ONLINE MINDFULNESS INTERVENTION FOR INFLAMMATORY BOWEL DISEASE PATIENTS: ADHERENCE AND EFFICACY

by

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ABSTRACT

LEILA FORBES. Online Mindfulness Intervention for inflammatory bowel disease patients: adherence and efficacy (Under the direction of SUSAN JOHNSON, PhD).

The impact of stress and other psychological variables on Inflammatory Bowel Disease (IBD) prognosis, treatment response, and functional level is well established. However, typical IBD treatment focuses on the physiological pathology of the disease and neglects complementary stress-reducing interventions. Recent pilot studies report the benefits of mindfulness-based interventions in people living with IBD; however, these studies have small sample sizes. Recruitment challenges may be in part due to the difficulty IBD patients often have adhering to set schedules as a result of IBD symptoms such as pain, fatigue, and incontinence. The current study aimed to address this barrier by offering participants access to mindfulness training online, allowing individuals to engage with intervention materials in a comfortable environment with scheduling flexibility. Online mindfulness programs have gained popularity in recent years, as they increase access and flexibility and decrease cost to the user; however, the dropout rate tends to be high. The current study compared the rate of adherence and efficacy of mindfulness training as a function of level of support: self –guided versus supported. Analysis revealed no significant difference in the benefits received between participants in the two groups; however group assignment significantly impacted the rate of intervention completion. Common challenges to meditation were measured, but did not significantly predict adherence to the intervention. Implications of the current research, future directions for the use of mindfulness-based intervention for IBD patients and a discussion of methodological considerations are provided.

DEDICATION

This work is dedicated to individuals living with invisible illnesses.

I see you.

Your heroic resilience inspires.

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Introduction

Inflammatory Bowel Disease (IBD) is a broad term that refers to chronic relapsing-remitting immune system disorders affecting the digestive tract (McCombie, Mulder, & Gearry, 2013; Shih & Targan, 2009). The two most common inflammatory bowel diseases are Crohn's disease (CD) and ulcerative colitis (UC) (Department of Health and Human Services, Centers for Disease Control (CDC), 2017). CD is characterized by inflammation and lesions affecting any part of the GI tract. UC, in contrast, the affected area is typically confined to the large intestines. IBD affects 1.3 million people in the United States. The exact pathogenesis remains complex and elusive, although it is believed to involve genetic, environmental, and immunological factors (Bouma & Strober, 2003; Gearry, Richardson, Frampton, Dodgshun, & Barclay, 2010).

In individuals with IBD, the immune system mistakes food, bacteria, and other naturally occurring materials in the intestine for foreign substances and sends white blood cells to the intestines, attacking the lining and producing chronic inflammation (CDC, 2017). IBD can cause severe abdominal pain and gastrointestinal symptoms that include persistent diarrhea, intestinal ulcers, internal bleeding, vomiting, and bloating. These symptoms may range from mild to severe depending on the disease activity. In addition to gastrointestinal symptoms, IBD can cause extra-intestinal manifestations, affecting other systems in the body, including the eyes, liver, joints, skin, and blood (Das, 2010; Dudley-Brown, 2002). The disease is typically progressive, often requires surgery, and patients with IBD are at an increased risk of colon cancer (Nguyen et al., 2009). IBD is not curable, but a wide range of pharmacological, surgical, and dietary options are used

to manage the disease; however, standard medical treatment is ineffective for a substantial proportion of IBD patients (Whitehead et al., 2004).

Clinicians and scholars recognize not only the physical toll of the disease, but also the impact on psychological health, and well-being (Andrews, Barczak, & Allan, 1987; Graff, Walker, & Bernstein, 2009; McCombie et al., 2013). Rates of anxiety and depression among IBD patients are higher when compared to the general population, even when IBD patients are in a period of remission (Graff et al., 2009; Mittermaier et al., 2004). Stress and poor psychological health are associated with symptom relapse and physiological changes negatively affecting the disease, such as tissue inflammation (Levenstein, 2004; Mittermaier et al., 2004). However, the link between stress and IBD is not unidirectional; symptoms and difficulties around disease management often contribute to the experience of stress, and feelings of anxiety and depression (Dudley-Brown, 2002; Graff et al., 2009; Rubio et al., 2016). Furthermore, research suggests the morbidity of IBD negatively impacts socioeconomic factors such as employment, educational attainment, and relationship status (Bernstein et al., 2001).

The interconnectivity of psychological and physiological health is apparent in IBD, forming a self-perpetuating cycle with detrimental implications for those affected. Because of the interplay between the experience of distress, stress, and immune functioning, identifying ways to effectively cope with the deleterious effects of IBD is imperative to patients' overall health. In addition, behaviors such as good medication adherence, following dietary guidelines, and smoking cessation (in Crohn's Disease) are important in reducing the frequency and severity of disease flares (Kane & Hanauer, 2000). Therefore, health behavior change, stress management, and adaptive coping

strategies should be a logical focus of psychotherapeutic modalities for individuals with IBD.

Rationale and Purpose

An increasing number of empirical studies report mindfulness-based interventions are effective in reducing stress and increasing well-being in a variety of populations including individuals living with chronic illnesses. The current literature examining the feasibility and efficacy of online mindfulness training for IBD patients highlights several considerations relevant to the present study. First, there are very few studies examining the effect of mindfulness training on IBD, and those that exist have small sample sizes. The difficulty recruiting participants is likely due to the low prevalence of IBD in the general population in combination with the experience of common IBD symptoms being prohibitive factors for attending regularly scheduled mindfulness training sessions. IBD patients report difficulty following through with social obligations due to anticipation and anxiety surrounding onset of IBD-related symptoms. While the sample sizes of existing studies examining mindfulness training is small (with Ns ranging from 6 to 60), the results are generally positive, with the majority of studies reporting benefits related to mood, stress, and symptom severity (Drent, Kuiken, Mooibroek, Diskstra, & Schroevers, 2016; Schoulz, Atherton, & Watson, 2015.) Mindfulness-based interventions may be particularly well-suited to treat the reciprocally-related physical and psychological manifestations of the disease due to the effect of stress on the trajectory of disease progression. Mindfulness training attempts to alter both threat appraisal and coping, impacting the practitioner's experience at multiple points of intervention. Delivering interventions online may be a way to allow more people with IBD to benefit from

mindfulness psychoeducation and training by increasing the flexibility of accessing the material, as well as allowing for the practicing of the exercises in the comfort of their own homes.

Online mindfulness-based interventions have been utilized with a variety of populations. While online mindfulness training programs would appear to be a good option, allowing people with IBD to receive benefits associated with mindfulness training, the drop-out rate for such programs is high (Howells, Ivtzan, & Eiroa-Orosa, 2014; Morledge et al., 2013). Typically, online mindfulness programs are delivered using a self-help model, with minimal support and guidance from research staff. Increasing the level of support may improve the rate of adherence and extend possible benefits to reach more people.

Gaps in the literature lead to several research questions, which are addressed in the current study. The primary research question is an examination of the effects of online mindfulness training for with patients with IBD. The proposed research will also establish the rate of completion of an online mindfulness program for people with IBD, and examine whether the rate of completion differs depending on the level of support received during an online mindfulness program for people with IBD. In light of the generally high attrition rate in mindfulness studies (particularly in those that are conducted online), and because the current study teaches mindfulness to naïve meditators, the obstacles and challenges experienced while meditating was also examined. Analyses were conducted to determine whether common challenges to meditation affected the rate of adherence to the intervention. Further details about the

specific procedures used to examine these research questions are included in Chapter III: Current Study.

Literature Review

Theoretical Model

Although the pathogenesis of IBD only partially understood, The Biopsychosocial (BPS) Model (Drossman, 1998) can be used to provide a framework for the development, progression, and prognosis of the disease. The BPS model integrates biological and psychosocial factors in a conceptualization of disease progression wherein genetic vulnerabilities interact with stressors to exacerbate the condition (Sperry, 2006). IBD results from dysregulation of the immune and neuroendocrine functions. Genetics influence intestinal health through several important pathways, including intestinal barrier function, epithelial restitution, and innate immune regulation. Research in the field of psychoneuroimmunology is revealing how activation of the body's stress response affects immune function at a systemic and localized gut bacterial level. Stress can be defined as a perceived threat to an organism's homeostasis (Sapolsky, 2004). When a stressor is detected the brain initiates the physiological flight-or-flight stress response. This activation affects the immune system through the autonomic nervous system (ANS) and the hypothalamus-pituitary-adrenal (HPA) axis feedback loop. The duration and intensity of the stress significantly affects the physiological response (Sapolsky, 2004). Acute stress, such as maneuvering to avoid traffic accident promotes immune response and allows the body to quickly return to homeostasis (Sapolski, 2004). Chronic stress, in contrast, can result in immune system dysregulation. In people with IBD, this dysfunction perpetuates the inflammation response which causes lesions to form, resulting in pain,

intestinal permeability, and inhibiting digestive system functioning (Soderholm et al., 2002)

Because of the chronic nature of IBD, patients often find themselves in a persistent state of psychological distress regarding the anticipation of the onset of negative symptoms (Rubio et al., 2016). Ironically, the resulting anxiety can trigger a symptom flare-up through the pathways described above. Because IBD results from a complex interrelated relationship between appraisal of threat, stress, coping, and immune function, there are several points of disease progression which can be targeted by interventions. Despite these options, psychosocial factors are rarely considered when GI specialists develop treatment plans for patients with IBD.

Traditionally, interventions for IBD have been based on the biomedical framework. Pharmacological treatment is typically the first intervention following a diagnosis of IBD. Anti-inflammatory, immune suppressants, corticosteroids, antibiotics, anti-diarrheal, and pain medications are frequently used to reduce symptoms and slow disease progression (CDC, 2017). Unfortunately, treating IBD solely with medication frequently does not result in total remission of the disease (Bernal et al., 2006; Jackson, Clatworthy, Robinson, & Horne, 2010). Medication adherence is low, and even when compliant with the prescribed medication regimen, a third of IBD patients continue to experience symptoms of IBD affecting their functioning.

To receive a diagnosis of a chronic disease is a major stressor for many, and is often overwhelming. At diagnosis, individuals are provided with a great deal of information about acute disease (flare) management, flare prevention, maintenance of remission, colon cancer detection, monitoring of comorbidity, and the consequences of

complex medication regimens (Keefer & Kane, 2016). This information is often provided quickly and with little guidance and support to follow (Thoolen, de Ridder, Bensing, Gorter, & Rutten, 2008). Furthermore, the psychological toll of chronic pain, and living with some of the more pervasive and intrusive symptoms of IBD have a negative effect on psychosocial functioning and quality of life (Faust, Halpern, Danoff-Burg, & Cross, 2012). IBD patients report concerns regarding social isolation, dependency on others, sexual inadequacy, body image, public embarrassment, and self-worth (Drossman & Ringel, 2004; Kiebles, Doerfler, & Keefer, 2010). Individuals living with IBD are at a greater risk of anxiety, depression, and decreased well-being than healthy peers (Graff et al., 2009), and as compared to other chronic illness populations (Hauser, Janke, Klump, & Hinz, 2011; Walker et al., 2008). The prevalence of psychological disorders, such as depression and anxiety, appear to be slightly higher in patients with CD, as compared to those with UC (Tarricone et al., 2017). Despite the high rate of psychological problems, less than 40% of IBD patients with high levels of anxiety and depression receive treatment for these disorders (Bennebroek et al., 2012; Craven, Quinton, & Taft, 2018; Tarricone et al., 2017). Those who do receive treatment are typically prescribed antidepressants without psychotherapeutic consultation or concurrent support (Goodhand et al., 2012; Mikocka-Walus, Gordon, Stewart & Andrews, 2013).

The relationship between psychological symptoms and IBD is unclear. Some studies suggest that psychiatric problems precipitate the onset of physical symptoms of IBD, while others find that mental health issues result from the disability and physical challenges associated with IBD (Mikocka-Walus, Knowles, Keefer, & Graff, 2016). The BPS model of disease offers multiple points of entry to slow disease progression and

improve overall health. Psychological interventions can target threat appraisal and coping, both of which, in turn, affect the activation of the HPA axis and ANS, immune function, disease, and illness behavior (Sperry, 2006). Despite this strong rationale, many researchers have noted that psychotherapeutic interventions are under-utilized among IBD patients (Mikocka-Walus et al., 2013; Tarricone et al., 2017). Though not utilized by the majority of IBD patients, a variety of therapeutic modalities have been developed to treat the disease and associated psychological issues. A review of current psychotherapeutic approaches follows.

Psychotherapeutic Approaches

Since IBD does not have a cure, IBD patients explore a variety of psychotherapeutic options to effectively cope with symptoms and improve quality of life. A variety of psychotherapeutic interventions have been studied in patients with IBD. These strategies include psychoeducation focused on behavior change, cognitive behavioral therapy, social support, hypnosis, and stress-reduction (including mindfulness). Information gained from meta-analysis of psychotherapeutic approaches in IBD patient populations is limited due to the low number of studies, variability among the interventions utilized, differences in patients included, and varied outcome measures.

A search of the psychotherapeutic approaches in IBD literature resulted in two relevant meta-analysis. The first exemplifies some of the study design challenges in this field. Tu, Xu, and Du (2015) included randomized, controlled, trials that examined the effect of "education and supportive interventions with the purpose of increasing [IBD] patients' skills and confidence in managing their diseases or facilitate behavior changes"

on health-related quality of life. Despite the broad inclusion criteria, limiting the outcome variable to quality of life measures resulted in only 15 studies being included in the final analysis. Intervention techniques ranged from psychoeducation to web-based psychotherapy interventions, making comparison challenging. The researchers concluded that psychotherapeutic interventions had a medium effect on measures of quality of life in IBD patients.

A most recent meta-analysis examined studies that reported the prevalence and efficacy of both psycho-pharmacological and psychotherapeutic treatments for IBD (Tarricone et al., 2017). It included 43 studies published between 1996 and 2016. Of the 43 studies, 31 evaluated the effectiveness of psychotherapeutic approaches. Psychotherapeutic approaches represented in the studies included, Cognitive-Behavioral Therapy (CBT), Solution-Focused Therapy (SFT), hypnotherapy, mindfulness-based interventions, and "other". In aggregate, psychotherapeutic approaches were associated with improved disease symptomatology, decreased depression and anxiety, and/or improved quality of life in roughly 1/3 the studies included. Participants reported satisfaction with psychotherapeutic approaches. This meta-analysis did not further classify and analyze interventions beyond the aggregate category of "psychotherapies," thus comparison of the different types of psychotherapeutic approaches was not available.

As the understanding of the interrelated nature of mental and physical health increases, the use of psychotherapeutic approaches among IBD patients will likely increase, as well. Several psychotherapeutic modalities have emerged as a supplemental (or in some cases-primary) treatment for IBD. These approaches include psychoeducation focused on behavioral change, cognitive behavioral therapy (CBT), interventions aimed

at increasing social support, hypnotherapy, and (most recently) mindfulness-based interventions.

Psychoeducation and behavior change. The rationale for psycho-educational interventions focused on behavior change is rooted in the epidemiology of IBD. IBD is more common in developed countries, and within the United Sates, IBD is more prevalent in urban communities compared with rural areas (Hanauer, 2006). These observations suggest that urbanization is a potential contributing factor. It is believed that this is the result of the "westernization" of lifestyle, such as changes in diet, smoking, and differences in exposure to sunlight, pollution, and industrial chemicals. Furthermore, disease progression is inhibited by engaging pro-health behaviors pertaining to lifestyle and medication adherence (Keefer, Doerfler, & Artz, 2012). In light of these findings, treatment of IBD often takes the form of psycho-education regarding health behavior change targeting behaviors known to reduce symptoms and increase the length of periods of remission. Several empirical studies examined the effects of psycho-education and behavior change in IBD patient populations on psychological variables (Hommel et al., 2012; Hommel, Herzer, Ingerski, Hente, & Denson, 2011; Keefer et al., 2012; Leong et al., 2004; Waters, Jensen, & Fedorak, 2005) and physiological markers of the disease (Gerbarg et al., 201). Interventions in these studies, focused on medication adherence, symptom monitoring, sleep hygiene, planning dietary and exercise goals, and family functioning. On the whole, the studies examining psycho-education and behavioral change interventions report inconsistent results regarding improvements in quality of life and reduced anxiety and depression. Some studies demonstrate psychosocial gains (Hommel et al., 2012; Hommel et al., 2011, Keefer et al., 2012), while others report

negative findings (Leong et al., 2004; Waters et al., 2005). Studies measuring physiological outcomes also demonstrated mixed results. Gerbarg and colleagues (2015) reported a decrease in inflammation, but noted the small sample and short duration of the study. This limitation applies to most, if not all studies examining the effects of psychoeducation and behavior change in IBD populations. While these interventions may alter the course of the disease in the short-term, longitudinal studies focusing on disease progression have yet to be conducted and other research suggests behavior change is difficult to maintain, and therefore does not have lasting benefit (Chisholm, Hart, Lam & Peters, 2012). Additionally, the link between healthy behaviors, diet, and the improvement of IBD symptoms has not been established. Often, people with IBD experience symptoms despite healthy habits. It is for this reason that many therapeutic approaches not only focus on behaviors, but also emphasize cognitive reframing and acceptance of the disease**.**

Cognitive Behavioral Therapy. Cognitive behavioral therapy (CBT) is a type of psychotherapy characterized by attempting to modify maladaptive thoughts and increase the utilization of healthy coping skills (Hofmann, Asnaani, Volk, Sawyer, & Fang, 2012). Research by Diaz-Sibaja and colleagues (2007) reported positive results in terms of decreasing anxiety and depression following a CBT intervention for 57 IBD patients. In this study, participants were randomly assigned to a treatment or control group. The treatment group received CBT-based psychoeducation regarding coping strategies, problem-solving techniques, social skills training, and cognitive reframing techniques.

Keefer et al (2013) examined the effect of a CBT intervention on frequency of IBD flare over the course of the 12-month intervention as compared to the history of disease

flare prior to study participation. This randomized controlled study found that participants in the treatment group were 57% less likely to flare in the following 12 months (compared to 18% in the control group).

Most outcome measures in the CBT studies reviewed exclusively measured one or more aspects of psychological health. Studies examining both psychological and physiological effects of CBT on IBD patients have reported mixed results. One recent study including both psychological and physiological outcomes found that 6 months after a 10-week CBT program, participants exhibited a significant improvement in regards to measures of both psychological outcomes (anxiety, depression, and quality of life), and physiological markers of IBD (C-reactive protein, hemoglobin, platelet, and white cell counts) as compared to controls (Mikocka-Walus et al., 2014). Stress level was not significantly different between groups. The authors conclude that CBT seems to have a positive effect on immune system regulation, and call for more research in this area to be conducted. However, a follow-up study conducted at 24 months demonstrated no significant difference on any measure between the treatment and control groups (Mikocka-Walus et al, 2015). Mussell, Böcker, Nagel, Olbrich, & Singer (2003) found a 12-week CBT intervention was effective in reducing depressive symptoms in women, but not in men. However, the psychological improvements were not accompanied by any change in IBD activity.

The few studies that focus on the efficacy of CBT to promote medication adherence in IBD patients also reveal mixed results. Two studies found that CBT led to improved medication adherence in both group (Hommel et al., 2012) and individual formats

(Hommel et al., 2011). However, the use of CBT failed to lead to improved medication adherence in another study (Keefer et al., 2013).

Support-focused interventions. Chronic illness and IBD, in particular, can be isolating and stigmatizing. Social isolation and perceived stigma is associated with poor health (Taylor, 2011). Many people with similar diagnoses find that support groups provide comfort, camaraderie, and an exchange of ideas. However, with disease that is relatively rare, support groups are difficult to find outside of major metropolitan areas. Only one study, conducted in San Paulo, Brazil, utilized a true support group model. In this study, IBD patients were randomized to a control group or a monthly support group aimed at facilitating & stimulating discussion about the problems & concerns of patients with IBD (ostomies, surgery, relation to cancer, diet, uncertainties about outcome, drug side effects) (Oliveira, Zaltman, Elia, Vargens, Leal, & Barros, 2007). After 18-months, results of the study suggest that individuals engaged in a support groups scored higher on measures of quality of life. This study did not measure between group differences in symptoms of physiological markers of IBD.

Other studies employing a group format, but focused on psychoeducation rather than support provided mixed results. Oxelmark and colleagues, (2007) randomized 44 patients with IBD to either formal group IBD education sessions or to standard care alone. The education program consisted of regular contact with a physician, nurses, dieticians, surgeons, and 4 group therapy sessions provided by a medical social worker and psychotherapist over a 2-month time period. The control group received conventional "on demand" medical and psychosocial/psychological treatment during the study period. Although participant feedback significantly favored the group-based intervention

program, there were no significant differences in average quality of life. Jaghult and colleagues (2007) randomized 93 IBD patients into either a multi-professional program, in which participants received information regarding IBD from a variety of health care professionals, or to a regular biomedical program. No significant differences in terms of quality of life were found between groups (Jaghult et al., 2007).

Hypnotherapy. Hypnosis and guided imagery for the treatment of gastrointestinal disorders, including IBD, have been used for several decades and are the focus of many empirical studies. Hypnotherapy for IBD focuses on "generating the most receptive state possible through a combination of prolonged physiologic relaxation from head to toe, vivid and detailed imagery, and transportation of the subject to a different setting entirely removed from the here-and-now" (Palsson & van Tilburg, 2015). It has been theorized that hypnosis benefits the practitioner by helping to develop insight, reinforcing interpretations, managing stress, visualizing normal intestinal areas, and returning autoimmune antibodies to normal levels (Schafer, 1997). Studies examining the benefits of hypnotherapy for IBD generally report positive results with participants experiencing a decrease in symptoms and longer periods of remission (Keefer, Taft, Kiebles, Martinovich, Barrett, & Palsson, 2013; Mawdsley, Jenkins, Macey, Langmead, & Rampton, 2008; Miller & Whorwell, 2008; Palsson, Turner, Johnson, Burnett, & Whitehead, 2002; Shafer, 1997). While the literature in this area has been quite consistent in demonstrating positive results, many of the studies are not randomized and controlled and have a small sample size. Others do not use validated outcome measures.

Mindfulness. Mindfulness has been defined as "paying attention in a particular way: on purpose, in the present moment, nonjudgmentally" (Kabat-Zinn, 1994, p.4).

Mindfulness promotes receptive experience, which involves processing information about one's internal and external environment nondefensively and non-evaluatively, allowing the practitioner to remain experientially open (Brown, Ryan, & Creswell, 2007). Though the practice of mindfulness has been a tenant of Buddhism for millennia, it remained largely ignored by Western medicine until the last part of the 20th century (Grossman & Van Dam, 2011).

In recent years, research focusing on mindfulness and its effect on both physical and mental health has significantly increased. Trait mindfulness has been associated with greater practice of health behaviors (Greeson, 2009), fewer illness symptoms (Brown & Ryan, 2003), fewer healthcare appointments (Brown & Ryan, 2003), and better overall perceived health (Zvolensky et al., 2006).

