

Correlates of Treatment Preference in a Randomized Trial Comparing
Mindfulness Meditation versus Cognitive-Behavioral Therapy

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Abstract

Purpose: There is growing interest in the clinical application of mindfulness meditation. However, little is known about the extent to which clients prefer mindfulness-based interventions (MBI) over conventional psychological therapies. The present study examined predictors of treatment preference and credibility in individuals with social anxiety disorder (SAD) who participated in a randomized trial of a mindfulness intervention adapted for SAD (MBI-SAD) versus a conventional psychological therapy (cognitive behavior group therapy; CBGT).

Method: The sample included 97 adults who met DSM-5 criteria for SAD. Binary logistic and multiple linear regressions were conducted to examine baseline sociodemographic and clinical predictors of treatment preference for the MBI-SAD and perception of treatment credibility. Analysis of variance was used to compare levels of trait mindfulness across treatment preference groups. **Results:** The majority of participants (49%) reported a preference for the MBI-SAD. Ratings of treatment credibility were comparable for the two interventions. Employment status significantly predicted preference for CBGT versus the MBI-SAD, whereas younger age predicted preference for CBGT. Higher household income, a history of psychotherapy, elevated scores on clinician ratings of depression and social anxiety, and lower scores on self-report depression predicted no treatment preference. Higher household income predicted greater perceived credibility of treatment. Trait mindfulness did not differ across the treatment preference groups or predict treatment credibility. **Discussion:** Mindfulness meditation appears to be an acceptable and credible treatment for SAD. However, few baseline demographic and clinical characteristics predicted preference for the MBI-SAD. Additional research is needed to explore factors that shape preference and beliefs about mind-body interventions.

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Introduction

What is Social Anxiety Disorder?

Social Anxiety Disorder (SAD) is one of the most common and persistent anxiety disorders in Canada (Canadian Psychological Association (CPAa), 2013; Katzman et al., 2014; Stein & Kean, 2000; Wittchen & Fehm, 2003). The Diagnostic Statistical Manual-V (American Psychiatric Association (APA), 2013) defines SAD as an individual's excessive and persistent fear or anxiety of others negatively evaluating and scrutinizing him/her in social and performance situations. Examples of feared situations include speaking in front of others, initiating or maintaining a conversation, speaking with unfamiliar people, eating or drinking in front of others, and being the center of attention. Individuals with SAD fear they will act in such a way or show anxiety symptoms, such as blushing, trembling or sweating, that will result in embarrassment, rejection or humiliation. As a result of their fear, individuals with SAD either avoid social situations or endure them with dread (APA, 2013).

Epidemiological research indicates that SAD is a common condition, affecting 7 to 12% of the population (Kessler, Chiu, Demler, & Walters, 2005; Ruscio et al., 2008), with a female to male ratio of about 3:2 (Beesdo et al., 2007). The disorder typically begins in childhood or adolescence (APA, 2013; Wittchen & Fehm, 2003), with a median age of onset of 13 years (APA, 2013; Kessler et al., 2005; National Institute for Health and Care Excellence (NICE), 2013). In some cases, SAD may manifest itself out of a childhood history of shyness or behavioral inhibition (APA, 2013; Canadian Psychiatric Association (CPAb), 2006; Schneier, 2006; Wittchen & Fehm, 2003). Onset may also occur following an embarrassing or humiliating experience or may develop over a protracted period of time (APA, 2013; Rapee & Spence, 2004). Generally, the prevalence of SAD declines with age and the disorder rarely develops in late adulthood (CPAb, 2006; Wolitzky-Taylor, Castriotta, Lenze, Stanley, & Craske, 2010; Wolitzky-Taylor, Zimmerman, Arch, De Guzman, & Lagomasino, 2015).

If left untreated, SAD tends to be a chronic and lifelong condition (Mayo-Wilson et al., 2014; Wittchen & Fehm, 2001). It frequently co-occurs with other psychological conditions, especially mood disturbances, other anxiety disorders, major depressive disorder, substance use disorders (APA, 2013; Beesdo et al. 2007; CPAb, 2006; NICE, 2013; Stein & Kean, 2000; Wittchen & Fehm, 2003), and may increase risk for suicidal attempts (Cognigni et al., 2012; CPAb, 2006; Dalrymple & Zimmerman, 2011; Sareen et al., 2005; Wittchen & Fehm, 2003).

SAD is also associated with marked impairment in multiple domains including educational, occupational, and social (APA, 2013; Davis, Smits, & Hofmann, 2014; Patel, Knapp, Henderson, & Baldwin, 2002; Van Ameringen, Mancini, & Farvolden, 2003). For example, SAD has adverse effects on academic attainment, social and job success, socioeconomic status, and the formation and maintenance of romantic and other interpersonal relationships. Individuals with SAD report a lower quality of life, primarily in social and emotional areas, and greater functional and physical disability in comparison to individuals without SAD (CPAb, 2006; Stein & Kean, 2000). SAD can incur a significant economic burden on the healthcare system largely because of the high use of primary care services (CPAb, 2006; Mavranouzouli et al., 2015).

Despite the availability of effective treatments for SAD, few individuals with the disorder utilize mental health services. The National Comorbidity Study revealed that only 19% of people with SAD obtain care (Magee, Eaton, Wittchen, McGonagle & Kessler, 1996), and those who do seek initial treatment after 15 to 20 years of experiencing symptoms (Grant et al., 2005). The reasons why the majority of SAD sufferers do not receive treatment is unclear but may be attributed to a perception that their symptoms are attributed to a personality flaw rather than a treatable condition, reluctance to disclose their social anxiety to health care providers due to fear of negative evaluation, stigma associated with mental health treatment, financial burden of treatment, and poor detection of the disorder by primary care physicians (Grant et al., 2005; Kasper, 1998; Ruscio et al., 2008; Stein & Kean, 2000; Vermani, Marcus, & Katzman, 2011). The failure of these individuals to obtain care is an important public health issue and likely contributes to the morbidity and functional impairment associated with this condition.

Treatment of SAD

Pharmacological interventions. Pharmacotherapy is recommended as one of the initial treatment options for adults with SAD (CPAb, 2006; NICE, 2013). The most effective pharmacological interventions for this disorder include serotonin reuptake inhibitors (SSRIs), serotonin norepinephrine reuptake inhibitors (SNRIs), monoamine oxidase inhibitors (MAOIs) (Canton, Scott, & Glue, 2012; CPAb, 2006; Davis et al., 2014; Katzman et al., 2014; NICE, 2013; Stein et al., 2010), anticonvulsants, and benzodiazepines (CPAb, 2006; Katzman et al., 2014). A pharmacotherapy approach is generally recommended when an individual shows a preference towards receiving a drug treatment or refuses the first-line psychological intervention, cognitive behavioral therapy (CBT) (NICE, 2013) (A detailed description on CBT can be found

on page 9). Pharmacological interventions are also considered as a front-line treatment for SAD when individuals respond partially to CBT (Mayo-Wilson et al., 2014). When this occurs, it is recommended to offer pharmacotherapy in conjunction with individual CBT (NICE, 2013).

First-line agents. Selective serotonin reuptake inhibitors (SSRIs) and serotonin and norepinephrine reuptake inhibitors (SNRIs) are the most well researched classes of drugs for SAD (Canton et al., 2012; CPAb, 2006). These medications include the SSRI escitalopram, sertraline, fluvoxamine, paroxetine and the SNRI venlafaxine (CPAb, 2006; NICE, 2013). Several studies have shown the superiority of SSRIs to placebos in improving SAD symptoms (Fedoroff & Taylor, 2001; van der Linden, Stein, & van Balkom, 2000). In addition to their high rates of efficacy, SSRIs are also known for their relatively safe and well tolerated profile (CPAb, 2006; Davis et al., 2014; NICE, 2013; Yoshinaga et al., 2013). In a recent meta-analysis involving 17 studies, Canton et al. (2012) demonstrated that all the SSRIs, except for fluoxetine, were superior to placebo in improving SAD symptoms. Four of the studies reviewed in the meta-analysis were relapse prevention studies; these studies demonstrated robust effects of SSRIs in preventing relapse of SAD symptoms (Canton et al., 2012). In another review comparing the efficacy of different pharmacological interventions for SAD, Stein et al. (2010) supported the use of SSRIs as a first-line medication, due to their efficacy, favorable side effect profile, and benefit in reducing symptoms of comorbid psychological disorders. Furthermore, several placebo-controlled trials have found the SNRI, venlafaxine, to be a safe, well-tolerated and efficacious treatment for generalized SAD (Allgulander et al., 2004; Liebowitz, Gelenberg, & Munjack, 2005; Rickels, Mangano, & Khan, 2004). Liebowitz et al. (2005) supported the use of venlafaxine as a first-line treatment for generalized SAD, given its comparable efficacy and tolerability to the SSRI paroxetine.

Second-line and third-line agents. Several randomized controlled trials (RCTs) have demonstrated the superiority of several second line agents (alprazolam, benzodiazepines, bromazepam, citalopram, clonazepam, gabapentin, pregabalin and phenelzine) in comparison to placebo in the treatment of SAD (Canton et al., 2012; CPAb, 2006; Katzman et al., 2014). In a study that compared group CBT, phenelzine, alprazolam and pill-placebo, Gelernter et al. (1991) found response rates were the greatest in the phenelzine-treated group. Therapeutic gains were sustained in the phenelzine-treated group, whereas those who received alprazolam were more likely to relapse once medication was discontinued. Nonetheless, Gelernter et al. (1991)

considered both alprazolam and phenelzine to be effective treatments in SAD, as both drugs were associated with greater improvement in SAD symptoms than pill-placebo at posttest. Although, the Canadian Psychiatric Association (2006) considers monoamine oxidase inhibitors (MAOIs) to be effective in the treatment of SAD, they recommend that its use be limited due to dietary restrictions and potentially serious interactions with other drugs.

Benzodiazepines are another second-line agent that research shows to be safe and effective for short-term use in the treatment of SAD (CPAb, 2006). In a meta-analysis, Fedoroff and Taylor (2001) found that pre- to posttreatment effect sizes for benzodiazepines were comparable to those of SSRIs, although a meta-analysis by Blanco et al. (2003) found that the benzodiazepine, clonazepam, had a significantly greater effect size than SSRIs. However, long-term use of high-potency benzodiazepines has been associated with certain complications such as potential risk of physical dependence, drowsiness, withdrawal effects with discontinuation, and memory and cognitive impairment (Barker, Greenwood, Jackson, & Crowe, 2004; Blanco & al., 2002; CPAb, 2006; Fedoroff & Taylor, 2001). Consequently, the Canadian Psychiatric Association (2006) recommends the short-term use of benzodiazepines in SAD, in addition to clinicians being vigilant with prescribing benzodiazepines to those with a history of alcohol/substance abuse (CPAb, 2006; Davis et al., 2014). There has also been some support for use of high dose anticonvulsants (gabapentin, pregabalin) in the treatment of SAD, although the use of these medications is rather novel and their efficacy is not yet well established (Pande et al. (1999; 2004).

Third-line medications for SAD include: bupropion, mirtazapine, divalproex, topiramate, levetiracetam, olanzapine, quetiapine, selegiline, and clomipramine (CPAb, 2006). These medications are beneficial when an individual fails to respond to first-and-second line pharmaceutical therapies. Third-line agents may also be used in conjunction with other treatments for SAD (CPAb, 2006). However, evidence for third-line agents for SAD remains mixed and preliminary (CPAb, 2006; Hedges, Brown, Shwalb, Godfrey, & Larcher, 2007; Clark et al., 2003; Davidson et al., 2004; Kobak, Greist, Jefferson & Katzelnick, 2002). Kobak et al., 2002; Davidson et al., 2004).

Limitations with pharmacotherapy for SAD. In a recent systematic review of interventions for SAD, Mayo-Wilson and colleagues (2014) found several problems associated with pharmacological interventions. These included tolerability, side-effects such as sexual

dysfunction and increased agitation, adverse interactions with other medications, and a high incidence of relapse following treatment discontinuation. Moreover, pharmacotherapy may be challenging for individuals who suffer from a comorbid Axis 1 disorder (i.e., severe depression, suicidality, substance use disorders), or from a general medical condition. Drug therapy should also be used with extreme caution in certain populations such as pregnant and breastfeeding women (CPAb, 2006). These individuals require closer monitoring from the physician, and potential postponement of pharmacotherapy (Stein et al., 2010). Taking these factors into consideration, NICE (2013) has indicated that if an individual prefers to receive pharmacotherapy, they must be informed of the advantages and disadvantages of medication and be closely monitored for adverse reactions by a physician. If an individual does not respond to any pharmacological intervention, it is suggested that the individual considers cognitive behavior therapy (CBT) (CPAb, 2006; NICE, 2013).

