family Help You Living Life and Maintaining Your Gains *Practice: Time Management</td>
<td>146 – 156</td>
<td>157 – 173</td>
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<tr>
<td></td>
<td>10</td>
<td></td>
<td>77 - 79</td>
<td></td>
</tr>
</tbody>
</table>

Please complete Questionnaire Package #2 Online

* Learn and practice the relaxation and stress management techniques described on the indicated pages in addition to the assigned chapters this week

Complete Questionnaire Package # 3 and make an appointment for a debriefing.
Appendix C

Table C1

Comparison of SHB completers pre- and mid-treatment means using paired samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-treatment M (SD)</th>
<th>Mid-treatment M (SD)</th>
<th>t</th>
<th>df</th>
<th>Sig. (1-tailed) p value</th>
</tr>
</thead>
<tbody>
<tr>
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<td>35.17 (2.14)</td>
<td>30.33 (4.63)</td>
<td>3.95</td>
<td>5</td>
<td>.006**</td>
</tr>
<tr>
<td>MIHT</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
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<td>21.17 (4.26)</td>
<td>0.63</td>
<td>5</td>
<td>.279</td>
</tr>
<tr>
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<td>26.00 (7.01)</td>
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<td>5</td>
<td>.065</td>
</tr>
<tr>
<td>Perception</td>
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<td>29.33 (6.28)</td>
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<td>5</td>
<td>.058</td>
</tr>
<tr>
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<td>26.50 (1.97)</td>
<td>21.83 (5.64)</td>
<td>1.75</td>
<td>5</td>
<td>.071</td>
</tr>
<tr>
<td>CES-D</td>
<td>25.33 (10.19)</td>
<td>18.67 (3.44)</td>
<td>2.15</td>
<td>5</td>
<td>.042*</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>51.32 (8.92)</td>
<td>48.23 (10.16)</td>
<td>0.76</td>
<td>5</td>
<td>.242</td>
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<td>34.97 (10.49)</td>
<td>32.96 (7.30)</td>
<td>0.33</td>
<td>5</td>
<td>.337</td>
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</table>

Note. SHB = self-help book group; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

* p < .05. ** p < .01.
Table C2

Comparison of SHB completers pre- and post-treatment means using paired samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-treatment $M$ (SD)</th>
<th>Post-treatment $M$ (SD)</th>
<th>$t$</th>
<th>$df$</th>
<th>Sig. (1-tailed) $p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td>35.17 (2.14)</td>
<td>20.33 (6.74)</td>
<td>6.25</td>
<td>5</td>
<td>.001**</td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>22.17 (3.49)</td>
<td>21.00 (3.03)</td>
<td>1.34</td>
<td>5</td>
<td>.120</td>
</tr>
<tr>
<td>Behaviour</td>
<td>31.17 (2.48)</td>
<td>24.50 (4.59)</td>
<td>4.39</td>
<td>5</td>
<td>.004**</td>
</tr>
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<td>5</td>
<td>.002**</td>
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<td>2.33</td>
<td>5</td>
<td>.034*</td>
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<td>25.33 (10.19)</td>
<td>10.00 (6.07)</td>
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<td>5</td>
<td>.018*</td>
</tr>
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<td>SF-36</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>51.32 (8.92)</td>
<td>50.14 (6.79)</td>
<td>0.26</td>
<td>5</td>
<td>.402</td>
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<td>.270</td>
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</tbody>
</table>

Note. SHB = self-help book group; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