Research on the physical and psychological effects of mindfulness and meditation has been aided by advances in technology, specifically magnetic resonance imaging (MRI) and functional magnetic resonance imaging (fMRI), which allows researchers to observe the neurological impact of mindfulness meditation. Experienced meditators appear to have neurological differences implicated in emotion regulation (hypothalamus) and higher level cognitive processes (prefrontal cortex) (Kang, 2013). This finding provides context for the large body of research which contends that mindfulness meditation has a positive effect on many facets of mental health including, depression (Altman, 2010), PTSD (Kearney, McDermott, Malte, Martinez, & Simpson, 2011), and anxiety (Carroll, 2008). Taken on the whole, this research and the established link between psychological and physical determinants of health provide the rationale for further investigation of the effects mindfulness meditation has on health.

Numerous studies have examined the efficacy of mindfulness-based interventions with various chronic diseases and autoimmune diseases (Baer, 2003; Sadlier, Stephens, & Kennedy, 2008; Thomas, Sadlier, & Smith, 2006; Carson, Carson, Olsen, Sanders & Porter, 2017). It is hypothesized that mindfulness training may impact the body's inflammatory response, having particular benefits for chronic inflammatory conditions, such as asthma, rheumatoid arthritis, and IBD (Rosenkranz et al., 2013).

Rosenkranz and colleagues (2013) compared two methods of reducing stress: mindfulness training and the Health Enhancement Program using a sample of community dwelling adults. The Health Enhancement Program was designed to increase the participants' engagement in healthy behaviors unrelated to mindfulness and included nutritional education, physical activity, core strengthening, and music therapy. Using capsaicin cream to produce inflammation on the skin, and the Trier Social Stress Test to induce psychological stress, researchers collected immune and endocrine activity levels from participants in both groups prior to and following their respective mindfulness or health enhancement interventions. Participants in the mindfulness group demonstrated a greater decrease in measures of inflammation reactivity following the intervention than those in the health enhancement group, suggesting that mindfulness techniques may be more effective in relieving inflammatory symptoms than other activities that promote well-being. Both the mindfulness and health enhancement interventions were taught in a university laboratory setting; however the researchers suggest that the mindfulness-based approach to stress reduction may offer a lower-cost alternative or complement to standard treatment, as it can be learned and practiced by patients in their own homes (Rosenkranz et al., 2013).

Additional evidence suggesting the benefits of mindfulness training was found in a 2013 study examining the relationship between dispositional mindfulness and measures of well-being in UC patients. Dispositional mindfulness was inversely correlated with anxiety, depression and perceived stress, and positively correlated with quality of life in both symptomatic and non-symptomatic patients (Jedel et al., 2013). Though this study was not experimental in nature, other research has demonstrated that mindfulness not only varies dispositionally as a trait, but is also a skill that may be developed, cultivated and increased (Quickel, Johnson, & David, 2014). Jedel and colleagues (2013) suggest that mindfulness training may be an important component in treating UC. Despite the strong rationale for the use of interventions designed to reduce stress as appropriate in a clinical population with an dysregulated stress response, there have been very few studies focusing on the use of mindfulness-based interventions in IBD patients and those that exist are subject to questions regarding methodological quality (Aucoin, Lalonde-Parsi, & Cooley, 2014). Furthermore, no studies to date, have examined the efficacy of online mindfulness training in IBD.

The few studies that have examined the benefits of mindfulness training for IBD patients show promising, but somewhat inconsistent results. A 2014 study found that enrollment in an 8-week MBSR program did not affect the rate or severity of symptom flare-ups in UC patients in remission, but did report improvements in quality of life (Jedel et al., 2014). The researchers proposed that mindfulness helps to mitigate the negative psychological effect of symptoms. This study randomized 55 participants to an MBSR (N = 27) or control group (N = 28). All but one participant finished the face-to-

face MBSR training; however, only 4 participants from the experimental group participated in the one year follow-up.

A recent study including both CD and UC patients compared outcomes of participants enrolled in an 8-week Mindfulness-based Cognitive Therapy (MBCT) program (N = 22) to those randomized to a wait-list control group (N = 22) (Schoultz, Atherton, & Watson, 2015). The MBCT intervention consisted of 16 hours of structured group training over 8 consecutive weeks plus guided home practice and follow-up sessions. At the conclusion of the study, researchers found significant decreases in depression, trait anxiety, and a significant increase in dispositional mindfulness in the group receiving MBCT. No statistical improvement was found in state anxiety, disease activity, or quality of life. This study had a high drop-out rate of 44%, with 33% of participants only attending one session. Data regarding reasons for attrition was not collected,

Another recent study including 60 adults with IBD examined the efficacy of an 8-week MBSR program which was tailored for people with IBD (Neilson et al., 2015). The MBSR group met weekly and included guided meditations, mindfulness exercises, and an opportunity to discuss experiences and challenges. Of the 33 participants who initially agreed to enroll in the MBSR program, 27 completed the protocol, representing a relatively low dropout rate of 18.2%. When compared to the control group, participants who completed the MBSR program demonstrated greater reductions in anxiety and depression, as well as improvements in physical health, quality of life, and mindfulness. This study also included a 6-month follow-up, at which those in the MBSR group still

reported a significant reduction in in depression and quality of life and a trend toward reduced anxiety.

Applying mindfulness-based interventions to IBD populations has not always yielded positive results. Research conducted by Berrill, Sadlier, Hood and Green (2014) did not find any significant effect of an MBSR program on stress level, quality of life, or disease remission. The researchers also noted the high drop-out rate in this study (24% of participants failed to attend a single appointment and the majority of the sample was lost to follow-up) In general, recent studies provide rationale and support for using mindfulness-based interventions for patients with IBD. Most of the studies were conducted at research centers and universities in major metropolitan areas where patients living in that area can access quality face-to-face mindfulness training and support from experts in the field (Jedel et al., 2013; Neilson, et al. 2015).

Mindfulness as self-help

Mindfulness-based interventions are typically delivered by trained professionals in a face-to-face, group format. Some experts suggest that the presence of others is an integral part of the process of learning to meditate, providing social support and an opportunity to engage in investigative dialog (Kabat-Zinn, 1994; Segal, Teasdale, Williams, & Gemar, 2002). However, the face-to-face format does not allow for scheduling flexibility and can be cost-prohibitive for many individuals who may benefit from mindfulness training. Regularly scheduled, face-to-face classes may be particularly daunting for people with IBD, who may experience fatigue, pain, and the sudden onset of gastrointestinal symptoms. A number of studies have begun to examine whether the

benefits of mindfulness-based interventions can be delivered through less intensive, more cost-effective methods such as workbooks, on-line programs, phone apps, and videos. These methods, being self-delivered, fall under the category of 'self-help' (Lewis, Pearce, & Bisson, 2012). There is some research that supports the notion that utilizing self-help interventions can benefit people experiencing common psychological problems such as depression or anxiety (Coull & Morris, 2011; Newman, Szkodny, Llera, & Przeworski, 2011).

A meta-analysis of 15 mindfulness- and acceptance-based intervention studies examined the efficacy of these less intensive methods of delivery (Cavanagh, Strauss, Forder, & Jones, 2014). Overall, the results suggest that the interventions are associated with increases in mindfulness and decreases in levels of depression and anxiety in both clinical and non-clinical samples. The researchers note that the small sample size and heterogeneity in terms of self-help format (i.e. book, website, CD) were limitations for many of the studies. This is a criticism of mindfulness-based studies in general (Goyal et al., 2014), and the studies focused on IBD populations are no exception. Sample sizes of the existing studies of mindfulness-based interventions applied to IBD populations are typically small, which reduces the effect size, limiting the usefulness of the results. The difficulty recruiting and retaining patients with IBD to participate in mindfulness-based intervention research may be a reflection of some of the challenges that people with IBD face in their daily lives, namely difficulty fulfilling obligations that have a set time and are outside the home due to actual or feared symptoms of IBD.

Mindfulness is unique in that it promotes a shift in the practitioner's appraisal of both internal and external stimuli. A tenant of mindfulness is to be open to receptive

experience, to feel sensations, thoughts, and feelings, non-judgmentally. Practitioners are encouraged to remind themselves of the universality and temporal nature of all experiences- both pleasant and unpleasant. Additionally, mindfulness teaches the practitioner methods of breathing and muscle relaxation that have been reported to reduce anxiety (Bell, 2015). In these ways, mindfulness targets both the points of appraisal and coping in the BPS model of disease progression. The BPS model provides a strong rationale for the use of mindfulness-based interventions for IBD and for chronic illness, more generally.

Challenges to Psychotherapeutic Approaches

Psychotherapeutic interventions for IBD are typically delivered in individual or group face-to-face sessions. One challenge associated with typical face-to-face therapeutic approaches in this population is that individuals with severe IBD often limit traveling and venturing out in public. Even mild to moderate cases of IBD are associated with unpredictable onset of symptoms that increase the likelihood of missing appointments or sessions. One possible alternative is the use of online therapeutic interventions. Online interventions allow the user more privacy and flexibility; however, the online delivery is associated with high rates of attrition, and has yet to be empirically examined in IBD populations. The use of online support groups in IBD populations also has not been studied and may be an area of future research. Although online interventions may improve access to treatment for those who have difficulty leaving their homes or adhering to scheduled sessions, such interventions should be entered into cautiously. Advantages, disadvantages, as well as technology and privacy considerations should be considered.

Access to particular treatment modalities may also be limited by the particular therapeutic setting, the length of appointment time, limitations on the number of follow-up appointments, cost and insurance considerations, as well as the overall culture of the setting which may prohibit the practitioner from engaging in certain modalities. For example, a mindfulness-based intervention may not be appropriate for a client measuring low in dispositional mindfulness if the number of follow-up sessions allowed is small. Groundwork to increase base levels of mindfulness before entering into the intervention itself may take up too much time. In those cases, psycho-education, behavior change, or CBT may be more appropriate.

Online Mindfulness Interventions

Despite the complex medical and psychological factors associated with IBD, and the pervasive nature of managing symptoms, the average IBD patient spends less than 3 hours per year obtaining care or in communication with their providers (Keefer & Kane, 2016). The rest of the time, IBD patients engage in self-management of the disease, often poorly, and without adequate resources. To date, only one study utilized an online format to deliver a psychotherapeutic intervention (8-week CBT) to individuals with IBD (McCombie, Gearry, Andrews, Mulder, & Mikocka-Walus, 2016). Results indicate that the intervention was effective in increasing the use of healthy coping techniques and quality of life, but did not have an effect of physiological markers of the disease.

Recognizing a cultural shift toward the integration of technology into the lives of individuals, reducing cost, and the importance of making potential benefits of mindfulness training accessible to a wider audience, online mindfulness resources have

recently gained popularity (Krusche, Cyhlarova, King, & Williams, 2013; Keng, Smoski, & Robins, 2011; Munoz et al., 2016). Several studies have assessed the feasibility and efficacy of delivering mindfulness training using an online format to a variety of populations (Baer, Smith, Hopkins, Krietemeyer, & Toney 2006; Cavanaugh et al., 2014; Davis & Zautra, 2013; Howells et al., 2014; Querstret, Copley, & Fife-Shaw, 2017).

Few online studies have assessed the efficacy of an online mindfulness intervention in populations living with a chronic health condition (Davis & Zautra, 2013; Ljótsson et al., 2010). Using a sample of participants diagnosed with fibromyalgia, Davis and Zautra (2013) compared self-report levels of pain and socio-emotional variables between those randomized to an online Mindful Socio-emotional Regulation (MSER) intervention (n = 39) to participants who received online health tips (n = 40). The program lasted up to 6 weeks and encouraged participants to access 12 self-paced modules. The study prompted participants to follow a link, sent via email, to the first training module (either mindfulness training or health tips), and instructed them to complete online nightly diaries after accessing the module. Once participants reported accessing the module in their nightly diary, they received an email with a link to the next module and a reminder to complete the nightly diaries. Health, mood, pain, and activity measures were administered pre and post intervention in both groups.

Results of this study (Davis & Zautra, 2013) suggest that while reports of daily pain remained unchanged, the participants in the mindfulness group experienced improvements in their ability to manage pain and stress, engage in social activities, and positive affect. No such change was observed in the health tips group. The total sample consisted of 79 out of 151 adults screened. Of the 72 individuals who were screened, but

did not participate, 9 were ineligible based on depression measures, 5 did not have daily access to the internet, 15 did not complete the diaries necessary to participate in the study, and 48 declined participation from the onset. No reasons were given regarding why the 48 individuals were not interested in participating. Researchers reported that outcome measures were collected from all participants who initiated the first module; however, only 49% of participants in the MSER and 63% of participants assigned to the health tips group completed all 12 modules. Rates of early attrition (dropping out after the first module) were 15% and 5% in the MSER and Health Tips groups, respectively. Notably, the trend for lower completion rates in the MSER group was largely accounted for by dropping out after the first module. The researchers did not offer data or speculation for the early attrition in the MSER group. On average, the MSER group accessed 8.23 (SD = 4.57) and the Health Tips group accessed 9.45 (SD + 3.98) of the 12 modules.

A 2010 study of 85 Swedish patients with Irritable Bowel Syndrome investigated the benefits of a 10-week, online, CBT intervention that included a mindfulness component. Participants were randomized to either a wait-list control group or the intervention group (Ljótsson et al., 2010). Those in the intervention group received instruction in daily mindfulness exercises focused on bringing the participant into immediate awareness of current GI symptoms, thoughts, feelings and behavioral impulses. Other components of the intervention included a presentation of a psychological model of IBS explaining how behaviors used to control or avoid symptoms or negative emotions related to symptoms often have the converse effect of increasing the intensity or attention to the symptoms. The intervention also included exposure practices

wherein the participant was asked to participate in activities they may otherwise avoid such as long bus rides, or attending a meeting while experiencing abdominal discomfort. The intervention was divided into five consecutive modules with the goal of one module being completed each week. The participants were instructed to spend approximately one hour on each module. Participants were required to complete a homework assignment reinforcing the lesson found in the module before continuing onto the subsequent module. The intervention group demonstrated a significant decrease in IBS symptoms and GI-specific anxiety, as well as improved quality of life.

Ljótsson and colleagues (2011) also conducted a follow-up study, administering the outcome measures to 75 of the original 86 participants between 15- and 18-months post-intervention. Results of the follow-up study demonstrated that an online CBT intervention incorporating a mindfulness component can be effective in the long-term in reducing IBS symptoms and increasing quality of life. Notably, individuals with a diagnosis or symptoms unique to IBD (as opposed to IBS) were excluded from the study, thus the findings cannot be generalized beyond IBS.

As previously discussed, many chronic illnesses, including IBD, are reciprocally related to the psychological and physiological response to stress. A recent study compared 31 experienced meditators to a demographically matched control group on measures of stress and inflammatory responsivity and psychological health (Rosenkranz et al., 2013). Meditators demonstrated lower stress and inflammatory responsivity after administration of the Trier Social Stress Test (TSST) and topical capsaicin cream. Furthermore, meditators reported lower levels of anxiety and higher levels of well-being than controls. Researchers concluded that the long-term practice of meditators may

decrease stress and inflammation in the body. Though not experimental, this study provided a sound rationale for further investigation of the benefits of applying mindfulness-based interventions to chronic inflammatory disease populations.

A few recent studies have demonstrated the feasibility of delivering online mindfulness-based interventions aimed at the treatment of anxiety (Boettcher et al., 2014; Krusche, Cyhlarova, & Williams, 2013). In one such study, 91 individuals diagnosed with an anxiety disorder were randomly assigned to either a control group that had access to an online discussion forum, or a mindfulness treatment group that received instructions to access an online mindfulness program website (Boettcher et al., 2014). The mindfulness website presented brief psychoeducation audio files guiding users through a variety of meditation exercises. Participants in this group were asked to access the material 6 days per week for 8 weeks. Results of a mixed models analysis showed that participants who completed the mindfulness treatment showed a significantly greater decrease in anxiety, depression, and insomnia (as measured by the Beck Anxiety Inventory, Beck Depression Inventory, and Insomnia Severity Scale) than participants in the control group. The researchers note that on average participants in the intervention group completed 44 out of the 96 mindfulness exercises included in the intervention. The researchers acknowledge the low adherence rate, and note that most clinical trials on mindfulness-based interventions fail to document the extent to which participants adhere to the protocol. Recording not only the outcomes or benefits received during the course of a mindfulness-based intervention, but also the amount of time mindfulness is practiced may have implication for future online mindfulness intervention design.

Studies aimed at improving work-life balance have also recently employed an online mindfulness-training format (Kemper, 2016; Querstret et al., 2017). Querstret and colleagues (2016) used an online mindfulness course comprised of psychoeducational videos, guided meditations, and activity instructions as an intervention aimed at improving sleep quality (as measured by the Pittsburg Sleep Quality Index) and reducing work-related rumination and fatigue (measured by the Work-Related Rumination Questionnaire). Compared to a wait-list control group, individuals who participated in the intervention exhibited benefits in the examined domains. The 87 participants in the intervention group were encouraged to complete the course in 4 weeks, but were allowed a maximum of 12 weeks to finish the program. No differences in terms of outcomes were found between those participants completing the course in less than 6 weeks and those who took longer than 6 weeks to finish. Dropout rates were not reported.

Kemper (2016) enrolled health care professionals (graduate students, residents, and experienced professionals) in an online mindfulness training and education program. The program consisted of three modules: Intro to Mindfulness, Mindfulness in Daily Life, and Mindfulness of Breathing and Walking. Each module lasted approximately one hour and contained a guided practice, relevant didactic information, and self-reflection exercises. Participants could enroll in one or all three modules; most (68%) completed all three modules. The sample size ranged from 129 to 166 depending on the module. The outcome variable, "self-reflection" was measured by administering standardized mindfulness measures, the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R), the Mindful Attention Awareness Scale (MAAS), and the Five Facet Mindfulness Questionnaire (FFMQ), before and after each of the modules. Results of the study

indicate that self-reflection increased following the brief mindfulness interventions. Kemper (2016) did not find differences in self-reflection based on gender, profession, or length of employment in health care. Kemper's (2016) results indicate that not only can online delivery of mindfulness training be effective, but even very brief intervention may result in immediate benefits for the practitioner. Follow-up data were not collected as part of this study, so it is not clear if participants experienced any lasting changes to self-reflection.

A brief online mindfulness meditation intervention was applied to 104 college students recruited by email and posters on campus (Cavanagh et al., 2013). The intervention lasted 14 days and consisted of a tutorial and 10-minute guided- mediation audio files. Questionnaires were completed at baseline and after 14-days. Results suggest participants experienced a significant increase in mindfulness, as measured by the FFMQ (Baer et al., 2006), and a significant decrease in stress and anxiety measured by the PSS. This study had a high rate of attrition, with only 43% of the intervention group completing the 2-week program; however, the majority (61%) of those who completed the intervention indicated that they intended to continue to practice meditation on their own.

A recent, innovative study used a smartphone application to deliver a 10-day mindfulness training program (Howells et al., 2014). The researchers compared participants' scores on measures of well-being following the use of Headspace, a mindfulness-training application, or Catch Notes, a list making application used in this study as the control condition. Results of the study suggested that users of Headspace experienced a significant increase in positive affect, and a reduction in depressive

symptoms, as measured by the Positive and Negative Affect Scale (PANAS) and the Center for Epidemiological Studies Depression Scale (CES-D), respectively. This study reported a 77% dropout rate; of the 537 individuals who signed up for the study, only 121 completed the final measures and were included in the analysis. However, the researchers did perform bivariate statistics (T and Chi Squared tests) to compare the adherent and non-adherent groups on baseline characteristics. They found that participants 'higher level of negative emotion (measured with the PANAS) was the only measured characteristic that predicted dropout from the study. The researchers note that this correlation was weak, although statistically significant. They suggest further investigation into the yet unidentified variables likely to influence adherence to novel platforms of mindfulness training delivery.

Taken on the whole, research demonstrates that a digitized or online delivery of mindfulness training can be effective; however, this method has not been studied using IBD patients, and the dropout rates in many of the studies that do exist are quite high (Baer et al., 2006; Cavanaugh et al., 2014; Davis & Zautra, 2013; Howells et al., 2014). One related area regarding the use of online interventions in a health related population is examining the different types and different levels of support which accompany the online training.

Online supported interventions

The rationale for the use of online mindfulness-based interventions, particularly in populations that may have difficulty accessing or adhering to routine face-to face mindfulness groups, is strong. Online interventions allow people in geographic locations

or with disease symptoms that interfere with attending traditional mindfulness class an opportunity to learn new skills and gain potential benefits. Open-source mindfulness training websites allowing individuals to access guided meditations, exercises, and educational material abound. However, for a naïve meditator, the process of becoming aware of the resources, accessing the materials, and practicing the skills may be daunting. Individuals who access online interventions through email, text messaging, or other means may improve the adherence and efficacy of online mindfulness interventions; however, to date, this question has not been empirically examined. Research comparing interventions using differing levels of support for mindfulness training has not been published; however, studies examining the efficacy of online mindfulness training suggest that some level of support (through email, text messaging or other means) may improve the level of adherence to an online protocol, thus maximizing the benefits.

Several studies demonstrate that supported online interventions can be effective in chronic illness populations. A systematic review of internet-administered CBT-based interventions for health problems included twelve studies that employed a range of health populations, outcome measures, CBT-based interventions, and online modalities (Cuijpers, van Straten, & Andersson, 2008). None of the studies included comparison between different modalities or levels of support, but reported positive outcomes on physical and mental health on the whole.

In terms of online supported mindfulness-based interventions applied to chronic illness populations, only one study was found. A 2011 pilot study including six individuals with chronic widespread pain, utilized a daily mobile phone text messaging as a way to prompt participants to engage in mindfulness- based CBT exercises (focused on

relaxation and acceptance of symptoms), write daily online journal entries, and give notification when feedback on journal entries was available (Kristjánsdóttir et al., 2011). The communication was one-way; the participants could not respond to the text messages or email the researchers with questions. The intervention lasted four weeks and was completed by five of the six participants, a 17% drop out rate. Although this study had a very small sample size it does suggest that support may help individuals with chronic health conditions complete an online intervention. Scores on measures of subjective pain increased following the intervention; however; several participants reported a decrease in catastrophizing and an increase in acceptance of pain after the intervention.

Kristjánsdóttir and colleagues reported that participants who completed the protocol said they found the intervention helpful- increasing their awareness of automatic reactions and supporting the use of healthy coping strategies. Some participants reported finding writing in the daily online diaries challenging, and frustration with the limitations placed on contact with the researchers. Additionally, the researchers who provided feedback did so using set messages that did not allow for much personalization, empathy, or direction to refer back to helpful material. The researchers suggested improvements to the supportive online protocol, particularly in regards to reducing the taxing number of journal entries required, widening the type of feedback and contact allowed, which may improve the participants' experience.

