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Mindfulness-Based Therapy and Behavioral Activation: A Randomized Controlled Trial with Depressed College Students

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Mindfulness-Based Therapy and Behavioral Activation: A Randomized Controlled Trial with Depressed College Students

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ABSTRACT

Major Depressive Disorder (MDD) is found in about 20% of university students, with increasing incidence in the past two decades (American College Health Association, 2010). Depressed college students report significant academic problems, including lower grade point average, inability to concentrate, absenteeism, lower academic productivity, and interpersonal problems. Mindfulness-Based Stress Reduction (MBSR) and Behavioral Activation (BA) are two interventions that have significant potential in meeting demands of college counseling clinics insofar as treating depressed college students. This study utilized a randomized controlled design (n = 50) to examine the efficacy of four-sessions of abbreviated MBSR and BA relative to a no-treatment control condition with depressed college students. Results suggested both treatments were efficacious compared to the wait-list control group, there was strong therapist competence and adherence to protocols, and there were significant pre-post treatment gains across a breadth of outcome measures assessing depression, rumination, stress, and mindfulness. However, neither treatment effectively reduced self-reported somatic anxiety. Across both treatments, gains were associated with strong effect sizes, and based on response and remission criteria, approximately 56-79% of patients exhibited clinically significant improvement. There were no significant differences in outcomes as a function of active intervention at post-treatment, and treatment gains largely were maintained at 1-month follow-up. Study limitations and implications for the assessment and treatment of depressed college students are discussed.

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CHAPTER 1: INTRODUCTION

Major depressive disorder (MDD) is a widespread problem among college students, and consistent with community samples, depression is found in 15-20% of university students, with increasing incidence in the past two decades (American College Health Association, 2010; Benton, Robertson, Tseng, Newton, & Benton, 2003; Gallagher, 2007). Depressed college students report significant academic problems, such as lower grade point average, inability to concentrate, missed classes, lower academic productivity, and interpersonal problems at school (Califano, 2003; Fazio & Palm, 1998; Pritchard & Wilson, 2003). The impact of depression extends beyond the academic setting, and has been linked to suicide, physical illness, risky sexual behavior, and poorer quality of life (Califano, 2003). In addition, relative to non-depressed college students, those with depression are more likely to engage in self-injurious behavior (Serras, Saules, Cranford, & Eisenberg, 2010), smoke cigarettes (Califano, 2003; Lenz, 2004; Saules et al., 2004), have alcohol dependency, and abuse illicit drugs (Califano, 2003). Indeed, the American College Health Association- National College Health Assessment (ACHA-NCHA) indicated that approximately 30 percent of college students reported "feeling so depressed it was difficult to function" (ACHA, 2010). Depression in college students is a significant problem and there is a pressing need to develop and assess efficient evidence-based interventions to address the prevalence and impact of the condition (Gawrysiak, Nicholas, & Hopko, 2009; Lee, 2005).

Prevention research indicates that early detection and intervention of depression during college can reduce the incidence, severity, and duration of future mental health problems, such as depressive and anxiety disorders as well as substance use disorders (Cuijpers & van Straten, 2007; Cuijpers, van Straten, Smit, Mihalopoulos & Beekman, 2008; Kupfer, Frank, & Perel,

1989; Mrazek & Haggerty, 1994). Moreover, among individuals with subclinical depressive symptoms at risk for developing MDD, early psychological interventions may prevent this trajectory (Cuijpers & van Straten, 2007). Access to treatment interventions for MDD during college can improve young adults' quality of life (Eisenberg, Golberstein, & Hunt, 2009), reduce stress and anxiety (Deckro et al., 2002; Seligman, Schulman, DeRubeis, & Hollon, 1999), increase health and fitness behaviors (Deckro et al., 2002; Gawrysiak, Nicholas, & Hopko, 2009), reduce dysfunctional attitudes and increase optimism (Seligman et al., 1999), and positively impact academic performance (Eisenberg, Golberstein, & Hunt, 2009).

In addition to the benefits of treating depressive symptoms early, it is also ideal to have time-limited effective treatments for college populations. Counseling centers continue to experience increased student demands that are met with limited resources. The International Association of Counseling Services (IACS) recently reported a steady increase in the clinician to student ratio (Gallagher, 2010), and many counseling centers consequently have extensive wait lists (Gallagher, 2010; Kitzrow, 2003; Voelker, 2003). Additionally, some data suggest students currently are presenting with more severe symptom presentations than in the past (Gallagher, 2010; Kitzrow, 2003). Collectively, when these issues are compounded by budget reductions and time constraints on allowable therapy sessions, parsimonious and effective treatment options in academic settings is essential (Gallagher, 2010; Gawrysiak, Nicholas, & Hopko, 2009; Mowbray et al., 2006; Stone, Vespia, & Kanz, 2000; Suicide Prevention Resource Center, 2004, Voelker, 2003). School based psychological clinics are designed to provide short-term services, such that 71% of counseling centers set limits on the number of sessions allowed (Gallagher, 2010). In addition, briefer psychotherapy is a more cost-effective intervention strategy that is needed at a

time when funding is low. Therefore, it is important to identify and implement time-limited effective treatments in academic settings.

Treatment Outcome Research with Depressed College Students

Significant research supports the efficacy of psychosocial interventions for depression (Chambless & Hollon, 1998; DeRubeis & Crits-Christoph, 1998; Hollon & Ponniah, 2010; Hollon, Thase, & Markowitz, 2002; Sturmey, 2009; Westen & Morrison, 2001; Wolf & Hopko, 2008). Quite problematically, however, there is a paucity of empirical support for psychotherapeutic interventions for depressed college students in the context of university settings (Gawrysiak, Nicholas, & Hopko, 2009; Lee, 2005). In one of few studies exploring this issue, Shaw (1977) compared the relative efficacy of group administered cognitive and behavioral treatments for depression. Both interventions were more effective than the wait-list control condition, and cognitive therapy appeared more effective than behavioral therapy in reducing depression. Resulting in somewhat divergent findings, Hodgson (1981) compared behavioral and cognitive interventions among groups of depressed university students and demonstrated that both treatments were more effective than no treatment, with some evidence supporting behavioral therapy as most effective. Hogg and Deffenbacher (1988) compared cognitive and interpersonal-process group therapies among moderately depressed university students and found both treatments equally effective in reducing depression. All three of these studies examined the efficacy of standardized treatments of depression in university students using a group therapy format. To assess the efficacy of individualized psychotherapy for moderately depressed university students, Pace and Dixon (1993) compared cognitive therapy and a wait-list control group. Cognitive therapy was not only more effective in reducing depressive symptoms, but also reduced the frequency and intensity of negative cognitions

associated with depressive schemas. Reagin (1982) also conducted a series of case studies at a counseling center and found some support for time-limited cognitive behavioral psychotherapy in treating depressed university students. Finally, research demonstrated that brief behavioral activation treatments (2-3 sessions) for moderately depressed college students was superior to a wait-list control group (Gawrysiak, Nicholas, & Hopko, 2009) and supportive psychotherapy (Armento, McNulty, & Hopko, 2012).