* $p < .05$. ** $p < .01$. 
Table C3

Comparison of SHB and WLC completers pre-treatment and pre-wait-list means using independent samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>SHB at T1 M (SD)</th>
<th>WLC at T1 M (SD)</th>
<th>Equality of variances F Sig.</th>
<th>t df Sig. (1-tailed) p value</th>
</tr>
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<td>SHAI</td>
<td>35.17 (2.14)</td>
<td>29.00 (9.42)</td>
<td>4.20 .075</td>
<td>1.59 8 .076</td>
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<td>MIHT Cognition</td>
<td>22.17 (3.49)</td>
<td>25.50 (2.38)</td>
<td>0.75 .412</td>
<td>-1.66 8 .068</td>
</tr>
<tr>
<td>MIHT Behaviour</td>
<td>31.17 (2.48)</td>
<td>30.00 (2.71)</td>
<td>0.03 .862</td>
<td>0.70 8 .251</td>
</tr>
<tr>
<td>MIHT Perception</td>
<td>33.83 (2.86)</td>
<td>37.75 (4.79)</td>
<td>0.74 .414</td>
<td>-1.64 8 .070</td>
</tr>
<tr>
<td>MIHT Affect</td>
<td>26.50 (1.97)</td>
<td>26.75 (1.50)</td>
<td>1.00 .347</td>
<td>-0.21 8 .413</td>
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<td>CES-D</td>
<td>25.33 (10.19)</td>
<td>21.25 (10.43)</td>
<td>0.02 .885</td>
<td>0.62 8 .278</td>
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<td>SF-36 PCS</td>
<td>51.32 (8.92)</td>
<td>50.45 (6.75)</td>
<td>0.47 .513</td>
<td>0.17 8 .437</td>
</tr>
<tr>
<td>SF-36 MCS</td>
<td>34.97 (10.49)</td>
<td>50.00 (10.28)</td>
<td>3.29 .107</td>
<td>-2.76 8 .013*</td>
</tr>
</tbody>
</table>

Note. SHB = self-help book group; WLC = wait-list control group; T = time; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36= Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

*p < .05.
Table C4

Comparison of SHB and WLC completers mid-treatment and mid-wait-list means using independent samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>SHB at T2</th>
<th>WLC at T2</th>
<th>Equality of variances</th>
<th>Sig. (1-tailed)</th>
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<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>F</td>
<td>Sig.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>21.17 (4.26)</td>
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<td>.051</td>
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<td>6.01</td>
<td>.040&lt;sup&gt;u&lt;/sup&gt;</td>
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<td>SF-36</td>
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<tr>
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<td>4.61</td>
<td>.064</td>
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</table>

Note. SHB = self-help book group; WLC = wait-list control group; T = time; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

<sup>u</sup>Unequal variance assumed.

*<sup>p</sup> < .05.
Table C5

*Comparison of SHB and WLC completers* post-treatment and post-wait-list means using independent samples *t* tests

<table>
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<tr>
<th>Measure</th>
<th>SHB at T3 M (SD)</th>
<th>WLC at T3 M (SD)</th>
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<th>Sig. (1-tailed)</th>
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<td>Equality of variance</td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
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<td></td>
</tr>
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<tr>
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<td>.712</td>
</tr>
</tbody>
</table>

*Note.* SHB = self-help book group; WLC = wait-list control group; T = time; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

^uUnequal variance assumed.

*p < .05. **p < .01.