Broadening the scope of supported online interventions to those that target health behaviors more generally, several studies demonstrate that augmenting an online intervention with supportive counseling may increase an intervention's effectiveness (Alexander et al., 2010; Tate, Jackvony, & Wing, 2003). A 2010 study evaluating types

of online support for interventions aimed to improve fruit and vegetable consumption provides insight into the optimal level of support for such interventions (Alexander et al., 2010). Alexander and colleagues (2010) assessed the change in fruit and vegetable intake in a large population-based sample (N = 2540) as a function of one of three different levels of online support: untailored program (arm 1), tailored behavioral intervention (arm 2), and tailored behavioral intervention plus email-based motivational interviewing counseling (arm 3).

All three intervention arms made use of a website which was divided into four sessions offered at 1, 3, 13, and 15 weeks after enrollment; automated e-mails notified participants when a new session was available on the website. Each session included 4 to 5 pages of core content, illustrations, optional links to more detailed explanations, and special features designed to supplement session content. The tailored behavioral intervention included in arms 2 and 3 included a welcome page on the study site which displayed the participant's current fruit and vegetable intake compared with a goal intake of 5 to 9 servings daily, as well as a goal-setting tool designed to elicit planning for behavior change strategies. Additionally, arms 2 and 3 had access to an optional feature offering menus and healthy recipes. Fruit and vegetable consumption increased by more than 2 servings across all study areas, with the greatest increase of 2.8 servings found in the participants assigned to arm 3 ($P = .05$, compared with control). Participants randomized to arm 2 increased their fruit and vegetable intake by more than 2.6 servings, suggesting the greater the intervention support, the greater the benefit. Outcome data was collected on 80% of participants (Alexander et al., 2010).

Tate and colleagues (2003) compared the efficacy of behavioral counseling on weight loss between a group of participants who received a basic internet (N = 46) and those who received internet plus behavioral e-counseling (N = 46). Both groups had an initial face-to-face counseling session, a core internet weight loss support program, and were instructed to submit weekly weights online. Participants in the e-counseling group also submitted calorie and exercise information, as well as received weekly behavioral counseling and feedback via email. Results of the analysis suggested that the additional support of e-counseling significantly increased weight loss.

Tate and colleagues (2006) followed-up their initial study with an examination of the effect of e-counseling on weight loss with a three group study comparing the effect of no counseling, computer-automated feedback, or personalized human e-mail counseling. All groups received an initial face-to-face weight loss group counseling session, and access to an interactive website. The rate of adherence was 82% for all three groups after three months. Across all three groups, 82% of the participants completed the measures administered at 3-months and 80% completed the 6-month measures. An exact breakdown of adherence to the protocol between the three groups was not provided, but the authors did note a trend for fewer participants in the computer-automated feedback group to complete the follow-up assessments ($x2 = 5.2$, P = .07). Those who completed the follow-up assessments in both the computer-automated feedback group and the human e-mail counseling group demonstrated significantly greater weight loss compared to the group that received no counseling support, but did not significantly differ from each other. The authors concluded that providing automated computer feedback was as effective as human e-mail counseling in an online weight loss program.

Current Study

Purpose and Research Questions

A theoretical basis using the BPS model, as well as empirical research provides a strong rationale for the use of mindfulness-based interventions in patients with IBD. Likewise, current research suggests that mindfulness-based interventions can be effectively administered online and have been utilized in a range of health and chronic illness populations. However, online mindfulness training has not been applied to an IBD population. Furthermore, online mindfulness-based interventions, and online interventions in general tend to have a low rate of adherence, and reasons for dropping out go largely unexamined or unreported. Some research suggests that providing supports in the form of emails, text messages, counseling, or supplemental materials improves adherence and outcomes of online interventions targeting health behaviors, but again, very few studies compare different levels of support and none that do examine levels of support while delivering a mindfulness-based intervention.

The current study aims to fill the gaps in the literature by examining several research questions:

RQ1: What is the rate of completion to an online mindfulness program for people with IBD and does the rate of completion differ as a function of the level of support received during an online mindfulness program for people with IBD?

RQ2: What are the benefits of online mindfulness training for with patients with IBD?

RQ3: Do benefits differ as a function of the level of support received during an online mindfulness intervention for patients with IBD?

RQ4: What are challenges to meditation experienced by people participating in an online mindfulness intervention for patients with IBD?

RQ5: Do the challenges experienced affect rate of adherence to an online mindfulness intervention for patients with IBD?

Methodology

Recruitment

Individuals in online IBD support groups who endorse receiving a diagnosis of CD or UC were invited to participate. The recruitment script described the research project as a 4-week, web-based study, examining efficacy of mindfulness training on patients with IBD. It explained that participants would be asked to access guided meditation audiofiles and complete a number of self-report questionnaires. The recruitment script stated that the study lasts approximately four weeks, and the total amount of time spent participating in the meditations and answering questions may vary based on frequency with which the participant accessed the materials, but is estimated to be two hours per week, for a total of 8 hours of mindfulness training. The recruitment script also stressed that participants be interested in learning meditation and principles of mindfulness, and communicated the technology requirements to participate (ie: the ability to watch videos and listen to audio files through their device). The script also explained confidentiality and the de-identifying of data. The recruitment script had a link to the informed consent on Qualtrics and also the contact information of the Principal Investigator should they participant desire more information. (The full recruitment script is included in Appendix A.)

Inclusion criteria. Individuals at least 18 years of age who endorsed a diagnosis of CD or UC, were interested in learning meditation, but had no prior meditation experience were recruited into the study.

Informed consent. Each participant was presented with an IRB-approved informed consent document prior to initiating the baseline measures. The document was

the first screen participants saw when they attempted to access the survey through Qualtrics. Inclusion and exclusion criteria were detailed in the document. The informed consent explained in detail the nature of the study (i.e. randomization), time commitments, potential risks and benefits of participation, and confidentiality and privacy protections. Participants read and agreed to the informed consent document by clicking "I agree," before they were allowed to progress to the baseline survey. (A copy of the informed consent document is included in Appendix B.)

Participants

At the end of data collection, 119 unique cases were logged on Qualtrics. Of those cases, 11 were excluded from analysis because they opted to "answer questionnaires later" and did not return. One hundred and eight individuals completed at least one baseline measure. Ninety-six participants finished all baseline measures. The study site gave participants the option to access the first module and attempt the first meditation directly following the completion of the baseline questionnaires or return at a later time to attempt the first meditation. Seventy-one participants attempted the first meditation and completed the Obstacles Checklist and Repetitive Thought Questionnaire. Thirty-three participants accessed all modules, completed the final measures and were included in all levels of analysis. (A flow chart of participant data, including attrition rates at all stages of the study design, is represented in Figure 1.)

The mean age of the sample was 39.27 (SD = 11.46; range = 18-65) was comprised mostly of women (73.1%). The sample and was predominantly white (83.3%) with Black participants making up 6.5%, Asian participants 5.6%, Latino participants 3.7%, and .9% of the sample identifying as "other." Half of the participants were

married or in a domestic partnership, while 26.9% were single, 17.6% divorced, 2.8% separated, and 2.8% widowed. Data regarding age of diagnosis and disease classification are reported in Table 1.

Table 1

Disease Characteristics of Sample (n= 108)

Characteristic	frequency	percentage
Age at Diagnosis		
Under 18 years old	24	22.2%
18-24 years old	29	26.9%
25-34 years old	35	32.4%
35-44 years old	9	8.3%
45-54 yerars old	8	7.4%
55+ years old	3	2.8%
IBD Classification		
Mild Crohn's Disease	9	8.3%
Moderate Crohn's Disease	31	28.7%
Severe Crohn's Disease	11	10.2%
Mild Ulcerative Colitis	17	15.7%
Moderate Ulcerative Colitis	26	24.1%
Severe Ulcerative Colitis	29	13.0%

As summarized in Table 2, there were no significant differences between participants in the Self-Guided group and those in the Supported group in demographic or disease characteristics.

Table 2

Descriptive Statistics by Study Group (n = 108)

Characteristic	Self Guided (n = 54)	Supported (n = 54)	Difference Statistic
Age			t (106) = -1.54, p = .295
M years	37.31	41.22	
SD	11.2	11.5	
Gender			$\chi2(2) = 0.47$, p = .800
Male	12	15	
Female	41	58	
Non-Conforming	1	1	
Race/Ethnicity			$\chi2(4) = 5.28$, p = .260
White	46	44	
African American	1	6	
Latino	2	2	
Asian/Pacific Islander	4	2	
Other	1	0	
Relationship Status			$\chi2(4) = 3.85$, p = .426
Married or Domestic Partne	29	25	
Divorced	6	13	
Separated	2	1	
Single, Never Married	16	13	
Widowed	1	2	
Education			$\chi2(5) = 1.88$, p = .866
High School or GED	5	7	
Some College (No Degree)	10	7	
Trade/Vocational Training	9	6	
Associates Degree	5	7	
Bachelor's Degree	15	16	
Graduate Degree	10	11	
Age at Diagnosis			$\chi2(5) = 0.708$, p = .983
Under 18	13	11	
18-24	17	12	
25-34	14	21	
35-44	4	5	
45-54	5	3	
55+	1	2	
IBD Classification			$\chi2(5) = 5.793$, p = .327
Mild Crohn's Disease	6	3	
Moderate Crohn's Disease	18	13	
Severe Crohn's Disease	4	7	
Mild Ulcerative Colitis	5	12	
Moderate Ulcerative Colitis	13	13	
Severe Ulcerative Colitis	8	8	

Note. $*p < .05$.

Procedure

Individuals interested in the participating in the study after reading the recruitment script followed a link to the study site the Qualtrics research platform. The

first page of the study site included the informed consent. The informed consent consisted of a brief description of mindfulness and a more detailed description of the intervention and study characteristics. It also included the email address of study staff and IRB contact information. The informed consent explained the randomization process and the two different groups. The informed consent stated that participation was completely voluntary and the study could be discontinued at any point without penalty. Consented participants were randomized through Qualtrics software, and then continued onto demographic questions and baseline measures through the Qualtrics research website. The completion of these measures took approximately 30 minutes. Following the baseline measures, participants continued to a page that includes a brief introduction to mindfulness and a reiteration of how to interact with the study site. Participants then clicked on a button to be routed to the Week 1 module of the intervention. Participants were instructed to read the handouts available for each week and attempt to listen to the guided meditation 4 times each week. Qualtrics generate an email list of participants randomized to the supported treatment group. This list was used to email participants from an account specific to the current study. A welcome email went out to participants in the supported group that informed the participant that they should expect to receive email reminders approximately once a week, and be encouraged to contact study staff with questions or concerns. See Appendix D for additional detail about the communications sent to the supported group. Any emails received from the participants were responded to within 24 hours and individualized according to the specific content of the participant email. A record of participant contact with the date and nature of the communication was logged.

For both the basic and supported intervention groups, each module stayed accessible to participants for 14 days before the study times out and the link became invalid.

Intervention. The four modules of the intervention were developed to address psychosocial and behavioral factors relevant to living with IBD. All of the guided meditations were obtained from the UCLA Mindful Awareness Research Center website, which is open source. A description of the material included in each module follows:

Module 1: Mindfulness of Breathing: Focus on the breath is a foundational technique in mindfulness meditation. Module 1 included an introductory text paragraph that explained the concept of mindful breathing and mindful awareness more generally. The module also included the 5-minute "Breathing Meditation" guided meditation. A one-page pdf file titled "Meditation: It's not what you think" by John Kabat-Zinn (2005) was also be available for participant access. This document provided a basic overview of the concept of meditation and meditation training as a "way of being" and interacting with oneself and the environment. The Breathing Meditation and the handout were selected because they provide a foundational understanding and experience of basic meditation and required a manageable amount of time to complete.

Module 2: Body Scan/Mindful Eating: Nutrition has an important role in both the supportive and therapeutic management of IBD (Rigaud et al., 1991). Though suitable diets vary from between individuals, diets high in sugar, saturated fats, and carbohydrates are thought to exacerbate IBD symptoms. This module included an introductory text paragraph that explained the concept of mindful awareness of the body and mindful eating. The 12-minute"Breath, Sound, Body" guided meditation was available for access during Module two, as was a two-page pdf file titled, "Mouthfuls of Mindfulness" by Jan

Chozen Bays (2012). The handout introduced the concept of mindful eating. The week 2 audio file and the handout were selected due to their relevance for people with IBD. Symptoms of IBD tend to cause discomfort and distress among patients. The "Breath, Sound, Body" meditation encourages interacting with bodily sensations, particularly unpleasant sensations with nonjudgmental acceptance. Additionally, patients with IBD tend to have a complicated relationship with food, and the comorbidity of disordered eating and IBD is higher as compared to the general population (Defilippis et al., 2015; Ilzarbe et al., 2017). The mindful eating handout instructs the reader to attend to bodily cues of hunger and satiation, as well as to slow down and fully attend to the act of eating. Mindful eating interventions have demonstrated benefits to individuals with body image and eating disorders (Kristeller, Wolever, & Sheets, 2014; Godfrey, Gallo, & Afari, 2015; O'Reilly, Cook, Spruijt-Metz, & Black, 2014).

***Module 3: Meditation for Difficult Situations*:** Meditation for Difficult Situation: This module was included an introductory text paragraph outlining the use of mindfulness in reappraising or coping with difficulties, both physically and emotionally. The module included access to the 7-minute "Working with Difficulties" guided meditation and a one page handout titled "The Power of Focusing" by Ann Weiser Cornell. This handout provided an overview of noticing unpleasant thoughts and sensations with curiosity and acceptance. These materials were specifically selected for patients with IBD, as research suggests individuals with the disease have a higher level of distress regarding physical symptoms, as well as the social and psychological correlates associated with living with IBD (Kiebles et al., 2010).

Module 4: Self-Compassion*:* The final module of the intervention focused on the concept of self-compassion. The Module 4 study page included an introductory text paragraph briefly explaining the concept and how it may be beneficial for people with IBD. Research suggests people with IBD often experience guilt and shame stemming from their limitations, symptoms, and reliance on caregivers (Kiebles et al., 2010). The 9-minute guided meditation used in this module is titled "Loving Kindness Meditation". The module also included a 6-page article titled, "Self-Compassion: The Secret to Empowered Action is Learning Not to Beat Yourself Up" by Emma Seppala and illustrated by Farida Zaman (2011).

Final questionnaires were available after Module 4 was completed. Participants were instructed to complete these measures, which took approximately 30 minutes. At the conclusion of the final questionnaires, participants were thanked and links to several meditation websites used in the study were provided. This allowed participants to continue the practice after the study's conclusion.

Measures

Demographics. Demographic Questionnaire: Participants provided information about their age, gender, ethnicity, educational background, income, marital status, date of IBD diagnosis, and IBD severity classification. This measure was only administered at baseline.

Quality of Life. The IBD quality of life (IBDQ) questionnaire (32-items) measures disease-specific quality of life in four domains: bowel symptoms, emotional health, systemic systems and social function (Irvine, 1993). Responses to each item are scored in a 7-point scale in which 1 indicates worst function and 7 the best. The total

IBDQ points range from 32 to 224, with a higher score reflecting better quality of life. The IBDQ has been shown to be valid and reliable (0.70) in a clinical setting and sensitive to change during a period of time (Irvine, Feagan, Rochon, Armambault, & Fedorak, 1994). This measure was administered at baseline and after study completion. The Cronbach's alpha for the current sample was calculated to be 0.93 at baseline.

Anxiety. The Beck Anxiety Inventory (BAI) is a 21-item, self-administered measure of anxiety that focuses on somatic and cognitive symptoms of anxiety, including nervousness, dizziness, and the inability to relax (Beck, Epstein, Brown, and Steer, 1988). Responses are rated on a 4-Likert scale ranging from 0 (not at all) to 3 (severely). Construct validity studies show good convergence of the BAI with other measures of anxiety including the Hamilton Anxiety Rating Scale (r = 0.51), the State Anxiety Inventory (r = 0.47–0.58), and the anxiety scale of the Symptom Checklist-90 (r = 0.81) (Beck & Steer, 1991). Internal consistency is high with Cronbach's alphas ranging from 0.90 to 0.94 in a range of clinical and non-clinical populations (Creamer, Foran, & Bell, 1995; Fydrich, Dowdall, & Chambless, 1993; Osman, Barrios, Aukes, Osman, & Markway, 1993). In the current study, the Cronbach's alpha was calculated to be 0.92 at baseline administration. The BAI has been demonstrated to detect change over time in a range of chronic illness populations (Arnold et al., 2010; Lee, Park, Kwon, Kim & Kim, 2010). This measure was administered at baseline and after study completion.

Stress. Perceived Stress Scale (PSS): A widely used 10-item self-report instrument for measuring the perception of psychological stress (Cohen, Kamarck, & Mermelstein, 1983). The PPS items evaluate the degree to which individuals believe their life has been unpredictable, uncontrollable, and overloaded during the previous

month. The assessed items are general in nature rather than focusing on specific events or experiences. There are three versions of the PSS. The original instrument is a 14-item scale (PSS-14) that was developed in English (Cohen et al., 1983), with 7 positive items and 7 negative items rated on a 5-point Likert scale. Five years after the introduction of the PSS-14, it was shortened to 10 items (PSS-10) using factor analysis based on data from 2,387 U.S. residents. Cronbach's alpha of the PSS-10 was evaluated at >.70, and the test-retest reliability of the PSS-10 was assessed at >.70 (Lee, 2012). This measure was administered at baseline and after study completion. Cronbach's alpha for the current sample was 0.83 at baseline administration.

Depression. The Patient Health Questionnaire (PHQ-9) is a 9-item depression scale used primarily for diagnosing and monitoring treatment of primary care patients (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 allows the user to rate themselves on each of the 9 DSM-IV depression criteria as "0" (not at all) to "3" (nearly every day). The PHQ-9 has demonstrated high internal validity as well as high test-retest reliability. This measure was administered at baseline and after study completion. The Cronbach's alpha for the current sample was 0.89 at baseline administration.

Mindfulness. The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15 item, single factor scale measuring the general tendency to be attentive to and aware of the present moment in day to day experiences. Using a 6-point Likert scale, participants designate their frequency of particular experiences such as, "I find myself doing things without paying attention" or, "I snack without being aware that I'm eating." The MAAS has demonstrated high internal consistency (.82-.87), convergent validity, and discriminant validity in various populations (Brown & Ryan, 2003). The MAAS has

demonstrated sensitivity to change in mindfulness following a brief online mindfulness intervention (Forbes, Johnson, & Gutierrez, 2018). This measure was administered at baseline and after study completion. The Cronbach's alpha for the current sample was calculated to be 0.88 at baseline administration.

Mindful Eating. The Mindful Eating Scale (Hulbert-William, Nicholls, Joy, & Hulbert-Williams, 2014) is a 28-item instrument designed to assess the concept of mindfulness as applied to eating behaviors. The scale is self-report with response options on a four-point Likert-type scale from (1) never to (4) usually. Numerous items are reverse-scored, and subscales measuring acceptance, awareness, non-reactivity, routine, and act with awareness. The instrument is considered to be consistent with widely accepted operational definitions of mindfulness. The Cronbach's alpha in the current sample was calculated to be 0.86 at baseline administration.

Obstacles. The Obstacles Checklist (OBS) is a list containing 12 commonly experienced challenges to meditation, including items such as: "becoming too distracted to finish the meditation" and "feeling too anxious/agitated to do the meditation." The participant was asked to rate each item from 1 ("not a problem") to 5 ("a major problem"). This measure was administered immediately following the first and final mediations. The Cronbach's alpha for this scale was calculated to be 0.88 in the current sample at the first administration of the measure.

Intrusive Thoughts. The Repetitive Thoughts Questionnaire (Feldman, Greeson, & Senville, 2010) asks participants to report on their experiences during a mindfulness exercise. The Repetitive Thoughts Questionnaire (RTQ) has a two factor structure with 5 items assessing frequency of repetitive thoughts (e.g., thoughts about one or more

problems in your life, a mental to-do list, criticisms of yourself) scored from 0 (never) to 4 (almost constantly). The second factor consists of 3 items assessing negative reactions to thoughts (e.g., to what degree were you upset, annoyed, or distracted by thoughts) scored from 0 (slightly or not at all) to 4 (extremely). Alpha reliability for frequency of RT was 0.83, and for negative reaction to RT was 0.81 in a prior study (Johnson, Gur, David, & Currier, 2014). This measure was completed after the first meditation and the final meditation. In the current sample, the Cronbach's alpha for frequency of RT was 0.76, and 0.83 for negative reaction at the first administration.

Analysis

All analyses were conducted in SPSS Version 21 (IBM, Corp, 2012). The study used a multilevel factorial design to test differential treatment effects with repeated measures over time. Variables values were screened for distribution assumptions prior to analysis.

Results

Preliminary Results

Descriptive statistics were calculated for all demographic information. These data were checked for out of range values and sufficient variability. (Reported descriptive data included statistics for gender, age, education, ethnicity, age at the time of diagnosis and IBD severity can be found in Table 1.) As noted, there were no significant group differences found between the self-guided and supported groups on any demographic variables collected.

Participant communication with the study staff was logged. Throughout the duration of the study, 19 emails from 15 unique participants were received; two Facebook comments were also received. All 15 participants who emailed the study had been assigned to the supported group. This represents 25.42% of the supported group. The majority (14) of the 19 emails were in regards to technical issues (i.e., not being recognized as a returning participant or not picking up in the place the participant left off). Follow-up emails, confirming that the issue was resolved constituted 4 of the emails logged. One email received asked for specific dietary recommendations. This participant was informed that study staff could not recommend any specific diet, but a link to the Crohn's and Colitis Foundation website was provided. The two Facebook comments, both made on recruitment posts, were made by a participants confirmed to be in the self-guided group, representing 3.33% of that group. One comment was a request for help navigating technical issues. A link to the participant's place in the study was sent to the participant through the email she provided. The other comment expressed skepticism about the legitimacy of the study, stating that the participant suspected study staff of

collecting private information and email addresses. The participant's concerns were addressed and contact information for the approving IRB provided. The participant did not respond further. Other Facebook users commenting on recruitment posts could not be confirmed as participants, but comments typically expressed support for the study, asked questions about their own eligibility or the design of the study.

Rate of Completion

The rate of completion was calculated by finding the frequency of cases in which the participant completed all 4 modules from the total number of cases. Out of the 108 participants who started the study, 33 participants completed the entire protocol. This represents a completion rate of 30.6% for the sample as a whole. Completion rate was calculated for both the self-guided and supported groups, as well. Of the 60 participants randomly assigned to the self-guided group, 7 completed the protocol, representing an adherence rate of 11.7%. In the supported group, 26 of the 59 participants assigned to the group completed the entire study, representing an adherence rate of 44.1%. A Chi-Square analysis performed indicated a statistically significant difference in the completion rate between the two groups (X^2= 15.75; p= .000, r= .38) with an observed power of .976. A flow chart detailing drop-out points and the percent change, or extent to which the sample decreased, at key points in the study design is provided in Figure 1.