Behavioral Activation Treatments and Theory

Behavioral Activation (BA) is a time-efficient and effective treatment for depression that has significant potential in meeting the demands of college counseling clinics. The efficacy and effectiveness of BA has been increasingly researched and BA is now considered an empirically validated treatment for depression (Cuijpers, Van Straten, & Warmerdam, 2007; Ekers, Richards, & Gilbody, 2008; Sturmey, 2009). There currently are two derivations of BA, *Behavioral Activation* (Martell, Addis, and Jacobson, 2001) and the *Brief Behavioral Activation Treatment for Depression* (BATD; Lejuez, Hopko, & Hopko, 2001), the latter recently revised to clarify treatment procedures (BATD-R, Lejuez, Hopko, Acierno, Daughters, & Pagoto, 2011). These protocols are based on behavioral theory and the premise that depression is alleviated by increasing response-contingent positive reinforcement (RCPR; Lewinsohn, 1974). According to Lewinsohn's behavioral model of depression, a reduction in RCPR is attributable to a decrease in the number and range of reinforcing stimuli available to an individual, lack of skill in obtaining reinforcement, and/or an increase in the frequency of distressing or unpleasant life events (Lewinsohn, 1974). Based on this model, conventional behavioral therapy successfully decreased symptoms of depression by increasing access to pleasant events and decreasing the frequency of aversive events and consequences (Lewinsohn & Graf, 1973; Lewinsohn, Sullivan, & Grosscup,

1980). Also supporting this model of depression, it is well established that there is a strong relationship between mood and overt behaviors, such that an increase in positive or pleasurable activities is associated with more positive affect (Gallagher, 1981; Hopko, Armento, Cantu, Chambers, & Lejuez, 2003; Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972). People who are depressed also report fewer pleasurable activities and engage in fewer social interactions (Libet & Lewinsohn, 1973; MacPhillamy & Lewinsohn, 1974). Another study showed that mildly depressed college students engaged less frequently in social, physical, and educational behaviors compared to non-depressed students (Hopko & Mullane, 2008).

Behavioral therapy has been shown to be effective in treating depression with a wide range of samples. Cuijpers, Van Straten, and Warmerdam (2007) conducted a meta-analysis on BA treatments compared to other psychological treatments and antidepressant medication. This study revealed that BA was highly effective in reducing depression in adults and had a large effect size (d =.87; Cuijpers, Van Straten, & Warmerdam, 2007). In one of the more compelling studies, BA was comparable to antidepressant medication and superior to cognitive therapy in treating severe depression (Dimidjian et al. 2006), results that were maintained at 2-year follow-up (Dobson et al., 2008). BA also has been effectively used with depressed patients in a variety of settings and among samples with divergent medical and psychiatric problems (Daughters et al., 2008; Ekers, 2011; Gawrysiak, Nicholas, & Hopko, 2009; Hopko, Lejuez, LePage, Hopko, & McNeil, 2003; Jacobson et al., 1996; Jakupcak et al., 2006; MacPherson et al., 2010; Pagoto, Bodenlos, Schneider, & Spates, 2008). BA also appears to be effective among difficult to treat samples, including psychiatric inpatients (Hopko, Lejuez, LePage, Hopko, & McNeil, 2003), people with depression and Alzheimer's disease (Teri, Logsdon, Uomoto, & McCurry, 1997), cancer patients with depression (Hopko et al., 2005, 2008, 2011), individuals with co-existent

anxiety problems (Hopko, Robertson, & Lejuez, 2006), and college students with depression (Gawrysiak, Nicholas, & Hopko, 2009) and problem drinking behavior (Reynolds et al., 2011). BA also appears effective when delivered by smartphone (Ly et al., 2014) and when applied in group as opposed to individual therapy (Porter, Spates, & Smitham, 2004). In summary, BA is supported as an effective treatment for depression with a variety of patient samples.

Mindfulness-Based Stress Reduction

Another promising psychotherapy approach in treating depression is Mindfulness-Based Stress Reduction (MBSR). MBSR is defined as a "self-regulatory approach to stress reduction and emotion management" (Bishop, 2002). One of the main goals of MBSR is to gain the ability to regulate attention and experience life as present-focused, and includes strategies designed to increase awareness of thoughts, emotions, and other sensations. In other words, the premise of MBSR is to be open to present experience, such as being curious and accepting of the "here-and-now" (Bishop, 2002). MBSR also is a practice that involves development of acceptance and non-judgmental experiencing of the environment (Bishop, 2002). Rumination appears to play a central role in exacerbating depression (Nolen-Hoeksema & Hilt, 2009; Nolen-Hoeksema, Parker, & Larson, 1994). As MBSR has been shown to reduce rumination, MBSR should theoretically be helpful in treating depression (Bishop et al., 2004). MBSR focuses on training the client in mindfulness meditation and bringing awareness to the present moment (Kabat-Zinn, 1982). The idea is to instill self-regulatory strategies to reduce stress and depressive symptoms. Depression theoretically is alleviated because life stressors become more manageable and meaningful (Dobkin, 2008), concentration is enhanced (Kabat-Zinn et al., 1992), and rumination is reduced (Jain, Shapiro, Swanick, Roesch, Mills, Bell, et al. 2007; Ramel, Goldin, Carmona, & McQuaid, 2004).

MBSR as a Treatment for Depression

Several meta-analyses have investigated the effectiveness of MBSR with encouraging findings. Hofmann and colleagues (2010) conducted a meta-analysis on mindfulness-based therapies, including MBSR and mindfulness-based cognitive therapy (MBCT) applied to clinical samples (i.e., those diagnosed with psychological or medical conditions). Results indicated that both MBSR and MBCT significantly reduced depressive and anxiety symptoms. In a meta-analysis including controlled studies investigating the effects of MBSR on depression, anxiety, and psychological distress among people with chronic medical diseases (Bohlmeijer, Prenger, Taal, & Cuijpers, 2010), MBSR reduced depression, anxiety, and psychological distress (Bohlmeijer, Prenger, Taal, & Cuijpers, 2010). Moreover, Baer's (2003) meta-analysis on mindfulness training in clinical and non-clinical samples revealed a large effect size for depression (d = .84) and anxiety (d = .70). Baer's (2003) review revealed a larger effect size relative to Bohlmeijer and colleagues' (2010) meta-analysis, which may be attributable to Baer's inclusion of non-controlled studies, a wider range of samples, and inclusion of two studies that used MBCT rather than MBSR to treat depression, which could have inflated effect sizes.

Another systematic review of MBSR and MBCT with clinical and non-clinical samples indicated that MBSR reduced psychological distress and improved overall well-being among individuals with physical illness (Fjorback, Arendt, Fink, & Walach, 2011). Also, this review demonstrated that symptoms of depression, distress, and anxiety were reduced for individuals with psychiatric disorders (Fjorback et al., 2011). Results were less conclusive for the effectiveness of MBSR toward improving physical health. The effectiveness of mindfulness-based interventions, including MBSR, MBCT, brief mindfulness training, one-on-one mindfulness meditation, and psychoeducation with mindfulness components with cancer patients

also has been explored (Shennan, Payne, & Fenlon, 2011). MBSR in particular was shown to attenuate symptoms of depression, anxiety, and stress in cancer patients (Carlson, Ursuliak, Goodey, Angen, & Speca, 2001; Shennan, Payne, & Fenlon, 2011; Speca, Carlson, Goodey, & Angen, 2000). A recent meta-analysis examined stress-reducing interventions for college students and revealed that MBSR was effective in reducing depression and anxiety (Regehr, Glancy, & Pitts, 2013). Contrary to results discussed thus far, Toneatto and Nguyen (2007) conducted a meta-analysis on the efficacy of MBSR for depression and anxiety with medical and community samples, reporting that MBSR did not have a reliable effect on depression and anxiety. However, this review excluded a substantial number of MBSR studies, effect sizes were not reported, inclusion and exclusion criteria were not clearly articulated, and most of the studies were community samples that may have reduced baseline symptom levels and created a floor effect. In addition, this review included other forms of "meditation", such as a stress reduction, relaxation, and attentional control training, which may differ substantially from traditional MBSR. Taken together, meta-analyses provide encouraging preliminary support for MBSR as an effective treatment for depression and anxiety, and there are data to suggest treatment gains may be maintained at 3-year follow-up (Miller, Fletcher, & Kabat-Zinn, 1995). Particularly relevant to the current study, preliminary data suggests MBSR can be effective in reducing depression and anxiety with undergraduate students (Astin, 1997) and medical and premedical students (Shapiro, Schwartz, & Bonner, 1998). Astin conducted a study that included 28 behavioral medicine undergraduate volunteers who were randomly selected to be in a MBSR group or a non-intervention group, and results suggested that anxiety and depression were decreased in the treatment group compared to the control group.