115
Table C6

Comparison of WLC pre- and mid-wait-list means using paired samples t tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-wait-list M (SD)</th>
<th>Mid-wait-list M(SD)</th>
<th>Paired correlation</th>
<th>t</th>
<th>df</th>
<th>Sig. (1-tailed) p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td>29.00 (9.42)</td>
<td>34.75 (5.91)</td>
<td>.74</td>
<td>-1.80</td>
<td>3</td>
<td>.085</td>
</tr>
<tr>
<td>MIHT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognition</td>
<td>25.50 (2.38)</td>
<td>25.25 (2.50)</td>
<td>.25</td>
<td>0.17</td>
<td>3</td>
<td>.439</td>
</tr>
<tr>
<td>Behaviour</td>
<td>30.00 (2.71)</td>
<td>30.50 (3.87)</td>
<td>.99</td>
<td>-0.78</td>
<td>3</td>
<td>.248</td>
</tr>
<tr>
<td>Perception</td>
<td>37.75 (4.79)</td>
<td>37.50 (1.29)</td>
<td>.03</td>
<td>0.10</td>
<td>3</td>
<td>.463</td>
</tr>
<tr>
<td>Affect</td>
<td>26.75 (1.50)</td>
<td>25.50 (2.38)</td>
<td>.42</td>
<td>1.13</td>
<td>3</td>
<td>.171</td>
</tr>
<tr>
<td>CES-D</td>
<td>21.25 (10.43)</td>
<td>22.25 (6.24)</td>
<td>-.92</td>
<td>-0.12</td>
<td>3</td>
<td>.455</td>
</tr>
<tr>
<td>SF-36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>50.45 (6.75)</td>
<td>45.65 (5.63)</td>
<td>.14</td>
<td>1.17</td>
<td>3</td>
<td>.163</td>
</tr>
<tr>
<td>MCS</td>
<td>50.00 (10.28)</td>
<td>35.90 (17.37)</td>
<td>-.63</td>
<td>1.48</td>
<td>3</td>
<td>.118</td>
</tr>
</tbody>
</table>

Note. WLC = wait-list control group; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.
Table C7

Comparison of WLC pre- and post-wait-list means using paired samples $t$ tests

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-wait-list $M$ (SD)</th>
<th>Post-wait-list $M$ (SD)</th>
<th>$Paired$ correlation</th>
<th>$t$</th>
<th>$df$</th>
<th>Sig. (1-tailed) $p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAI</td>
<td>29.00 (9.42)</td>
<td>38.00 (6.00)</td>
<td>.71</td>
<td>-2.69</td>
<td>3</td>
<td>.037*</td>
</tr>
<tr>
<td>MIHT Cognition</td>
<td>25.50 (2.38)</td>
<td>24.50 (1.29)</td>
<td>-.22</td>
<td>0.68</td>
<td>3</td>
<td>.243</td>
</tr>
<tr>
<td>MIHT Behaviour</td>
<td>30.00 (2.71)</td>
<td>29.25 (1.89)</td>
<td>.39</td>
<td>0.57</td>
<td>3</td>
<td>.304</td>
</tr>
<tr>
<td>MIHT Perception</td>
<td>37.75 (4.79)</td>
<td>37.00 (0.82)</td>
<td>.17</td>
<td>0.32</td>
<td>3</td>
<td>.386</td>
</tr>
<tr>
<td>MIHT Affect</td>
<td>26.75 (1.50)</td>
<td>26.25 (1.26)</td>
<td>-.49</td>
<td>0.42</td>
<td>3</td>
<td>.352</td>
</tr>
<tr>
<td>CES-D PCS</td>
<td>21.25 (10.43)</td>
<td>23.25 (14.22)</td>
<td>-.32</td>
<td>-0.20</td>
<td>3</td>
<td>.428</td>
</tr>
<tr>
<td>SF-36 PCS</td>
<td>50.45 (6.75)</td>
<td>48.60 (10.45)</td>
<td>.32</td>
<td>0.36</td>
<td>3</td>
<td>.214</td>
</tr>
<tr>
<td>SF-36 MCS</td>
<td>50.00 (10.28)</td>
<td>26.55 (13.28)</td>
<td>.03</td>
<td>3.49</td>
<td>3</td>
<td>.020*</td>
</tr>
</tbody>
</table>

*Note. WLC = wait-list control group; SHAI = Short Health Anxiety Inventory; MIHT = Multidimensional Inventory of Hypochondriacal Traits; CES-D = Centre for Epidemiologic Studies Depression Scale; SF-36 = Short Form 36 Health Survey; PCS = Physical Component Summary; MCS = Mental Component Summary.