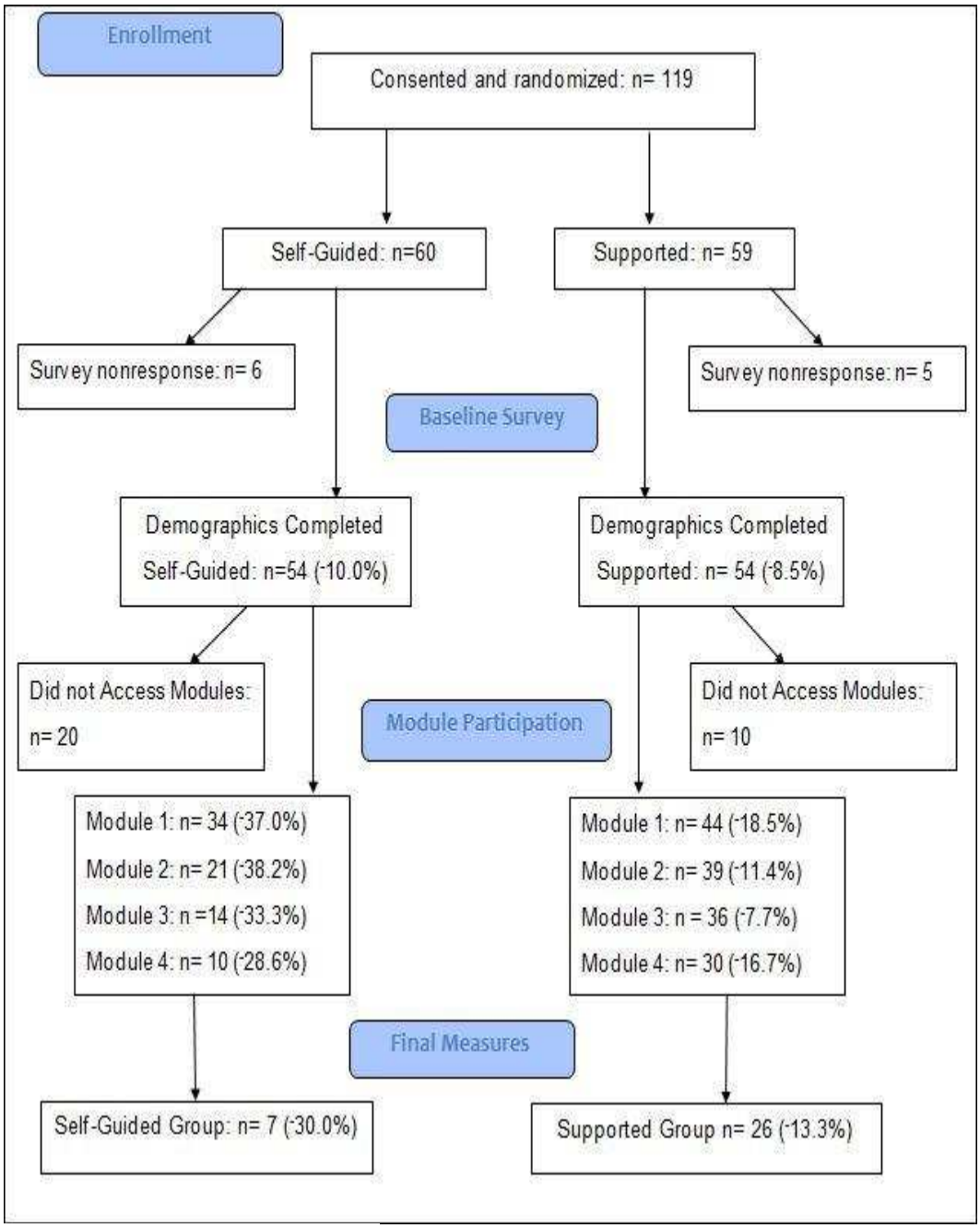

Figure 1. Attrition Flow

When including the entire sample, an examination of the points at which participants dropped out of the study revealed the largest decrease (-27.8%) occurred after the baseline measures were started, but before the first meditation was completed. In terms of participants who attempted at least one meditation, the largest decrease was found following the first meditation (-23.1%). This pattern was found in both the self-guided and supported groups. A visual representation of drop-out data, by group, is found in Figure 2.

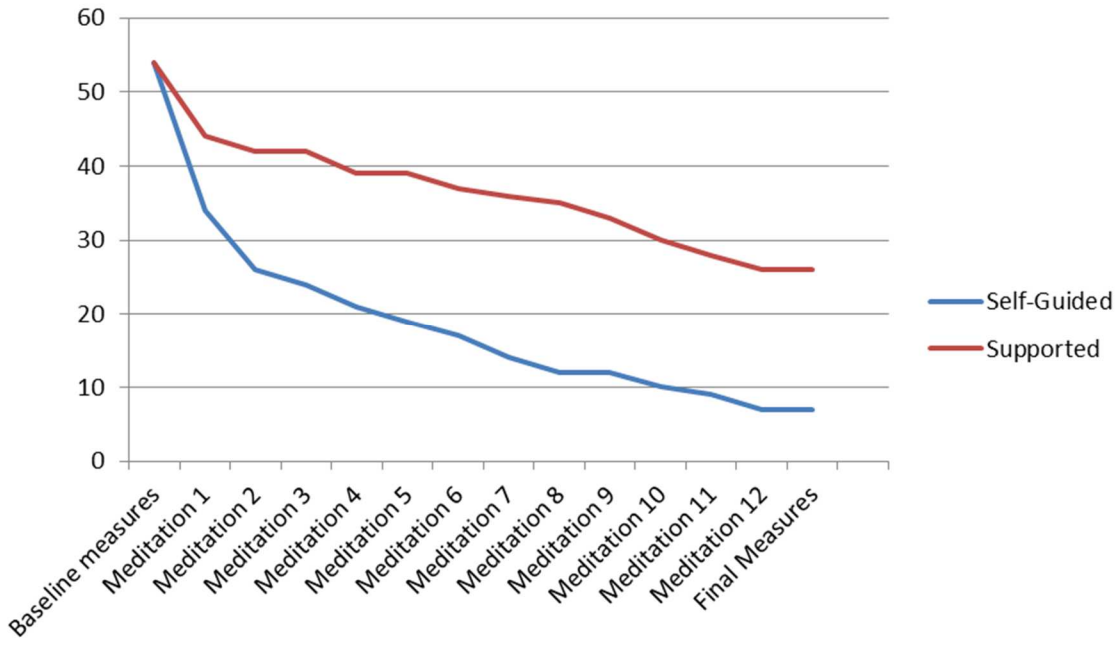

Figure 2. Participant Decrease Over Duration of Study

A series of ANOVAs and Chi Squares were conducted to examine any demographic differences between participants who completed the intervention and those who did not. No demographic differences were found between the participants who completed the online intervention and those who dropped out, as illustrated in Table 3.

Table 3

Descriptive Statistics by Competion Group (n = 108)

Characteristic	Completed Program (n = 33)	Dropped out of Program (n = 75)	Difference Statistic
Age			t (106) = -1.54, p = .295
M years	41.82	38.15	
SD	13.08	10.6	
Gender			$\chi 2(2) = 3.92$, p = .141
Male	12	15	
Female	21	58	
Non-Conforming	0	2	
Race/Ethnicity			$\chi 2(4) = 7.54$, p = .110
White	25	65	
African American	5	2	
Latino	2	2	
Asian/Pacific Islander	1	5	
Other	0	1	
Relationship Status			$\chi 2(4) = 8.28$, p = .082
Married or Domestic Partne	13	41	
Divorced	10	9	
Separated	0	3	
Single, Never Married	10	19	
Widowed	0	3	
Education			$\chi 2(5) = 2.12$, p = .833
High School or GED	4	8	
Some College (No Degree)	6	11	
Trade/Vocational Training	3	12	
Associates Degree	5	7	
Bachelor's Degree	8	23	
Graduate Degree	7	14	
Age at Diagnosis			$\chi 2(5) = 0.708$, p = .983
Under 18	18	24	
18-24	3	1	
25-34	0	1	
35-44	63	48	
45-54	0	0	
55+	1	1	
IBD Classification			$\chi 2(5) = 4.155$, p = .527
Mild Crohn's Disease	3	6	
Moderate Crohn's Disease	12	19	
Severe Crohn's Disease	1	10	
Mild Ulcerative Colitis	5	12	
Moderate Ulcerative Colitis	9	17	
Severe Ulcerative Colitis	3	11	

*Note. *p < .05.*

Benefits

Benefits obtained from completing the online intervention were examined on measures of symptoms of IBD on quality of life (IBDQ), anxiety (BAI), stress (PSS),

depression (PHQ-9), mindfulness (MAAS), mindful eating (MES) at baseline and following the intervention. Additionally, instruments measuring the participants' experience of obstacles to meditating (OBS), and repetitive thoughts while meditating (RTQ) were administered after the first and final meditations. Baseline correlation values of all variables include in the analysis are shown in Table 4.

Table 4

Bivariate Correlations Between Baseline Measures (n = 108)

Variable	IBDQ	BAI	PSS	PHQ9	MASS
IBDQ					
BAI	.52**				
PSS	.64**	.52**			
PHQ9	.64**	.65**	.67**		
MASS	-.12	-.33**	-.35**	-.52*	
MES	-.20*	-.02	-.18	-.24*	.40**

Note. *p <.05, **p <.01

Per protocol, mixed ANOVA (with both between-subjects and within-subject factors) was conducted. For this analysis, the group*time interaction where the group (self-guided or supported) was the between factor, and time (baseline, and post-intervention) was the within factor. The analysis was completed for each of the dependent variables: quality of life, depression, stress, anxiety, dispositional mindfulness, and mindful eating. The analysis demonstrated no statistically different treatment effects, on any measure, between the self-guided and supported groups (IBDQ, $F=0.06$, $p= .806$; BAI, $F= 2.92$, $p= .098$; PSS, $F= 0.15$, $p= .698$; PHQ9, $F=0.50$, $p= .483$; MAAS, $F=3.59$, $p= .068$; MES, $F=0.89$, $p= .350$).

The aggregate sample was included in a per protocol series of paired t-tests conducted to examine the differences in means between the first administration of the measures and the administration of the same measures following the interventions. Only participants who completed the final measures were included in the analysis. A significance level of 5% was used for hypothesis testing. An informal analysis of the distribution of the difference scores using a histogram and normal Q-Q plot was conducted to reveal any serious threats to the assumption of normality. *Cohen's d* (Cohen, 1992) was used to report effect size. Results of the analysis indicated that there was a significant change on the BAI, PSS, MAAS, and MES. No significant change was found in pre- and post-intervention administrations of the IBDQ or PHQ-9. Results of the analysis, including effect sizes, are summarized in Table 5.

Table 5

Change in Outcome Variables (n = 33)

	Time 1		Time 2				
Outcome	*M*	*SD*	*M*	*SD*	*t*	*p*	*d*
IBDQ	108.94	17.63	112.45	15.93	-1.868	.072	0.21
BAI	12.12	8.49	7.27	6.35	4.14	.000**	0.65
PSS	20.52	6.08	16.85	3.94	3.29	.002**	0.72
PHQ-9	9.36	5.05	6.94	4.26	2.72	.010*	0.52
MAAS	3.72	0.61	4.26	0.66	-4.49	.000**	0.85
MES	76.64	8.97	88.18	7.13	-8.31	.000**	1.42
OBS	1.51	0.42	1.18	0.31	4.41	.000**	0.89
RTQ	13.06	3.18	9.00	2.59	6.91	.002**	1.39

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

Some of the largest changes (with significance values <.01) were found on the MAAS and MES. The MES includes subscales measuring acceptance, awareness, non-reactivity, routine, distractibility, and unstructured patterns of relating to food and eating. A subsequent analysis of the MES subscales indicated significant increases on all subscales with the exception of distractibility. A summary of the results is found in Table 6.

Table 6

Change in MES Subscales (n = 33)

	Time 1		Time 2				
Subscale	*M*	*SD*	*M*	*SD*	*t*	*p*	*d*
Acceptance	14.09	3.97	18.63	2.49	-6.75	.000**	1.40
Awareness	14.34	2.67	16.06	2.34	-3.01	.005**	0.64
Non-Reactivity	13.19	2.37	14.78	1.53	-3.60	.001**	0.78
Routine	13.41	2.39	13.63	1.62	-2.76	.010*	0.11
Distractibility	12.06	2.09	12.72	1.85	-1.59	.120	0.33
Unstructured	9.97	2.11	12.03	1.59	-6.14	.000**	1.10

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

Challenges to Meditation

Two measures, the Obstacle Checklist and the Repetitive Thoughts Questionnaire were administered to participants after the first meditation, and again following the final meditation of the study protocol. The sum score for each administration of the OBS and the RTQ was computed and descriptive statistics calculated. Following the first meditation, the mean OBS score for the sample was 1.45 (*SD* = .47) and the mean on the RTQ was found to be 12.86 (*SD* = 3.51). Mean scores on these two measures did not significantly differ by study group (OBS: $p = .30$; RTQ: $p = .64$) or by whether or not the participant completed the protocol (OBS: $p = .81$; RTQ: $p = .40$). Results of a general linear model to examine between group differences in the change in the level of obstacles and repetitive thoughts experienced over the course of the intervention demonstrated no statistically different treatment effects, on either measure, between the self-guided and supported groups (OBS, $F=1.67$, $p= .205$; RTQ, $F= 0.101$, $p= .753$)

Using two independent *t*-tests, within measure differences between the first and second administrations of the OBS and RTQ were calculated. An informal analysis of the distribution of the difference scores using a histogram and normal Q-Q plot test suggested that each met assumptions of normality for conducting subsequent analysis. Results of this analysis are reported in Table 7.

Table 7
Change in Challenges (n = 33)

	Time 1		Time 2				
Outcome	*M*	*SD*	*M*	*SD*	*t*	*p*	*d*
OBS	1.51	0.42	1.18	0.31	4.41	.000**	0.89
RTQ	13.06	3.18	9.00	2.59	6.91	.002**	1.39

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

To better understand which specific challenges to meditation were most common in the sample, the mean score for each of the 18 items on the checklist and 8 items on the questionnaire were calculated for both administrations of the instruments.

The three most intensely experienced obstacles endorsed in the OBS at baseline were mind wandering (*M* = 2.82), feeling distracted (*M* = 2.00), and lack of enjoyment (*M* = 1.76). Mind wandering (*M* = 1.78), feeling distracted (*M* = 1.28), and lack of enjoyment (*M* = 1.28) were also the most experienced obstacles at the second administration of the measure. Computer or technical difficulties, an obstacle specific to online or electronic device based meditation instruction, was the only obstacle to increase from a mean of 1.07 at the first administration, to 1.25 at the final meditation.

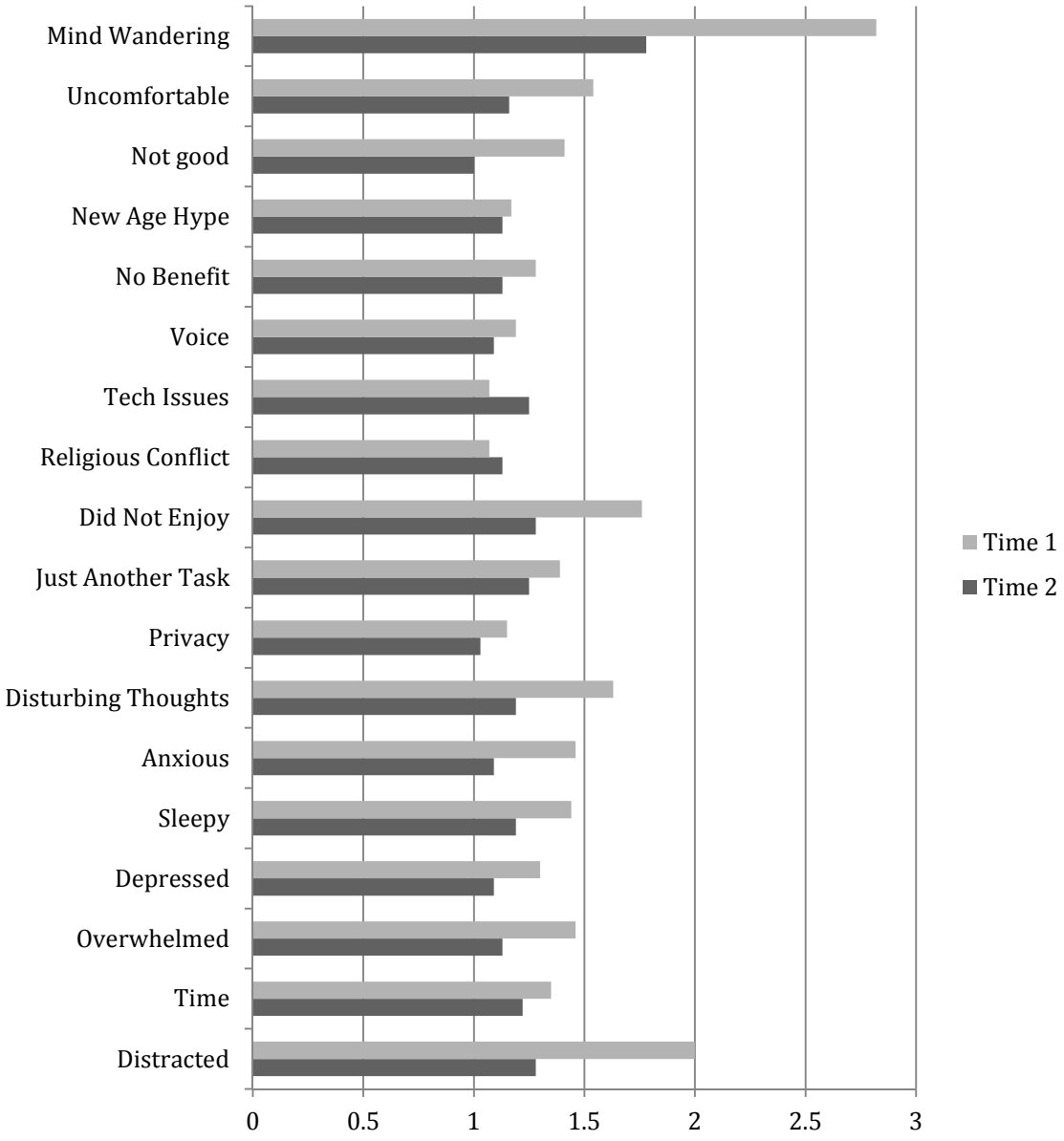

Figure 3. Obstacle Checklist Item Means at Time 1 (n=78) and Time 2 (n= 33)

Repetitive Thoughts

Analysis of the baseline RTQ items indicated the most frequent type of thought experienced was about problems in the participant's life (M = 2.90), followed by worries about the future (M = 2.58), and recent situations the participant wished went differently (M = 2.45). Participants were more distracted by their thoughts (M =3.01) than annoyed

(*M* =2.15) or upset (*M* = 1.90). The same pattern emerged in the final administration of the RTQ with thoughts regarding problems in the participant's life (*M* = 2.12), followed by worries about the future (*M* = 1.91), and recent situations the participant wished went differently (*M* = 1.72) being the most frequently experienced items. Again, participants reported they were more distracted by their thoughts (*M* =1.87) than annoyed (*M* =1.41) or upset (*M* = 1.09).

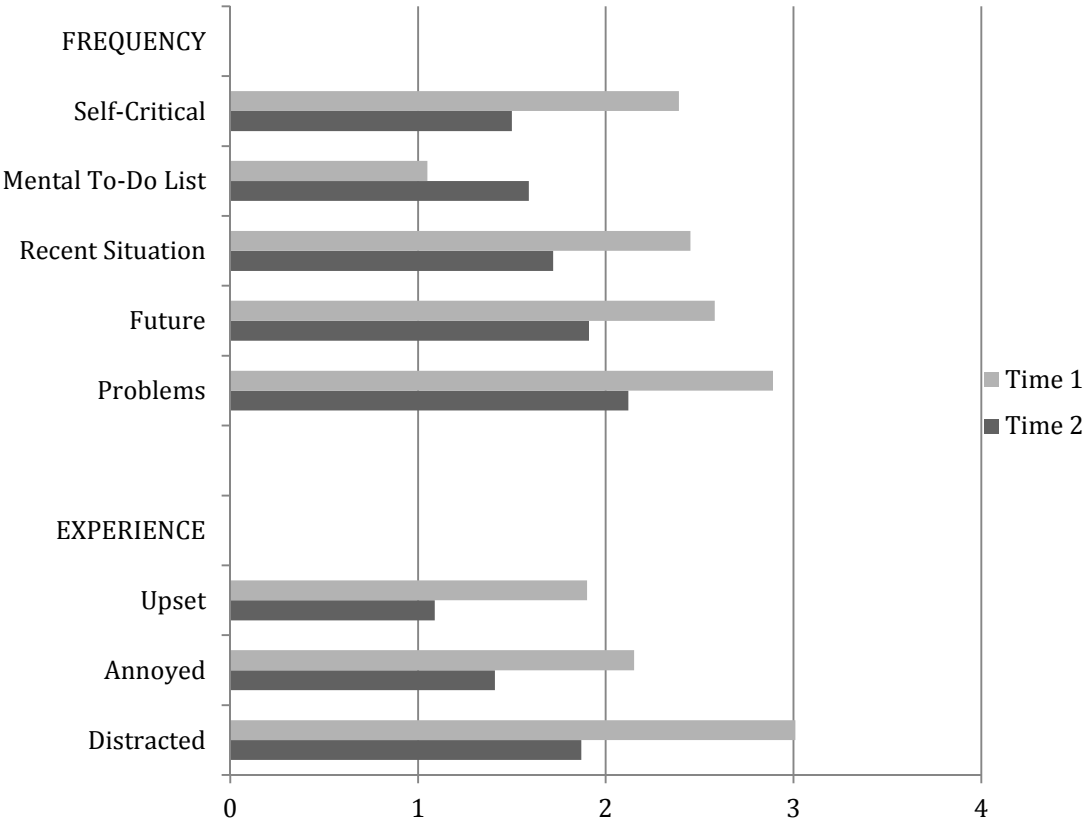

Figure 4. RTQ Item Means at Time 1 (n=78) and Time 2 (n= 33)

Challenges and Adherence. To assess the effect challenges and negatively appraised experiences had on the participant's progress through the intervention, regression analysis, using scores on the OBS and RTQ as the predictor variables was

conducted. For this analysis adherence was treated as a continuous variable using the percentage of the intervention completed. Results of this analysis were not significant for either the OBS (p =.07) or the RTQ (p = .49).

Discussion

The present study aimed to a) establish the rate of completion to an online mindfulness program for individuals with IBD and examine whether the rate of completion differs as a function of the level of support received; b) understand the benefits received from completing an online mindfulness training intervention for patients with IBD and whether benefits differ as a function of the level of support received; c) measure the challenges to meditation experienced by people participating in an online mindfulness program for patients with IBD, and whether the challenges experienced affect the rate of adherence to the intervention.