Cognitive-behavior therapy. Cognitive-behavior therapy (CBT) is recognized as the gold standard and most empirically supported psychological intervention for SAD (Barkowski et al., 2016; Canton et al., 2012; CPAa, 2013; Faucher, Koszycki, Bradwejn, Merali, & Bielajew, 2016; Katzman et al., 2014; NICE, 2013; Shahar, 2013), with an efficacy comparable to medication according to a recent meta-analysis (Cuijpers et al., 2013). The therapy is based on a cognitive model of social anxiety, which posits a bidirectional relationship between negative expectations about social or performance situations (e.g., “I will sound stupid”), attention to possible social mistakes, physiological symptoms of arousal and avoidance behaviour (Hofmann, 2007; Radomsky & Otto, 2001). It specifically addresses the maladaptive cognitive cycle that is thought to contribute to the maintenance of SAD by incorporating both behavioural and cognitive strategies (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012). CBT protocols for SAD typically include psychoeducation about the disorder, an orientation to the cognitive model of social anxiety, cognitive restructuring, within- and between-session exposure to feared social situations, and education on relapse prevention (Goldin et al., 2014; Katzman et al., 2014; NICE, 2013).

CBT can be delivered individually or in a group format and studies have found that both modalities are equally effective treatments for SAD (Acarturk, Cuijpers, Van Straten, & De Graaf, 2009; Barkowski et al., 2016; Hope, Heimberg, Juster, & Turk, 2000; Ledley et al., 2009; Powers, Sigmarsson, & Emmelkamp, 2008). Nevertheless, cognitive behavior group therapy

(CBGT) has several advantages over individual CBT, such as the facility of simulating real life social situations (e.g., role play, exposure), vicarious learning through other group members (Heimberg, Juster, Hope, & Mattia, 1995; Stangier, Heidenreich, Peitz, Lauterbach, & Clark, 2003), cost-effectiveness (Wersebe, Sijbrandij, & Cuijpers, 2013), normalization of symptoms, reduction of stigma, and the social context of learning (Aderka, McLean, Huppert, Davidson, & Foa, 2013; Barkoswki et al., 2016). In addition to face-to-face CBT, researchers have begun to investigate the efficacy of delivering this intervention via the internet. Internet-based cognitive behavioral therapy (ICBT) has the advantage of making this effective treatment more accessible and readily available (Boettcher, Andersson, & Carlbring, 2013), especially for individuals who: (a) reside in areas where few trained CBT therapists are available, (b) cannot attend weekly face-to-face therapy sessions, (c) cannot afford the cost of a therapist, or (d) are reluctant to engage in therapy because of intense fear of social interactions (Boettcher et al., 2013; Hedman et al., 2014).

Review of studies on the efficacy of CBT for SAD

Studies that compare CBT to a waitlist control or psychological placebo

Researchers have compared individual and group CBT to a waitlist control condition in order to determine their efficacy for SAD (Acarturk et al., 2009). Although a waitlist control design is not a robust test of efficacy and may inflate the effects of psychotherapies (Canton et al., 2012; Cuijpers, Cristea, Karyotaki, Reijnders & Huibers, 2016), several meta-analyses have concluded that CBT has large effects ($d = 0.77$; Hedges' $g = 0.88$) compared to a waitlist control in improving symptoms of SAD (Acarturk et al., 2009; Cuijpers et al., 2016; Mayo-Wilson et al., 2014). When using Cohen's d or Hedges' g , an effect size of $d \geq .80$ or $g \geq .80$ is considered to be a large effect size, which indicates an importance difference (Cohen, 1988; Hedges & Olkin, 1985). In the most up-to-date meta-analysis by Cuijpers et al. (2016) that included 48 randomized trials of CBT versus a control condition, large effects in favour of CBT (Hedges' $g = 0.88$) were found. However, 40 studies included in this meta-analysis used a waitlist control design, and these studies produced much larger effects (Hedges' $g = 0.98$) than studies that compared CBT to pill placebo (Hedges' $g = 0.47$) and treatment as usual (Hedges' $g = 0.44$). A meta-analysis by Hoffman and Smits (2008) evaluated seven studies that compared CBT for SAD versus a psychological placebo that involved interventions that controlled for non-specific therapy factors. This analysis revealed that CBT was superior to psychological placebo, with

moderate effects (Hedges' $g=0.62$). There was also evidence that CBT was more effective than waitlist control groups in a recent meta-analysis by Barkowski et al. (2016), who found greater alleviation of symptoms of SAD with CBGT.

The long-term effects of individual or group CBT has also been evaluated. A recent study by Furukawa and colleagues (Furukawa et al., 2013) showed that symptoms remained the same or worsened in individuals assigned to the waitlist group, whereas treatment gains were sustained at both 3- and 12-months follow-ups for those assigned to CBGT. It is noteworthy that that two out of three of individuals who worsened in the waitlist condition were on medication (antidepressants and/or benzodiazepines), which may have affected their worsening of symptoms (Furukawa et al., 2013). The long term benefits of CBGT was also supported in a naturalistic study by Kawaguchi and colleagues (2013), which found that treatment gains were maintained at 1-year follow-up. In their meta-analysis of treatments for SAD, Mayo-Wilson and colleagues (2014) concluded that CBT is the best initial treatment option because its effects are well-maintained at follow-up, whereas first-line medications (i.e., SSRIs and SNRIs) are associated with high relapse rates following treatment discontinuation.

Studies comparing CBT to other psychological therapies

Few studies have investigated how well other psychological therapies compare to CBT. A recent RCT (Leichsenring et al., 2013) found that while both CBT and psychodynamic therapy (PDT) showed greater remission and response rates than the waitlist control, CBT was superior to PDT in rates of remission and response and in reducing social phobia symptoms and interpersonal problems. In contrast, Bögels, Wijts, Oort, and Sallaerts (2014) found that CBT and PDT were equally efficacious in improving symptoms of SAD, with over 50% of patients in each treatment modality meeting study criteria for remission. While these authors consider both CBT and PDT as efficacious treatments for SAD, it should be noted that the “dose” of PDT was considerably higher than that of CBT (31.4 versus 19.8 sessions). Other research has shown that acceptance and commitment therapy (ACT), a “third wave” CBT intervention that emphasizes personal values and cognitive flexibility, is comparable to standard CBT (Craske et al., 2014; Kocovski, Fleming, Hawley, Huta, & Antony, 2013), whereas CBT is superior in efficacy to interpersonal psychotherapy (Stangier, Schramm, Heidenreich, Berger, & Clark, 2011) and supportive therapy (Cottraux et al., 2000). While exposure therapy alone, cognitive techniques

alone, social skills training, attention focused therapy, and applied relaxation have been found to improve symptoms of SAD, it is unknown if these interventions are as effective as CBT.

Review of studies on the efficacy of internet-based delivered CBT for SAD

A recent study compared the effectiveness of ICBT to CBGT in individuals with SAD (Hedman et al. 2014). This study suggested that both CBGT and ICBT were comparable treatments and equally cost-effective. Both groups improved significantly from baseline to 4-year follow-up on numerous measures including severity of social anxiety symptoms. Moreover, a RCT that compared ICBT to a waitlist control also supported the use of ICBT for SAD; ICBT led to significant improvements in clinician and self-report ratings of social anxiety and general symptomatology (e.g., phobic anxiety, anxiety, depression, somatization, obsessive-compulsivity, distrust and interpersonal sensitivity, hostility, and insomnia) (Berger, Holh, & Casper, 2009). Carlbring, Nordgen, Furmark, and Andersson (2009) conducted a 30-month follow-up study and found significant pretreatment to follow-up within-group effects for measures of social anxiety and that the majority of their participants (68.4%; 26/38) reported improvement. These researchers suggested that ICBT may yield similar long-term effects as in-person CBT.

Review of studies comparing monotherapy versus combination therapy for SAD

Because both pharmacotherapy and CBT have shown efficacy in the treatment of SAD, researchers have investigated whether a combination of the two might be a more effective treatment than either intervention alone (Mayo-Wilson et al., 2014). In a meta-analysis by Canton et al. (2012) that included five studies comparing pharmacotherapy alone versus combined treatment, no significant differences between treatment conditions emerged, suggesting there is no advantage in adding CBT to medication therapy. Nonetheless, one study investigating the use of benzodiazepines revealed a significant difference in favor of the combined treatment. Canton et al. (2012) also evaluated four studies that compared the effectiveness of psychological treatments alone (mostly CBT) versus combined treatment with medication. Their results revealed no significant difference between the combination of SSRIs and psychological treatment versus psychological treatment alone. They did, however, find that a combination of MAOIs and CBT was superior to CBT alone. However, Canton and colleagues (2012) recommended that the results of their meta-analysis be interpreted with caution due to the methodological limitations of studies included in their analysis (i.e., small sample size, inclusion

of a highly selected group of individuals). Another study by Blanco et al. (2010) compared the efficacy of monotherapy (phenelzine or CBGT), combined therapy, and placebo-pill in a large sample of SAD patients. Patients who received the combined treatment had a better response and remission rates than those who received monotherapy or placebo-pill. While there is some support for the use of combined treatments for SAD, the available research is limited and results are inconclusive. A meta-analysis by Mayo-Wilson et al. (2014) found combined treatment had numerically higher effect sizes than monotherapy. However, differences were non-significant, although, this may be attributed, in part, to low statistical power. Nevertheless, there is a need for further clinical studies to determine the benefits of combined treatments for SAD as well as their long-term effects (Canton et al., 2012; Mayo-Wilson et al., 2014).

Limitations associated with CBT

Although an extensive body of research has documented the successful use of CBT for SAD, a substantial number of individuals do not respond to this treatment (Koszycki et al., 2016). According to a review of 269 meta-analyses examining the efficacy of CBT among different disorders and medical problems (i.e., borderline personality disorder, panic disorder, anger/aggression, depression, anxiety, chronic fatigue, personality disorders, generalized anxiety disorder, bulimia nervosa, obsessive compulsive disorder) only 38% to 77% of individuals achieve a clinically significant change (Hofmann et al., 2012). Consequently, a considerable number of people remain symptomatic at the end of treatment (Boettcher et al., 2013; Goldin et al., 2014; Jazaieri, Goldin, Werner, Ziv, & Gross, 2012; Leichsenring et al., 2013; Shahar et al., 2013). Other disadvantages of CBT include the need for highly qualified and trained therapists, high treatment cost, the complexity of the therapy that may require higher level learning skills, and the time commitment (Rhodes et al., 2014).

Alternative Psychological Approaches for SAD

There is growing interest in the use of non-traditional approaches for managing symptoms of anxiety including mind-body practices such as tai chi, yoga, and meditation (Burnett-Zeigler, Schuette, Victorson, & Wisner, 2016). One mind-body practice that has attracted considerable attention for the treatment of SAD is mindfulness meditation. This intervention has been touted as a possible alternative treatment for individuals who are reluctant or unable to engage in traditional treatments such as CBT, because of the stigma and cost associated with mental health services (Jazaieri et al., 2012; Piet, Hougaard, Hecksher, &

Rosenberg, 2010; Norton, Abbott, Norberg, & Hunt, 2015). Mindfulness meditation may also be an appealing option due to its accessibility; mindfulness meditation can be self-administered (i.e., guided meditations, self-help materials) or taught in different settings by experienced instructors who are not necessarily mental health professionals (Koszycki, Bengler, Shlik, & Bradwejn, 2007; Koszycki et al., 2016). Moreover, mindfulness meditation may be an appealing option for individuals who prefer a more holistic approach to care and prefer to focus on wellness rather than illness (Faucher et al., 2016). This emphasis on wellness makes mind-body interventions an attractive and potentially less stigmatizing approach to the treatment of SAD (Jazaieri et al., 2012).

Mindfulness Meditation

Mindfulness meditation is an ancient Buddhist practice aimed at cultivating a calm and concentrated mind, inner balance, clarity of thinking, ethical behavior, and an attitude of acceptance, nonjudgment, and compassion (Chiesa & Serretti, 2010; Farb, Anderson, & Segal, 2012; Kabat-Zinn, 2003). Although the concept of mindfulness is difficult to operationalize (Baer, 2015), it is usually described in the psychological literature as a purposeful, nonjudgmental, enhanced awareness of present moment experiences (Chiesa, 2013; Kabat-Zinn, 2003; Keng, Smoski, & Robins, 2011; Malinowski, 2013; Norton et al., 2015; Schmertz, Masuda, & Anderson, 2012). Mindfulness is cultivated through formal and informal meditation practices (Goldin & Gross, 2010). Formal meditation practices include concentration meditations, where the practitioner refines attention skills by learning to notice when the mind has wandered and to bring attention back to the object of focus (e.g., the breath), and open monitoring meditations, where the practitioner cultivates a detached awareness of the transient nature of internal events such as thoughts, emotions, and physical sensations and insight into habitual mental patterns (Goldin & Gross, 2010; Grossman, Niemann, Schmidt, & Walach, 2004; Malinowski, 2013). Informal practice involves being mindful in daily activities (e.g., eating, driving, taking a shower) (Goldin & Gross, 2010; Shapiro, Carlson, Astin, & Freedman, 2006).