*p < .05.
## Appendix D

Draft of unconstrained categorization matrix

<table>
<thead>
<tr>
<th>Subcategories</th>
<th>Category questions and identified themes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Q1. Liked most</strong></td>
</tr>
<tr>
<td>Learned new things</td>
<td>relaxation techniques</td>
</tr>
<tr>
<td>Learned new things</td>
<td>tools to deal with anxiety</td>
</tr>
<tr>
<td>Learned new things</td>
<td>relaxation techniques</td>
</tr>
<tr>
<td>Changed my thinking</td>
<td>challenged my current ways of thinking</td>
</tr>
<tr>
<td>Changed my thinking</td>
<td>added more pleasure and enjoyment to my life</td>
</tr>
<tr>
<td>Changed my behaviour</td>
<td>working on my anxiety</td>
</tr>
<tr>
<td>Changed my thinking</td>
<td>being aware of my health anxiety</td>
</tr>
<tr>
<td>Changed my thinking</td>
<td>not letting health anxiety just happen to me</td>
</tr>
<tr>
<td>Changed my behaviour</td>
<td>being open about health anxiety</td>
</tr>
<tr>
<td>Learned new things</td>
<td>book exercises and information</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>opportunity to ask for help/clarification</td>
</tr>
<tr>
<td>Work was manageable</td>
<td>amount of required reading/work each week was generally reasonable</td>
</tr>
<tr>
<td>Changed my thinking</td>
<td>better understanding of my problems and weaknesses</td>
</tr>
<tr>
<td>Learned new things</td>
<td>gained knowledge and strategies</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>my concerns were taken seriously</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>I was treated with respect and patience</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>strategies and objectives were explained clearly</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>the support was comforting and effective</td>
</tr>
<tr>
<td>Beneficial experience</td>
<td>it was a great experience</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>one to one support of the professional</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>professional gave me directions about my health anxiety</td>
</tr>
<tr>
<td>Positive interaction with research staff</td>
<td>people are friendly</td>
</tr>
<tr>
<td></td>
<td><strong>Q2. Liked least</strong></td>
</tr>
<tr>
<td>Time constraint</td>
<td>exercises were tedious</td>
</tr>
<tr>
<td>Time constraint</td>
<td>some exercises required a lot of time</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Time constraint</td>
<td>behaviour changing work compressed into too short time</td>
</tr>
<tr>
<td>Time constraint</td>
<td>I felt rushed</td>
</tr>
<tr>
<td>Questionnaires</td>
<td>questionnaires</td>
</tr>
<tr>
<td>No counselling</td>
<td>no weekly counselling</td>
</tr>
<tr>
<td>Nothing</td>
<td>nothing</td>
</tr>
<tr>
<td>Usability</td>
<td>has to be more practical</td>
</tr>
<tr>
<td>Setting</td>
<td>program should pay for parking</td>
</tr>
<tr>
<td>No counselling</td>
<td>no weekly counselling</td>
</tr>
</tbody>
</table>

**Q3. Found easy**

| Convenience             | could fit it into my schedule          |
| Reading                 | reading                                |
| Reading                 | reading                                |
| Interaction with research staff | check-in sessions                    |
| Reading                 | own knowledge fit with strategies presented |
| Reading                 | easy to read and understand book       |
| Convenience             | 30 minutes for a visit...is manageable |
| Convenience             | time is very flexible                  |

**Q4. Found difficult**

| Exercises and skills practice | difficult to complete all the exercises/worksheets with work schedule |
| Learning new things          | difficult to have new skills actually penetrate mind                     |
| Questionnaires               | questionnaires                                                            |
| Exercises and skills practice | finding time to do exercises                                              |
| New thinking                 | allowing myself to become in touch with my fears                           |
| No counselling               | allowing myself to be vulnerable without counselling session               |
| Nothing                      | nothing                                                                    |
| Nothing                      | nothing                                                                    |
| Exercises and skills practice | hard time applying some exercises (e.g., interoceptive exposure)          |