The term Inflammatory Bowel Disease (IBD) is used to describe complex and chronic illnesses, including Crohn's Disease (CD) and Ulcerative Colitis (UC), affecting the digestive tract. Specific physical symptoms and symptom severity vary from patient to patient, but typically involve abdominal pain, intestinal and rectal bleeding, diarrhea, and fatigue. Secondary symptoms of inflammation outside the digestive tract are also common (Ko & Auyeng, 2014). Many of the symptoms of IBD are stigmatized in society, resulting in embarrassment, shame, and social isolation for the individual (Tarricone et al., 2017). The BPS model (Drossman, 1998) provides a framework from which the complex interrelationship between biological and pycho-social-cultural factors can be understood.

In addition to stigmatized physical symptoms, patients with IBD must cope with the uncertainty of a relapsing remitting chronic illness with no known cure, and the physical limitation of the illness (Fennel, 2008). Perhaps due to the compounding effects of stigma and disease characteristics, rates of depression and anxiety are higher in patients with IBD as compared to both general and chronic illness populations (Hauser et

al., 2011; Walker et al., 2008). While the psychosocial effects of living with IBD are well-documented, barriers to treatment, including cost and physical limitations affecting attendance, prevent many IBD patients from seeking and maintaining psychotherapeutic care (Craven et al., 2018).

Building off the growing body of literature reporting the benefits of mindful practice on physical and mental health (Consedine & Butler, 2014; Greeson, 2009), the current study sought to examine the feasibility and possible benefits of utilizing a mindfulness-based intervention for people with IBD, and how levels of support affected the participant experience. The intervention used was designed specifically to address psychosocial factors relevant to living with IBD. Modules were designed to address issues such as, body image, eating behaviors, coping with life's difficulties, and self-compassion.

Intervention Completion

The online method of delivering health interventions has become more popular as technology becomes increasingly infused in people's lives. Furthermore, people with IBD report barriers to traditional face-to-face interventions, including cost, physical limitations, and unpredictable variability in symptoms that could be mitigated using an online delivery system. Modules accessed online at the participant's own pace allow the user flexibility in terms of time and location. Though consistent with modern trends in technology use, studies employing an online delivery of mindfulness-based interventions are often characterized by low rates of completion (Allexandre et al., 2016; Forbes et al., 2018). This pattern applied to the current sample, as well, which had a completion rate of 30.6%. This statistic is low; however, it is consistent with the few studies reporting

adherence rates for online or digital mindfulness-based interventions (52.3% for Cavanagh et al., 2014; 53.3% for Forbes et al., 2018; 23% for Howells et al., 2014). Despite the supposition that an online format may address some of the barriers to psychological treatment reported by IBD patients, it appears a different set of challenges, common to this delivery method negatively affected adherence in the current sample. Previous research cites loss of interest, health issues, and technical difficulties as factors inhibiting online intervention adherence (Allexandre et al., 2016).

Level of support. The 30.6% completion rate was calculated using the aggregate sample. When parsing out the data, analysis revealed the rate of completion was significantly associated with the level of support received. Only 11.7% of participants in the self-guided group completed the interventions, as compared to 44% in the supported group(X^2= 15.75; p= .000, r= .38). The analysis demonstrated a large effect size. This is an important finding, adding information about how levels of support influence participant retention to the literature. The results suggest email reminders, availability of a subject matter expert, and access to technical support may aid individuals in continuing to progress through an online mindfulness-based intervention. This finding adds to the growing body of evidence suggesting that including some level of support when administering interventions targeting health behaviors is associated with improved outcomes and health benefits (Allexandre et al., 2010; Tate et al., 2003; Tate et al., 2006).

The optimal level of support may vary depending on the intervention used and the population targeted, and warrants further study. As the participant completed a module, the supported wing of the current study were sent automated, standardized, emails consisting of encouragement and an introduction of the material in next module. Each

email sent offered individualized support. Of the participants randomized to the supported group, thus offered individualized support, 25.4%, utilized the bidirectional communication, emailing the researcher. The majority of these communications were regarding technical issues rather than the content of the material or participant experience with the intervention. Only one communication was related to content. It stands to reason that while the email support may have been effective in retaining participants, the individualized support did not add much benefit in terms of enhancing the participant experience. Tate and colleagues (2006) reported a similar finding when comparing the benefits of individualized and computer automated support, concluding the two levels of support did not differ in terms of benefits.

Obstacles. A detailed examination of the points at which participants dropped out of the study protocol indicated the largest attrition point, for participants in both the supported and self-guided groups, was following the first meditation. This finding is consistent with previous research, conducted by Forbes and colleagues (2018), examining adherence to a mindfulness meditation program in college students. The researchers suggested future studies administer instruments designed to capture challenges to meditation following the first meditation in an effort to understand experiences that might influence drop-out. The current study built on this previous research by administering the OBS and RTQ following the first meditation; however, no difference was found in the challenges experienced while meditating (as measured by the OBS and RTQ) between participants who dropped out early in the protocol and those who continued to progress through the intervention. Obstacles and intrusive thoughts reported after completing the first meditation did not significantly predict adherence to the intervention.

Other considerations. Although not measured in the current study, personality characteristics have been found to predict adherence to an online mindfulness-based intervention (Forbes et al., 2018). Researchers suggested an individual's level of trait conscientiousness predicts completion of an online, brief, mindfulness meditation intervention. Individuals high in conscientiousness tend to be motivated to master a competency, are organized and dutiful in their commitments. It is not surprising that individuals higher in these characteristics would be well-suited to adhere to an intervention designed to be flexible and self-paced. In light of the current findings, individual differences, and how well those differences are suited to a particular intervention, may be more predictive of adherence than the participants' experience of challenges or obstacles with the intervention materials.

When considering the practical application of mindfulness-based interventions to general and clinical populations, it is advisable to consider the appropriateness or "goodness of fit" of the intervention for that particular individual. To ignore the goodness of fit may have detrimental therapeutic outcomes (Dillon, 2003). The notion that intervention type should take into account client preference and characteristics is standard practice in clinical psychology; however, when both research and popular sources come together to laud certain interventions, such as mindfulness-based interventions, an environment where interventions are indiscriminately recommended and inappropriately applied may be created. Many therapeutic settings offer clinical assessment tools, such as the NEO – FFI (Costa & McCrae, 1991), which can provide a relatively quick measure of personality characteristics such as conscientiousness.

Additionally, some benefits of mindfulness may be experienced by incorporating mindfulness activities into a less formal or manualized intervention. This may be accomplished through observing the environment, and engaging in activities in a focused, attentive, and non-judgemental manner. Mindful activities can take many different forms, but often include receptively experiencing thoughts and sensations that arise while performing everyday tasks, or engaging in specific movements or exercises that incorporate mindfulness (Caldwell, Harrison, Adams, Quin & Greeson, 2010). Another method of increasing mindfulness may be to participate in extremely brief mindfulness meditation practices. Sessions may initially be one or two minutes, gradually increasing to longer periods of time as the practitioner feels more comfortable and is able to sustain attention for longer periods of time.

Obstacles and Challenges to Meditation

Two measures, the Obstacle Checklist and the Repetitive Thoughts Questionnaire were administered to participants after the first meditation, and again following the final meditation of the study protocol. A discussed, results indicated that the level of obstacles and repetitive thoughts experienced did not significantly predict progression through or completion of the intervention. Those who reported more difficulty meditating did not drop-out of the protocol at higher rates than participants who reported fewer challenges and obstacles.

The current study design allowed for the comparison of the participants' experiences during the first meditation to that of the final mediation. These data suggest that participants who complete the intervention generally experienced fewer or less

intense obstacles and intrusive thoughts while meditating at the end of the protocol than they did in the beginning. Average scores on both the OBS and the RTQ significantly decreased between the first and final meditations. The results are consistent with previous research indicating meditation becomes easier for the practitioner over time (Fraser, 2013).

The current study adds to the literature in that it suggests that like other practitioners, meditators with chronic illnesses characterized by pain and discomfort, may follow a similar trajectory. This finding is significant because pain can often increase the negative appraisal of activities (Linton & Shaw, 2011). In fact, the current sample did not demonstrate a decrease on the IBDQ, a measure quantifying the impact of symptom-related distress, including pain and discomfort. Despite an unchanged level of symptom-related distress, participants reported a reduction in obstacles and a less negative appraisal of common challenges to meditation with continued practice. Additionally, the change in these measures over the course of the intervention did not significantly differ based on whether the participant was assigned to the self-guided or supported treatment group, suggesting that the reduction in challenges is a function of meditation practice, rather than support.

Benefits of the Intervention

A large body of research demonstrates the positive effects of mindfulness and meditation on the body. Results of the current study suggest several psychological benefits following a mindfulness-based intervention tailored to address the psychosocial correlates of IBD. A significant increase in dispositional mindfulness and mindful eating, as well as a significant decrease on measures of depression, stress, and anxiety were

found after the completion of the intervention. These findings add to the emerging body of research indicating benefits from brief online mindfulness training for people with chronic illnesses. Specific findings are further discussed below.

Self-guided and supported. A mixed ANOVA analysis demonstrated no difference in treatment effect, on any measure, between the self-guided and supported groups. The results suggest that the intervention has benefits for those who complete it, regardless of level of support received. Support appears to have a larger impact on completing the intervention rather than affecting the intervention's impact in terms of benefits received.

Mindfulness. A significant result in the current study was the increase in dispositional mindfulness scores, as measured by the MAAS, following the intervention. The finding that a mindfulness-based intervention increases participants' level of mindfulness is expected, but nonetheless adds to the body of research. While this is not a surprising finding, it leads to the question of how mindfulness produces benefits in those who practice it, and specifically within chronic illness populations. Research by Voth and Sirois (2009) found that self-blame and the utilization of avoidant coping strategies were associated with more difficulty adjusting to a diagnosis of IBD. Mindfulness training may benefit IBD patients by fostering disease self-compassion and disease acceptance.

A related mechanism by which mindfulness may benefit individuals with IBD is through moderating the effects of negative emotion. Individuals with IBD tend to score high on measures of neuroticism, a personality dimension closely related to the experience of anxiety and negative emotion (Sirois, 2015). Furthermore, IBD patients higher in neuroticism experience reduced psychosocial wellbeing, psychological

adjustment and quality of life as compared less neurotic peers (Jordan, Sin, Fear, & Chalder, 2016). Research conducted by Wenzel and colleagues (2015) suggest dispositional mindfulness may serve as a buffer, moderating the effects of negative emotionality (neuroticism) on mood and well-being. Neuroticism, they found, is more closely associated with depression in those with lower levels of mindfulness than in those measuring higher in mindfulness. Practicing mindfulness encourages the individual to relate to thoughts and feelings in a nonjudgmental manner and to develop the ability to focus with intentionality. Increased intentional focus allows the individual to choose to attend to certain tasks and stimuli, and decreases the frequency and impact of intrusive thoughts, which are often negative in valence. A reduction in intrusive thoughts following the mindfulness intervention was found in the current sample. It is possible that while individuals high in neuroticism tend to experience negative thought patterns, applying the principles of mindfulness may reduce the impact of such patterns.

A more specific discussion of the mechanisms by which mindfulness impacts psychological health and health behaviors is found in the subsequent sections.

Stress and anxiety. Results of the current study demonstrated statistically significant decreases on measures of perceived stress and anxiety following the intervention. This finding is especially salient to the IBD population due to the strong evidence indicating the deleterious effects of stress and anxiety on IBD symptoms and the overall course of the disease (Dudley-Brown, 2002; Bernstein et al., 2000; Levenstein et al., 2000; Vidal et al., 2006; Wahed, Corser, Goodhand & Rampton, 2010). Though the mechanism by which mindfulness decreases stress and anxiety is not fully understood, some researchers hypothesize that mindfulness encourages metacognitive processes,

which allows the practitioner to respond rather than react to stimuli (Didonna, 2009). The increased emotional control may lead to more effective coping strategies and in turn, reduce anxiety (Hill, & Updegraff, 2012; Garland, & Roberts-Lewis, 2013; Roemer et al., 2009; Fraser, 2013). Mindfulness has also been associated with decreased rumination (Altman, 2010; Burg & Michalak, 2011; Feldman et al., 2010; Raes & Williams, 2010). Rumination is a key feature of Generalized Anxiety Disorder (American Psychiatric Association, 2013). Relatedly, the current study demonstrated a reduction in the frequency and intensity of intrusive thoughts while meditating following the intervention. Although, the RTQ specifically measured intrusive thoughts while meditating, and caution in generalizing the findings to other contexts should be taken, the hope is that the practice of relating to one's thoughts and feelings in a different manner will be applied to other aspects of the practitioner's life.

Jon Kabat-Zinn (1994), preeminent mindfulness researcher and developer of MBSR, hypothesized that mindfulness-based interventions reduce anxiety by encouraging the practitioner to relate to their physical and emotional experiences with acceptance and without judgment. It is the energy used in fighting against emotional experiences and the judging experiences as "bad" that produce anxiety. Stress and anxiety are reduced as judgment and negative appraisal dissipate.

Whatever the mechanisms involved prove to be, the body of research, including the current study, indicate the mindfulness practitioner receives a benefit from the practice in the form of decreased stress and anxiety. With most models of the disease identifying chronic stress as a contributing factor in IBD relapse and symptom exacerbation, then it stands to reason that interventions which reduce stress and anxiety

should improve the overall course of the disease. However, it should be noted that even though researchers agree that chronic stress has a deleterious effects on health, it takes time and the interplay of other biopsychosocial variables to manifest as disease (Sapolsky, 2004). The reverse may also be true. While psychological benefits of reduced stress and anxiety may be noticeable rather quickly, it may take time to affect the experience of symptoms or the course IBD.

Depression. The results of the current study are consistent with the growing body of evidence indicating the efficacy of mindfulness-based interventions in reducing symptoms of depression (Boggs et al., 2014; Hoffman, Sawyer, Witt, & Oh, 2010; Kearney et al., 2012; Krusche et al, 2013). The current study extends the literature by demonstrating the efficacy of an online mindfulness-based intervention for people with IBD, a population at risk for depression. As compared to the general population, depression occurs at much higher rates among individuals with chronic illness. Furthermore, depression rates in IBD populations are higher than that of other chronic illnesses (Graff et al., 2009; Mittermaier et al., 2004). While it is unclear if negative emotion directly affects disease progression, research suggests reduced depressive symptoms are associated with many health behaviors such as medication adherence, healthy diet, exercise, access to social support, and other behaviors that result in positive disease outcomes.

An examination of the mechanism by which mindfulness reduces depression was not included in the current research, but it is hypothesized that modifying the cognitive processes individuals utilize when experiencing and coping with negative emotion may reduce depressive symptoms (Hofmann, et al., 2010). While symptoms of major

depressive disorder may be cognitive, behavioral, or somatic, the predominant experience is sustained negative affect (American Psychiatric Association, 2013). Prominent psychologist, Richard Lazarus (1999), posited that cognitive processes play a central role the experience of emotions and emotional regulation. He maintained that before an internal cue to gives rise to an emotion, a person must first attend to the cue and interpret or appraise it; the result of these cognitive processes influence what emotional response will be elicited. The mindfulness principle of non-judgmental awareness may allow for more neutral appraisal of typically negatively appraised stimuli. Depressive symptoms may decrease with relating to one's thoughts and emotional cues less negatively. Furthermore, affective theories of depression postulate that when individuals experience depressed mood they engage in maladaptive coping strategies which, in turn, increases negative affect (Teasdale, Segal, & Williams, 1995). Interventions aimed at increasing the individual's level of mindfulness may serve to protect against the development and increase of depressive symptoms by modifying cognitive processes and promoting adaptive coping strategies.

Mindful Eating. The largest change in outcome measure was found in the increase on the mindful eating scale. Although, the sample was not assessed for weight or dysregulated eating behaviors, evidence suggests a relationship between eating disorders and IBD (Ilzarbe et al., 2017). Individuals with IBD often have a complex relationship with food. Many individual's with IBD engage in life-long refinement and modifications of their diets in order to avoid GI distress and other symptoms of the disease (Gibson & Shepard, 2010). Restrictive eating behaviors due to diet specifications may place individuals at an increased risk for the development of eating disorders (Satherley,

Howard & Higgs, 2015). Prior to 2010, CBT was regarded as the gold standard in psychotherapeutic treatment for weight management and eating disorders (Wilson, Wilfley, Agras, & Bryson, 2010; Murphy, Straeble, Cooper, & Fairburn, 2010). This modality is still widely used, and consistently demonstrates moderate treatment outcomes (Grilo, Masheb, Wilson, Gueorguieva, & White, 2011). More recently, mindfulness-based interventions for weight management and disordered eating have increased in popularity. Several studies have demonstrated its efficacy in reducing disordered eating behaviors, especially binging and craving-related eating (Kristeller et al., 2014; Fulwiler, Brewer, Sinnott, & Loucks, 2015).

The intervention used in the current study attempted to encourage the practice of mindfulness, generally. In addition, Module 2 of the study was specifically devoted to providing mindful eating psychoeducation and leading the participant through several guided meditations pertaining to awareness and acceptance of self-regulatory processes including hunger, thirst, and satiation. Analysis of the MES subscales indicated significant gains in the domains of acceptance, awareness, non-reactivity, routine, and structure. (The only subscale that did not demonstrate a significant change was in distractibility). The MES subscale domains represent important behaviors associated with management of IBD. Mindfulness encourages the practitioner to increase awareness and acceptance of one's cognitive and emotional experience, which in turn, may reduce the frequency of reactivity. In terms of eating behaviors, reactivity may result in eating to escape self-awareness in response to one's emotions (Heatherton & Baumeister, 1991), and often results in impulsively selecting food or over eating (Forman & Butryn, 2015). Mindful eating is associated with better adherence to diet, reduced frequency of binge-

and craving-related eating (Mason, Jhaveri, Cohn, & Brewer, 2018), all of which are associated with improved disease outcomes in IBD patients.

Quality of Life. Given the positive outcomes of decreased depression, stress and anxiety, and increased dispositional mindfulness and mindful eating, it is somewhat surprising that quality of life did not improve. The measure of quality of life used, the IBDQ, ask participants to indicate to what degree they are negatively impacted by specific symptoms and psychosocial correlates of IBD. It would seem that the mindfulness principles of awareness and non-judgment, which demonstrated gains in the sample, would lend to a reduction in the perceived impact of negative symptoms and consequences of IBD; however, current results do not support this position. This trend is not without precedence in the literature (Jedel et al., 2014; Schoultz et al., 2015). Jedel and colleagues (2014) did not find a significant difference in quality of life, as measured by the IBDQ, following an 8-week MBSR intervention for UC patients. The researchers found that quality of life was affected by disease symptoms, with participant's experiencing a flare during the intervention reporting a decrease in quality of life.

A 2015 study conducted by Schoultz and colleagues, use an experimental design, applying a MBCT intervention to a sample of IBD patients; however, they did not find a significant change in quality of life as measured by the IBDQ pre-and post- intervention. The researchers offered several possible explanations including, an inadequate sample size (n = 22), questions regarding the instrument's sensitivity, and worsening external factors not measured in the study impacting quality of life. The two studies described were both conducted face-to-face, but could apply to the current study, as well.

No change in the measure of quality of life may not mean there is not a benefit from the intervention. Though IBD is considered to be relapsing-remitting in nature, the typical trajectory of the disease is a progressive worsening of symptoms. The IBDQ was the only instrument included in the current study that specifically asked about the impact of IBD symptoms on the participant's quality of life. The instrument's focus on symptoms and progressive nature of the disease may affect the current results. In this light, maintenance of IBD-specific quality of life may be considered a success for people with the chronic illness. Another explanation for the lack of change in symptom-specific quality of life may be that the development of mindfulness begins with increased awareness and a "leaning in" to internal experience. For most able-bodied individuals, turning towards one's internal bodily sensations is not met with as much pain and discomfort as people living with IBD. Acceptance and relating to one's pain non-judgmentally may be more difficult and take more time and effort than the first step of becoming more aware of the pain.

Limitations

Technical considerations. As technology changes and becomes increasingly utilized in research, a discussion of best practices, with consideration to recruitment, retention, and adherence needs to be ongoing. Researchers must be willing to adapt to identified challenges and limitations and advancements in technology.

While the current study measured the participant's experience of meditation challenges and obstacles, it did not assess for challenges to accessing the intervention itself. The current study attempted to fill a gap in the literature by administering the OBS and RTQ following the first meditation, capturing challenges and difficulties participants

experienced at a point before they dropped out of the study. The OBS does include an item regarding technical difficulty; however, participants who experienced issues with the study website likely did not realize the problem until they were unable to log in at a subsequent time point. Several participants in the supported group contacted researchers regarding difficulty logging into the study website. While all technology issues brought to the researcher's attention were successfully addressed, it is unknown how frequently participant's difficulties accessing the intervention went unreported and lead to dropout. Participants not in the supported group did not receive reminder emails, thus contacting study staff would require initiative and additional steps. This is a particularly troubling consideration because this type of dropout is not related to the content or the participant's experience with the intervention material, but due to extraneous factors.

The current study utilized online recruitment methods, thus presuming a basic level of proficiency with technology. The logical assumption that people active in online forums would be comfortable accessing an online intervention, may not be accurate. Research suggests lack of computer savvy or access also may be a deterrent to using web-based therapies (Andersson & Titov, 2014). Though the future of managing chronic conditions, such as IBD, may incorporate online or mobile device interventions, it should be stated that this modality is not practical for everyone. We are in an age of technology transition. Individuals with less comfort or exposure to technology may struggle to embrace and effectively utilize such methods of delivery.

Meditation difficulties. Although the level of difficulty reported following the initial meditation did not predict how far a participant advanced through the protocol and, generally, those who finished the intervention reported a decrease in difficulties

experienced while meditating, we cannot assume that all people will find meditation easier with practice, or that consistent or even an increased level of difficulty while practicing the meditations did not affect the rate of attrition. Future research designs that administer instruments measuring challenges and negative appraisal while meditating after every meditation (or specific intervals) may be better suited to understand the effect that frustration and expectation has on adherence to a meditation practice.

Qualitative data. The results of the current study add to the paucity of literature in this area by suggesting level of support does impact retention and adherence. This finding is important information, however, measurement and feedback about the participant's experience of that support was not collected. More research regarding the optimal type of support, in terms of frequency, length of communication, individualization, and delivery may be a focus of future research in order to improve retention and adherence to online interventions. This data may be collected using a mixed methods design incorporating quantitative data, or through the use of focus groups.

Changes in health and treatment. Changes in disease activity were not measured as part of the current study. Further, medical or behavioral interventions administered concurrently to the application of the current intervention were also not measured. This represents a limitation, but one that was considered in the study design. The collection of private health information was intentionally limited as to reduce time spent in baseline measures and decrease anxiety concerning the type of information collected online. The current study was conceptualized to be a supplement to treatment as usual, but it should be noted that we cannot account for confounding concurrent changes in treatment that may have contributed to the benefits observed.