Overview of Mindfulness-Based Interventions (MBI)

Mindfulness meditation has been incorporated into both clinical and non-clinical settings to help individuals cope with daily stressors, to foster emotional growth (Kabat-Zinn et al., 1992), and to alleviate symptoms of several mental and physical conditions (Baer, 2003). The most

well-researched MBIs are mindfulness-based stress reduction (MBSR), which was developed by Jon Kabat-Zinn in the 1970s to help individuals cope with the stress of chronic illness (Kabat-Zinn & Hanh, 2009), and mindfulness-based cognitive therapy (MBCT), which was developed by Segal and colleagues in the 1990s as a relapse prevention program for depression (Segal, Williams, & Teasdale, 2002). More recently, these interventions have been assessed in a wide range of psychological and medical populations (Hofmann, Sawyer, Witt, & Oh, 2010; Lindsay & Creswell, 2017). Although other psychological interventions incorporate mindfulness training, including ACT (Hayes, Luoma, Bond, Masuda & Lillis, 2006) and dialectical behavior therapy (Linehan, 2000), intensive training in mindfulness meditation is not the core feature of these interventions (Baer, 2003).

MBSR was inspired by the Theravada tradition of Buddhism but secularized in order to make it more accessible to the Western mindset (Kabat-Zinn, 2003). MBSR is a manualized, structured group program, in which participants attend 8 weekly sessions of 2.5 hours' duration, in addition to an all-day silent retreat. The sessions incorporate formal and informal mindfulness meditation practices to cultivate mindfulness awareness, such as sitting meditation, hatha yoga, and the body scan (Kabat-Zinn, 2003). Individuals learn to cultivate nonjudgmental awareness and acceptance of present-moment experiences, including thoughts, emotions and physical sensations (Hjeltnes, Moltu, Schanche, Jansen, & Binder, 2016; Keng et al., 2011). Research on the efficacy of MBSR indicates that intensive training in mindfulness reduces anxiety, depression and stress and improves quality of life (Goldin & Gross, 2010; Grossman et al., 2004; Koszycki et al., 2007; Shapiro et al., 2006). A recent meta-analysis that included 47 RCTs found that MBSR is a moderately effective treatment for improving symptoms of anxiety, depression and pain in diverse populations (Goyal et al., 2014).

MBCT is an adapted version of MBSR that integrates core features of cognitive therapy (Segal et al., 2002). The 8-week group program is manualized, and similar to MBSR, teaches individuals to develop a decentered view of thoughts, emotions, and bodily sensations by learning to observe these experiences in a non-judgmental manner. MBCT teaches individuals to become aware of their negative thinking patterns and to disengage from ruminating cognitive-affective processing cycles (Segal et al., 2002). There is strong evidence that MBCT reduces relapse in individuals with a history of recurrent depression (i.e., those with three or more depressive episodes) (Godfrin & van Heeringen, 2010; Kuyken et al., 2016; Ma & Teasdale,

2004; Shallcross et al., 2015; Teasdale et al., 2000). MBCT has also been shown to be more effective than treatment as usual in decreasing depressive symptoms among currently depressed patients (Barnhofer et al., 2009; Hepburn et al., 2009) and improving quality of life and residual depressive symptoms in recovering depressed patients (Godfrin & van Heeringen, 2010; Kuyken et al., 2008). Consequently, MBCT is considered a first-line treatment for depression relapse according to NICE treatment guidelines (NICE, 2009). Moreover, there is some preliminary data suggesting that MBCT may also improve outcomes in other psychological conditions such as bipolar disorder (Ives-Deliperi, Howells, Stein, Meintjes, & Horn, 2013; Williams et al., 2008), social phobia (Piet et al., 2010), depressive symptoms among individuals with epilepsy (Thompson et al., 2010), anxiety (Baer, 2003; Brown, Ryan & Creswell, 2007), generalized anxiety disorder (Craigie, Rees, Marsh, & Nathan, 2008; Evans et al., 2008), attention deficit hyperactivity disorder (Gu, Yu, & Zhu, 2016), and panic disorder (Kim et al., 2010).

Mindfulness interventions for SAD

While only a few studies have investigated the effectiveness of MBIs for the treatment of SAD, results have been generally favourable (Goldin et al., 2016; Jazaieri et al., 2012; Kocovski et al., 2013; Koszycki et al., 2007; Piet et al., 2010). Koszycki et al. (2007) conducted the first randomized trial that compared the efficacy of MBSR and CBGT in individuals with SAD. Their study found that MBSR was less effective than CBGT in reducing social anxiety symptoms, although comparable to CBGT in alleviating depressive symptoms and improving quality of life. This study also showed that CBGT was more effective than MBSR in decreasing subjective anxiety during a speech task, with responses being comparable to healthy controls (Faucher et al. 2016). Nevertheless, although CBGT produced the best results, participants who received MBSR did exhibit a decrease in subjective anxiety and symptoms of SAD during the speech task. The authors concluded that the within- and between-sessions exposures to feared social stimuli, which is a core component of CBGT, may have been a key element contributing to better outcome with this intervention (Faucher et al, 2016; Koszycki et al., 2007).

A follow up study by Koszycki and colleagues (2016) evaluated the feasibility and efficacy of a MBI that was more tailored for individuals with SAD (MBI-SAD). The intervention included elements of the standard MBSR program as well as extensive psychoeducation about SAD, training in self-compassion to develop a more accepting and unconditional kindness toward oneself, and mindful exposure where participants practice applying mindfulness skills in

feared social situations. To accommodate these changes, the group intervention was extended from 8- to 12-weekly sessions and the day of silence was excluded. In this preliminary randomized waitlist control trial, MBI-SAD was found to be superior to waitlist in improving symptoms of social anxiety, depression and social adjustment. Additionally, participants in the MBI-SAD condition exhibited higher levels of self-compassion and mindfulness post-treatment compared to those in the waitlist condition. Their preliminary results suggested that a 12-week MBI adapted for SAD may be a feasible and efficacious intervention for this disorder (Koszycki et al., 2016).

Other studies have also reported that MBIs are efficacious for SAD. Piet et al. (2010) conducted a crossover design study where participants with SAD were randomly assigned to MBCT followed by CBGT or CBGT followed by MBCT. They found that pre to post-treatment effects sizes were moderate for MBCT and large for CBGT. Although MBCT was somewhat less efficacious than CBGT, Piet et al. (2010) suggested that MBCT may be a lower-cost intervention which may appeal to different individuals. A subsequent trial by Kocovski and colleagues (2013) looked at the efficacy of mindfulness and acceptance based group (MAGT) versus CBGT for SAD. They found MAGT and CBGT were similar in efficacy but superior to waitlist at post-treatment, with treatment gains maintained at 3-months follow-up. In another trial by Jazaieri et al. (2012), MBSR and aerobic exercise (AE) produced similar improvement in symptoms of social anxiety, depression and subjective well-being post-intervention, with gains maintained at 3-month follow-up. Although, AE is not an established intervention for SAD, Jazaieri et al. (2012) suggested that MBSR and AE may be alternative treatments to current evidence-based therapies, that are readily accessible, cost-effective and perhaps more desirable to individuals who are reluctant to seek mental health services.

In a more recent comparative trial of CBGT, MBSR, and waitlist, Goldin et al. (2016) found no significant difference in efficacy between MBSR and CBGT; both interventions improved symptoms of social anxiety at post-treatment, with treatment gains maintained at one-year follow-up. Interestingly, this study noted that changes in CBGT-related processes (cognitive distortions, cognitive reappraisal frequency, self-efficacy, subtle avoidance behaviors) and MBSR-related processes (mindfulness skills, attention focusing, attention shifting and rumination) were comparable for both active treatments, with the exception that CBGT was better than MBSR in reducing avoidance behavior.

Treatment preference and perception of treatment credibility

As the above review of the literature indicates, there is a multiplicity of effective treatments for SAD. In clinical practice, clients and their health care provider need to make decisions about the most appropriate treatment strategy to reduce distressing symptoms and improve well-being. The choice of treatment depends on several factors including those related to the health care provider (e.g., expertise/experience with a particular treatment, the availability of a therapist) (Bystritsky, Khalsa, Cameron & Schiffman, 2013), the illness (e.g., severity of symptoms, degree of disability) (Starcevic, Linden, Uhlenhuth, Kolar, & Latas, 2004), the treatment (e.g., costs, side effect profile, efficacy) (Olfson et al., 2000) and clients' preferences for a specific treatment (Swift, Callahan, & Vollmer, 2011).

Additionally, there has been an apparent shift towards person-centered care (also known as "patient-centered care" and "client-centered care") in both primary care and mental health practices (Gask & Coventry, 2012; Laine & Davidoff, 1996). This shift began, in part, when consumers advocated for their right to be active participants in treatment decision making. In contemporary mental health care, "client-centered" conveys a holistic approach, with an emphasis on clients' values, preferences and needs in the treatment decision making process (Hensley, 2012). An increasing number of studies highlight the important role of client preference in treatment decision making and how it can influence client willingness to start treatment, compliance with treatment, treatment outcome, the therapeutic alliance, and positive expectancies about treatment (Kwan, Dimidjian, & Rizvi, 2010; Lindhiem, Bennett, Trentacosta, & McLear, 2014; Mergl et al., 2010; Steidtmann et al., 2012). Having a greater understanding of the factors associated with treatment preference can help with reducing treatment barriers, such as the financial and psychological burden associated with a particular treatment, and increase treatment accessibility, particularly with disorders such as SAD, where there are low rates of help-seeking behavior (Olfson et al., 2000). In meta-analytic studies that examined preference effects in adults seeking treatment for diverse psychological problems, clients who were matched to their preferred treatment were less likely to discontinue treatment prematurely and more likely to improve with treatment than those mismatched to their preferred treatment (Swift & Callahan, 2009; Swift et al., 2011). Rutherford and colleagues (Rutherford, Wager, & Roose, 2010) suggested that treatment preference relates to treatment expectation and contributes to treatment adherence and outcome as a non-specific factor. It is notable that although evidence-based

practice and client-centered care emphasizes the integration of client preference in treatment decision-making, client treatment preference is not routinely assessed or accommodated in clinical practice (Norcross, Hogan & Koocher, 2008).

Although, there is a paucity of research on treatment preference in SAD, there are several studies that have focused on treatment preference in depressed individuals in primary care settings or on comparisons of pharmacotherapy versus psychotherapy for depression in the context of controlled clinical trials. These studies generally suggest that depressed clients prefer psychotherapy over medication (e.g., Chilvers et al., 2001; Churchill et al., 2000; Dwight-Johnson, Sherbourne, Liao, & Wells, 2000; Gelhorn, Sexton & Classi, 2011; Raue, Schulberg, Heo, Klimstra, & Bruce, 2009; van Schaik et al., 2004) or a combination of psychotherapy and medication than medication alone (De las Cuevas, Marrero, & Cabrera, 2016; Steidtmann et al., 2012). In a meta-analysis by McHugh and colleagues (McHugh, Whitton, Peckham, Welge, & Otto, 2013) that included 34 peer-reviewed studies that assessed treatment preference in individuals with depression or anxiety, 75% of participants reported a preference for psychotherapy over medication. Similarly, Deacon and Abramowitz (2009) found that individuals seeking treatment for diverse anxiety disorders preferred CBT over medication, although both treatments were rated as equally credible. In a study of individuals with health anxiety, CBT was rated as more acceptable and perceived to be more effective than medication (Walker, Vincent, Furer, Cox, & Kjernisted, 1999). A survey of elderly individuals in the community also found that psychological treatments for anxiety were preferred over medication (Mohlman, 2012). Furthermore, other studies (Arch, 2014; Deacon & Abramowitz, 2009; Feeny, Zoellner, Mavissakalian, & Roy-Byrne, 2009) have found that when individuals were provided education and choice about exposure based CBT, exposure based CBT was preferred over medication for the treatment of anxiety. Interestingly, despite preference for exposure-based CBT, many individuals were previously unaware of this treatment option (Wolitzky-Taylor et al., 2015). As lack of awareness of treatment options can affect clients' ability to select treatments most consistent with their preference, this finding highlights the importance of educating the public about effective mental health treatments.

Although, little is known about what client factors influence treatment preference for psychotherapy versus medication, there is some evidence that sociodemographic variables may be important and influence individuals' treatment preference. For example, in their meta-

analysis, McHugh et al. (2013) noted that preference for psychotherapy was stronger for women and younger participants. Similarly, Holzinger, Floris, Schomerus, Carta, and Angermeyer (2012) found that women tend to favor psychosocial conceptualizations of mental illness and seek non-conventional sources of help more frequently than men. A study by Givens, Houston, Van Voorhees, Ford, and Cooper (2007) reported that racial and ethnic minorities (African Americans, Asians, and Hispanics) were more likely to choose psychotherapy over antidepressants for the treatment of depression in comparison to Caucasians. Other studies also support an association between ethnicity and treatment preference, particularly with African Americans (Dwight-Johnson et al., 2000) and Hispanics (Cooper et al., 2003) preferring counselling over antidepressants, as compared to Caucasians. On the other hand, Mohlman (2012) found that among elderly individuals, ethnicity, age and sex had no effect on treatment preference, but higher education attainment predicted a preference for psychotherapy (Mohlman, 2012).