MBSR as a Treatment for Anxiety and Stress

MBSR also has been effective in reducing anxiety, stress, fatigue, and sleep disturbances, as well as enhancing quality of life in cancer patients (Bränström, Kvillemo, Brandberg, & Moskowitz, 2010; Carlson, Speca, Patel, & Goodey, 2004; Ledesma & Kumano, 2009; Matchim & Armer, 2007). A meta-analysis investigating MBSR with clinical and stressed non-clinical samples found that MBSR improved quality of life, anxiety, and physical well-being (e.g., sensory pain and medical symptoms; Grossman, Niemann, Schmidt, & Walach, 2004). Praissman (2008) reported that MBSR was effective in reducing stress and anxiety elicited by daily hassles and more significant stressors, such as chronic illness. Another study demonstrated that MBSR was effective for reducing perceived stress, improving psychological well-being, and increasing mindfulness among adults; additionally, mindfulness was found to mediate the relationship between meditation practice and reductions in psychological distress (Carmody & Baer, 2008). Moreover, a meta-analysis found that MBSR reduced ruminative thinking and trait anxiety, and increased empathy and self-compassion among undergraduates, medical students, medical and mental health care professionals, and university faculty and staff (Chiesa & Serretti, 2009). MBSR was also effective in reducing anxiety, confusion, and fatigue, and increased overt activity among medical students (Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003). In another sample of undergraduate students, MBSR increased mindfulness, subjective well-being, and empathy, with gains maintained at one-year follow-up (Shapiro, Brown, Thoresen, & Plante, 2011). MBSR participants with higher levels of pretreatment mindfulness displayed larger increases in mindfulness, subjective well-being, empathy, and hope, as well as larger reductions in perceived stress at one-year follow-up relative to a wait-list control group (Shapiro, Brown, Thoresen, & Plante, 2011). In addition, Oman and colleagues (2008) found that MBSR reduced

perceived stress and to a lesser extent rumination, and increased forgiveness with college students. MBSR has also been extensively researched with medical patients and documented as useful in the self-regulation of chronic pain (Kabat-Zinn et al., 1985).

MBSR has also been researched in abbreviated formats modeled after the full 8-week MBSR treatment. A six-week MBSR intervention significantly reduced perceived stress and improved mindfulness and sleep quality (Klatt, Buckworth, & Malarkey, 2009). Another research team found that six-weeks of interpersonal mindfulness training modeled after MBSR reduced anxiety and perceived stress, and enhanced interpersonal well-being (Cohen & Miller, 2009). Finally, four-weeks of brief training in mindful meditation modeled after the full MBSR protocol gained preliminary empirical support in reducing emotional distress (Jain et al., 2007).

MBSR and BA Treatments for Depression

Based on existing research, MBSR shows effectiveness in reducing depressive symptoms and preliminary data indicates these techniques may be effective in a brief format. It seems feasible that abbreviated MBSR could provide a time-limited and effective therapeutic approach for treating MDD. Indeed, mindfulness is positively related to mood regulation, positive emotions, and self-acceptance, outcomes that have been inversely related to depressive symptoms (Jimenez, Niles, & Park, 2010). BA is an established treatment for depression (Cuijpers, Van Straten, & Warmerdam, 2007; Ekers, Richards, & Gilbody, 2008; Hopko, Lejuez, Lepage, Hopko, & McNeil, 2003; Sturmey, 2009) and abbreviated BA may effectively reduce depression among college students (Armento et al., 2012; Gawrysiak et al., 2009).

Current Study

The researchers assessed the efficacy of MBSR and BA in the treatment of depressed college students as compared to a wait-list control (WLC) group. Specifically, the study was

designed to examine the efficacy of MBSR and BA for depressed college students by utilizing brief (4-week) mindfulness-based therapy (MBT) and BA protocols, potentially more feasible for college counseling centers compared to the more traditional (8-week) MBSR and BA therapies. MBSR is a promising and viable treatment for depression and it is important to further establish the effectiveness of MBSR in treating depression, since direct research in this area is limited. In addition, MBSR has only been empirically researched in group formats, so this study will expand MBSR research in administering treatment in an individualized format. Further research is needed to systematically assess BA for the treatment of depressed college students and examine whether treatment gains are maintained for abbreviated BA. This study had four primary aims: 1) investigate whether MBT and BA alleviate depression in college students relative to a WLC group at post-treatment; 2) examine whether MBT and BA reduce self-reported stress, somatic anxiety, and rumination relative to a WLC group; 3) examine whether treatment gains are maintained at 1-month follow-up; and 4) examine whether MBT increases mindfulness compared to BA and the WLC group at post-treatment and 1-month follow-up (i.e., experimental manipulation check).

Study Hypotheses

1) Compared to the WLC condition, participants in MBT and BA would report significantly lower depression at post-treatment.
2) Compared to the WLC condition, participants in MBT and BA would report significantly lower stress, somatic anxiety, and rumination at post-treatment.
3) Compared to the BA and WLC conditions, participants in MBT would have significant increases in mindfulness at post-treatment and 1-month follow-up.

4) Participants in MBT and BA would report high and comparable treatment satisfaction at post-treatment.

5) Treatment gains would be maintained at 1-month follow-up.

CHAPTER 2: METHOD

Participants

Fifty college students with mild to severe depression were recruited through general psychology courses at a Southeastern university and fliers posted around campus. Participants were provided research credit for each meeting and financial compensation ($25 per person) after completing the 1-month follow-up. Using a research participation website and study description emphasizing current feelings of depression as an inclusion variable, participants were initially screened for depression using the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996; M = 31.4, SD = 9.7). Those who experienced at least mild symptoms of depression (BDI-II $\geq$ 14) were invited to attend a more comprehensive (and individual) diagnostic assessment that included a second administration of the BDI-II as well as modules from the Anxiety Disorders Interview Schedule (ADIS-IV; Brown et al., 1994) that included the depression module, as well as screeners for current alcohol and substance dependence and psychosis. To be included in the study, participants had to have mild depression (BDI-II $\geq$ 14) and/or be diagnosed with current MDD without psychosis and current substance dependence. As part of the demographic form, participants also were assessed for current engagement in mindfulness practices, such as yoga, progressive muscle relaxation, and meditation. Participants who practiced such activities (see Table 1) were asked if they were willing to refrain from these practices during the study. No participants declined this request. To be included, participants also were required to either be non-medicated (n = 44; 88%) or stabilized [i.e., same dosage for a minimum of 8 weeks (n = 6; 12%)] on antidepressant and antianxiety medication, and could not be receiving any current psychotherapy or counseling. Therapists recorded antidepressant or antianxiety medication use at each session as well as at the 1-month follow-up meeting. Data

indicated that all six participants continued on the same medication and dosage throughout treatment and follow-up, and there were no participants who were initially non-medicated and began pharmacotherapy during the study. Medication use did not differ as a function of treatment condition [χ^2 (2) = 2.77, p = 0.25].