Future Directions

Research design. In general, the results of the current study add to the literature evidencing the benefits and feasibility of online mindfulness-based interventions, and extend it to an IBD population. It should be noted that not all outcome measures demonstrated a significant benefit for the participant. Scores on the IBDQ did not show a significant change. As discussed in a previous section, if symptom-related changes take longer to manifest, then longitudinal research designs may better capture any effects of mindfulness-based interventions on symptom-specific quality of life. Additionally, to test the supposition that physical symptoms of IBD were less affected by mindfulness-based interventions, thus making the intervention less impactful on symptom related quality of life measures, an instrument purely measuring symptoms could be added. Future research which incorporates both longitudinal design and measures of both symptoms and psychological correlates of chronic illness (stress, anxiety, depression) at intervals over the course of the study could provide valuable information regarding any differences in the pace of change.

Smartphone Apps. A rapidly growing majority of American's own a smartphone (77%; Pew Research Center, 2018). Research examining the feasibility and efficacy of using smartphone apps, rather than computer-based therapeutic interventions is still in a nascent stage. However, acknowledging the cultural shift to increased integration of mobile devices into the daily lives of individuals, researchers and clinicians are interested in how this technology may assist individuals in making desired behavior changes. Smartphone apps may improve adherence due to the manner in which the individual

interacts with the technology. In contrast to desktop or laptop computers, people tend to interact with their mobile devices frequently throughout the day. Additionally, mobile device applications allow the user to take the intervention wherever they go, and access the material at their convenience or at critical times when they need the intervention the most (Klasnja & Pratt, 2012).

Research comparing a computer-based and smartphone-delivered intervention for weight loss found a retention rate of 93% in the smartphone group, and 53% in the computer-based group (Carter, Burley, Nykjaer, & Cade, 2013). Participants in the smartphone group also lost significantly more weight than those in the computer-based group. A recent study focusing on the efficacy and feasibility of a smartphone-delivered mindful eating intervention targeting craving-related eating behavior found a significant reduction in craving-related eating (Mason, et al., 2018). This particular study applied the intervention to overweight individuals; research applying smartphone-delivered mindfulness interventions to chronic illness populations has yet to be conducted. Given the growing body of literature evidencing the benefits of mindfulness for IBD, and the feasibility of smartphone interventions, a logical next step in terms of research is to examine how smartphone-delivered, mindfulness-based interventions may benefit IBD patients. In the context of the current study, wherein level of support had a significant effect on adherence, it is unknown to what degree (or even if) level of support applies to the smartphone experience.

The current study provided email reminders to participants in the supported group, a function that could be built into a smartphone app. The majority of communications from participants in the current study pertained to technical difficulties;

it seems that at a minimum, research employing smartphone apps should have some form of technical assistance. The benefit of bidirectional communication beyond that is not known and may be a focus of future research.

Conclusion

Patients with IBD vary greatly in terms of psychological health, but in general, suffer higher rates of depression and anxiety. Because the development and course of IBD may be significantly impacted by psychosocial factors, including chronic stress and anxiety, a holistic approach to patient care should aim to improve not only physiological symptoms of IBD, but also patients' level of perceived stress and overall emotional health.

Primary care doctors and Gastroenterologists are typically the professionals guiding treatment for patients with IBD. While optimizing conventional treatment of IBD, physicians may help to increase patients' psychological well-being and overall health by connecting patients to empirically supported psychotherapeutic interventions. At the very least, physicians should ensure that they have in place routes for prompt referral of their patients to colleagues with expertise in the management of psychosocial correlates of the disease.

Additional research is needed to develop the most effective intervention in terms of benefits and ease of use. The current study adds to the literature by demonstrating the benefits of an online mindfulness-based intervention for patients with IBD. Many of the outcome variables demonstrated very significant improvements in measures of psychological health. The intervention was specifically designed to teach fundamentals of mindfulness while also addressing specific psychosocial and behavioral factors relevant

to IBD. This is a novel approach in terms of how mindfulness-based interventions have been used with IBD populations in the past, which were typically the use of manualized existing mindfulness-based interventions which used a face-to-face format. The rationale for the utilization of a mindfulness-based intervention in order to improve psychological health in a chronic illness population is grounded in the belief that awareness and acceptance of experience is a fundamental component of cognitive and behavioral change (Kabat-Zinn, 1994; Lau and McMain, 2005).

IBD does not have a cure and a large portion of patients do not respond to biomedical interventions. Psychotherapeutic interventions, such as the one used in the current study, that promote disease acceptance and non-judgmental awareness, may be especially well-suited for individuals with IBD, given the chronic nature of the disease. Further, the current research demonstrates the efficacy of an online delivery method of mindfulness-based interventions for this population. This is an important factor since the modality allows for scheduling flexibility and can be offered at a reduced cost. Future research may focus on how to best utilize advances in technology to better suit the lifestyles of individuals while still maintaining the integrity of the interventions and offering necessary support.

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APPENDIX A: RECRUITMENT FLYER

Are you interested in learning about mindfulness and meditation?

Hello, my name is Leila Forbes. I am a graduate student at the University of North Carolina at Charlotte in the Health Psychology Program. I am conducting research on using mindfulness to improve the experience of people diagnosed with Crohn's Disease and Ulcerative Colitis, and I am inviting you to participate.

Participation in this research includes taking a survey, learning about mindfulness, and practicing meditation. Learning about mindfulness and practicing meditation will take place online over the course of 4 weeks. You will be asked to login and practice several times a week. The survey questions will focus on your symptoms, mood, and quality of life, and will take about 30 minutes. You will be asked to complete the survey before and after the 4-week mindfulness class.

Please follow the link to learn more about the research opportunity and how to participate.

If you have any questions about this research project, feel free to contact me at LRodri17@uncc.edu

APPENDIX B: INFORMED CONSENT

Informed Consent Online Mindfulness Training for IBD

Hello, my name is Leila Forbes and I am a doctoral student at the University of North Carolina at Charlotte studying how mindfulness training may can benefit people with Inflammatory Bowel Disease (IBD) The purpose of this study is to examine the effects of mindfulness and meditation training on mood, quality of life, and the experience of IBD symptoms. The study will also examine whether support in the form of reminder emails and communication increases adherence and benefits. This information will help us to better design interventions that may benefit people living with IBD.

This study is for individuals who are:

1) At least 18 years of age
2) Diagnosed with IBD (Crohn's Disease or Ulcerative Colitis)
3) Have interest in learning and practicing mindfulness and meditation
4) Have no formal meditation training
5) Have regular access to the internet

If you agree to participate you will be directed to the study website. Once on the website, you will first be asked to complete a survey focusing on your mood, quality of life and symptoms. This survey will take 20-30 minutes to complete. Following the survey, you will be provided access to 4 mindfulness and meditation modules (one module per week, for 4 weeks). Each module contains a handout regarding concepts and principles of mindfulness and a guided meditation. You will be asked to practice the meditation several times a week. The guided meditations range from 5 minutes to 12 minutes in length. At the end of the fourth module, you will be directed to another survey, focused on mood, quality of life, and IBD symptoms. This survey will take approximately 20 minutes to complete.

All information you provide will be confidential. Your identity will be kept private. All data collected will be de-identified. However, I may send you reminder emails, respond to email questions you have, and/or send you links to the final questionnaires. You may contact me through email, LRodri17@uncc.edu, at any time or the UNCC the Office of

Research Compliance at 704-687-1888 should you have questions or concerns. Thank you.

APPENDIX C: MEASURES ADMINISTERED

Demographic Questionnaire

age, gender, ethnicity, educational background, income, marital status, age of IBD diagnosis, and IBD severity classification. This measure will only be administered at baseline.

What is your age?

- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55+ years old

To which gender identity do you most identify?

- Male
- Female
- Non-Conforming
- Prefer not to answer

Please specify your ethnicity

- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian / Pacific Islander
- Other

What is the highest degree or level of school you have completed? *If currently enrolled, highest degree received.*

- Nursery school to 8th grade
- Some high school, no diploma

- High school graduate, diploma or the equivalent (for example: GED)
- Some college credit, no degree
- Trade/technical/vocational training
- Associate degree
- Bachelor's degree
- Master's degree
- Professional degree
- Doctorate degree

What is your marital status?

- Single (never married)
- Married, or in domestic partnership
- Widowed
- Divorced
- Separated

How old were you when first diagnosed with IBD

- Under 18 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55+ years old

What is your IBD classification?

- Mild Crohn's Disease
- Moderate Crohn's Disease
- Severe Crohn's Disease
- Mild Ulcerative Colitis
- Moderate Ulcerative Colitis

- Severe Ulcerative Colitis

IBDQ

This questionnaire is designed to find out how you have been feeling during the last two weeks. Please circle only one number for each question.

1. How frequent have your bowel movements been during the last 2 weeks? a) Bowel movements as or more frequent than they have ever been b) Extremely frequent c) Very frequent d) Moderate increase in frequency of bowel movements e) Some increase in frequency of bowel movements f) Slight increase in frequency of bowel movements g) Normal, no increase in frequency of bowel movements

2. How often has the feeling of fatigue or being tired and worn out been a problem for you during the last 2 weeks? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

3. How often during the last 2 weeks have you felt frustrated, impatient, or restless? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

4. How often during the last 2 weeks have you been unable to attend school or work because of your bowel problem? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

5. How much time during the last 2 weeks have your bowel movements been loose? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

6. How much energy have you had during the last 2 weeks? a) No energy at all b) Very little energy c) A little energy d) Some energy e) A moderate amount of energy f) A lot of energy g) Full of energy

7. How often during the last 2 weeks did you feel worried about the possibility of needing surgery because of your bowel problem? a) All of the time b) Most of the

time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

8. How often during the last 2 weeks have you had to delay or cancel a social engagement because of your bowel problems? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

9. How often in the past 2 weeks have you been troubled by cramps in your abdomen? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

10. How often in the past 2 weeks have you felt generally unwell? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

11. How often during the last 2 weeks have you been troubled because of fear of not finding a bathroom? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

12. How much difficulty have you had, as a result of your bowel problems, doing leisure or sports activities you would liked to have done during the last 2 weeks? a) A great deal of difficulty; activities made impossible b) A lot of difficulty c) A fair bit of difficulty d) Some difficulty e) A little difficulty f) Hardly any difficulty g) No difficulty; no limit sports or leisure activities

13. How often during the last 2 weeks have you been troubled by pain in the abdomen? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

14. How often during the past 2 weeks have you had problems getting a good night's sleep, or been troubled by waking up during the night? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

15. How often during the past 2 weeks have you felt depressed or discouraged? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

16. How often during the past 2 weeks have you had to avoid attending events where there was no bathroom at hand? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

17. Overall, in the past 2 weeks, how much problem have you had with passing large amounts of gas? a) A major problem b) A big problem c) A significant problem d) Some trouble e) A little trouble f) Hardly any trouble g) No trouble

18. Overall, in the last 2 weeks, how much of a problem have you had maintaining or getting to the weight you would like to be at? a) A major problem b) A big problem c) A significant problem d) Some trouble e) A little trouble f) Hardly any trouble g) No trouble

19. Many patients with bowel problems often have worries and anxieties related to their illness. These include worries about getting cancer, worries about never feeling better, and worries about having a relapse. In general, how often during the last 2 weeks have you felt worried or anxious? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

20. How much of the time during the last 2 weeks have you been troubled by a feeling of abdominal bloating? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

21. How often during the last 2 weeks have you felt relaxed and free of tension? a) None of the time b) A little of the time c) Some of the time d) A good bit of the time e) Most of the time f) Almost all of the time g) All of the time

22. How much time during the last 2 weeks have you had a problem with rectal bleeding with your bowel movements? a) All of the time b) Most of the time c) A

good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

23. How much time during the last 2 weeks have you felt embarrassed as the result of soiling, or because of an unpleasant odor caused by your bowel movement? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

24. How much of the time during the past 2 weeks have you been troubled by a feeling of having to go to the bathroom even though your bowels are empty? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

25. How much of the time during the last 2 weeks have you felt tearful of upset? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

26. How much of the time during the last 2 weeks have you been troubled by accidental soiling of your underpants? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

27. How much of the time in the 2 weeks have you felt angry as a result of your bowel problems? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

28. To what extent has your bowel problem limited sexual activity during the last 2 weeks? a) No sex as a result of Crohn’s disease b) Major limitation as a result of Crohn's disease c) Moderate limitation as a result of Crohn's disease d) Some limitation as a result of Crohn's disease e) A little limitation as a result of Crohn's disease f) Hardly any limitation as a result of Crohn's disease g) No limitation as a result of Crohn's disease

29. How much of the time during the last 2 weeks have you been troubled by feeling sick to your stomach? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

30. How much of the time during the past 2 weeks have you felt irritable? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

31. How often during the last 2 weeks have you felt a lack of understanding from others? a) All of the time b) Most of the time c) A good bit of the time d) Some of the time e) A little of the time f) Hardly any of the time g) None of the time

32. How satisfied, happy, or pleased have you been with your personal life during the past 2 weeks? a) Very dissatisfied, unhappy most of the time b) Generally dissatisfied, unhappy c) Somewhat dissatisfied, unhappy d) Generally satisfied, pleased e) Satisfied most of the time, happy f) Very satisfied most of the time, happy g) Extremely satisfied, could not have been more happy or pleased

Beck Anxiety Inventory (BAI)

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	Not At All	Mildly but it didn't bother me much	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	☐	☐	☐	☐
Feeling hot	☐	☐	☐	☐
Wobbliness in legs	☐	☐	☐	☐
Unable to relax	☐	☐	☐	☐
Fear of worst happening	☐	☐	☐	☐
Dizzy or lightheaded	☐	☐	☐	☐
Heart pounding/racing	☐	☐	☐	☐
Unsteady	☐	☐	☐	☐
Terrified or afraid	☐	☐	☐	☐
Nervous	☐	☐	☐	☐
Feeling of choking	☐	☐	☐	☐
Hands trembling	☐	☐	☐	☐
Shaky / unsteady	☐	☐	☐	☐
Fear of losing control	☐	☐	☐	☐
Difficulty in breathing	☐	☐	☐	☐
Fear of dying	☐	☐	☐	☐
Scared	☐	☐	☐	☐
Indigestion	☐	☐	☐	☐
Faint / lightheaded	☐	☐	☐	☐
Face flushed	☐	☐	☐	☐
Hot/cold sweats	☐	☐	☐	☐

m

PSS

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate your response by placing an "X" over the circle representing HOW OFTEN you felt or thought a certain way.

Never	Almost Never	Sometimes	Fairly Often	Very Often
0	1	2	3	4
○	○	○	○	○

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you felt confident about your ability to handle your personal problems?
5. In the last month, how often have you felt that things were going your way?
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
7. In the last month, how often have you been able to control irritations in your life?
8. In the last month, how often have you felt that you were on top of things?
9. In the last month, how often have you been angered because of things that were outside your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Over the last 2 weeks, how often have you been bothered by any of the following problems? (Use " ✔ " to indicate your answer)

Not at all= 0

Several days = 1

More than half the days = 2

Nearly every day = 3

1. Little interest or pleasure in doing things 0 1 2 3

2. Feeling down, depressed, or hopeless 0 1 2 3

3. Trouble falling or staying asleep, or sleeping too much 0 1 2 3

4. Feeling tired or having little energy 0 1 2 3

5. Poor appetite or overeating 0 1 2 3

6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down

0 1 2 3

7. Trouble concentrating on things, such as reading the newspaper or watching television

0 1 2 3

8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual

0 1 2 3

9. Thoughts that you would be better off dead or of hurting yourself in some way

0 1 2 3

CODING 0 + _____ + _____ + _____ =Total Score: _____

Mindful Attention Awareness Scale (MAAS)

Please indicate the degree to which you agree with each of the following items using the scale below.		Almost always	Very frequently	Somewhat frequently	Somewhat infrequently	Very infrequently	Almost never
MAAS 1	I could be experiencing some emotion and not be conscious of it until some time later.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 2	I break or spill things because of carelessness, not paying attention, or thinking of something else.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 3	I find it difficult to stay focused on what's happening in the present.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 4	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 5	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 6	I forget a person's name almost as soon as I've been told it for the first time.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 7	It seems I am "running on automatic" without much awareness of what I'm doing.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 8	I rush through activities without being really attentive to them.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 9	I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 10	I do jobs or tasks automatically, without being aware of what I'm doing.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 11	I find myself listening to someone with one ear, doing something else at the same time.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 12	I drive places on "automatic pilot" and then wonder why I went there.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 13	I find myself preoccupied with the future or the past.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 14	I find myself doing things without paying attention.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
MAAS 15	I snack without being aware that I'm eating.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

Mindful Eating Scale

	Never	Sometimes	Often	Usually
I become very short tempered if I need to eat.	1	2	3	4
I snack without being aware that I'm eating.	1	2	3	4
I multi-task whilst eating.	1	2	3	4
I don't pay attention to what I'm eating because I'm daydreaming, worrying or distracted.	1	2	3	4
I need to eat like clockwork.	1	2	3	4
I can tolerate being hungry for a while.	1	2	3	4
I tell myself I shouldn't be hungry.	1	2	3	4
I criticise myself for the way I eat.	1	2	3	4
When I get hungry, I can't think about anything else.	1	2	3	4
I have a routine for what I eat.	1	2	3	4
I tend to evaluate whether my eating is right or wrong.	1	2	3	4
I eat the same thing for lunch each day.	1	2	3	4
I notice how my food looks.	1	2	3	4
I eat something without really being aware of it.	1	2	3	4
I stay aware of my food whilst I'm eating.	1	2	3	4
I wish I could control my hunger.	1	2	3	4
It's easy for me to concentrate on what I'm eating.	1	2	3	4
I notice the smells and aromas of food.	1	2	3	4
I eat the same thing on the same day of each week.	1	2	3	4
I eat between meals.	1	2	3	4
Once I've decided to eat, I have to eat straight away.	1	2	3	4
I have a routine for when I eat	1	2	3	4
I wish I could control my eating more easily.	1	2	3	4
I snack when I'm bored.	1	2	3	4
I eat automatically without being aware of what I'm eating.	1	2	3	4
I notice flavours and textures when I'm eating my food.	1	2	3	4
I eat at my desk or computer.	1	2	3	4
I tell myself I shouldn't be eating what I'm eating.	1	2	3	4

Obstacle Check List

	Not a Problem	Slight Problem	Neutral	A Moderate Problem	A Major Problem
Becoming too distracted to finish the meditation					
Not having enough time to do the meditation					
Feeling too stressed or overwhelmed ot do the meditation					
Feeling too sad or depressed to do the meditation					
Becoming drowsy, falling asleep during meditation					
Feeling too anxious/agistated to do the meditation					
Having too many disturbing thoughts during meditation					
Not having enough privacy to do th emeditation (frequent interruptions)					
It was just another thing "to do"					
Didn't like meditating					
It conflicts with my religious tradition					
I had computer problems					
I didn't like the voice on the guided meditation					
I didn't see any benefits					
It feels like weird New Age hype					
I'm not good at this, I can't get it right					
I find it really uncomfortable to sit still					
My mind won't sotp wandering					

Repetitive thought (RT) during the exercises

During the exercise, how often did you experience each of the following types of thoughts described below?"

	Never	Rarely	Sometimes	Often	Almost constantly
Thoughts about one or more problems in your life	0	1	2	3	4
Worries about something in the future	0	1	2	3	4
Thoughts about a recent situation that you wish had gone differently	0	1	2	3	4
A mental to-do list	0	1	2	3	4
Criticisms of yourself	0	1	2	3	4

	Very slightly or not at all	a little	Moderately	Quite a bit	Extremely
To what degree were you upset by the thoughts you experienced during the exercise	0	1	2	3	4
To what degree were you annoyed by the thoughts you experienced during the exercise	0	1	2	3	4
To what degree were you distracted by the thoughts you experienced during the exercise	0	1	2	3	4

APPENDIX D: EMAIL PROMPTS

Module 1 email:

Welcome to Module 1

Mindfulness has been defined as ***Paying attention to present moment experience with open curiosity and a willingness to be with what is.*** Over the next few weeks you will be presented with different ways to incorporate mindfulness into your life and guided through regular meditation practices. In Week 1 we will start with the basics: an introduction to mindfulness and an exercise focused on the Mindful Breathing.

Like learning anything new, leaning about mindfulness and practicing meditation takes time and may be challenging. I encourage you to reach out to me if you have any questions or concerns, or just want to tell me about your experience.

(link to study)

Sincerely,

Leila Forbes

Module 2 email:

Hello! You have now entered the second module of mindfulness training. The guided meditation this week focuses on tuning into the sensations in the body without judgment. In this module you will also learn about the concept of mindful eating. This week might be difficult for people with IBD because we sometimes have a complicated relationship with food and eating, and our bodies often don't work the way we would like it to. However, I'd like you to remember that mindfulness is about learning a different way to relate to yourself and the world around you. It may not be easy, but many have found this way of thinking and relating to the world to be helpful. Please to not hesitate to contact me should you have any concerns, questions, or experiences you would like to share.

(link to study)

Sincerely,

Leila Forbes

Module 3 email:

Welcome to the third module of mindfulness training! This week's lesson will focus on using mindfulness and meditation to work through difficult situations: both emotionally and physically. Living with IBD can be physically painful and can take a psychological toll. Mindfulness may not be a cure, but if can offer a different way to look at and cope with life's difficulties.

Again, please feel free to contact me if you would like. I am here for you, and your feedback is very helpful to me in the course of this research project.

(link to study)

Sincerely,

Leila Forbes

Module 4 email:

You have now entered into the fourth and final module of mindfulness and meditation training. This week will focus on concept of self-compassion. This concept is sometimes difficult for people to embrace because we are bombarded with messages in our lives that we have to be better, stronger, faster… But living with a chronic illness is difficult, and there is a power in and giving ourselves a little compassion. The article this week is a little lengthy, but I chose to include it because the understanding what self-compassion is and how it can help can be very beneficial.

At the end of this module, you will be asked to complete some survey questions. Completing the survey is important so I can assess if the mindfulness training was helpful and something worth inviting more people with IBD to learn. At the end of the survey you will be provided with links to other websites where you can continue learning and practicing mindfulness.

As always, feel free to email me if you have any questions or concerns.

Sincerely,

Leila Forbes

APPENDIX E: MEDITATIONS

Module 1

Breathing Meditation (5:31)

Link: https://www.uclahealth.org/marc/mpeg/01_Breathing_Meditation.mp3

Transcript:

Find a relaxed, comfortable position

Seated on a chair or on the floor, on a cushion

Keep your back upright, but not too tight

Hands resting wherever they're comfortable

Tongue on the roof of your mouth or wherever it's comfortable.