In a cross-sectional survey of treatment preference for depression, Churchill et al. (2000) found that prior treatment experience influenced treatment preference. Previous experience with counselling was associated with having a greater preference for counselling over pharmacotherapy for the treatment of depression. On the other hand, in a RCT for depression, Khalsa, McCarthy, Sharpless, Barrett, and Barber (2011) found that individuals who expressed a preference for supportive-expressive psychotherapy over medication, had fewer past experiences with psychotherapy than those who expressed a preference for pharmacotherapy. Although their findings confirmed a significant relationship between treatment preference and previous treatment experience, their results revealed no significant gender and ethnic differences in treatment preference. Beliefs clients have about the cause of their symptoms also appear to play a role in treatment preference. For example, among individuals with chronic depression, those who preferred medication were more likely to endorse a chemical imbalance explanation for their depressive symptoms, whereas those who preferred combined treatment were more likely to attribute their depression to stressful experiences (Steidtmann et al., 2012). In a study of anxiety disordered clients, endorsement of psychological causes for anxiety symptoms was associated with a preference for psychological treatment, whereas a belief in multiple etiology was related to a preference for multiple treatment modalities (Waikar, Bystritsky, Craske, & Murphy, 1994).

There appears to be limited information among studies investigating client preference between different forms of psychotherapies. In a cross-sectional survey of 15,078 people who received psychological services in diverse settings in England and Wales, half expressed a preference for a specific type of psychological therapy. Those who received their preferred treatment believed the treatment helped them cope better with their difficulties in comparison to those who did not (Williams et al., 2016). Soucy and Hadjistavropoulos (2017) evaluated treatment preference, acceptability and credibility (how believable, logical, and successful the treatment is in reducing symptoms), among 116 individuals in primary care with severe health anxiety. Participants were asked to rank their treatment preference (medication, CBT, ICBT) and to provide a rationale for their preference. Results revealed that participants had a greater preference for CBT and medication than ICBT. Lack of accountability and familiarity, therapeutic support, and availability of ICBT were cited as reasons for lower preference of ICBT. Soucy and Hadjistavropoulos (2017) also found that medication, CBT and ICBT were all rated as moderately acceptable treatments for health anxiety, and that CBT was perceived as the most credible treatment.

Studies of traditional treatments versus MBIs for psychological problems and factors that determine preference for a MBI also appear to be scarce. A recent meta-analysis by Lever Taylor, Cavanagh, and Strauss (2016) found that during the perinatal period, pregnant and breastfeeding women had a more favorable perception and preference towards mindfulness meditation than pharmacotherapy due to the potential risks associated with medication (i.e., adverse effects, concerns of depend, harm to baby). In a study of individuals with remitted depression (Segal et al., 2010), a greater proportion of individuals preferred MBCT to medication as a maintenance treatment, although no significant difference in relapse rates were noted for matched versus mismatched participants (Segal et al., 2010). In other studies of MBCT for depression relapse, treatment expectancies did not differ between MBCT and medication (Eisendrath et al., 2015) and clients with a preference for medication did equally well with MBCT as those with a preference for MBCT (Huijbers, Spinhoven, van Schaik, Nolen, & Speckens, 2016). A community based survey of treatment preference for anxiety disorders among older adults found that the majority of participants endorsed CBT as the preferred treatment, whereas few participants endorsed mindfulness meditation (Mohlman, 2012). Those with greater education preferred mindfulness training over supportive-based therapy (Mohlman,

2012). Wahbeh, Svalina, and Oken (2014) examined preferences for different formats of MBCT (internet, individual, and group), and found that Internet-delivered MCBT was the preferred choice, followed by individual and group formats. Similarly, other studies have found preference for individual MBCT to be greater than the group format (Lau, Colley, Willett, & Lynd, 2012; Schroevers, Tovote, Snippe, & Fleer, 2016).

Treatment preference in SAD

Despite growing recognition of the importance of client treatment preference in mental health care, there is minimal information regarding treatment preference and perception of treatment credibility (Bunnell, Beidel, & Mesa, 2013; Cohen, Beard, & Björqvinnsson, 2015). Craske and colleagues (2014) evaluated perception of treatment credibility in a randomized trial of CBT versus ACT and found that both interventions were perceived as being equally credible by participants. In a RCT looking at the efficacy of ICBT versus CBGT for SAD, Hedman et al. (2011) found that 54% of participants preferred ICBT and 46% preferred CBGT. Reasons for treatment preference were not explored in this study. Hedman and colleagues (2011) also assessed treatment credibility one-week post-treatment, and found no significant difference in treatment credibility between groups, suggesting that both groups rated their respective treatment as credible. In an open trial of MBSR for young adults with SAD, Hjeltne et al. (2016) found that MBSR may not be optimal for clients who are demoralized or have a preference for other psychological treatment. Some of these individuals expressed wanting a more problem-focused intervention and a treatment that incorporates self-directed exposure to everyday social situations and that encourages more risk-taking in social situations. Furthermore, Cohen et al. (2015) looked at patients' demographic and clinical characteristics as predictors of treatment expectancy and credibility beliefs in SAD. Their findings suggested that depressive severity predicted treatment expectancy, whereas male sex, severe depression and severe SAD symptoms predicted lower treatment credibility. Clearly, there is a need for further research to understand treatment preference in SAD and to identify client characteristics that may influence treatment preference.

The Present Study

Given that treatment preference can have an important impact on treatment outcomes, it is important to understand the characteristics of individuals who chose one intervention over another. Currently, there is a paucity of research investigating treatment preference in individuals with SAD, and to my knowledge, no study has examined treatment preference for an alternative

mind-body intervention such as mindfulness meditation versus a “gold standard” psychological treatment. The primary objective of the present study was to explore determinants of treatment preference in individuals with SAD who participated in a randomized comparative trial of a MBI adapted for SAD (MBI-SAD) versus CBGT. My specific research questions were:

- 1) What treatment do individuals with SAD prefer (MBI-SAD, CBGT or no preference)?
- 2) Do individual perceive the MBI-SAD as a credible treatment for SAD?
- 3) Which baseline demographic and clinical characteristics predict treatment preference and perception of treatment credibility (how believable, logical, and successful the treatment is in reducing symptoms (Deville & Borkovec, 2000)). for the MBI-SAD versus CBGT or no preference?

Given the preliminary nature of this research, no specific hypotheses were postulated. Although the proposed research on client preference were explored through secondary analysis of data collected in the context of a randomized clinical trial, it was hoped that this research would generate new information on factors that influence preference for a traditional versus alternative treatment in individuals with SAD.

Method

Study Design

The data for this thesis comes from a randomized trial comparing the efficacy of 12 weekly group sessions of the MBI-SAD and 12 weekly group sessions of CBGT. A total of 97 participants were randomized to the treatment conditions. Recruitment for this study started in July 2015 and ended in March 2017. The study was conducted at the Institut de recherche de l'Hôpital Montfort and was funded by the Ontario Mental Health Foundation. The lead investigator was Dr. Diana Koszycki and the trial was registered with the ClinicalTrials.gov registry (NCT (02490189)). The study was approved by the research ethics board of l'Hôpital Montfort and the University of Ottawa. For this current study, secondary use of research data was approved by the Social Sciences and Humanities Research Ethics Board of the University of Ottawa.

Participants and recruitment

Participants were male and female outpatients between the ages of 18-65 years. They were recruited via local newspaper and Internet advertisements, flyers posted in family physician

offices and anxiety disorders clinics, as well as referrals from primary care physicians and university health and counselling services. Participants who met the following criteria were eligible for the study: 1) a diagnosis of SAD based on the Structured Clinical Interview for DSM-5 (SCID) (First, Williams, Karg, & Spitzer, 2015), 2) baseline score ≥ 30 on the clinician-rated Liebowitz Social Anxiety Scale (LSAS) (Liebowitz, 1987), ≥ 4 on the Clinical Global Impression-Severity of Illness subscale (CGI-S) (Guy, 1976) and ≤ 21 on the Montgomery Åsberg Depression Rating Scale (MADRS) (Montgomery & Åsberg, 1979); 3) comorbid depressive and anxiety disorders (panic disorder, agoraphobia, generalized anxiety, specific phobia) were allowed as long as the SAD was primary and predominated the clinical presentation; 4) concurrent use of psychotropic medication was allowed as long as the type and dose of medication had remained stable for at least six weeks prior to the screen visit; 5) provision of written informed consent; 6) able to attend the 12 weekly group sessions; 7) proficiency in English or French.

Study exclusion criteria included: 1) a current diagnosis of Axis I disorders excluding those listed in the inclusion criteria; 2) co-existing medical conditions that can alter the clinical presentation of SAD such as Parkinson's disease and other neurological disorders; 3) lifetime history of psychosis or bipolar disorder; 4) substance-related disorders in the past 12 months; 5) acutely suicidal or a history of suicide attempt in the past five years; 6) history of non-suicidal self-injurious behaviour in the past 12 months; 7) currently receiving any form of psychological counselling; and 8) engaged in a regular meditation or yoga practice.

Procedure

Interested participants completed a brief telephone pre-screen with a research assistant who explained the requirements of the study, briefly described the study interventions, ascertained the presence of SAD symptoms, and excluded those who were clearly ineligible to participate. Potentially eligible participants were then scheduled for a face-to-face appointment with the study investigators for confirmation of SAD and other eligibility criteria. Participants were provided with information about the study requirements, including details about the two treatment conditions, and written informed consent was obtained. Participants were then administered the SCID-I (First et al., 2015), CGI-S (Guy, 1976), MADRS (Montgomery & Åsberg, 1979) and LSAS (Liebowitz, 1987). If a participant was protocol eligible, they completed a battery of self-report questionnaires.

After verification of eligibility, informed consent and baseline assessments, participants were randomized to one of the two study conditions. The treatment allocation scheduled was generated by an independent research assistant using a computer-based random number generation program. The study used sequentially numbered, opaque, sealed envelopes as a means to assure allocation concealment. The envelopes were kept in the office of a research administrator who was not involved in the study and given to the investigator after participants had been evaluated and deemed eligible to be randomized. Prior to opening up the envelope, clients were asked whether they would prefer the MBI-SAD, CBGT or have no preference, and if they have a preference, to provide an explanation for their preference. After opening the envelope in front of the participant, the investigator provided them with additional information about the treatment condition they were assigned to and participants completed a questionnaire that assessed their perception of treatment credibility.

Treatment

The mindfulness intervention used in this trial was adapted for individuals with SAD (Koszycki et al., 2016) and consisted of a 12-week group intervention led by clinicians who were trained in mindfulness-based interventions. A graduate student in counselling psychology co-facilitated aspects of the program under the supervision of the lead clinician. The intervention was manualized, and included elements of the standard MBSR program, in addition to in-session and between-session mindful exposure and explicit training in self-compassion. The sessions followed a structured format; each session beginning with a meditation practice, followed by a discussion of participants' experience with the home practice and specific session themes, and then ending with a meditation practice and the assignment of the week's home practice.

The CBGT sessions were led by a trained CBT clinician or senior doctoral clinical psychology students with supervised training in delivering CBT. A graduate student in counselling psychology co-facilitated aspects of the sessions under the supervision of the lead clinician. This 12-week group intervention followed the treatment manual by Heimberg and Becker (2002). Sessions consisted of a brief overview of the treatment, psychoeducation, training in self-monitoring, cognitive restructuring, in- and between-session exposures to feared social situations, consolidation of treatment gains and relapse prevention.

Measures

Structured Clinical Interview for DSM-5 (SCID; First et al., 2015) is a semi-structured assessment instrument that was used to ascertain the primary diagnosis of SAD and other included and excluded psychiatric disorders. The SCID incorporates questions related to the DSM-5 criteria and an algorithm for arriving to a final diagnosis. The SCID has shown to have an excellent inter-rater reliability for SAD, with a value of 0.83 (Lobbestael, Leurgans, & Arntz, 2011).

Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987) is a well-established clinician-administered instrument that assesses fear and avoidance of social interactions and performance situations. The scale is composed of 24 social situations that are each rated on two subscales: Fear and Avoidance. All items are rated on a 4-point Likert scale ranging from 0 to 3. A total score is calculated by summing the fear and avoidance subscales, with scores ranging from 0 to 144. Scores of individuals with SAD typically range from 55-65 for moderately severe symptoms, 65-80 for markedly severe symptoms, 80-95 for severe symptoms, and greater than 95 for very severe symptoms. The LSAS has shown to have strong psychometrics properties, including good internal consistency, good convergent validity, adequate discriminant validity and strong treatment sensitivity (Baker, Heinrichs, Kim & Hofmann, 2002; Fresco et al., 2001; Heimberg et al., 1999).

Clinical Global Impression – Severity Scale (CGI-S; Guy, 1976) is a clinician rating scale that is administered to measure the severity of an individual's illness. Participants receive scores on a 7-point scale and ranging from 1 (normal; not at all ill) to 7 (among the most severely ill). The CGI-S has demonstrated high reliability and validity (Zaider, Heimberg, Fresco, Schneier, & Liebowitz, 2003).

Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979) is a 10-item clinician-rated scale that measures the severity of depressive symptoms. Items are rated on a 7-point Likert scale from 0 to 6, with scores on the MADRS ranging from 0 to 60. A higher score indicates a more severe depression. The MADRS has shown to have favorable psychometric properties and is considered to be a reliable and valid measure of depressive symptomatology (Davidson, Turnbull, Strickland, Miller, & Graves, 1986; Montgomery & Åsberg, 1979).