**Q5. What would you change about program**

<p>| Change program timing | spread out chapters 6 and 7...allow several weeks each                    |
| Change program timing | read first few chapters in week 1                                         |</p>
<table>
<thead>
<tr>
<th>Questionnaires</th>
<th>the questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment delivery</td>
<td>make questionnaires accessible without computer</td>
</tr>
<tr>
<td>Change program timing</td>
<td>more time between check-ins for the second half of program</td>
</tr>
<tr>
<td>Change program timing</td>
<td>needed more than a week for some activities (e.g., hierarchy)</td>
</tr>
<tr>
<td>More counselling</td>
<td>face/face meetings/counselling sessions</td>
</tr>
<tr>
<td>Treatment delivery</td>
<td>send out the whole book in one piece</td>
</tr>
<tr>
<td>More counselling</td>
<td>sometimes 30 minutes for a visit not long enough</td>
</tr>
<tr>
<td>Nothing</td>
<td>nothing to change</td>
</tr>
<tr>
<td>More counselling</td>
<td>help people understand their health anxiety during session</td>
</tr>
<tr>
<td>More counselling</td>
<td>help people understand what to do about their health anxiety during session</td>
</tr>
</tbody>
</table>
Appendix E

Ethical clearance
DATE: September 3, 2008

TO: Candice Bovell
    1320 Jubilee Avenue, Regina, SK S4S 3S9

FROM: Dr. Bruce Plouffe
      Chair, Research Ethics Board

Re: Randomized Controlled Trial of a Self-Help Book for Health Anxiety (06S0809)

Please be advised that the University of Regina Research Ethics Board has reviewed your proposal and found it to be:

☒ 1. APPROVED AS SUBMITTED. Only applicants with this designation have ethical approval to proceed with their research as described in their applications. For research lasting more than one year (Section 1F). ETHICAL APPROVAL MUST BE RENEWED BY SUBMITTING A BRIEF STATUS REPORT EVERY TWELVE MONTHS. Approval will be revoked unless a satisfactory status report is received. Any substantive changes in methodology or instrumentation must also be approved prior to their implementation.

☐ 2. ACCEPTABLE SUBJECT TO MINOR CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB. **Do not submit a new application.** Once changes are deemed acceptable, ethical approval will be granted.

☐ 3. ACCEPTABLE SUBJECT TO CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB. **Do not submit a new application.** Once changes are deemed acceptable, ethical approval will be granted.

☐ 4. UNACCEPTABLE AS SUBMITTED. The proposal requires substantial additions or redesign. Please contact the Chair of the REB for advice on how the project proposal might be revised.

Dr. Bruce Plouffe

C.C. Dr. Gordon J. G. Asmundson - Psychology

**supplementary memo should be forwarded to the Chair of the Research Ethics Board at the Office of Research Services (Lab Building Addition - LA 109) or by e-mail to research.ethics@uregina.ca**
Worried About Your Health?

Do you worry too much about your health? Are you afraid of illness? Do unusual body symptoms scare you?

If yes, then you may be eligible to participate in research about self-help treatment for health anxiety.

Eligible participants will receive a health anxiety assessment, 8 weeks of self-help materials, and friendly one-on-one support throughout treatment.

INTERESTED?

Telephone (306) 337-2473, visit www.aibl.ca, or email bovell1e@uregina.ca to complete the screening questionnaire. Limited spaces available. Study ending soon.

University of Regina

AIBL

This study has been reviewed by, and received ethics clearance through, the Research Ethics Board, University of Regina, and the Regina Health District Research Ethics Board.
Title: Self-Help Book Treatment for Health Anxiety

Introduction: Health anxiety is a preoccupation with fear about having a physical disease. The fear is based on the extremely negative misinterpretation of harmless bodily sensations. It is associated with unpleasant physical, behavioural, mental, and emotional symptoms. When elevated, health anxiety affects an individual’s interpersonal relationships, especially with his or her doctor, and increases use of medical resources.

Cognitive-behavioural therapy (CBT) treatments aim to identify harmful thoughts and behaviours and replace them with healthy ones. CBT has been proven effective and is preferred by many people. The development of CBT programs for treating elevated health anxiety has progressed to the point where widely accessible self-help options are available.