And you can notice your body

From the inside

Noticing the shape of your body, the weight, touch

And let yourself relax

And become curious about your body

Seated here

The sensations of your body

The touch

The connection with the floor

The chair

Relax any areas of tightness or tension

Just breathe

Soften

And now begin to tune into your breath

In your body

Feeling the natural flow of breath

Don't need to do anything to your breath

Not long not short just natural

And notice where you feel your breath in your body

It might be in your abdomen

It may be in your chest or throat

Or in your nostrils

See if you can feel the sensations of breath

One breath at a time

When one breath ends, the next breath begins

Now as you do this you might notice that your mind might start to wander

You might start thinking about other things

If this happens this is not a problem

It's very natural

Just notice that your mind has wandered

You can say "thinking" or "wandering" in your head softly

And then gently redirect your attention right back to the breathing

So we'll stay with this for some time in silence

Just a short time

Noticing our breath

From time to time getting lost in thought and returning to our breath

See if you can be really kind to yourself in the process

And once again you can notice your body, your whole body, seated here

Let yourself relax even more deeply

And then offer yourself some appreciation

For doing this practice today

Whatever that means to you

Finding a sense of ease and wellbeing for yourself and this day

[bell rings]

Module 2

Breath, Sound, Body Meditation (12:00)

Link: https://www.uclahealth.org/marc/mpeg/02_Breath_Sound_Body_Meditation.mp3

Transcript:

So you can find your meditation posture

Sitting in a way that's neither too tight nor too relaxed

But comfortable and upright

Then notice your body from the inside

Noticing the shape and the weight and the touch

And areas you make contact with the floor or the chair

Then you can focus on your breathing

Feeling your breath

In the area of either the abdomen, chest, or nostrils

Feeling the gentle rising and falling of your abdomen or chest

Or the coolness and in and out sensations at your nostrils

So the breath is our anchor

It's where we establish our awareness

It helps us have something to always return to

This simple act of breathing

Now you might notice that other things pull your attention away from the breath

And that might be sound

So right now, just for a moment

Bring your attention to the sounds

Inside the room

Or outside the room

Simply listening

They might be pleasant sounds, unpleasant sounds

Listen to them with curiosity and interest

Noticing them coming and going

Without getting caught up in a story about what that sound is or why it's there

Simply listening

Can also notice the sound of silence

And now letting go of this hearing

The listening

Bring your attention into your body

And notice if there are body sensations

To be aware of

There might be pressure or tightness

Or movement or vibration

Or heat or cold

Or tingling

Notice which sensations call out to you

And let your attention go to them

It might be a very strong and obvious sensation

There might be a soft or subtle sensation

You might notice yourself jumping from sensation to sensation

Or there may be one that grabs your attention and holds it

Particularly if it's unpleasant

You might notice it

Is it growing or shrinking?

Moving

Does is pulse or throb

Ache

Just notice with curiosity

Similarly not making up a whole story about the experience

Just being directly with the sensations in your body

So now return to your breathing

Finding your breath

And as you continue on in this meditation

You'll stay with your breath one breath at a time

If you notice yourself lost in thoughts you can say "thinking"

Or "wandering"

And then redirect your attention

Returning back to the breathing

Now if you find a sound

Or a body sensation

Become so obvious, strong

That you can't, any longer, stay with the breath

Because it pulls your attention away

Then let yourself let go of the breath

And focus on the body sensation

Or sound

Listen to it or feel it

Until it no longer holds your attention

Or it's stopped

At that point go back to the breathing

Returning to the simplicity of your anchor

The breath

We'll try this for a few minutes in silence

[silence]

Now once again notice your whole body sitting here

Tuning into the shape

The posture

The movement

Let yourself relax

And you can wish yourself well

May I be happy and at ease

May I be free from stress and anxiety

May I be peaceful

And let yourself consider the possibility

Of finding peace and ease

Wellbeing

[bell ring]

Module 3

Meditation for Working with Difficulties (6:55)

Link:
https://www.uclahealth.org/marc/mpeg/04_Meditation_for_Working_with_Difficulties.mp3

Transcript:

You can use this practice to work with difficult emotions or body sensations

Find a posture that's comfortable to you

And then check inside your body and try to locate a part of your body that feels good to you right now

Pleasant, safe, at ease,

Or at the very least, neutral

You can check out your hands or feet or legs

But let your attention go to this pleasant part of your body

Hands or feet or wherever you've chosen

And let your attention rest there

Feel it

Sense it

Notice what those sensations are

Let your mind relax a bit

Feeling that part of the body

And now if there's something difficult that's happening for you

A difficult emotion, or a physical sensation that's hard

Let your attention go to that

So it may be an aching in your shoulder or back

Or a headache

Or it could be a sense of sadness

Or anxiety

Or anger

Where do you feel that sensation in your body

Where do you feel that emotion in your body

Notice it

Just notice it for one moment

Tap into it

Feel it

Make sure to breathe

And now return your attention back down to that area that feels at ease

Your hands or feet or legs

And just let yourself stay there for a moment

Feeling it sensing it

Relaxing. maintaining the mindfulness

Yet giving yourself a break from what could be potentially overwhelming to feel

And now once again return your attention to that part of the body that feels unpleasant

The body ache or pain

Or the emotion the sensations of the emotion in your body

The vibrations in your chest

Or the clenching in your belly

Or the tightness in your jaw

Just notice

And breathe

And let it be there

Let whatever is there, be there

And then bring your attention again back down to this pleasant or neutral part of the body

Hands, feet, so forth

Relaxing

Staying present and alert

Feeling the safety

The connection in that place

Now let yourself stay connected to this place

But see if you can cast what we might call a sidelong glance at the difficult area in your body

Is it possible to still feel connected to you body in the area that feels good

And yet know there's something going on that feels unpleasant

And just let it be there

Keeping maybe 75% of your attention on the part that feels peaceful and at ease

Still breathing

Casting the side long glance at this difficult area

Noticing what happens to it, is it growing or shrinking

Is it changing, shifting into something else

Becoming aware of whatever it is it's doing

Relaxing, breathing

And now see if you can bring some loving kindness

Just some kindness to yourself for whatever you're feeling right now

Physical pain, emotional pain

Hold yourself with kindness

You're not the only one

So may we all be free from our pain and our suffering

May we all have happiness

[bell rings]

Module 4

Loving Kindness Meditation (9:31)

Link: https://www.uclahealth.org/marc/mpeg/05_Loving_Kindness_Meditation.mp3

Transcript: To begin this practice

Let yourself be in a relaxed and comfortable position

We're going to do the practice of cultivation positive emotion

In this case, loving kindness

Which is the desire for someone to be happy

Or yourself to be happy

It's not dependent on something, it's not conditional

It's just a natural opening of the heart

To someone else or to yourself

So you can check in to your body and notice how you're feeling right now

Letting whatever is here, be here

Now let yourself bring to mind

Someone whom, the moment you think of them, you feel happy

See if you can bring to mind

It could be a relative, a close friend

Some with not too complicated a relationship

Just a general sense, that when you think of them you feel happy

Can pick a child

Or you can always choose a pet

A dog or a cat

A creature it's fairly easy to feel love for

So let them come to mind

Have them-- have a sense of them being in front of you

You can feel them, sense them, see them

And as you imagine them

Notice how you're feeling inside

Maybe you feel some warmth

Or there's some heat to your face

A smile, sense of expansiveness

This is a loving kindness

This is a natural feeling that's accessible to all of us at any moment

So now having this loved one in front of you

Begin to wish them well

May you be safe and protected from danger

May you be happy and peaceful

May you be healthy and strong

May you have ease and wellbeing

And as I say these words, you can use my words or your own words

And have a sense of letting this loving kindness come from you

And begin to touch this loved one

Reaching out

You might think in images

You might have a sense of color or light

You might just have a feeling

The words may continue to bring on more of this feeling

And I encourage you to say whatever feels meaningful to you

May you be free from stress and anxiety

May you be free from all fear

And so as you're sending out these words and these feelings of loving kindness

Also check into yourself and see how you're feeling inside

And now imagine that this loved one turns around

And begins to send it back to you

So see if you can receive the loving kindness

Take it in

And they're wishing you well, may you be happy

Meaning you

May you be peaceful and at ease

May you be safe and protected from all danger

May you have joy, well being

Letting yourself take it in

Now if you're not feeling anything at this point

Or before in the meditation

It's not a problem

This is a practice that plants seeds

And if you're feeling something else other than lovingkindness

Just check into that

What is it I'm feeling

There may be something to learn here

Now if it's possible and it's not always easy to do this

But see if you can send loving kindness to yourself

You can imagine it coming down your body from your heart

You can just have a sense of it

May I be safe and protected from danger

May I be healthy and strong

May I be happy and peaceful

May I accept myself just as I am

And as you ask yourself the question “what do I need to be happy?”

See what arrises

And offer that to yourself

May I have meaningful work

A joyful life

Close friends and family

And now checking into yourself

And noticing what it is you feel as you do this

And now let yourself bring to mind one person

Or a group of people that you wish to send the loving kindness to

Imagine them in front of you

Sense them, feel them

May you be happy and peaceful

May you be free from all stress and anxiety and fear

Worry

Grief

May you have joy and happiness

Wellbeing

And now let this loving kindness expand out

Spreading

Touching anyone that you want to touch right now

In all directions

People you know, people you don't know

People you have difficulty with

People you love

Just imagine expanding and touching

And each person or animal

Whoever is touched by this loving kindness

Each person is changed

You can imagine that

So may everyone everywhere be happy and peaceful and at ease

May we all experience great joy

[bell rings]

APPENDIX F: HANDOUTS

Module 1

Meditation: It's Not What You Think

by Jon Kabat-Zinn

It might be good to clarify a few common misunderstandings about meditation right off the bat. First, meditation is best thought of as a way of being, rather than a technique or a collection of techniques.

I'll say it again.

Meditation is a way of being, not a technique.

This doesn't mean that there aren't methods and techniques associated with meditation practice. There are. In fact, there are hundreds of them, and we will be making good use of some of them. But without understanding that all techniques are orienting vehicles pointing at ways of being, ways of being in relationship to the present moment and to one's own mind and one's own experience, we can easily get lost in techniques and in our misguided but entirely understandable attempts to use them to get somewhere else and experience some special result or state that we think is the goal of it all…

Second, meditation is not relaxation spelled differently. Perhaps I should say that again as well: Meditation is not relaxation spelled differently.

That doesn't mean that meditation is not frequently accompanied by profound states of relaxation and by deep feelings of wellbeing. Of course it is, or can be, sometimes. But mindfulness meditation is the embrace of any and all mind states in awareness, without preferring one to another. From the point of view of mindfulness practice, pain or anguish, or for that matter boredom or impatience or frustration or anxiety or tension in the body are all equally valid objects of our attention if we find them arising in the present moment, each a rich opportunity for insight and learning, and potentially, for liberation, rather than signs that our meditation practice is not "succeeding" because we are not feeling relaxed or experiencing bliss in some moment. We might say that meditation is really a way of being appropriate to the circumstances one finds oneself in, in any and every moment.

If we are caught up in the preoccupations of our own mind, in that moment we cannot be present in an appropriate way or perhaps at all. We will bring an agenda of some kind to whatever we say or do or think, even if we don't know it…

For meditation, and especially mindfulness meditation, is not the throwing of a switch and catapulting yourself anywhere, nor is it entertaining certain thoughts and getting rid of others. Nor is it making your mind blank or willing yourself to be peaceful or relaxed. It is really an inward gesture that inclines the heart and mind (seen as one seamless whole) toward a full-spectrum awareness of the present moment just as it is, accepting whatever is happening simply because it is already happening…

Meditation is not about trying to get anywhere else. It is about allowing yourself to be exactly where you are and as you are, and for the world to be exactly as it is in this moment as well. This is not so easy, since there is always something that we can rightly find fault with if we stay inside our thinking. And so there tends to be great resistance on the part of the mind and body to settle into things just as they are, even for a moment. That resistance to what is may be even more compounded if we are meditating because we hope that by doing so, we can effect change, make things different, improve our own lives, and contribute to improving the lot of the world…

So, from the point of view of awareness, any state of mind is a meditative state. Anger or sadness is just as interesting and useful and valid to look into as enthusiasm or delight, and far more valuable than a blank mind, a mind that is insensate, out of touch. Anger, fear, terror, sadness, resentment, impatience, enthusiasm, delight, confusion, disgust, contempt, envy, rage, lust, even dullness, doubt, and torpor, in fact all mind states and body states are occasions to know ourselves better if we can stop, look, and listen, in other words, if we can come to our senses and be intimate with what presents itself in awareness in any and every moment. The astonishing thing, so counterintuitive, is that nothing else needs to happen. We can give up trying to make something special occur. In letting go of wanting something special to occur, maybe we can realize that something very special is already occurring, and is always occurring, namely life emerging in each moment as awareness itself.

Module 2

Mouthfuls of Mindfulness

by Jan Chozen Bays

Mindful eating is not directed by charts, tables, pyramids, or scales. It is not dictated by an expert. It is directed by your own inner experiences, moment by moment. Your experience is unique. Therefore you are the expert. In the process of learning to eat mindfully, we replace self-criticism with self-nurturing, anxiety with curiosity, and shame with respect for your own inner wisdom.

Let's take a typical experience. On the way home from work Sally thinks with dread about the talk she needs to work on for a big conference. Before starting to work on the speech, however, she decides to relax and watch a few minutes of TV. She sits down with a bag of chips. At first she eats onlya few, but as the show gets more dramatic, she eats faster and faster. When the show ends she looks down and realizes she's eaten the entire bag. She scolds herself for wasting time and for eating junk food. "Too much salt and fat! No dinner for you!" Engrossed in the drama on the screen, covering up her anxiety about procrastinating, she ignored what was happening in her mind, heart, mouth, and stomach. She ate unconsciously. She ate to go unconscious. She goes to bed unnourished in body or heart and with her mind still anxious about the talk.

The next time this happens she decides to eat chips but to try eating them mindfully. First she checks in with her mind. She finds her mind is worried about an article she promised to write. Her mind says she needs to get started on it tonight. She checks in with her heart and finds she is feeling a little lonely because her husband is out of town. She checks in with her stomach and body and discovers she is both hungry and tired. She needs some nurturing. The only one at home to do it is herself.

Throwing a Small Party

She decides to treat herself to a small chip party. (Remember, mindful eating gives us permission to play with our food.) She takes twenty chips out of the bag and arranges them on a plate. She looks at their color and shape. She eats one chip, savoring its flavor. She pauses, then eats another. There is no judgment, no right or wrong. She is simply seeing the shades of tan and brown on each curved surface, tasting the tang of salt, hearing the crunch of each bite, feeling the crisp texture melt into softness. She ponders how these chips arrived on her plate, aware of the sun, the soil, the rain, the potato farmer, the workers at the chip factory, the delivery truck driver, the grocer who stocked the shelves and sold them to her.

With little pauses between each chip, it takes ten minutes for the chip party. When she finishes, she checks in with her body to find out if any part of it is still hungry.

She finds her mouth and cells are thirsty, so she gets a drink of orange juice. Her body is also saying it needs some protein and something green, so she makes a cheese omelet and a spinach salad. After eating she checks in again with her mind, body, and heart. The heart and body feel nourished but the mind is still tired. She decides to go to bed and work on the talk first thing in the morning, when the mind and body will be rested. She is still feeling lonely, although less so within the awareness of all the beings whose life energy brought her the chips, eggs, cheese, and greens. She decides to call her husband to say good night. She goes to bed with body, mind, and heart at ease and sleeps soundly.

Mindful eating is a way to rediscover one of the most pleasurable things we do as human beings. It also is a path to uncovering many wonderful activities going on right under our noses and within our own bodies. Mindful eating has the unexpected benefit of helping us tap into our body's natural wisdom and our heart's natural capacity for openness and gratitude. We ask ourselves questions like:

Am I hungry?

Where do I feel hunger?

What part of me is hungry?

What do I really crave?

What am I tasting just now?

These are very simple questions, but we seldom pose them.

Mindfulness Is the Best Flavoring

As I write this I am eating a lemon tart that a friend gave to me. After writing for a few hours I'm ready to reward myself with a tart. The first bite is delicious. Creamy, sweet-sour, melting. When I take the second bite, I think about what to write next. The flavor in my mouth decreases. I take another bite and get up to sharpen a pencil. As I walk, I notice I am chewing, but there is almost no lemon flavor in this third bite. I sit down, get to work, and wait a few minutes.

Then I take a fourth bite, fully focused on the smells, tastes, and touch sensations in my mouth.

Delicious, again! I discover, all over again (I'm a slow learner) that the only way to keep that "first bite" experience, to honor the gift my friend gave me, is to eat slowly,

with long pauses between bites. If I do anything else while I'm eating—if I talk, walk, write, or even think—the flavor diminishes or disappears. The life is drained from my beautiful tart. I could be eating the cardboard box.

Here's the humorous part. I stopped tasting the lemon tart because I was thinking. About what? Mindful eating! Discovering that, I grin. To be a human being is both pitiful and funny.

Why can't I think, walk, and be aware of the taste of the tart at the same time? I can't do all these at once because the mind has two distinct functions, thinking and awareness. When the thinking is turned up, the awareness is turned down. When the thinking function is going full throttle, we can eat an entire meal, an entire cake, an entire carton of ice cream, and not taste more than a bite or two. When we don't taste, we can end up stuffed to the gills but feeling completely unsatisfied. This is because the mind and mouth weren't present, weren't tasting or enjoying, as we ate. The stomach became full but the mind and mouth were unfulfilled and continued calling for us to eat.

If we don't feel satisfied, we'll begin to look around for something more or something different to eat. Everyone has had the experience of roaming the kitchen, opening cupboards and doors, looking vainly for something, anything, to satisfy. The only thing that will cure this, a fundamental kind of hunger, is to sit down and be, even for a few minutes, wholly present.

If we eat and stay connected with our experience and with the people who grew and cooked the food, who served the food, and who eat alongside us, we will feel most satisfied, even with a meager meal. This is the gift of mindful eating, to restore our sense of satisfaction no matter what we are or are not eating.

Module 3

The Power of Focusing

[From Chapter 3 of The Power of Focusing by Ann Weiser Cornell]

Imagine that you are in a meadow, at the edge of a forest. As you stand there quietly, you see a shy animal peeking out of the woods. You know that this animal is not dangerous to you, nor you to it, and you would like to help it feel safe with you. What would you do? What mood would you try to create? What would you not do? You would not run toward it, shouting. You would be still and patient. If you moved, you would move slowly and gently. You would be attentive to it, interested in it, watching it carefully for signs that it might be OK for you to move a little closer. Focusing is a process of listening to something inside you that wants to communicate with you. And yet, like a shy animal, it may first need to discover that you are trustworthy, and that you have created a safe place for it, before it can deliver its message.

In this chapter we will talk about how to create the climate of safety and trust in your inner world that makes Focusing possible. Letting it be as it is Take a moment to notice what you are feeling right now and see if it is possible to simply let the feeling be there. Good, bad, or indifferent; angry, sad, or scared; bored, restless, or joyful - just notice how you are right now, and notice if you can say, "Yes, that is how I feel." Notice whether it is difficult or unfamiliar to let your feelings be there. You may have a tendency, as many people do, to judge your feelings as soon as you notice them: "I shouldn't be feeling that way. What a horrible person I am to feel that!" You may try to be "reasonable" about your feelings: "There's no reason to be scared." Or you may try to talk yourself out of your feelings: "Oh, it's not that bad. Other people have it worse." Or you may try to analyze your feelings, asking yourself: 'Why? Why do I always feel this way? Why can't I change?"

As you may have noticed, none of these ways is effective in helping you change. Every time you judge yourself, or try to talk yourself out of your feelings, or try to figure out why you are feeling this way, you just stay in the same place, and probably feel even worse about yourself.

But I can tell you with absolute assurance, for I've seen this hundreds of times and never seen it fail: when you allow your feelings to be as they are, then they can change. When you try to change them, they stay unchanged. Gene Gendlin put it so well: What is split off, not felt, remains the same. When it is felt, it changes. Most people don't know this. They think that by not permitting the feeling of their negative ways they make themselves good. On the contrary, that keeps these negatives static, the same from year to year. A

few moments of feeling it in your body allows it to change. If there is in you something bad or sick or unsound, let it inwardly be, and breathe. That's the only way it can evolve and change into the form it needs.

The inner climate of letting it inwardly be is necessary for inner change. And this is the good news. You may think that allowing your feelings to be will make them bigger, or will give them permission to go out of control. You will find that just the opposite is the case. Your feelings get bigger and more painful when they aren't allowed to be. When they are allowed to be, they settle down to have a conversation with you, and that conversation leads to change, as we will see.

Being in a relationship with your feelings

Being in a relationship with your inner experience allows you to be with your feelings, not in them. Many people think that the only way to change strong emotions is to jump right into the middle of them, feel them intensely, and get through them. When you're reluctant to do that, you may call yourself "resistant" and "afraid to change." Focusing, however, teaches us that change comes more easily from a relationship with your feelings. And you can't have a relationship with something if you're up to your neck in it! Think of your emotions as a big lake. You have a choice: you can plunge into the lake, or you can sit next to it.

Focusing works best when you "sit next to" what you feel instead of plunging into it. When you have a relationship with something, you can sense it as a whole. When you're in the middle of it, it's harder to know it - just as it's hard for a fish to know water. When I assisted Gene Gendlin in teaching Focusing he would say, "If you want to know what the soup smells like, it's better not to stick your head in it." When you have a relationship with what's there, you are able to be its listener. It is able to tell you its story. If you are it, then there's no one else to hear the story. This inner relationship is how you give yourself the healing presence that is so powerful and helpful.

If you find yourself saying, "I am sad," try changing that to "Part of me is sad," or "I have a sad feeling," or "I'm aware of something that feels sad." Now the sad feeling becomes something you can be with instead of feeling all over, because it's part of you, not all of you. Being a good listener to your self Do you remember a time when someone listened to you, really listened? Do you remember how good it felt to be heard? Perhaps you began to understand yourself better, and you clarified what you were thinking and feeling, simply because someone was listening. Perhaps you also remember a time when you wanted to express yourself and be heard, but the other person didn't hear you. Instead, perhaps they criticized, or told you about their own experience, or offered well-meaning advice. Advice isn't listening. If you wanted to be heard and you got criticism or advice instead, you probably became more confused or frustrated or upset instead of

more clear. And you probably felt you wouldn't come back to that person again when you needed to be heard. Focusing is being a good listener to your inner self. There are parts of you that want to be heard, without judgment, without criticism, without advice. In Focusing, you can give yourself that nonjudgmental listening that feels good and brings greater clarity.

The qualities of good listening are:

•A welcoming presence

•Holding the space

•Hearing the essence

•Staying in present time.

A welcoming presence means you are interested in everything you become aware of inside. Each feeling you become aware of, no matter how ugly or negative it appears at first, has a good reason for being the way it is. A welcoming presence gives it the space to be and breathe, evolve and transform.

Holding the space means bringing your awareness to your inner world and holding it there. It's as if you're saying to your inner self, "I'm here and I'm staying with you."

Hearing the essence means listening for what is longing to be heard. When something first comes forward, its message may be difficult to understand. If you keep listening for what "it" wants you to hear, the message will become clearer and clearer.