Social Phobia Inventory (SPIN; Connor et al., 2000) is a self-report measure of severity of SAD symptoms. The 17-items are designed to capture how individuals perceive their concerns about being criticized or embarrassed, fear and avoidance of specific social situations, and distress about physical symptoms associated with SAD (Campbell-Sills, Espejo, Ayers, Roy-Byrne, Stein, 2015). Items are rated on a 5-point Likert scale (0= not at all, 1= a little bit, 2= somewhat, 3= very much, 4= extremely). A total score of ≤ 20 indicates little or no social anxiety, between 21-30 mild social anxiety, between 31-40 moderate social anxiety, between 41-50 severe social anxiety, and between 51-68 very severe social anxiety. This scale has shown to have adequate test-retest reliability, good internal consistency, good convergent validity, good divergent validity, and good construct validity (Antony, Coons, McCabe, Ashbaugh, & Swinson, 2006; Connor et al., 2000).

Beck Depression Inventory Second Edition (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report instrument that assesses the severity of depressive symptomatology. For each question, participants are asked to select the statement that best describes the way they have been feeling during the past two weeks. Each answer is scored on a scale value of 0 to 3. Total scores range from 0 to 63, with a higher score representing greater depressive severity. The BDI has good validity, internal consistency and adequate reliability estimates (Beck & Steer, 1987; Beck, Steer, & Garbin, 1988).

Social Adjustment Scale-Self-Report (SAS-SR, Weissman & MHS Staff, 1999) is a 54-item self-report questionnaire that assesses both behavioral and emotional social adjustment across six major areas: work, social and leisure activities, relationship with extended family, primary relationship, parental role and role within the family unit. Each question is rated on a 5-point Likert scale and an overall mean is calculated by summing up all items completed by the respondent. Higher scores indicate greater social impairment (Gameroff, Wickramaratne, & Weissman, 2012). Overall internal consistency for the SAS-SR is considered to be moderate (Delvecchio, Di Riso, Lis, & Salcuni, 2016).

Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item scale that measures an individual's overall satisfaction with one's life. Items are scored with a 7-point Likert scale and range between 5 to 35. Higher scores are associated with greater life satisfaction. The SWLS has shown to have favorable psychometric properties, including high

temporal reliability and high internal consistency (Corrigan, Kolakowsky-Hayner, Wright, Bellon, & Carufel, 2013; Diener et al., 1985).

Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965) is a 10 item self-report instrument that assesses an individual's global self-esteem. Items are scored using a 4-point scale ranging from strongly agree to strongly disagree. The scores on the RSES range from 0 to 30, where higher scores are an indicator of higher self-esteem. Scores below 15 suggest low self-esteem and scores between 15 and 25 are considered within normal range (Ritter, Leichsenring, Strauss, & Stangier, 2013). The RSES has demonstrated good convergent validity, good item discriminant validity, high internal consistency and good test-retest reliability (Schmitt & Allik, 2005; Sinclair et al., 2010; Torrey, Mueser, McHugo, & Drake, 2000).

Five-Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) is a reliable and valid self-report scale for assessing different aspects of mindfulness. This 39-item scale measures five facets of mindfulness: observing (i.e. when I'm walking, I deliberately notice the sensations of my body moving), describing (i.e., I can easily put my beliefs, opinions, and expectations into words), acting with awareness (i.e., I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted), non-judging of inner experience (i.e., I believe some of my thoughts are abnormal or bad and I shouldn't think that way) and nonreactivity to inner experience (i.e., I watch my feelings without getting lost in them). Respondents are asked to rate on a 5-point Likert scale (1 = never or very rarely true, to, 5 = very often or always true) the degree to which each statement is true. In addition to scoring the five subscales individually, scores on each facets can be added to obtain a total score ranging from 39 to 195. The total score represents a global measure of mindfulness, with higher scores indicating that the individual is more mindful. The FFMQ has been shown to have good psychometric properties, including good reliability and good validity (Christopher, Neuser, Michael, & Baitmangalkar, 2012; Baer et al., 2006; 2008).

Treatment Preference. A treatment preference questionnaire was administered at baseline to assess which treatment participants would prefer (MBI-SAD, CBGT, or no preference). Participants were asked to provide a reason for their treatment preference.

Credibility Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000) measures treatment expectancy and credibility in clinical outcome studies. Items are scored with a 9-point Likert scale (0= not all credible to 9 = very credible), with higher scores indicating greater

perceived credibility of treatment. This scale is showed to have adequate reliability and validity, as well as high internal consistency within each factor and good test-retest reliability (Devilly & Borkovec, 2000; Webb, Kertz, Bigda-Peyton, & Björgvinsson, 2013).

Demographic Questionnaire. A demographic questionnaire was given at baseline to collect information on participants' age, gender, marital status, educational attainment, employment status, household income, ethnic and religious background.

Additional information. Information on participants' medical and psychiatric history, and comorbid psychiatric disorders were collected during the screen visit interview.

Statistical Analyses

All analyses were conducted using SPSS Version 24. Prior to conducting statistical analyses, we explored patterns of missing data values with the aid of SPSS' Missing Values Analysis. There was a total of fourteen subjects with one or more missing items on a self-report questionnaire (0.13%). Missing items were imputed with the expectation-maximization technique. Data were screened for outliers, skewness and kurtosis in order to determine violations to the assumption of normality. Variables were normally distributed, as assessed by Shapiro-Wilk's test, therefore no log transformations were needed. In addition to checking for violations of assumptions, SPSS' bootstrapping resampling procedure was also used due to the relatively small sample size. Bootstrapping allows for the estimation of the statistical parameters of the sampling distribution from the sample data. Frequency counts were computed to examine treatment preference.

Comparison of preference groups on baseline demographic and clinical characteristics was assessed by analysis of variance (ANOVA) for continuous variables and chi-square or Fisher's exact test for categorical data. The relationship between participants' baseline traits of mindfulness and their treatment preference was also explored by performing one-way ANOVAs. Bivariate correlations were conducted to evaluate the relationship between participants' baseline demographic and clinical characteristics and their treatment preference, and to examine the relationship between participants' baseline demographic and clinical variables and their treatment credibility. Correlations also allowed for us to test for multicollinearity. Pearson correlations were used for continuous variables, and point-biserial correlations were used for categorical data.

Binary logistic regressions, using a stepwise backward elimination (likelihood ratio) method, were performed to examine whether baseline sociodemographic and clinical characteristics predicted treatment preference for the MBI-SAD versus CBGT (dummy coded as 0 and 1, respectively) and for the MBI-SAD versus no treatment preference (dummy coded as 0 and 1, respectively). Multiple linear regression analysis, using a backward elimination method, was performed to examine predictors of treatment credibility. For both the logistic and linear regressions, baseline sociodemographic predictors included gender, age, marital status, ethnicity, household income, education attainment, religion and employment status, and baseline clinical predictors included history of psychotherapy, comorbid psychiatric disorder, current psychotropic medication, comorbid medical conditions, age of onset of SAD, scores on the LSAS fear and avoidance subscales, and the total scores on the CGI-S, MADRS, SPIN, BDI-II, SAS-SR, SWLS. Additionally, separate binary logistic regressions, using a stepwise backward elimination (likelihood ratio) method, were performed to examine whether levels of mindfulness predicted treatment preference and a multiple linear regression, using a backward elimination method, was performed to examine whether levels of mindfulness predicted treatment credibility. For all regressions, the backward method was employed due to the exploratory nature of this research (Field, 2009).

Prior to conducting the statistical analyses, categorical predictor variables with more than two categories were dummy coded into dichotomous variables for analyses (Field, 2009). Categorical baseline demographic variables were coded as follows: gender (0: female, 1: male); marital status (0: married / common-law, 1: other); ethnicity (0: Caucasian, 1: other); household income (0: \geq \$80,000, 1: $<$ \$80,000); education attainment (0: post-secondary or more; 1: high school to some post-secondary); adherence to a religion (0: non-religious, 1: religious); and employment status (0: full-time employed or full-time studies, 1: other). The household income groups were defined based on the average household income in Canada, which is \$80,940, according to most recent census by Statistics Canada (Statistics Canada, 2015). Categorical baseline clinical variables were coded as follows: history of psychotherapy (0: no, 1: yes); comorbid psychiatric disorder (0: no, 1: yes); current psychotropic medication (0: no medication, 1: medication); and comorbid medical conditions (0: no, 1: yes).

All regression models were assessed by verifying the assumptions of regression analysis. Linearity and homoscedasticity were assumed by visually inspecting the histogram, and the

scatterplots (the normal probability plot and the graph of the regression standardized residuals plotted against the regression standardized predicted values). There was no concern for extreme values, nor significant outliers, as assessed by the values of Cook's distance (no value above 1), and the standardized residuals. The assumption for independence of observations was not violated, as assessed by the Durbin-Watson test. There was no multicollinearity, which was tested by the Variance Inflation Factor (VIF) and the tolerance value. The average of VIF values was not substantially greater than 1, which confirmed that collinearity was not of concern in our model. Statistical significance was set at $p \leq .05$ for all analyses.

Results

The sample comprised 97 individuals with SAD. A summary of baseline sociodemographic and clinical characteristics for the sample is presented in Table 1 and 2. The mean age of the sample was early forties (age range, 20 to 65 years) and participants were predominantly Caucasian (76%) and female (62.9%). Half of the participants were married or in a common-law relationship. The sample was well educated, with the majority of participants having at least postsecondary education (72.2%). A little more than half of the participants (57.7%) were employed full time or enrolled in full-time studies. Examination of clinical characteristics revealed an early age of onset of SAD for the majority of participants. The mean baseline scores for the LSAS and the SPIN indicated that participants suffered from moderately severe social anxiety. One or more concurrent psychiatric disorder was diagnosed in 40.2% of participants. Clinician and self-report measures of depression indicated that participants were mildly depressed at the baseline visit. Most participants were medication free (78.4%) at the time of the study and most had previous experience with psychotherapy (73.2%). Mean scores on the SAS-SR and the SWLS revealed that participants viewed their overall social functioning as poorer than the norm and their satisfaction with life slightly below average. Mean scores on the RSES were within the normal range.

Table 1

Baseline Demographic Characteristics of Total Sample

Characteristics	Total N = 97
<u>Gender</u>	
Female	61
Male	36
<u>Age (Years)</u>	40.86 ± 13.71
<u>Marital Status</u>	
Married /Common-Law	50
Other	47
<u>Ethnicity</u>	
Caucasian	74
Other	23
<u>Household Income</u>	
Less than 80,000	52
80,000 or more	45
<u>Education</u>	
Less or some postsecondary	27
Postsecondary or more	70
<u>Religion</u>	
Non-Religious	45
Religious	52
<u>Employment</u>	
Full-time employed or studying	56
Other	41

Note. $N = 97$. Values are given as n or mean \pm standard deviations. Household income is based on the most recent census of the average household income in Canada by Statistics Canada.

Table 2

Baseline Clinical Characteristics of Total Sample

Characteristics	Total N = 97
<u>History of Psychotherapy</u>	
Yes	71
No	26
<u>Comorbid Psychiatric Disorder</u>	
Yes	39
No	58

Current Psychotropic Medication	
Yes	21
No	76
Comorbid Medical Conditions	
Yes	28
No	69
Age of onset of SAD (years)	12.63 ± 7.28
LSAS Fear	39.90 ± 9.48
LSAS Avoidance	37.48 ± 10.78
CGI-S	4.46 ± 0.66
MADRS	8.09 ± 5.65
SPIN	43.51 ± 10.07
BDI-II	13.14 ± 10.03
SAS-SR	2.17 ± 0.43
SWLS	18.10 ± 7.56
RSES	15.84 ± 5.06

Note. $N = 97$. Values are given as n or mean ± standard deviations. LSAS = Liebowitz Social Anxiety Scale; CGI- S = Clinical Global Impression – Severity; MADRS = Montgomery and Asberg Depression Rating Scale; SPIN = Social Phobia Inventory; BDI-II = Beck Depression Inventory; SAS-SR = Social Adjustment Scale Self-Report; SWLS = Satisfaction with Life Scale; RSES = Rosenberg Self-Esteem Scale.

Treatment Preference

The majority of participants indicated a preference for the MBI-SAD ($n = 48, 49.5\%$), followed by no treatment preference ($n = 25, 25.8\%$) and a preference for CBGT ($n = 24, 24.7\%$). Reasons for treatment preference was provided by 87 participants with some providing more than one reason. Reasons are summarized in Table 3. The most common reasons for preferring the MBI-SAD was having heard and/or read about mindfulness (26.8%), followed by always wanting to learn how to meditate (16.1%); having tried CBT and either wanting to try a new approach or did not find CBT effective (14.3%) and believing that the calming and relaxing effects of meditation would be helpful (10.7%). Among those who preferred CBGT, the most common reason was the belief that there would be a greater opportunity for exposure (e.g., speaking in a group) (23.1%), followed by there being more evidence supporting the effectiveness of CBT (15.4%), and not believing that mindfulness would work (15.4%). Among those who did not have a treatment preference, most believed that both MBI and CBGT would be equally beneficial and interesting interventions (88.9%).