The purpose of this study is to determine the effectiveness of a CBT based self-help book for health anxiety, *It's Not All in Your Head* (Asmundson & Taylor, 2005), when compared to a wait-list. The availability of this treatment option, if supported by research, will hold potential to improve the psychological and social lives of many individuals while also decreasing unnecessary costs to the health care system.

Procedure:
1. At the beginning of the study you will be asked to attend an assessment appointment at the Anxiety and Illness Behaviours Laboratory (AIBL) where you will be asked to:
   a. Participate in an interview (approximately 30 minutes) about your health anxiety, medical health status, and related problems to determine the nature of your health anxiety. This study is available to Canadian residents only and if you live outside of Regina, Saskatchewan the assessment appointment may be conducted by telephone.
   b. Complete online questionnaires (approximately 1 hour 30 minutes) that pertain to health anxiety, health status, and related problems to determine if you are eligible for the study. Canadian residents from outside of Regina, Saskatchewan must have access to a computer and internet service in order to complete the online questionnaires.
   c. Sign a medical release form that will allow Candice Bovell, M.A. (Investigator) or Research Facilitators to contact your family doctor, inform him or her about your participation in the study, and ask if he or she consents to your participation if you are eligible.

2. If you are not eligible for the study you will be referred to other practitioners or resources that may be useful to you. If you are eligible to participate in the study your medical release form will be sent to your family doctor. Your family doctor will be asked to approve your participation in the study based on your medical history. If you have not received a medical examination in over 12 months it is also recommended that you obtain a medical examination.
3. If you are eligible for the study and your family doctor approves of your participation you will be mailed instructions and materials for the study. During the study, we are asking you to participate in an 8-week self-help program for health anxiety.

You will be randomly assigned to one of two experimental groups:

a. **Self-Help Book Group**: If you are assigned to this group you will be asked to read and complete exercises in 10 chapters of the self-help book *It's Not All in Your Head* (Asmundson & Taylor, 2005) at home. You will also be asked to participate in weekly telephone 'check-ins' with Candice Bovell, M.A (Investigator). Check-ins will be an opportunity for you to ask questions and get help with any aspects of treatment. You will also be asked about how much you have read and what exercises you have completed. Check-ins can range from 5 to 30 minutes. You must complete a weekly check-in before the next week's reading materials are mailed to you.

b. **Wait-List Control Group**: If you are assigned to this group you will be placed on an 8-week wait-list to enter the Self-Help Book Group. You will be telephoned at the end of 8 weeks to begin the Self-Help Book Group.

You will also be asked to use the Internet at home to complete questionnaires halfway through the program and you will be telephoned when it is time to do so. During program you may contact Candice Bovell, M. A. (Investigator) or Gordon Asmundson, Ph.D. at (306) 337-2473 or bovell1c@uregina.ca if you have any questions about the readings or exercises.

4. At the end of the 8-week program you will be asked to complete questionnaires and receive a telephone debriefing about the study. This will give you the opportunity to ask questions and discuss the study with the Candice Bovell, M.A.

5. Four months after the program is completed, participants in the Self-Help Book Group will be telephoned to complete a final set of questionnaires using the Internet at home.

**Risks and Benefits**: The risks of participation in this study are that private information about your physical and mental health status will be requested during assessments and this may be uncomfortable for you. Also, during the course of the program you will have to think about (or discuss) and expose yourself to thoughts or situations that may temporarily raise your health anxiety. It is expected that the only cost to you will be the time required to complete the assigned readings, exercises, and questionnaires and to complete the assessment appointment at the AIBL. The benefits of this study are that you will achieve a better understanding of your health anxiety and a possible reduction in your symptoms. You may also benefit from information that will help you to manage other life stressors. The results of this research will help to provide a better understanding of the effectiveness of self-help for health anxiety.
**Research Personnel:** This study is being conducted by a research team that is affiliated with the AIBL and the University of Regina. If you have any questions about the study please feel free to contact Candice Bovell, M. A. or Gordon Asmundson, Ph.D. at (306) 337-2473 or bovell1c@uregina.ca. Please contact the Anxiety and Illness Behaviours Laboratory at (306) 337-2473 or visit the AIBL website at www.aibl.com if you wish to obtain a summary of the results.