The final sample included 19 males (38%) and 31 females (62%), with a mean age of 19.2 years (*SD* = 1.67). The majority of participants identified as White/Caucasian (76%) followed by Mixed Race/Ethnicity (10%), Black/African American (4%), Asian American (4%), Indian/Middle Eastern (4%), and Hispanic or Latino/a (2%). Most participants were single (60%), and others were dating (34%), married (4%), or widowed (2%). The sample could be categorized as moderately depressed (BDI-II: *M* = 29.2, *SD* = 10.1), and 66% (*n* = 33) of the sample was diagnosed with MDD as assessed by the ADIS-IV major depression module (Brown et al., 1994). Although there was a trend toward more patients in the MBT group being diagnosed with depression, the proportion of depressed patients within groups did not statistically differ [χ^2 (2) = 5.50, p = 0.07]. Participant demographic characteristics (Table 1) and pre-treatment severity on outcome variables (Table 2) did not differ as a function of treatment condition as assessed via ANOVAs for continuous variables and chi-square analyses for categorical variables.

Assessment Instruments

Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown et al., 1994). The ADIS-IV is a semi-structured interview that comprehensively assesses anxiety, mood, somatoform, substance abuse, and psychotic disorders. For this study only four of the modules were administered: major depression, alcohol abuse, substance abuse, and psychosis. The ADIS-IV has good to excellent reliability and validity (Brown, Di Nardo, Lehman, & Campbell, 2001).

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996b). The BDI–II is a self-report measure that assesses depression severity over the past two weeks and includes 21 items rated on a 4-point Likert scale. Sample items include degree of "sadness" and "loss of pleasure." The scale has excellent internal consistency (α = 0.92 for outpatient samples; 0.93 for nonclinical samples) and one-week test-retest reliability (*r* = .93: Beck, Steer, & Brown, 1996). Convergent validity has been established through strong correlations with the Hamilton Psychiatric Rating Scale for Depression-Revised (*r* = .71). The instrument has excellent psychometric properties among depressed younger and older adults (Nezu, Ronan, Meadows, & McClure, 2000; α = .88; *M* = 29.2, *SD* = 10.1 for the present study).

Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960). The HRSD is a 17-item semistructured interview designed to measure symptom severity in patients with depression. The instrument is the most widely accepted outcome measure for depression and is a standard outcome measure in clinical trials (α = .86; *M* = 14.1, *SD* = 3.7 for the present study).

Beck Anxiety Inventory (BAI; Beck & Steer, 1993a). The BAI is a 21-item measure of cognitive and somatic symptoms of anxiety, with higher scores indicating increased anxiety. Sample items include "unable to relax" and "heart pounding or racing." Good psychometric properties have been demonstrated among college, medical, and psychiatric samples (Antony, Orsillo, & Roemer, 2001; α = .92; *M* = 18.0, *SD* = 11.4 for the present study).

Five-Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ is a 39-item self-report measure of five factors of mindfulness: observing sensations, describing thoughts and feelings, acting with awareness, and non-judging and non-reactivity to inner experiences. The FFMQ has excellent internal consistency (α = .93; Bränström, Kvillemo, Brandberg, & Moskowitz, 2010). The FFMQ facets are positively

correlated with meditation experience (observing, r = 0.35; describing, r = .14; acting, r = .04; non-judging, r = .22; non-reactivity, r = .31; Baer, Smith, Lykins, Button, Krietemeyer, Sauer, et al., 2008) and convergent validity is evident in relations to emotional intelligence (r = .60), self-compassion (r = .53), openness to experience (r = .42), dissociation (r = -.62), absent mindedness (r = -.61), and alexithymia (r = -.68; Baer et al., 2006; α = .76; *M* = 108.9, *SD* = 12.9 for the present study).

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS is a 10-item inventory designed to measure perceived stress over the previous month. The PSS includes items concerning unexpected events, irritating hassles, coping and control. Sample items include, "In the last month, how often have you felt confident about your ability to handle your personal problems?" and "In the last month, how often have you felt that you were on top of things." The PSS has good internal consistency (α = 0.84 - 0.86; Cohen, 1983; α = .81; *M* = 25.2, *SD* = 5.9 for the present study).

Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991). The RRS is part of the Response Style Questionnaire used to assess ruminative responses to depressed mood, with higher scores indicating more rumination (range = 0-88). The RRS consists of 22 items on a Likert-type scale, with values ranging from 1 (almost never) to 4 (almost always). Items such as "go away by yourself and think about why you feel this way" or "try to understand yourself by focusing on your depressed feelings" are used to assess ruminative coping responses. The instrument has adequate two-year test-retest reliability (r = 0.67), good convergent and predictive validity, and good internal consistency (α = .90; Nolen-Hoeksema & Morrow, 1991; Treynor, Gonzalez, & Nolen-Hoeksema, 2003; α = .88; *M* = 55.5, *SD* = 11.0 for the present study).

Client Satisfaction Questionnaire (CSQ; Larsen, Attkisson, Hargreaves, & Nguyen, 1979). The CSQ assesses patient satisfaction with treatment. The scale is an 8-item measure, with higher scores indicating greater treatment satisfaction (range = 0–32). Items are rated on a 4-point Likert scale and assess satisfaction with the kind of service, treatment staff, amount of service, quality of service, outcome of service, and general satisfaction.

Therapy Interventions[1]

Behavioral Activation. The BA manual was modeled after the *Brief Behavioral Activation Treatment for Depression* (BATD; Lejuez, Hopko, & Hopko, 2001) and was reduced to a four-session treatment. This decrease in therapy duration from the original protocol resulted in three fewer weeks of activity scheduling and the omission of behavioral contracting strategies. Also, to make the manual more applicable to college students, some life value areas such as employment/career and political activities were removed from the life value assessment. Otherwise, all elements of the BATD treatment were maintained. All four sessions were approximately 1-hour in duration. The first session involved an explanation of the treatment plan and expectations of the participant. Then, participants engaged in a motivational exercise in which goals and expectations of treatment and pros/cons of changing were discussed. Therapists also educated participants about how practicing new behaviors can alleviate symptoms of depression, and described etiological factors associated with its onset. Participants then were provided with the BA treatment rationale that emphasized the relevance of engaging in value-based activities that elicit a sense of pleasure and accomplishment as a way to combat feelings of depression and low self-esteem. Participants then were guided by the clinician in completing the

Footnote 1: Comprehensive treatment protocols can be provided upon request.

life values assessment. The goal of this exercise was to identify important life domains and corresponding activities that could be targeted for change. The values and goals assessed were: relationships; hobbies/recreation; physical and health issues; spirituality; and psychological/anxiety/avoidance issues. Following this exercise, an activity hierarchy was constructed in which 3 to 4 value-based behaviors were selected for change. Each participant and the therapist collaboratively established structured behavioral goals (frequency and duration), which the participant completed during the week that followed. Each participant used a behavioral checkout form to monitor progress. The therapist and participant discussed how to monitor progress toward completing goals and activities on the behavioral checkout, identified particular contexts (e.g., day, time, place) in which behavioral change might more likely elicit environmental reinforcement, and problem solved around obstacles to change.

During sessions 2 and 3, the therapist and participant reviewed the targeted value-based behaviors selected for change the previous week. They discussed progress toward completing desired goals and activities on the behavioral checkout and identified and resolved any obstacles that prevented compliance with activities. In sessions 2 and 3, the therapist and participant selected 3-4 new structured behavioral goals from the participant's value-based activity hierarchy. The fourth session was identical to sessions 2 and 3 with the exception of assigning approximately 3 new value-based behaviors for change.