Table 3

Categories of Reasons of Treatment Preference

Categories	Reporting %
Categories for MBI-SAD	
Heard / Read about approach	26.8
Always wanted to learn how to meditate	16.1
Tried CBT before – either not effective or wanted to try a new approach	14.3
Belief that the calming / relaxing effects of meditation will be helpful	8.9
Likes the novelty of the approach	7.1
Likes the yoga aspect of it	5.4
Likes Buddhist origin of mindfulness	3.6
CBGT would be more demanding (i.e., requires people to talk more in group)	3.6
Likes holistic approach	3.6
Was curious about approach	1.8
Categories for MBI-SAD (cont'd)	
Practical Reasons	1.8
Mindfulness is more introspective	1.8
Mindfulness will take me out of my comfort zone	1.8
Knows that it is an evidence-based approach	1.8
Categories for CBGT	
CBGT involves more opportunity for exposure (e.g., speaking in a group)	23.1
Believes there is more evidence / research to support CBGT	15.4
Does not believe in MBI	15.4
Heard / Read about CBT	11.5
CBGT more beneficial than MBI	11.5
Tried MBI and would like to try CBGT	7.7
Wants to learn a new way of thinking / dealing with thoughts	7.7
Does not know much about MBI	3.8
CBT was recommended	3.8
Categories for No Preference	
Believes both MBI and CBGT would be beneficial / interesting	88.9
Does not know much about either approach	11.1

Note. Participants may have provided more than one reason.

Baseline Sociodemographic and Clinical Characteristics

Descriptive statistics for baseline sociodemographic and clinical characteristics across the three treatment preference groups are shown in Tables 4 and 5. No significant differences between the groups were found for any of the sociodemographic variables: gender distribution ($\chi^2(2) = 1.12, p = 0.571$), age ($F(2, 94) = 0.63, p = 0.536$), marital status ($\chi^2(2) = 0.45, p = .799$), ethnicity ($\chi^2(2) = 1.64, p = 0.441$), household income ($\chi^2(2) = 0.189, p = 0.910$), education attainment ($\chi^2(2) = 3.05, p = 0.218$), adherence to a religion ($\chi^2(2) = 0.11, p = 0.949$) and

employment status ($\chi^2(2) = 0.57, p = 0.753$). Similarly, there were no significant differences between the three treatment preference groups for any of the baseline clinical variables; history of psychotherapy ($\chi^2(2) = 1.76, p = 0.415$), comorbid psychiatric disorder ($\chi^2(2) = 1.41, p = 0.495$), current psychotropic medication ($\chi^2(2) = 2.06, p = 0.357$), comorbid medical condition ($\chi^2(2) = 0.52, p = 0.770$), and age of onset of SAD ($F(2, 94) = 0.13, p = 0.879$). In addition, there were no significant differences between the treatment preference groups for baseline clinician-rated scales: LSAS fear ($F(2, 94) = 2.77, p = 0.068$), LSAS avoidance ($F(2, 94) = 1.35, p = 0.264$), CGI-S ($F(2, 94) = 0.74, p = 0.481$), MADRS ($F(2, 94) = 0.53, p = 0.591$), and on the self-report scales: SPIN ($F(2, 94) = 1.26, p = 0.29$), BDI-II ($F(2, 94) = 1.37, p = 0.259$), SAS-SR ($F(2, 94) = 0.40, p = 0.672$), SWLS ($F(2, 94) = 1.50, p = 0.229$), and RSES ($F(2, 94) = 1.19, p = 0.308$).

Table 4

Baseline Demographic Characteristics by Treatment Preference

Characteristics	MBI-SAD	CBGT	No Preference
<u>Gender</u>			
Female	31	13	17
Male	17	11	8
<u>Age (Years)</u>	42.44 ± 13.85	39.33 ± 13.61	39.28 ± 13.74
<u>Marital Status</u>			
Married /Common-Law	26	11	13
Other	22	13	12
<u>Ethnicity</u>			
Caucasian	34	20	20
Other	14	4	5
<u>Household Income</u>			
Less than 80,000	26	12	14
80,000 or more	22	12	11
<u>Education Attainment</u>			
Less or some Postsecondary	11	10	6
Postsecondary or more	37	14	19
<u>Religion</u>			
Non-Religious	23	11	11
Religious	25	13	14

Employment

Full-time employed or studying	28	15	13
Other	20	9	12

Note. $N = 97$. Values are given as n or mean \pm standard deviations. Household income is based on the most recent census of the average household income in Canada by Statistics Canada.

Table 5

Baseline Clinical Characteristics by Treatment Preference

Characteristics	MBI-SAD	CBGT	No Preference
History of Psychotherapy			
Yes	33	20	18
No	15	4	7
Comorbid Psychiatric Disorder			
Yes	22	9	8
No	26	15	17
Current Psychotropic Medication			
Yes	13	3	5
No	35	21	20
Comorbid Medical Conditions			
Yes	14	8	6
No	34	16	19
Age of onset SAD (Years)	12.71 \pm 7.72	13.08 \pm 7.13	12.04 \pm 6.75
LSAS Fear	39.23 \pm 8.72	37.50 \pm 9.43	43.48 \pm 10.26
LSAS Avoidance	37.10 \pm 10.64	35.33 \pm 11.23	40.26 \pm 10.45
CGI-S	4.48 \pm 0.68	4.33 \pm 0.64	4.56 \pm 0.65
MADRS	7.63 \pm 6.24	9.08 \pm 5.59	8.04 \pm 4.50
SPIN	42.92 \pm 9.52	42.92 \pm 12.28	46.16 \pm 8.58
BDI-II	11.47 \pm 10.54	15.22 \pm 10.41	14.35 \pm 8.35
SAS-SR	2.13 \pm 0.44	2.20 \pm 0.45	2.22 \pm 0.36
SWLS	19.35 \pm 8.44	17.54 \pm 7.11	16.24 \pm 5.78
RSES	16.64 \pm 5.54	15.00 \pm 4.89	15.12 \pm 4.10

Note. $N = 97$. Values are given as n or mean \pm standard deviations. LSAS = Liebowitz Social Anxiety Scale; CGI-S = Clinical Global Impression – Severity; MADRS = Montgomery and Asberg Depression Rating Scale; SPIN = Social Phobia Inventory; BDI-II = Beck Depression Inventory; SAS-SR = Social Adjustment Scale Self-Report; SWLS = Satisfaction with Life Scale; RSES = Rosenberg Self-Esteem Scale.

Treatment Credibility

Means and standard deviations for the CEQ total score by treatment preference group are as follows: MBI-SAD ($M = 28.19$, $SD = 4.74$), CBGT ($M = 26.00$, $SD = 4.77$), and no preference ($M = 26.36$, $SD = 5.21$). One-way ANOVA revealed that perception of treatment credibility and

expectancy did not differ statistically between treatment preference groups $F(2, 94) = 2.09, p = 0.129$, suggesting that individuals randomized to either the MBI-SAD or CBGT viewed both treatments as a credible approach to reduce their social anxiety symptoms.

Trait Mindfulness

We also explored the relationship between participants' tendency to be mindful in their daily life and their preferred treatment. Mean scores for the FFMQ facets across the three preference groups are described in Table 6. One-way ANOVA revealed no statistically significant differences between the treatment preference groups for the FFMQ facets of observe ($F(2, 94) = 0.23, p = 0.794$), describe ($F(2, 94) = 0.38, p = 0.687$), acting with awareness ($F(2, 94) = 1.95, p = 0.147$), non-judge ($F(2, 94) = 0.74, p = 0.478$) and non-reactivity ($F(2, 94) = 0.42, p = 0.655$), and for the total FFMQ score ($F(2, 94) = 0.60, p = 0.548$).

Table 6

Mean and Standard Deviation for FFMQ Subscales at Baseline

<u>FFMQ</u>	<u>Total</u>	<u>MBI-SAD</u>	<u>CBGT</u>	<u>No Preference</u>
Observe	23.77 ± 5.69	24.02 ± 5.53	23.08 ± 5.46	23.96 ± 6.38
Describe	23.12 ± 6.27	22.58 ± 6.65	23.88 ± 6.15	23.44 ± 5.75
Acting with Awareness	23.72 ± 5.92	24.58 ± 6.74	24.04 ± 4.46	21.76 ± 5.15
Non-judging	22.90 ± 5.81	23.15 ± 5.78	23.63 ± 6.76	21.72 ± 4.85
Non-Reactivity	18.48 ± 4.37	18.79 ± 3.83	18.58 ± 5.58	17.80 ± 4.15
FFMQ Total Score	112.00 ± 17.46	113.12 ± 18.70	113.21 ± 15.48	108.67 ± 17.02

Note. FFMQ = Five Facet Mindfulness Questionnaire. Values are given as mean ± standard deviations.

Demographic and Clinical Predictors of Treatment Preference

The results of the correlations for treatment preference and treatment credibility with baseline demographic and clinical characteristics are presented in Table 7. There were no significant correlations between treatment preference and baseline demographic variables. However, there was a significant negative correlation between treatment preference and history of psychotherapy and a significant positive correlation between treatment preference and scores on the LSAS fear and avoidance subscales. No significant correlations were found for baseline demographic and clinical variables and perception of treatment credibility.

Table 7

Pearson's Product-moment/Point-biserial Correlations for Treatment Preference and Treatment Credibility with Baseline Demographic and Clinical Variables

Characteristics	Treatment Preference	Treatment Credibility
<u>Baseline Demographic Variables</u>		
Gender	-.06	-.08
Age	-.06	-.12
Marital Status	.10	.10
Ethnicity	-.13	-.06
Household Income	.18	.19
Education Attainment	.15	-.07
Religion	-.04	.06
Employment	.09	.08
<u>Baseline Clinical Variables</u>		
History of Psychotherapy	-.20*	.15
Comorbid Psychiatric Disorder	.03	-.01
Current Psychotropic Medication	-.00	.19
Comorbid Medical Condition	.02	-.04
Age of Onset	-.15	.06
LSAS Fear	.26**	-.02
LSAS Avoidance	.23*	-.14
CGI-S	.16	-.09
MADRS	.08	-.05
SPIN	.16	-.06
BDI-II	-.07	-.13
SAS-SR	.00	-.18
SWLS	-.07	.13
RSES	-.14	.15

Note. $N = 97$. * P values $\leq .05$ are considered statistically significant. ** P values $\leq .01$ are considered statistically significant. LSAS = Liebowitz Social Anxiety Scale; CGI- S = Clinical Global Impression – Severity; MADRS = Montgomery and Asberg Depression Rating Scale; SPIN = Social Phobia Inventory; BDI-II = Beck Depression Inventory; SAS-SR = Social Adjustment Scale Self-Report; SWLS = Satisfaction with Life Scale; RSES = Rosenberg Self-Esteem Scale.

Results of the binary logistic regressions examining the relationship between baseline sociodemographic and clinical variables and treatment preference are presented in Tables 8a and 8b. For the logistic regression examining preference for CBGT versus the MBI-SAD (Table 8a), the model was statistically significant, $\chi^2(10) = 18.927, p = .04$, accounting for 32.1 % (Nagelkerke R^2) of the variance in treatment preference and correctly classifying 70.8% of cases. The analysis revealed that employment status significantly predicted treatment preference ($p =$

.06.), with individuals who were not employed full time or enrolled in full-time studies less likely to prefer CBGT. There was also a trend for lower age to predict preference for CBGT ($p = .055$). The other demographic and clinical variables in the model were not significant predictors of preference for the MBI-SAD versus CBGT.

For the binary logistic regression comparing preference for the MBI-SAD versus no treatment preference (Table 8b), the model was statistically significant, $\chi^2(20) = 32.289$, $p = .04$, explaining 49.4 % (Nagelkerke R^2) of the variance in treatment preference and correctly classifying 78.1% of cases. The results showed that having no treatment preference was predicted by higher scores on the MADRS ($p = .04$) and lower scores on the BDI-II ($p = .001$). The analysis also revealed a trend for higher household income ($\geq \$80,000$), ($p = .07$), a history of psychotherapy ($p = .09$), and higher scores on the LSAS fear subscale ($p = .07$) to predict no treatment preference. The other baseline demographic and clinical variables in the model were not significant predictors treatment preference for the MBI-SAD versus no treatment preference.

Table 8a

Summary of the Binary Logistic Regressions Predicting Preference for CBGT versus MBI-SAD

	<i>B (SE)</i>	95% CI for Odds Ratio			<i>P</i>
		<i>Lower</i>	<i>Odds Ratio</i>	<i>Upper</i>	
Constant	-1.64 (2.99)	-	-	-	.58
Age	-.06 (.03)	.89	.94	1.00	.055
Marital Status	.78 (.66)	.61	2.22	8.06	.23
Household Income	-.61 (.79)	.12	.54	2.54	.44
Education Attainment	.81 (.71)	.56	2.25	9.07	.25
Employment Status	1.33 (.72)	.93	3.79	15.38	.06
Comorbid Psychiatric Disorder	.40 (.66)	.41	1.49	5.41	.54
Age of Onset (Years)	-.05 (.05)	.86	.95	1.06	.35
SPIN	.06 (.04)	1.07	1.07	1.16	.12
SWLS	.04 (.05)	.94	1.04	1.15	.45
RSES	-.05 (.06)	.85	.95	1.07	.43

Note. $N = 72$ (includes individuals who selected CBGT or MBI-SAD as their preferred treatment). P values $< .05$ are considered statistically significant. CI = Confidence Interval. B= Beta value. SE= Standard Error. SPIN = Social Phobia Inventory; SWLS = Satisfaction with Life Scale; RSES = Rosenberg Self-Esteem Scale.