Staying in present time means not being distracted by dwelling on what happened in the past, or on fantasies or fears about the future. It means staying in touch with how you're feeling in your body right now, even when what you are focusing on is related to the past or the future. Whenever you find you have drifted away from the present, ask yourself, "How am I feeling in my body right now? What am I aware of right now?" Being a friend to your felt sense Focusing is like being a friend to your own inner experience. The qualities of true friendship include acknowledging, allowing, patience, curiosity, respect, warmth, welcome, empathy, compassion, and love. If you don't feel you can be that much of a friend to yourself immediately, don't worry - you'll be able to build up to it, step by step. And the first step is as simple as saying hello.

When you notice you're having a feeling, say to the feeling, "Hello. I know you're there." This might seem ridiculously simple, but it's actually such a powerfully helpful move that you'll probably feel relief just from doing this alone. It's amazing how often we don't do this. We ignore how we feel, we try to get rid of how we feel, we argue with how we feel

- but we're not actually acknowledging how we feel. We treat our felt senses like unwelcome party guests, to be talked about but never directly spoken to.

If your felt senses are at all scary or intense, saying hello becomes even more important. "I feel this constriction in my chest, and it's getting tighter and tighter!" said Rebecca. "You might just say hello to it," I suggested. "Oh! Now it's easing up quite a bit!" she reported, amazed that simply acknowledging could make such a difference.

The reason that acknowledging is so powerful is that your felt senses are here to communicate with you. Excuse me for talking about felt senses as if they were people, but the truth is, they want you to listen. They want to be heard. That constriction was

probably getting tighter and tighter because it was panicked about whether it would be heard. As soon as Rebecca acknowledged it, it was able to relax a little, because it knew that she knew it was there, and that she would listen to its story.

I cannot emphasize enough how important it is to say hello to what you find in your body. I've seen over and over how people skip over this step and find themselves in trouble. For example, Catherine had a tightness in her shoulders that she had been feeling for weeks. She wanted to focus on it. The people in the workshop watched as she rolled her neck impatiently and said, "I want to ask this what it's all about, but it won't talk to me. I feel stuck." Then she looked down at the card she had received at the beginning of the workshop and saw the sentence, I'm saying hello to what's here. "Oh," she said, "I haven't said hello to it yet."

Then the other workshop participants saw a remarkable transformation. Catherine's face flushed, her head stopped rolling, and tears sprang to her eyes. "I've never said hello to it!" she exclaimed. "I've called it bad, I've tried to get rid of it, I've shamed it, I've tried to fix it - but I've never actually said hello." From that moment on the tightness in her shoulders began to release and by the end of the session, after it had given its message, Catherine experienced her body quite differently.

Focusing is about having a positive and supportive relationship with yourself. Every relationship begins with hello. It isn't respectful to start a conversation without first saying hello. So give your felt sense a hello first of all, and the rest of your friendship with it will naturally follow.

When you're not feeling friendly

Sometimes you just can't bring yourself to be friendly to your felt sense. And that's OK - you can still do Focusing. Just move your awareness to the part of you that isn't feeling friendly. Say hello to that. The not - friendly feeling, whatever it is, becomes the new felt sense. Tom was feeling fear in his belly. He recognized it as an old fear, one that he had

felt many times before. When he asked himself to be "like a friend" to this fear, he could feel an angry impatience rising in his body. "I'm so sick of always getting scared, right when things are getting good!" So Tom said hello to the angry, impatient feeling. This is different from staying in the anger and impatience, continuing to be angry and impatient. This is more like stepping aside slightly, noticing or "witnessing" what is felt. Instead of trying to force himself to be friendly to the original feeling, the fear, Tom simply moved his friendly attitude to the anger and impatience about the fear.

When something is in the way of being friendly and accepting, we call this the feeling about the feeling. It might be: "I'm angry about this fear," or "I'm afraid of this sadness," or "I'm impatient with this stuck place." Trying to push your way past this feeling won't work. If you ignore it, your Focusing will get stuck at this exact point. That's because the feeling about the feeling is a signal that something else is coming up that needs attention. Two things may happen, and they're both fine.

Often, after you've spent some time with the feeling about the feeling, it relaxes and lets you go back to the original feeling. But sometimes the whole remainder of the session is about the feeling about the feeling. This is wonderfully rewarding, because it often relates to a central part of how you are in the world. When it changes, ripples of change spread through your whole life.

Hearing all the voices

We often believe that we must feel only one way about something. Ambivalence is wrong, we think. But it is the most natural thing in the world to have mixed feelings. A part of us wants to get to know someone better, another part of us is scared to get too close. A part of us feels angry that we haven't been consulted in a decision, but another part is frightened of the consequences of expressing that anger. Focusing allows all the parts of our self to be heard.

And when their messages have been received, they change. You don't have to choose between different parts; they can all be there at the same time. They can each have their own space. And a special kind of magic can happen when we are able to be with all the different parts. Out of that can come something that is better than and different from any of the parts, and yet all the parts have given something essential to the new synthesis. We are complex beings in an ambiguous world. We are full of often contradictory feelings and thoughts. It can be liberating to realize that we don't have to be monolithic. With Focusing, we learn how to welcome, acknowledge, and accept all our responses to life - whatever they are. We can feel all our variety and subtlety, all our richness and complexity.

The wisdom of not knowing

Be willing to approach your inner experience without thinking that you know all about it already. This is the attitude of not knowing. Why would you listen to someone if you think you already know what he or she has to say? When you treat your felt sense this way - for example, "I already know why I'm afraid" - you block your opportunity to find out what it's really about. You might be asking, "But what if I do already know?" Let me say this: as long as there is still a felt sense wanting your attention, there is something about it you don't know yet. If you are still experiencing tightness, fear, constriction, or stuckness, there is something your body knows and is trying to tell you.

So be curious, open, and more interested in what you don't know yet than in what you already know. Try acknowledging what you already know about what you're Focusing on and then setting that aside. Not because it's wrong - it might not be - but because it might be getting in the way of sensing what is new and not yet known about you and your life. Our modern culture puts a great premium on clarity.

We are taught that if we can't think or say something clearly, then it's not important. The winner in school is the one who gets "the answer" the fastest - see those hands shoot up! It's rarely acknowledged that there is a valuable kind of knowing that is vague at first and takes time to access.

The bias for clarity can lead to feeling uncomfortable in the face of something unclear and unknown. "How would I explain this to anyone? How would I defend it? What good is it?" Before you learned to honor and listen to felt senses, you might have dismissed them in just this way. Instead, enjoy them!

When a felt sense first comes, you may not know what to call it, and you may not know what it is. Let that be OK. You will learn to delight in that not-knowing, to look eagerly for the parts of your experience that are not yet known, just as a treasure hunter is most excited by the treasure chests that have not yet been opened. It may not seem likely that there would be wisdom hiding in this fuzzy, vague, hard-to-describe something that you feel in your body, but there is. That's exactly where the wisdom is: not in what is already clear and known - that's old information - but in what is emerging in you, the knowing that is coming into awareness right now. Learning Focusing is learning to value and even cherish the slow, subtle, and vague.

Following the felt sense

You can trust the felt sense to lead you to the center of the maze. It knows which way to go. All you have to do is follow and it will lead you right to the center. It wants to go there; it wants you to come, too. But only it knows the way, only it can take you there. To find your way, you need to trust it. You need to let go of controlling which direction you're going in. You have to let go of analyzing and asking why and judging. You can try lots of things during the process that may be very helpful - but the results are beyond

your control. You can't make the felt sense do anything it isn't ready and willing to do. You can't make it tell you anything, and you can't make it change - any more than you can make the shy animal your friend against its will.

You can only try things and offer possibilities, respectfully and without expectations, and see what happens next. Trying to impose your will on the felt sense is an exercise in pure futility. But trust and follow, and you will find that in the center of the maze lies the treasure you have been seeking.

Every Focusing session is unique

Remember that Focusing is a natural human process, and it is always more than we will be able to put into words. If there is one thing you can count on in Focusing, it's that you can't predict what is going to happen.

Every time you sit down to do Focusing, especially at first; you may need to remind yourself that what happened last time probably won't happen today. It might be similar; it might be very different. It might feel like skipping along the surface; it might feel like deep sea diving. You might have lots of images today. You might have lots of detail about your life. It might be peaceful and quiet. There might be lots of tears. But the felt sense will only bring you what you can deal with, and if you trust it and flow with it, you will find a natural resting place, a warm shore, a little closer to home.

Ann Weiser Cornell, is the creator of Inner Relationship Focusing and author of The Radical Acceptance of Everything, The Power of Focusing, Focusing in Clinical Practice, and Presence.

Module 4

Self-Compassion

The Secret to Empowered Action is Learning Not to Beat Yourself Up

by Emma Seppala

Strive for more, work even harder, aim to be the best! We live in a society that regularly sends us such messages. Meanwhile, most of us don't stop to consider whether our goals are possible or whether they would even bring us lasting happiness. Even if we were to win a gold medal at the Olympics, our status as reigning champion would only last a few years and would most likely be accompanied by anxiety about losing in the future. On my first day at Yale, one of the deans proclaimed, "You are not only the elite; you are the elite of the elite," and I still remember the wave of nausea this comment evoked in me. Success, after all, is a precarious position. While we strive to become infallible and to retain our position at the top, we cannot escape suffering.

This suspicion was confirmed as I observed my fellow classmates progress through freshman year. Each of us had previously been at the top of his or her class in high school. But we now found ourselves as one smart student among many, no longer special and no longer standing out. Yet we still continued to sweat, struggle, and strive. We had learned that we had to be the best. Most of us found this experience hard to bear, and it left me wondering whether this maddening competitiveness is the reason why anxiety and depression are exceptionally rampant on Ivy League campuses.

Kristin Neff, associate professor of human development at the University of Texas and a pioneer of research on self-compassion, believes that our society's emphasis on achievement and self-esteem lies at the heart of much unnecessary and even counterproductive suffering. From an early age, we are taught to build our self-esteem by competing successfully, yet competition is a losing battle. Psychologists have discovered that most people believe they are above average and better than others on almost every trait (the better-than-average effect). This belief helps us ward off painful feelings of inadequacy, but it comes at a price. When our self-esteem rests on the premise of successfully competing against others, we are always precariously teetering on the edge of losing. Social comparison and competition also foster disconnection by causing us to view others as obstacles to overcome in order to keep our position, mark our territory, and vanquish potential rivals. We ultimately feel more separate from others when the primary goal of our desire for success is to belong and to be loved. It is quite simply

impossible to be better than everyone at all times. Yet research shows that when we lose we tend to feel highly self-critical, adding to our misery. Faced with criticism, we become defensive and may feel crushed. Mistakes and failure make us so insecure and anxious that we give up early when faced with future challenge. Down the road this type of competitive self-esteem has been tied to larger societal problems such as loneliness, isolation, and even prejudice.

After observing the pitfalls of self-esteem, Neff went looking for an alternative, a way to set and achieve our goals without beating up ourselves — or anyone else — in the process. Through the practice of Buddhism, she found it in the form of self-compassion. With self-compassion, you value yourself not because you've judged yourself positively and others negatively but because you're intrinsically deserving of care and concern like everyone else. Where self-esteem leaves us powerless and distraught, self-compassion is at the heart of empowerment, learning, and inner strength.

Treating Yourself Like Your Best Friend

Working hard, striving to meet one's goals, and performing to the best of one's potential are obviously tremendously useful skills in the areas of both professional and personal growth. However, Neff 's research suggests that replacing self-esteem with self-compassion may have far superior implications for our mental health and well-being. In one study, for example, Neff found that when faced with a threatening situation (having to describe one's weaknesses in a job interview), self-compassion was associated with lower anxiety, whereas self-esteem did not impact anxiety levels.

Neff defines self-compassion as "being kind and understanding toward oneself in instances of pain or failure, rather than being harshly self-critical; perceiving one's experiences as part of the larger human experience, rather than seeing them as isolating; and holding painful thoughts and feelings in mindful awareness, rather than over-identifying with them. It is, in a sense, taking on the attitude that one might have toward a friend who has failed at something. Rather than berating him, judging him, and adding to his despair, we listen with empathy and understanding, encourage him to remember that mistakes are only normal, and validate his emotions without adding fuel to the fire.

Self-compassion is the ability to act with ourselves as we would with such a friend. Neff explains that self-compassion is not a way of avoiding goals or becoming self-indulgent. Instead, self-compassion is a great motivator because it involves the desire to alleviate suffering, to heal, to thrive, and to be happy. A parent who cares about her child will insist on the child's eating vegetables and doing her homework, no matter how unpleasant these experiences are for the child. Similarly, taking it easy on yourself may be appropriate in some situations, but in times of over-indulgence and laziness, self-compassion involves toughening up and taking responsibility.

A Better Way to Deal with Failure

When you are motivated by self-compassion, you see failure as the best learning opportunity. Criticism, for example, usually consists of a grain of truth that pertains to us and a grain of resentment or untruth that pertains to the critic's perception. Because of the sting that accompanies criticisms, we either become defensive or beat ourselves up — and ultimately miss the useful lesson. With self-compassion, however, we view failure with greater calm and understand it as an opportunity from which growth can follow.

Moreover, by preventing the defeating effects of self-criticism, self-compassion allows us to maintain peace of mind and thereby retain our energy. By remaining level-headed and understanding in the face of rejection, failure, or criticism, we develop an unshakable strength and ensure emotional stability independent of external circumstances. Neff explains that self-compassion provides a stable sense of self-worth that fluctuates much less over time, because it is not contingent on looking a certain way or competing successfully. In this way, it allows us to both experience well-being and contribute to society in meaningful ways.

Though research into the physiology of self-compassion versus self-criticism is still pending, Neff hypothesizes a simple model. Harsh self-criticism activates the sympathetic nervous system ("fight or flight") and elevates stress hormones such as cortisol in our bloodstream. When this sting has a hold on us, we cannot learn from or engage with the kernel of truth that may be there to serve us. Self-compassion, on the other hand, may trigger the mammalian care-giving system and hormones of affiliation and love, such as oxytocin. Also known as the "cuddle hormone," oxytocin is released in lactating mothers, during hugging and sex, and is associated with feelings of well-being, allowing us to hold the truth without attacking ourselves.

Developing Self-Compassion

We all know of people who seem to take care of everyone but themselves — and who berate themselves for not doing more. Neff's work confirms this observation: there is no correlation between the trait of self-compassion and feelings of compassion toward others. She noticed that many people, women in particular, are far more compassionate and kinder to others than to themselves. She gives the example of a pediatric oncology nurse who spent her life giving to others, yet was extremely hard on herself because she felt that she was not doing enough. Yet self-compassion can be learned. It is a practice that can help us all become less self-critical and perhaps even achieve more and give more.

One great example of self-compassion in action is Bonnie Thorne, who has been devoted to humanitarian work throughout her life, starting with caring for street children, disadvantaged youth, and prostitutes by successfully raising funds for service

organizations. Most recently, she is leading the funding agenda for the University of Wisconsin– Madison's Center for Investigating Healthy Minds' mission to use rigorous scientific research to improve well-being in the community. Bonnie explains, "Self-compassion gives me permission to breathe my own humanity into each situation that arises and greets me and to transmit that energy into kindness to others." To know Bonnie is to see her take advantage of every opportunity and interaction to connect with others in friendship, warmth, and the intention to serve where she can.

Thorne explains that as a child, she received tremendous pressure to perform and succeed. She had few compassionate role models and was highly self-critical. However, when she was placed in foster care, she witnessed the unconditional compassion of foster parents who whole-heartedly raised her as well as other foster children of diverse races and backgrounds. Bonnie attributes their love and respect and the safe environment they created to her development into a more integrated, creative, and giving person. Through her foster parents' acceptance and kindness, the self-critical voice within her began to quiet down. Bonnie keeps that critical voice quiet with a regular meditation practice.

A Boost for High-Achievers

Etelle Higonnet is another example of how learning self-compassion can empower even superachievers. The daughter of Harvard professors, Higonnet graduated with honors from Yale College and attended Yale law School and then continued in a blaze of successes, working at Human Rights Watch, Amnesty International, and the United Nations. Her human rights work saved thousands of lives, and she received recognition and awards. But she tells of an important shift in her life.

Says Higonnet, "I grew up with the idea that you should always criticize yourself and that you should never be satisfied but should always strive for better. If you received an A, why didn't you get an A+? If you're on the top soccer team, why are you not the number one scorer on the soccer team? It was 'quitters never win, and winners never quit' in all domains of life, from sports to academics." As a college student, human rights violations outraged her. Her activist spirit was fueled with anger, and she threw herself into overdrive to combat human rights issues.

"It took a car accident in which I nearly lost my life and a deep experience with yogic practice and philosophy that allowed my activist anger to be transformed into activist action. I realized that, despite the human rights violations being wrong, being angry would not change anything and would only hurt me and estrange me from others. Only solutions, and not anger, really change things." After surviving the car accident, Etelle began to feel a deep sense of gratitude for a life she now understood to be a gift. Soon thereafter, she took an intensive week-long yogic breathing and philosophy workshop that shifted her perspective. "The Art of Living course was like a tsunami of yogic

learning all at once that taught me explicitly about loving others and myself and developing harmony, balance, acceptance, and compassion, not only for myself and other people but for the planet itself. That's when I understood that life was not about winning, competing, or suffering through pain in order to win. It opened up a whole way of seeing love and acceptance and balance and harmony as a big part of me and that's how I try to live my life now. I've noticed that I am much more effective and happy."

Self-Compassion in Students and Veterans

Carole Pertofsky, head of health promotion at Stanford university, is a passionate advocate of resiliency and well-being through self-compassion. Pertofsky sees many Stanford students who are passionate about service but suffer from overexertion. She advocates the following: "Put your own oxygen mask on before giving it to others. If you run out of oxygen, you aren't going to help anybody. Our own basic needs must be met first; only then do we have the ability to help others. As humans, when we over-give, we become empty on the inside. We dry up and feel resentful. Our energy runs scarce, and we feel as if we have no more to give." This state has often been called "compassion fatigue" and is common in service professions, such as those of social workers and humanitarian aid workers.

Pertofsky also works with students who succumb to what's called the "Stanford floating duck" syndrome: on the surface they look like they are calmly gliding along, but if you look underneath the water you'll observe their legs pedaling away furiously, just to stay afloat. Carole teaches: "When we stop being self-critical and self-harming and start being kind to ourselves, it opens up the pathway to increase resilience." Rather than wasting energy pretending to be calm while being closet workaholics and overachievers, students can actually learn to take care of themselves and to be balanced and happy.

In my own research with veterans at the university of Wisconsin–Madison, I have found that self-compassion can be very helpful for returning soldiers. One man I'll call Mike was highly self-critical and had developed extreme forbearance and self-discipline — attributes that earned him awards for courageous actions in combat. But at home he could not reconcile his actions as a soldier with his values as a civilian, and he had come to think of himself as a terrible human being. Suffering from anxiety, depression, and post-traumatic stress disorder, Mike could not sleep at night. After participating in a yoga, breathing, and meditation-based workshop as part of our study, Mike's attitude changed. He shared that though he remembers everything that happened, he understands that his past actions under orders do not represent who he is as a person now. Mike has recovered his ability to sleep.

Neff tells a similar story of working with a group of young veterans with post-traumatic stress disorder. She taught them ways in which, in a challenging or anxiety-provoking

situation, it is possible to evoke self-compassion through touch. From an observer's perspective, they are simply crossing their arms, but there is a private intention of giving a self-hug. One of the symptoms of post-traumatic stress disorder is feeling severely isolated. She describes how one of the toughest-looking veterans in the room said, "I don't want to let go." He felt such relief from this new attitude of self-nurturing. And that's something you can try right now.

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Practices for Boosting Self-Compassion

1) Write yourself a letter: Take the perspective of being a compassionate friend, so you can imagine that you are this other person. Ask yourself, "What would a compassionate and kind friend say to me right now? What would his or her words be?" Later, come back and read the letter, and receive it from yourself.

2) Write down your Self-talk: If you are self-criticizing because your jeans don't fit or you said the wrong thing in a situation, write down the self-critical words that come to mind, and then ask if you would ever say these words to a friend. What would a friend say?

3) Develop a self-Compassion mantra: Neff suggests developing something that is easily memorized, so that when something difficult happens you can go to your phrases. These are not positive affirmations but reminders. Here is the self-compassion she developed for herself: "This is a moment of suffering. Suffering is part of life. May I be kind to myself in this moment; may I give myself the compassion that I need." Neff's son has autism, and when he would have a tantrum in public, she would immediately turn to her self-compassion mantra, partly as a focus for her mind but also because what she needed most at that moment was emotional support for herself, so she could deal with the situation calmly and with more grace.

For additional techniques by Kristin Neff to increase self-compassion, go to self-compassion.org.

The Three Elements of Self-Compassion

Self-kindness: Self-compassion entails being warm and understanding toward ourselves when we suffer, fail, or feel inadequate, rather than ignoring our pain or flagellating ourselves with selfcriticism. Self-compassionate people recognize that being imperfect, failing, and experiencing life difficulties are inevitable, so they tend to be gentle with themselves when confronted with painful experiences, rather than getting angry when life falls short of set ideals. People cannot always be or get exactly what they want. When this reality is denied or fought against, suffering increases in the form of stress, frustration, and self-criticism. When this reality is accepted with sympathy and kindness, greater emotional equanimity is experienced.

Common humanity: Frustration at not having things exactly as we want them is often accompanied by an irrational but pervasive sense of isolation — as if "I" am the only person suffering or making mistakes — but all humans suffer. The very definition of being "human" means that one is mortal, vulnerable, and imperfect. Therefore, self-compassion involves recognizing that suffering and personal inadequacy is part of the shared human experience — something that we all go through, rather than being something that happens to "me" alone. It also means recognizing that personal thoughts, feelings and actions are impacted by "external" factors, such as parenting history, culture, and genetic and environmental conditions, as well as the behavior and expectations of others. Thich Nhat Hahn calls the intricate web of reciprocal cause-and-effect in which we are all imbedded "interbeing." Recognizing our essential interbeing allows us to be less judgmental about our personal failings. After all, if we had full control over our behavior, how many people would consciously choose to have anger issues, addiction issues, debilitating social anxiety, eating disorders, and so on? Many aspects of ourselves and the circumstances of our lives are not of our choosing but instead stem from innumerable factors (genetic and/or environmental) over which we have little control. By recognizing our essential interdependence, therefore, failings and life's difficulties do not have to be taken so personally but can be acknowledged with nonjudgmental compassion and understanding.

Mindfulness: Self-compassion also requires taking a balanced approach to our negative emotions so that feelings are neither suppressed nor exaggerated. This equilibrated stance

stems from the process of relating personal experiences to those of others who are also suffering, thus putting our own situation into a larger perspective. It also stems from the willingness to observe our negative thoughts and emotions with openness and clarity, so that they are held in mindful awareness. Mindfulness is a nonjudgmental, receptive mind-state in which one observes thoughts and feelings as they are, without trying to suppress or deny them. We cannot ignore our pain and feel compassion for it at the same time. Mindfulness requires that we not be "over-identified" with thoughts and feelings, so that we are caught up and swept away by negative reactivity.

— Kristin Neff, PhD