Mindfulness-Based Therapy. The Mindfulness-Based Therapy (MBT) protocol was modeled after the MBSR program developed at the University of Massachusetts Medical Center (Kabat-Zinn, 1982; Stahl & Goldstein, 2010). The MBT intervention differed from the original MBSR program in length and duration. The original MBSR program is 8-weeks of 2.5-hour sessions and a one-day retreat. Consistent with BA, in this study MBT consisted of 4-weekly 1-

hour sessions. In addition, MBT was applied in an individualized format compared to the original MBSR group format. The first session involved an explanation of the treatment plan and participant expectations. Then, participants engaged in a motivational exercise in which goals and expectations of treatment and pros/cons of changing were discussed. Therapists also educated participants on how practicing mindfulness could alleviate symptoms of depression. Participants were then provided with the treatment rationale for the MBT that focuses on how mindfulness meditation instills self-regulatory strategies to reduce stress and depressive symptoms (Kabat-Zinn, 1982). This rationale emphasized the relevance of engaging in meditation to bring non-judgmental awareness to the present moment as a way to combat feelings of depression. Participants were then guided by the clinician in a mindfulness eating exercise to bring awareness to the present moment and attend to the sensations of eating. Next, the therapist led the participant in a mindfulness check-in to bring awareness to the present moment and recognize physical, cognitive, and emotional responses. The participant was then guided in a sitting meditation to practice focused non-judgmental awareness. At the end of each meditation exercise, the therapist and participant discussed patient experiences with a focus on emotions, physical sensations, and cognitions.

The second session consisted of a mindfulness check-in and body scan meditation. The mindfulness check-in exercise was the same as that introduced in the first session. Next, the therapist and participant discussed the meditation practices assigned for the previous week, including the frequency of meditation, any obstacles to completion, and the meditation experience. Then the participant was guided in a body scan meditation focusing on each part of the body to notice sensations, feelings, and thoughts as they arose. At the end of each meditation

exercise, the therapist and participant discussed what the patient observed in terms of physical, emotional, and cognitive reactions.

During the third session, the participant engaged in a mindfulness check-in and discussed meditation practices assigned for the previous week, including frequency of meditation practice and the meditation experience. Next, the participant was guided in a walking meditation involving walking slowly with non-judgmental awareness. At the end of each meditation exercise, the therapist and participant discussed patient observations and reflected on emotions, physical sensations, and cognitions.

The fourth session included a mindfulness check-in followed by discussing homework and practicing slow yoga movements. The participant engaged in 12 Hatha yoga postures, holding each pose for approximately one minute. This practice involved gentle stretching while paying attention to subtle movements in the body as well as sensations, feelings, and thoughts that arose moment to moment. At the end of every MBT session, the participant received a CD (and one handout at session 4 with yoga poses) that had the guided meditation practices taught that session.

Wait-List Control Condition. Participants in the wait-list condition attended the initial meeting in which the comprehensive assessment was completed. After measures were completed, participants were randomized to either an active treatment group or the wait-list control (WLC). WLC participants were informed they would be offered BA and/or MBT at the end of the study. Participants in the WLC group attended the post-treatment and 1-month follow-up assessments.

Therapists and Treatment Fidelity

Three advanced clinical psychology (doctoral) students served as study clinicians. All therapists were skilled in the administration of both BA and MBT and were trained by the principal investigator (DH) to administer these treatments. In addition, all clinicians had previously been enrolled in the comprehensive 8-week MBSR program. Based on randomization procedures, therapists treated patients in both the BA and MBT conditions. To ensure competent provision of both interventions, all sessions were audio taped and therapists met for supervision sessions with the principal investigator (DH). Including patients completing their respective intervention and those discontinuing treatment, a total of 131 therapy sessions were conducted across treatment conditions. A total of 23% of these tapes (n = 30) were selected randomly for ratings of therapist competence and adherence by an independent evaluator with expertise in cognitive-behavior therapy (S.D.H., M.A.). Ratings were made on 0- (no adherence/competence) to 8- (complete adherence/competence) point scales on a session-by-session basis, with ratings based on adherence and ability in completing session objectives highlighted in the respective treatment manuals. Ratings indicated high therapist adherence (BA: M = 7.1; SD = 0.6; MBT: M = 7.3; SD = 0.8) and competence (BA: M = 6.7; SD = 0.9; MBT: M = 6.9; SD = 0.7) in administering both protocols, with no significant differences in adherence [F (1, 29) = 0.64, p = 0.36] or competence [F (1, 29) = 0.48, p = 0.55] as a function of intervention.

Response and remission criteria. Consistent with methods highlighted in previous trials of behavioral activation (Dimidjian et al., 2006), response represented significant symptomatic improvement, whereas remission represented improvement to the point of being asymptomatic within normal range. On the HRSD and BDI-II, response was defined as at least 50% reduction from baseline. Remission was defined as scores $\leq$ 7 on the HRSD and $\leq$ 10 on the BDI-II.

Procedure

As indicated on the CONSORT Figure, following the comprehensive assessment, participants were randomly assigned to BA (n =16), MBT (n = 20), or the WLC (n = 14). Participants in treatment groups attended 4 individualized, weekly1-hour therapy sessions. Participants in the WLC received no active intervention and were assessed at similar time intervals (i.e., post-treatment, 1-month follow-up). Patients assigned to BA or MBT underwent treatment as described. Participants in both treatment groups completed the BDI-II following each session. At session five (post-treatment), all participants completed the full battery of self-report measures, were administered the ADIS-IV depression module, patients in treatment groups completed the client satisfaction questionnaire (CSQ), and therapists completed the HRSD. At the 1-month follow-up assessment, identical measures were administered with the exception of the CSQ.

CHAPTER 3: RESULTS

Treatment Outcome Data

As presented in Table 3, all clinical variables were initially examined with mixed-model ANOVA's [between subjects: treatment condition; within subjects (time): pre-treatment, post-treatment, 1-month follow-up]. The clinical significance of pre-post differences was assessed using Cohen's *d* statistic (using the pooled standard deviation), where effect sizes of .2, .5, and .8 are considered small, medium, and large, respectively. For the 50 patients in the study, available data were as follows: post-treatment (n = 46: i.e., 4 patients lost to attrition) and 1-month FU (n = 44). Due to low patient attrition (i.e., 8% at post-treatment; 12% at one-month follow-up), the decision was made to not utilize multiple imputation (MI) strategies to replace missing values. As noted earlier, finding no significant group differences on demographic and pre-treatment clinical variables, no covariates were used in data analyses. As reported in Table 3, there were significant group x time interactions across all outcome measures with the exception of somatic anxiety as measured by the BAI. Significant pre-post treatment improvement was observed on measures of self-reported (BDI-II) and clinician rated depression (HRSD), perceived stress (PSS), rumination (RRS), and mindfulness (FFMQ). Based on post-hoc LSD tests, for all outcome variables with the exception of the FFMQ, BA and MBT were associated with significant (and comparable) pre- to post-treatment gains that were not observed in the WLC group. For the FFMQ, the MBT group had significant increases in mindfulness at post-treatment compared to both BA and the WLC. At 1-month follow-up, treatment gains were maintained for both treatment groups on all outcome variables with the exception of the FFMQ, where treatment gains decreased to baseline levels. Also of high relevance, treatment improvements were clinically significant as indicated by large effect sizes on all outcome measures (d = 0.72 to 1.07)

with the exception of the BAI (d = 0.25). Important to note, based on a series of ANCOVA's that controlled for baseline medication, there were no significant differences in outcomes at post-treatment as a function of whether patients were medicated or non-medicated with antidepressant or anti-anxiety medications at pre-treatment. Finally, participants in BA (M = 26.79, SD = 3.91) and MBT (M = 29.35, SD = 2.50) reported strong treatment satisfaction, with those treated with MBT reporting increased satisfaction [F (1, 29) = 4.92, p < .05].