Table 8b

Summary of the Binary Logistic Regressions Predicting Preference for MBI-SAD versus No Preference

	<i>B (SE)</i>	95% CI for Odds Ratio			<i>P</i>
		<i>Lower</i>	<i>Odds Ratio</i>	<i>Upper</i>	
Constant	2.05 (4.80)	-		-	.67
Age	.04 (.04)	.96	1.04	1.12	.30
Gender	-.73 (.94)	.08	.48	3.05	.44
Marital Status	-.86 (.89)	.08	.43	2.41	.33
Ethnicity	-1.66 (1.07)	.02	.19	1.53	.12
Household Income	2.09 (1.17)	.82	8.10	79.91	.07
Education Attainment	1.04 (.86)	.52	2.83	15.24	.23
Employment Status	-.11 (.89)	.16	.90	5.14	.91
History of Psychotherapy	-1.59 (.95)	.03	.20	1.31	.09
Comorbid Psychiatric Disorder	.83 (.90)	.40	2.30	13.29	.35
Comorbid Medical Conditions	-.33 (1.04)	.10	.72	5.53	.75
Current Psychotropic Medication	-.39 (.93)	.11	.68	4.20	.68
LSAS Fear	.15 (.08)	.99	1.16	1.36	.07
LSAS Avoidance	-.07 (.08)	.81	.94	1.08	.37
CGI-S	-.38 (.81)	.14	.69	3.33	.64
MADRS	.18 (.09)	1.01	1.20	1.42	.04*
SPIN	.02 (.05)	.92	1.02	1.12	.75
BDI-II	-.26 (.09)	.64	.77	.92	.00*
SAS-SR	-.16 (1.34)	.06	.85	11.81	.91
SWLS	-.14 (.09)	.74	.87	1.03	.10
RSES	-.11 (.08)	.76	.89	1.06	.19

Note. $N = 73$ (includes individuals who selected MBI-SAD as their preferred treatment or had no preference). * P values $< .05$ are considered statistically significant. CI = Confidence Interval. B = Beta value. SE = Standard Error. LSAS = Liebowitz Social Anxiety Scale; CGI-S = Clinical Global Impression – Severity; MADRS = Montgomery and Asberg Depression Rating Scale; SPIN = Social Phobia Inventory; BDI-II = Beck Depression Inventory; SAS-SR = Social Adjustment Scale Self-Report; SWLS = Satisfaction with Life Scale; RSES = Rosenberg Self-Esteem Scale.

Demographic and Clinical Predictors of Treatment Credibility

Results of the backward multiple linear regression investigating predictors of treatment credibility are presented in Table 9. The regression model was statistically significant, $F(10, 86) = 1.999$, $p = .04$ and accounted for 18.9% of the variance in treatment credibility scores ($R^2 = .19$, Adjusted $R^2 = .09$). The variables that were included in the model following the backward elimination procedure are presented in Table 9. Variables that did not contribute significantly to

the model included gender, comorbid psychiatric disorder, comorbid medical condition, current psychotropic medication, employment status, age and the scores on the MADRS, SWLS, SPIN, CGI-S, LSAS-fear, LSAS-avoidance scales). Examination of individual standardized beta values revealed that household income was the only statistically significant predictor of treatment credibility, with higher household income ($\geq \$80,000$) associated with higher ratings of treatment credibility.

Table 9

Linear Regression of Baseline Demographic and Clinical Predictors of Treatment Credibility

	<i>B</i>	<i>SE B</i>	β	<i>P</i>
Constant	26.38	3.37	-	-
Marital Status	1.07	1.09	.11	.33
Ethnicity	-1.39	1.21	-.12	.25
Household Income	2.90	1.11	.30	.01*
Education Attainment	-1.34	1.13	-.12	.24
Religion	.94	1.03	.10	.37
History of Psychotherapy	1.91	1.15	.17	.10
Age of Onset (Years)	0.08	.07	.11	.28
BDI-II	-0.08	0.07	-.16	.24
SAS-SR	-1.89	1.55	-1.16	.23
RSES	0.11	0.10	.11	.28

Note. $N = 97$. Includes only the variables that remained in the model. * P values $\leq .05$ are considered statistically significant. B = unstandardized beta value. SE = Standard Error. β = standardized beta value. BDI-II = Beck Depression Inventory; SAS-SR = Social Adjustment Scale Self-Report; RSES = Rosenberg Self-Esteem Scale.

Trait Mindfulness as a Predictor of Treatment Preference and Credibility.

Results of the binary logistic regressions investigating whether trait mindfulness (FFMQ total score and FFMQ subscale scores) predicted treatment preference revealed non significant models. For the analysis of preference for the MBI-SAD versus CBGT, the overall Chi-square was $\chi^2(5) = 2.752, p = .74$, with trait mindfulness explaining 5.2 % (Nagelkerke R^2) of the variance in treatment preference. For the analysis of preference for the MBI-SAD versus no treatment preference, the Chi-square was $\chi^2(5) = 5.739, p = .33$, with trait mindfulness explaining 10.5 % (Nagelkerke R^2) of the variance in treatment preference. A summary of the results of the logistic regressions are provided in Tables 10a and 10b.

Table 10a

Summary of the Binary Logistic Regression of Trait Mindfulness Predicting Preference for CBGT versus MBI-SAD

	<i>B (SE)</i>	95% CI for Odds Ratio			<i>P</i>
		<i>Lower</i>	<i>Odds Ratio</i>	<i>Upper</i>	
Constant	-.32 (1.75)	-		-	.85
FFMQ- Observe	-.05 (.05)	.86	.95	1.05	.33
FFMQ-Describe	.06 (.05)	.97	1.06	1.17	.19
FFMQ-Acting with awareness	-.05 (.06)	.85	.95	1.06	.34
Non-Judging	.04 (.05)	.93	1.04	1.16	.48
Non-Reactivity	-.01 (.07)	.87	.99	1.13	.88

Note. $N = 72$ (includes individuals who selected CBGT or MBI-SAD as their preferred treatment. * P values $< .05$ are considered statistically significant. CI = Confidence Interval. B= Beta value. SE= Standard Error. FFMQ = Five Facet Mindfulness Questionnaire.

Table 10b

Summary of the Binary Logistic Regression of Trait Mindfulness Predicting Preference for MBI-SAD versus No Preference

	<i>B (SE)</i>	95% CI for Odds Ratio			<i>P</i>
		<i>Lower</i>	<i>Odds Ratio</i>	<i>Upper</i>	
Constant	.88 (1.72)	-		-	.61
FFMQ- Observe	-.00 (.05)	.90	1.0	1.11	.98
FFMQ-Describe	.07 (.05)	.97	1.07	1.18	.19
FFMQ-Acting with awareness	-.10 (.06)	.82	.91	1.01	.08
Non-Judging	.02 (.06)	.91	1.02	1.14	.80
Non-Reactivity	-.06 (.08)	.81	.94	1.09	.40

Note. $N = 73$ (includes individuals who selected MBI-SAD as their preferred treatment or had no preference). * P values $< .05$ are considered statistically significant. CI = Confidence Interval. B= Beta value. SE= Standard Error. FFMQ = Five Facet Mindfulness Questionnaire.

The backward multiple linear regression analysis examining the relationship between levels of trait mindfulness and treatment credibility revealed nonsignificant models. Model 1, which included the FFMQ total score and the five FFMQ subscale scores (observing, describing, acting with awareness, non reacting, non-judging) was not statistically significant, $F(5, 91) = 0.517, p = .76$ and accounted for 2.8% of the variance in treatment credibility scores ($R^2 = .03$, Adjusted $R^2 = -.03$). The last model, which included only the FFMQ total score, was also not significant $F(1, 95) = 0.864 p = .36$ and accounted for 0.9% of the variance in treatment credibility scores ($R^2 = .009$, Adjusted $R^2 = -.001$).

Discussion

Treatment preference and perception of treatment credibility are considered important process variables that can influence compliance and response to different treatment modalities in individuals with psychological disorders (Dwight-Johnson et al., 2001; Gelhorn et al., 2011; Iacoviello et al., 2007; Kwan et al., 2010; Lin et al., 2005; Mergl et al., 2011; Moradveisi, Huibers, Renner, & Arntz, 2014; Prins, Verhaak, Bensing, & van der Meer, 2008; CPAb, 2006; Zoellner, Feeny, Cochran, & Pruitt, 2003). While several studies have compared preference for psychological therapies versus medication (Kocsis et al., 2009; Leykin et al., 2007; Lin et al., 2005; Mergl et al., 2011; Raue et al., 2009; Steidtmann et al., 2012), few studies have examined predictors of preference for different psychological therapies (Ward et al., 2000), and even fewer have examined predictors of preference for mind-body interventions versus mainstream psychological interventions (Carlson et al., 2014; Huijbers et al., 2016). Accordingly, the aim of the current study was to identify predictors of treatment preference and treatment credibility in a sample of individuals with SAD who participated in a randomized trial comparing a mindfulness-based intervention with CBGT. To the best of my knowledge, this is the first study to examine treatment preference and credibility for an alternative mind-body intervention (MBI-SAD) versus a well-established psychotherapy for SAD.

Treatment Preference

The results of the present study revealed that the majority of participants expressed a preference for the MBI-SAD (49.5%). This finding is in accordance with previous studies indicating that most individuals prefer mind-body interventions. For example, in a randomized trial comparing patients' treatment preferences for MBCT versus antidepressant medications for recurrent depression, Huijbers et al. (2016) revealed that the majority of patients had a preference for MBCT (79%), while only 21% preferred antidepressant medications. In another randomized trial comparing MBCT versus antidepressant medications in depressed patients in remission, 50% of the participants were more likely to choose the mindfulness-based intervention, while only 33% stated a preference for medication (Segal et al., 2010).

Although, there is clear evidence of preference for psychological over pharmacological treatment for mental health issues (Churchill et al., 2000; Riedel-Heller, Matschinger, & Angermeyer, 2005.), the available data on treatment preference among psychological interventions is limited. Nevertheless, a study comparing two active psychosocial interventions

(mindfulness-based cancer recovery versus supportive-expressive therapy) to a control group (one-day stress management seminar) for breast cancer survivors found that the majority of participants (55.3%) preferred the mindfulness-based intervention, while 13.0% preferred supportive-expressive therapy, 15.5% preferred a stress management seminar, and 16.1% had no preference of treatment (Carlson et al., 2014). However, unlike the current study, Carlson et al. (2014) did not report why their participants preferred the MBI.

In the present study, the most frequently endorsed reasons for preferring the MBI-SAD included a desire to try an alternative approach if previously treated with CBT, hearing or reading about mindfulness; and wanting to learn how to meditate. It is also possible that interest in the MBI-SAD is attributed, in part, to coverage in mainstream media about the benefits of mindfulness practices, celebrity endorsement of meditation practices, and proliferation of self-help books on meditation techniques for health and wellness (Lauricella, 2016). Furthermore, given that almost twice as many participants expressed a preference for the MBI-SAD versus an empirically supported therapy for SAD, may suggest that individuals with social anxiety are more willing to try alternative treatments, irrespective of their empirical support in the scientific literature. Consistent with our findings, a study of 342 nurses in North America who were interested in mind-body training to reduce stress, revealed that the scientific evidence for a program's effectiveness was the least cited reason for choosing a type of mind-body training (in-person versus electronically), while the most cited reasons were related to convenience, time (i.e., time required for daily practice), and being able to train at one's own pace. (Kemper et al., 2011).

Nevertheless, it is important to note that not all studies report that individuals have a preference for mindfulness-based therapies. In a community based survey of older adults' preferences for the treatment of anxiety, Mohlman (2012) found that when individuals were given a choice among six possible psychological treatments (supportive therapy, CBT, stress management, psychodynamic therapy, mindfulness and acceptance-based therapy, pastoral counselling/religion-based therapy, other (i.e., talk to a friend about the problem, self-help book), most had a preference for CBT (29%), while mindfulness therapies were endorsed by only 4% of participants. It is important to note that participants in this study were older (65 -97 years of age) and the investigator used a hypothetical situation, where participants were asked to imagine that they were suffering from debilitating anxiety, and then chose their preferred treatments

(Mohlman, 2012). Nevertheless, consistent with Mohlman's (2012) results, Riedel-Heller, et al. (2005) found that few individuals (i.e., less than 4%) preferred meditation/yoga for the treatment of depression and schizophrenia, with the majority favoring psychotherapy.