**Confidentiality:** Any information derived from your participation in the study will be kept confidential by the researchers. There are a few important exceptional circumstances to this, however:

1. If you pose an immediate threat to your life or to that of other individuals, confidentiality may be broken in order to prevent harm.
2. If you disclose that a child is being abused or is in danger of abuse (physical or sexual), this information must be reported to the Ministry of Social Services.
3. If you become involved in a legal case, the judge has a right to subpoena any information relevant to this legal problem, which could also include this report.
4. If there is a concern regarding professional misconduct, it may be necessary to release information from this report to evaluate and address this concern.

Data collected from the study will be kept in the AIBL at the University of Regina for 7 years after the completion of the study. After 7 years the electronic data will be deleted and paper data will be securely destroyed.

**Voluntary Participation:** Participation in this project is completely voluntary. You may decline from participation or withdraw without penalty from the study at any time.

**Ethics Approval:** This project was approved by the Research Ethics Board, University of Regina, and the Regina Health District Research Ethics Board. If you have any questions or concerns about your rights or treatment as a research participant you may contact the Chair of the University Research Ethics Board at 585-4775 or by e-mail at research.ethics@uregina.ca, or the Chair of the Regina Health District Research Ethics Board at 766-5451.

---

**Consent Statement**

Having read the above, I agree to participate in this study and consent to the above. Finally, I acknowledge that I have received a copy of this form.


Signature of Participant  Signature of Investigator  Date
AUTHORIZATION TO RELEASE MEDICAL INFORMATION

Please complete the following forms. Once the forms are complete, please use the stamped envelope to mail the forms to your family doctor.

Name:
Street Address:
City & Postal Code:
Date:

Doctor Name:
Medical Practice or Hospital Name:
Street Address:
City & Postal Code

RE: Authorization to release medical information for ____________________________.

(date of birth) ____________________ (health card number) ______________________

Dear (Doctor Name) __________________________

I am writing to authorize Candice Bovell, M.A. to contact you on my behalf to obtain permission for me to participate in a research study. Please inform her of any information that could interfere with my participation in the study and indicate if you consent to my participation in the study.

If you have any questions, please call me at (your phone number) ________________________

Sincerely,

(print your name) __________________________

(signature) __________________________
University of Regina  
Anxiety and Illness Behaviours Laboratory  
Faculty of Kinesiology and Health Studies  
CK211  
Fax: (306) 337-3275  
Email: bovell1c@uregina.ca

To Whom It May Concern:

The Anxiety and Illness Behaviours Laboratory (AI BL) is currently testing the efficacy of a self-help program for health anxiety at the University of Regina. The program will have a duration of eight weeks. Participants will be required to read a self-help book at home, complete program exercises, and complete online questionnaires. Some participants will also be given individual therapist guided psychodeducation sessions at AI BL.

Participants in the study will be required to provide private information about their medical and psychological status. Participants in the study may experience negative mood and anxiety during the course of the study because some treatment components involve exposure to stimuli that may raise their health anxiety temporarily.

Your patient, ____________________________, has indicated an interest in participating in this program. In order for him/her to do so, we ask that you please fill and return the attached form by fax.

Thank you very much for your cooperation. If you have any questions or concerns, please feel free to call me at (306) 337-2473.

Sincerely,

Candice Bovell, M.A.  
Head Researcher  
University of Regina
Self-Help Book Treatment for Health Anxiety

Patient's Name: ________________________________________

This patient has my consent to participate in the Self-Help Treatment for Health Anxiety

Yes  No  (please circle)

Please indicate if there are any special precautions to be taken with this patient

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Signature of Physician: ________________________________________

Date: __________________________________________________________

Phone #: ________________________________________________________