Treatment Response and Remission. Categorical response and remission rates for the BA, MBT, and WLC groups at post-treatment also were calculated. As presented in Figure 2, overall combined rates of response and remission based on the BDI-II were 64% (n = 9) in BA, 56% (n = 10) in MBT, and 25% (n = 3) in the WLC. Treatment response and remission was significantly higher in the BA and MBT groups relative to the WLC [X^2 (2) = 6.89, p < .05]. As presented in Figure 3, overall combined rates of response and remission based on the HRSD were 79% (n = 11) in BA, 78% (n = 14) in MBT, and 33% (n = 4) in the WLC. Consistent with BDI-II data, treatment response and remission was significantly higher in the BA and MBT groups relative to the WLC [X^2 (2) = 8.31, p < .05].

Diagnostic Assessment. As a final index of BA and MBT treatment efficacy, individuals diagnosed with MDD at the pre-treatment assessment (ADIS-IV; Brown et al., 1994) were examined at post-treatment and 1-month follow-up. At post-treatment, participants in BA (71%) and MBT (87%) no longer met diagnostic criteria for MDD, which was significantly greater than the 29% of WLC patients who no longer met diagnostic criteria [X^2 (2) = 7.55, p < .05]. At 1-month follow-up, 71% of participants in BA and 73% in MBT no longer met diagnostic criteria for MDD. These remission rates were not significantly greater than the 43% of WLC patients who no longer met diagnostic criteria [X^2 (2) = 2.11, p = .35].

CHAPTER 4: CONCLUSION

Discussion. Major depression is highly prevalent in college students (American College Health Association, 2010; Gallagher, 2007) and associated with significant academic problems and decreased quality of life (Califano, 2003; Fazio & Palm, 1998; Pritchard & Wilson, 2003). Nonetheless, this population has been largely understudied in recent treatment-outcome research. The primary aim of this study was to evaluate the efficacy of abbreviated (4-week) BA and MBT treatments for depressed college students relative to a wait-list control condition. This study represents the only randomized controlled trial of BA and MBT to date (Hofmann, Sawyer, Witt, & Oh, 2010; Hopko et al., 2011) and also is the first assessment of these interventions among depressed college students. The treatments were designed for implementation on a college campus (i.e., uncomplicated, brief, feasible), and the sample was demographically similar to students typically presenting at our psychology clinic for services.

The major finding was that both BA and MBT were effective in reducing depression, stress, and rumination at post-treatment, with strong therapist competency and adherence, and treatment gains associated with strong effect sizes. Structured diagnostic assessment of depression also revealed that both interventions more frequently resulted in remission of clinical depression relative to the control group, and depending on the assessment measure and based on traditional response and remission criteria, approximately 56-79% of participants exhibited clinically significant improvement. Treatment gains largely were maintained at 1-month follow-up, providing preliminary support that both brief BA and MBT may elicit enduring treatment effects. There also was strong treatment satisfaction across both interventions, with some evidence suggesting patient preference for MBT strategies relative to BA. Although only speculation at this stage, this finding could be attributable to the more active in-session

interaction between therapist and patient in MBT, allowing for increased therapeutic rapport and satisfaction. Alternatively, MBT treatment components focused on increasing present-focused nonjudgmental awareness may be more appealing than the process of value assessment and structured activity scheduling. In any event, such a preliminary finding requires replication in future research. Contrary to study hypotheses, BA and MBT did not effectively decrease somatic anxiety at post-treatment. This result indicates that although perceived stress is reduced, more systematic inclusion of specific anxiety reduction strategies may be warranted to reduce the somatic features of anxiety, such as abdominal breathing, progressive muscle relaxation, and biofeedback. Finally, results demonstrated that MBT increased mindfulness compared to BA and the control group at post-treatment, which lends some support to the notion that (overall) symptom improvement in MBT was related to learning and practicing mindfulness skills. Self-reported mindfulness decreased to baseline levels at one-month follow-up; however, suggesting increased focus on discussing the importance of continued practice of MBT skills may be necessary at post-treatment.

Study findings are highly provocative and clinically relevant, yet also are associated with some important limitations. First, the majority of the sample was Caucasian undergraduate students recruited through general psychology courses. Accordingly, these students may not be representative of the college student population on some important motivational variables in that they were not initially treatment seeking. Second, future research with more heterogeneous samples is needed, both demographically and clinically. Co-existent anxiety disorders were not systematically assessed for example, the presence of which might impact the efficacy of the interventions. Third, even though study hypotheses largely were supported, the sample size was small. This methodological issue could have contributed to limited support for treatments in

decreasing anxiety, particularly in the context of prior research indicating that both BA (Hopko et al., 2008, 2011; Jakupcak et al., 2006; Ly et al., 2014) and MBSR may effectively decrease anxiety (Bränström, Kvillemo, Brandberg, & Moskowitz, 2010; Chiesa & Serretti, 2009; Hofmann et al., 2010; Ledesma & Kumano, 2009). The limited support of interventions toward reducing anxiety could be a reflection of the smaller sample, briefer treatment formats, or assessment of anxiety via the BAI rather than a broader measure of anxiety. Fourth, although participants reported homework completion, it is possible they may not have reported information accurately or honestly. Future research might benefit by more precise reporting procedures, such as electronic recorders with timestamps or another advanced documentation system. Fifth, significant efforts were made to increase external validity by including students who were severely depressed, suicidal, may have had comorbid psychological diagnoses in addition to MDD, and could have been taking medication as long as they were stabilized. Exclusion of students who were alcohol or substance dependent may have resulted in inadvertently excluding people more apt to be treatment resistant to BA or MBT. Sixth, the ADIS-IV depression module was used to assess MDD and additional modules were utilized for exclusion criterions. Only these modules were administered for pragmatic reasons (i.e., limiting participant burden). The study design could have been strengthened by administering the full ADIS-IV or the comprehensive Structured Clinical Interview for DSM-IV-Patient Version (SCID-I/P; First, Spitzer, Gibbon, & Williams, 1996) that would have allowed for a more extensive diagnostic assessment of the sample. Finally, with the rationale of continuity of care and a desire to mimic actual psychotherapy experiences for college students, treating clinicians conducted both assessments and respective interventions and thus were not blind to treatment conditions. Although theoretically this might only bear relevance for the clinician-rated HRSD,

independent evaluators blind to treatment condition would have strengthened the research design.

In the context of these limitations, the abbreviated BA and MBT interventions were associated with significant reductions in depression, perceived stress, and rumination. While these findings require replication, data suggest a shortened format of BA and MBSR (i.e., MBT) could effectively and efficiently reduce depression in college students. These results also may have important practical implications given that college counseling centers typically have a high volume of students with psychological needs combined with time constraints and a lack of mental health professionals to accommodate the demands (Gallagher, 2010; Kitzrow, 2003; Voelker, 2003). In addition to their utilization with depressed college students, these time-efficient treatments may serve as effective and proactive interventions for students at risk of experiencing increased psychological distress and poorer quality of life in response to a changing environment. Accordingly, given the stress, potential deficiency of coping skills, and new responsibilities and adjustment issues that come with transitioning to college, it will be useful to examine whether BA and MBT administered at college entrance reduces the likelihood of future psychological distress and facilitates academic performance.