With respect to those who preferred CBGT, the most cited reasons included the opportunity for exposure, not believing that the MBI-SAD intervention would be an effective treatment, and the evidence-base associated with CBT. This finding is not surprising since CBT is often perceived as the "gold standard" psychological intervention for mental illnesses, and is recognized for its perceived comprehensiveness and its practical nature (Moffitt, Haynes, & Mohr, 2015).

For participants who indicated no preference of treatment, the majority believed that either intervention (MBI-SAD or CBGT) would be an effective treatment for SAD, while the rest felt they did not have enough information regarding the interventions to explicitly choose a treatment. Similar to the work by Steidtmann et al. (2012), which found that 25.9% of individuals with chronic depression had no preference of treatment (among medication, combined medication and psychotherapy, no preference), our results indicated that 1 out of 4 individuals (25.8%) had no preference of treatment. Thus, there appears to be a significant portion of individuals who remain neutral or lack the necessary information to make an adequate decision with regards to the treatment they prefer to receive.

Predictors of Treatment Preference

The present study found that some baseline characteristics were significant predictors of treatment preference. For instance, employment status was a significant predictor of having a preference for CBGT versus the MBI-SAD. Individuals who were not employed or studying on a full-time basis were less likely to prefer CBGT. A trend also emerged for younger participants to prefer CBGT over the MBI-SAD. Although the reason for this is unclear, it is possible that an evidence-based treatment may be more relevant for younger sufferers of SAD, especially if their academic, interpersonal, and work functioning are adversely affected by SAD symptoms. Younger participants may have also preferred a more structured treatment modality and explicit focus on cognitive and behavioural change.

When preference for the MBI-SAD was compared to no treatment preference, results revealed that higher scores on the MADRS and lower scores on the BDI-II predicted no preference of treatment. There also appeared to be a trend for no preference of treatment among

individuals with a higher household income (\geq \$80,000), those with a history of psychotherapy and among individuals with a greater fear of social interactions and performance situations (higher LSAS fear subscale). Interestingly, other studies have reported an association between treatment preference and household income, as well as a significant relationship between age and treatment preference (Bertisch, Wee, Phillips, & McCarthy, 2009; van Schaik et al., 2004). For example, Bertisch and colleagues (2009) analyzed the data on mindfulness-based therapies use from the 2002 National Health Interview Survey Alternative Medicine Supplement ($n=31,044$) and found that preference for mindfulness-based therapies was greatest among young adults (18-29 years) and individuals with a higher household income and educational attainment. Although these researchers did not explain their findings, they highlighted the need for future work to elucidate factors that explain the popularity of alternative therapies such as mindfulness. Moreover, a study by van Schaik et al. (2004) found that individuals who self-identified as middle-class were more likely to prefer psychotherapy than antidepressants. On the other hand, the present study found that higher household income was associated with no preference of treatment, perhaps reflecting an openness to different therapeutic approaches including alternative interventions.

With regards to previous treatment experience, the current study found that a previous history of psychotherapy predicted no treatment preference. While some studies have reported no significant association between prior therapy exposure and treatment preference (Angelo, Miller, Zoellner, & Feeny, 2008; Feeny et al., 2009; Zoellner et al., 2003), others have found a relationship between past therapy experience and a preference for psychotherapy. Specifically, clients who had a positive experience with psychotherapy were more likely to re-engage in therapy than those with negative treatment experiences (Roy-Byrne, Berliner, Russo, Zatzick, & Pitman, 2003; Tarrier, Liversidge, & Gregg, 2006). Because the current study did not ask participants about their experiences with prior psychotherapies, it is unknown if the absence of preference for CBGT or the MBI-SAD was attributed to a neutral, positive or negative experience with previous treatments. This merits further research.

Gender and ethnicity were not significant predictors of treatment preference in the current study. Few studies have examined the influence of gender on treatment preference and existing studies have yielded mixed results and have mainly focused on preference for psychotherapy versus medication. Khalsa et al. (2011) failed to find an association between gender and

preference for supportive-expressive psychotherapy versus medication in depressed patients, whereas other studies found gender to significantly predict preference for psychotherapy versus medication (Churchill et al., 2000; Dwight-Johnson et al., 2000; van Schaik et al., 2004).

With respect to ethnicity, other studies have reported an association between ethnicity and treatment preference, although these studies have also focused on preference for psychotherapy versus medication (Cooper et al., 2003; Dwight-Johnson et al., 2000; Givens et al., 2007; Lang, 2005; Schnittker, 2003). For example, Lang (2005) found that in comparison to non-Caucasians, Caucasians were less likely to seek counselling if depressed and more likely to have a stronger preference for medication (Lang, 2005). Other studies (Cooper et al., 2003; Dwight-Johnson et al., 2000; Givens et al., 2007; Schnittker, 2003) have found non-Caucasians, particularly African Americans, to have a greater preference for counselling over pharmacotherapy. Overall, these studies suggest that Caucasians may have different beliefs and attitudes towards medication than do African Americans. Unfortunately, the current study comprised mainly Caucasian participants and finer analyses of the influence of race and ethnicity on preference for the MBI-SAD was not possible. As the use of alternative and complementary medicine has been found to vary across race and ethnic groups (Hsiao et al., 2006), further research efforts should focus on understanding how race and ethnicity might influence preference for mindfulness versus a conventional psychological therapy for mental health problems.

Treatment Credibility

Similar to the literature on treatment preference, little is known about predictors of perception of treatment credibility amongst individuals seeking treatment for mental health problems. Most of the studies have focused on the influence of treatment credibility on treatment outcome and findings are mixed. For example, some studies have found no association between treatment credibility and treatment response (Carlbring, Ekselius, & Andersson, 2003; Goates-Jones & Hill, 2008; Ladouceur et al., 2000; Mynors-Wallis & Thornett, 2002; Ramnerö, & Öst, 2004; Smith, Norton, & McLean, 2013), while other studies have found that treatment credibility beliefs influence treatment outcome, attrition, and compliance with treatment (Borkovec, Newman, Pincus, & Lytle, 2002; Carter et al., 2011; Hardy et al., 1995; Ilardi & Craighead, 1994; Morrison & Shapiro, 1987; Wong, Kim, Zane, Kim, & Huang, 2003).

The present study revealed that participants perceived both the MBI-SAD and CBGT as credible treatments for SAD. These results are consistent with previous studies that found treatment credibility ratings were comparable between different psychological interventions (Craske et al., 2014; Hedman et al., 2011). For instance, Hedman and colleagues' (2011) found that while participants with SAD had a greater preference for ICBT (54%) than CBGT (46%), perception of treatment credibility did not differ between treatment groups. In another study comparing ACT and CBT for SAD, no difference in treatment credibility ratings were found between the treatments (Craske et al., 2014). Similarly, in a randomized trial comparing attention training (a probe detection task in which pictures of faces with either a threatening or neutral emotional expression cued at different locations on the computer screen) to an attention control condition (replication of the attention training condition with the exception of the frequency in which the probe appeared in the place of neutral expressions rather than those of disgust) for individuals with generalized social phobia, treatment credibility did not differ significantly among treatment groups (Bunnell et al., 2013). These findings suggest that individuals' perceived credibility of treatment may be unrelated to treatment preference.

While research has indicated that perceptions of treatment credibility are malleable and can change over time (Hardy et al., 1995; Newman & Fisher, 2010; Schulte, 2008), little attention has been given to other variables that might influence treatment credibility. Given the widespread use of credibility measures in psychotherapy research (Deville & Borkovec, 2000), and the importance of credibility in the therapeutic process (Iacoviello et al., 2007), elucidating factors that influence perception of treatment credibility is an important area of investigation (Mooney, Gibbons, Gallop, Mack, & Crits-Christoph, 2014)

Predictors of Treatment Credibility

The present study revealed that higher household income ($\geq 80,000$) predicted higher ratings of treatment credibility. All other demographic and clinical variables were nonsignificant predictors of treatment credibility. These findings are consistent, in part, with those of Cohen et al. (2015), who found that age and race/ethnicity did not predict treatment credibility in patients with diverse psychiatric disorders, although they did find that gender, severity of illness and comorbid psychiatric disorders were significant predictors of treatment credibility. Interestingly, Cohen et al. (2015) found that individuals with MDD, SAD, and GAD were more likely to have lower treatment credibility beliefs than individuals without these disorders. Similar to the

findings of Cohen et al. (2015), Constantino and colleagues (Constantino, Penek, Bernecker, & Overtree, 2014) found that higher global functioning significantly predicted higher treatment credibility ratings and comorbid personality disorder predicted negative credibility ratings in a sample of outpatients attending a university mental health clinic. The researchers suggested that individuals with poorer global functioning might have more difficulty understanding the purpose of a treatment and consequently have greater difficulty believing the treatment will improve their psychological problems.

A more recent study examining patients' predictors of treatment credibility also found that employment status, marital status and severity of illness were not significant predictors of treatment credibility (Mooney et al., 2014). However, unlike the current study, individuals who were older and more educated were more likely to have lower ratings of treatment credibility (Mooney et al., 2014).

Due to the paucity of research on predictors of treatment credibility, more research is needed to better understand what factors influence individuals' beliefs regarding treatments credibility.

Trait Mindfulness

The present study revealed that levels of trait mindfulness did not differ among the treatment preference groups, and the regression analysis failed to demonstrate that levels of mindfulness were significant predictors of treatment preference or treatment credibility. To my knowledge, however no published studies have investigated the relationship between levels of trait mindfulness and preference for treatment and perception of treatment credibility. Nevertheless, several studies have revealed a relationship between treatment preference and individuals' personality traits (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003; Giluk, 2009; Thompson & Waltz, 2007). For example, preliminary findings from two recent studies (Petronzi & Masciale, 2015; Petronzi, 2016) found that individuals with higher scores on the trait agreeableness were more likely to prefer psychodynamic psychotherapy over CBT and person-centered therapy. It is possible that personality traits other than mindfulness may have influenced treatment preference in the current study. For example, the practice of mindfulness meditation has been found to correlate positively with the traits of openness and extraversion and negatively with neuroticism and conscientiousness (van den Hurk et al., 2011) although it is unknown if these traits were present prior to beginning the practice or changed with the practice.

In view of findings that personality traits can influence response to psychological therapies (Bagby et al., 2008), it would be worthwhile for future research to explore a wider range of personality traits and their influence on preferences for mindfulness-based interventions versus conventional psychological therapies.

Limitations

When interpreting the current findings, it is important to note several limitations. First, participants in this study volunteered to participate in a RCT and were recruited via local advertisements and referrals from physicians. Therefore, we do not know whether our results generalize to all individuals with SAD. Second, the sample was predominately Caucasian, which limits generalizability to more ethnically diverse samples. Third, the sample size was relatively small (n = 97) and a large number of predictor variables were assessed (22 predictors: 8 demographic predictors and 14 clinical predictors). Field (2009) recommends a minimum sample size of $50 + 8k$, where k is the number of predictors, to be able to accurately test the overall regression models. Accordingly, an acceptable sample size would have been a sample size of $n \geq 162$ (Field, 2009). Thus, it may have been advantageous to examine fewer and more targeted predictors in order to enhance the reliability of findings.

Suggestions for Future Research

While research on treatment preference is growing, only a few studies have evaluated predictors of treatment preference (Gelhorn et al., 2011) and most have focused on predictors of preference for antidepressant medications versus a psychological intervention (Hazlett-Stevens et al., 2002). With regards to SAD specifically, there remains a paucity of research on treatment preference and credibility, especially with respect to preference and perceived credibility of mindfulness-based interventions versus conventional psychological therapies. Accordingly, the present study contributes to the literature by examining a predictor of treatment preference and credibility. However, due to the complex nature of treatment preference and credibility, further research is needed to replicate these findings. It would also be interesting for further studies to determine if treatment preference and credibility change over time. Given that a considerable number of participants in the present study endorsed no treatment preference, it would be worthwhile to explore whether their treatment preference and ratings of credibility change over the course of treatment, and if so, which baseline characteristics predict these changes. This could potentially provide insight into other factors that moderate the treatment process.

Conclusion

These limitations considered, the current findings extend to the limited literature on treatment preference and credibility by elucidating clients' factors related to treatment preference and credibility. A strength of this study is that participants were asked to indicate their treatment preference and credibility prior to allocation to treatment, so their choices were not influenced by the treatment they were eventually assigned. Understanding the characteristics associated with treatment preference and credibility in individuals with SAD is an important area of research given that treatment preference can influence willingness to start treatment, treatment adherence, treatment outcome, the therapeutic alliance and expectancies associated with treatment (Kwan et al., 2010; Lindhiem et al., 2014; Mergl et al., 2010; Steidtmann et al., 2012). Interestingly, the current study found that almost half of the sample preferred the mindfulness-based intervention compared to the evidence-based approach, and that the MBI-SAD was perceived as a credible treatment for social anxiety. This study also demonstrated that the majority of baseline demographic and clinical characteristics were not significant predictors of treatment preference and perception of treatment credibility. To my knowledge this is the first study to investigate predictors of treatment preference and credibility for an evidence based psychological treatment (CBGT) and an alternative mind-body intervention (MBI-SAD) in individuals with SAD. Although findings are very preliminary and further research is warranted, the present study provides important insights with regards to the factors that influence individuals with SAD treatment preferences and perceptions of treatment credibility.

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