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APPENDIX

Table 1

Participant Characteristics Across Treatment Conditions

Characteristics	Mindfulness-Based Therapy (n = 20)	Behavioral Activation (n = 16)	Wait-List Control (n = 14)
Age	19.3 years (*SD* = 1.9)	19.3 years (*SD* = 1.5)	19.0 years (*SD* = 1.5)
Gender	Female = 12, Male = 8	Female = 11, Male = 5	Female = 8, Male = 6
Marital status			
Single	15 (75%)	6 (38%)	9 (64%)
Dating	3 (15%)	9 (56%)	5 (36%)
Married	1 (5%)	1 (6%)	0 (0%)
Widow/Widower	1 (5%)	0 (0%)	0 (0%)
Ethnicity			
White/Caucasian	16 (80%)	14 (88%)	8 (57%)
Black/African American	1 (5%)	0 (0%)	1 (7%)
Hispanic/Latino	1 (5%)	0 (0%)	0 (0%)
Asian American	0 (0%)	1 (6%)	1 (7%)
Indian/Middle Eastern	0 (0%)	1 (6%)	1 (7%)
Mixed Ethnicity	2 (10%)	0 (0%)	3 (22%)
Sexual Orientation			
Heterosexual	17 (85%)	14 (88%)	13 (93%)
Gay	2 (10%)	0 (0%)	0 (0%)
Lesbian	0 (0%)	1 (6%)	1 (7%)
Bisexual	0 (0%)	1 (6%)	0 (0%)
Asexual	1 (5%)	0 (0%)	0 (0%)
Family Income			
Less than $20,000	4 (20%)	3 (19%)	2 (14%)
$20,000 - $40,000	2 (10%)	2 (12%)	2 (14%)
$40,000 - $60,000	1 (5%)	3 (19%)	2 (14%)
$60,000 - $80,000	4 (20%)	4 (25%)	4 (29%)
$80,000 – 100,000	2 (10%)	3 (19%)	3 (22%)
More than $100,000	7 (35%)	1 (6%)	1 (7%)
Prior Mindfulness Practices			
Yoga	1 (5%)	2 (12%)	0 (0%)
Meditation	3 (15%)	1 (6%)	1 (7%)
Progressive muscle relaxation	1 (5%)	1 (6%)	1 (7%)
Reiki, energy healing or Chakra healing	0 (0%)	0 (0%)	0 (0%)
Guided imagery	0 (0%)	0 (0%)	0 (0%)
Self-hypnosis	0 (0%)	0 (0%)	1 (7%)

Table 2

Pre-treatment Outcome Measures as a Function of Group

	Pre-treatment		Time x Group (*F*)	Sig. (*p*)
Outcome measures and group	*M*	*SD*		
BDI-II				
BA	27.06	6.85	0.51	0.61
MBT	30.30	10.81		
WLC	30.00	12.42		
PSS				
BA	23.75	5.59	0.70	0.50
MBT	25.85	6.77		
WLC	25.93	5.03		
RRS				
BA	53.13	9.10	1.01	0.37
MBT	55.10	11.41		
WLC	58.79	12.34		
HRSD				
BA	13.81	3.49	0.13	0.88
MBT	14.00	4.38		
WLC	14.50	2.95		
BAI				
BA	17.50	12.80	0.03	0.97
MBT	18.00	9.62		
WLC	18.57	12.79		
FFMQ				
BA	110.63	11.25	0.32	0.73
MBT	107.20	13.57		
WLC	109.36	14.36		

Note. BDI-II = Beck Depression Inventory; PSS = Perceived Stress Scale; RRS = Ruminative Response Scale; HRSD = Hamilton Rating Scale for Depression; BAI = Beck Anxiety Inventory; FFMQ = Five-Facet Mindfulness Questionnaire; BA = Behavioral Activation; MBT = Mindfulness-Based Therapy; WLC = Wait-List Condition. Degrees of freedom = 2, 49 for all analyses.

* $p < .05$. ** $p > .01$.

Table 3

Treatment Outcome as a Function of Group

	Pre-treatment		Post-treatment		1-month follow-up		Time x Group (*F*)	Effect size (*d*)
Outcome measures and group	*M*	*SD*	*M*	*SD*	*M*	*SD*		
BDI-II								
BA	27.21	7.17	13.93	10.15	11.57	10.24	2.81*	0.74
MBT	29.67	9.81	16.50	12.80	16.72	15.98		
WLC	30.17	13.16	25.50	11.83	23.08	13.91		
HRSD								
BA	13.93	3.71	6.57	4.47	4.50	4.40	5.92**	1.07
MBT	14.44	4.34	7.44	5.24	7.06	5.98		
WLC	14.67	2.81	13.08	4.85	11.83	5.81		
PSS								
BA	24.00	5.95	19.14	5.89	17.50	3.94	2.68*	0.72
MBT	25.50	6.99	20.44	8.16	18.06	5.33		
WLC	25.92	4.83	25.00	4.47	25.92	2.57		
RRS								
BA	51.43	8.41	42.50	10.73	39.43	16.52	2.83*	0.74
MBT	54.33	11.48	43.94	13.46	44.67	15.10		
WLC	57.50	12.28	57.17	8.39	57.08	10.53		
FFMQ								
BA	109.93	10.67	113.00	12.76	95.29	13.66	2.65*	0.72
MBT	107.67	12.69	119.61	20.06	104.78	15.79		
WLC	109.00	15.57	108.92	14.29	85.58	19.43		
BAI								
BA	15.86	10.50	12.21	8.63	9.43	7.76	0.31	0.25
MBT	17.50	9.97	12.06	8.91	11.39	10.40		
WLC	18.92	13.27	16.05	9.19	14.08	12.33		

Note. BDI-II = Beck Depression Inventory; PSS = Perceived Stress Scale; RRS = Ruminative Response Scale; HRSD = Hamilton Rating Scale for Depression; FFMQ = Five-Facet Mindfulness Questionnaire; BAI = Beck Anxiety Inventory; BA = Behavioral Activation; MBT = Mindfulness-Based Therapy; WLC = Wait-List Condition. Degrees of freedom = 4, 82 for all analyses.

* $p < .05$. ** $p > .01$.

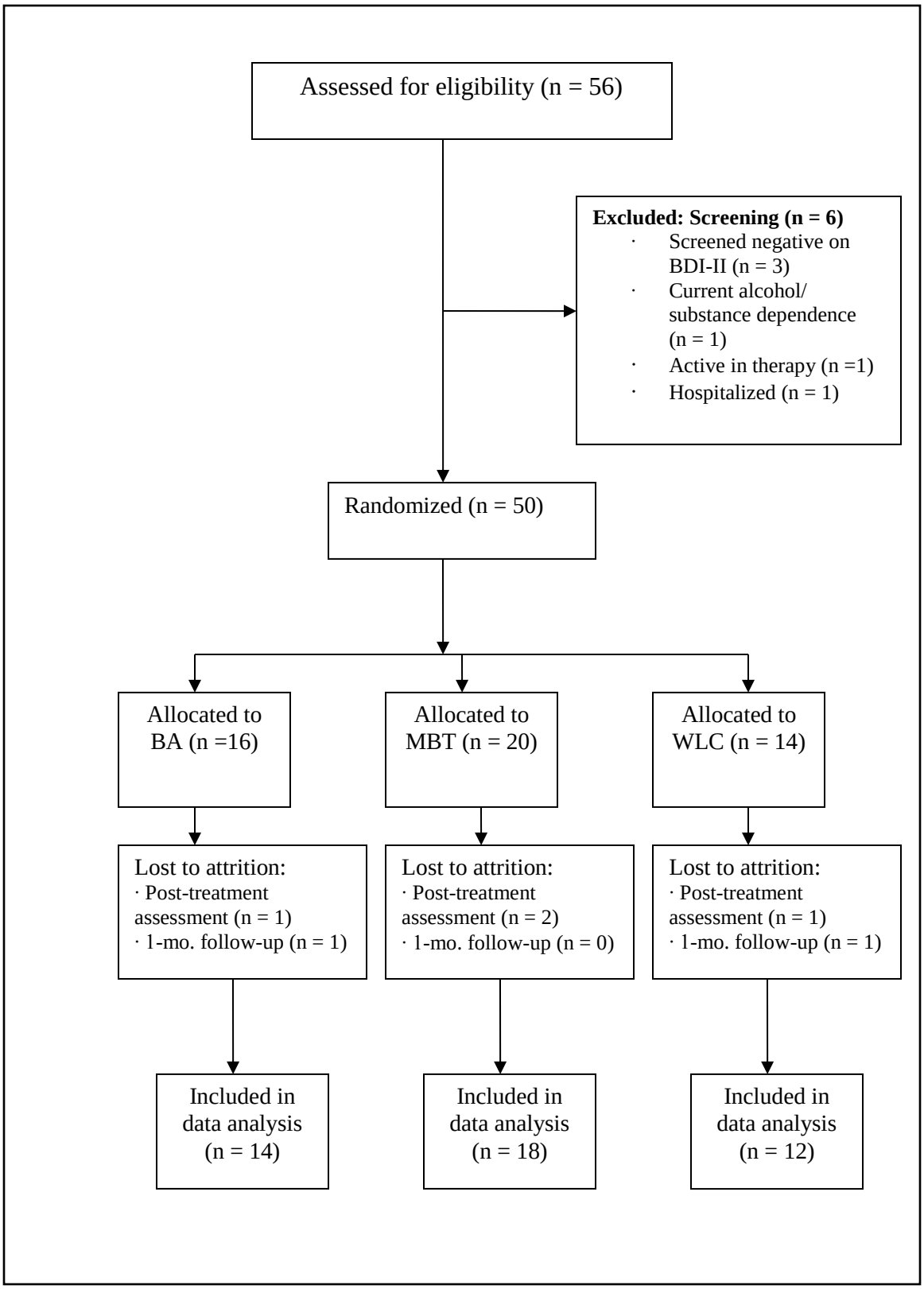

Figure 1. Consort

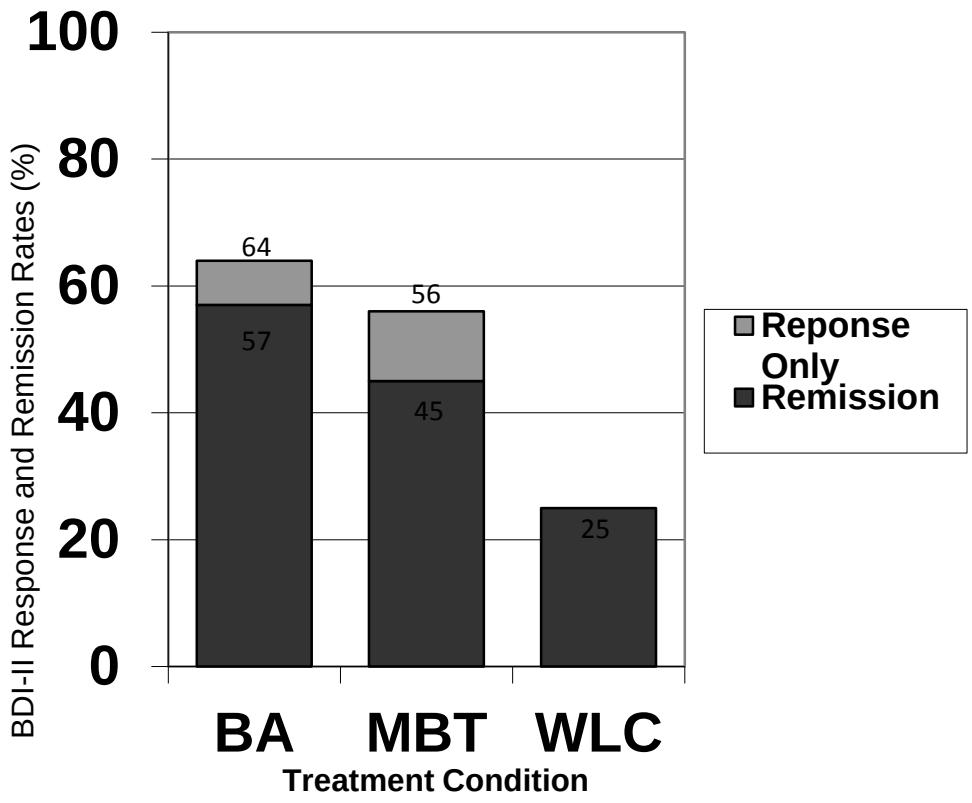

Figure 2. BDI-II Response and Remission Rates

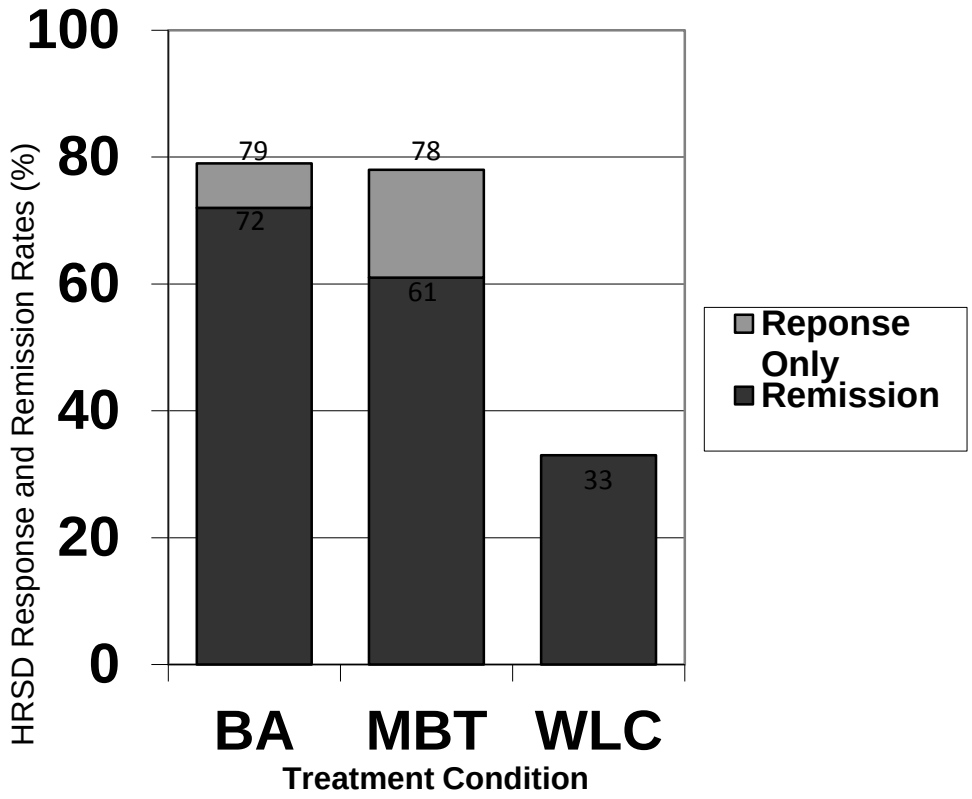

Figure 3. HRSD Response and Remission Rates

VITA

Crystal Constance McIndoo was born in Huntington Beach, CA. She earned her Master of Science in Clinical Psychology at California State University, Fullerton in 2010 and received her Doctor of Philosophy in Clinical Psychology at the University of Tennessee in 2015. She practiced as a therapist in training at the UT Psychological Clinic (Knoxville, TN) and Cherokee Health Systems (Powell, TN). She graduated with high honors from California State University, Fullerton (2010) and completed a practicum traineeship at Counseling and Psychological Services (Fullerton, CA). Her research and clinical interests include utilizing behavioral, cognitive, and mindfulness approaches in the treatment of mood and anxiety disorders, and co-comorbid health conditions. She conducts treatment outcome research on the efficacy of behavioral activation and mindfulness-based-stress-reduction interventions to treat clinical depression and anxiety. As of June 24, 2015, Crystal has completed her internship at the Portland Veterans Affairs Medical Center (Portland, OR).