

Running head: DBT SKILLS GROUP IN PRIMARY CARE

IMPLEMENTING A DIALECTICAL BEHAVIOR THERAPY GROUP  
INTERVENTION IN A PRIMARY CARE SETTING: A FEASIBILITY AND  
ACCEPTABILITY STUDY

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DBT SKILLS GROUP IN PRIMARY CARE

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## ABSTRACT

Research shows that people in the United States are more likely to seek mental health treatment from primary care providers than mental health specialists. Incorporating effective transdiagnostic psychological interventions in integrated behavioral health settings that can address a variety of presenting problems across clinical severity can reduce burden on primary care clinics and increase the accessibility of evidence-based treatments. Dialectical Behavior Therapy (DBT) is a comprehensive treatment originally developed to treat borderline personality disorder and suicidality whose skills teachings have been adapted to meet the needs of various clinical populations. Research shows that DBT skills-only interventions have been effectively delivered in diverse settings within transdiagnostic populations, but have never directly been researched in primary care settings. This year-long pilot study aimed to test the feasibility and acceptability of a modified DBT skills-only group intervention in an integrated behavioral health setting. DBT skills groups were open enrollment and rolling admissions, and ran continuously for 50 weeks. Results showed that the intervention was feasible and acceptable, with high ratings of enjoyment, skill helpfulness, and skills practice across weekly and post-treatment measures. Mindfulness skills were indicated by both quantitative and qualitative measures to be the most helpful and frequently used skills by participants. Paired t-tests showed clinically significant reductions in participant somatization, depression, rumination and emotion dysregulation and significant increases in participant skills use, with small – medium effect sizes in the intent-to-treat sample (N=35) and medium – large effect sizes in the subset of the sample that received an adequate dose of the intervention (N=16). HLM demonstrated a clinically significant effect of time on

decreases in weekly somatization, depression, and anxiety symptoms. Data indicate the clinical utility of using DBT skills as a transdiagnostic group intervention in primary care settings.

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## Introduction

Research estimates that between 18 – 25% of the United States population meets criteria for a mental health disorder annually (Kessler et al., 2005). However, only half of the people who have a diagnosable mental health disorder seek treatment (Kessler et al., 2005). When people do decide to seek treatment for psychological problems, approximately 70% will go to their primary care provider (PCP) for services (Regier et al., 1993), suggesting that only about 30% of people in distress look to mental health providers in specialty psychological or psychiatric settings to address their concerns with psychological treatment. More recent studies confirm that the majority of people seeking mental health services do so from their medical providers, and that this trend has increased over time (Olfson, 2016; Wang et al., 2005; Wang et al. 2006). Reluctance to seek treatment from specialty providers is more pronounced in minority communities, who are significantly more likely to look to PCPs when experiencing mental health symptoms compared to white patients (Sadock, Perrin, Grinnell, Rybarczyk, & Auerbach, 2017; Snowden, 2001). Barriers such as treatment affordability, lack of health insurance coverage, availability of mental health specialists, and stigma about mental health services are likely contributors to people reaching out to their PCPs for help instead of mental health specialists (Olfson, 2016; Walker, Cummings, Hockenberry, & Druss, 2015).

While primary care practices have improved methods for screening for anxiety and depression during doctor's visits, many mental health symptoms may go undetected by primary care providers with limited mental health training, especially in minority patients presenting with mental health symptoms (Ashton et al., 2003, Sadock, Perrin, Grinnell, Rybarczyk, & Auerbach, 2017; Stockdale, Lagomasino, Siddique, McGuire, & Miranda, 2008). When primary care providers do detect mental health symptoms and want to refer patients to specialty mental health

care, there are substantial barriers that result in patients not following up with referrals. Approximately 54% - 66% of primary care physicians have reported significant problems arranging outpatient mental health referrals for patients needing additional services (Cunningham, 2009; Trude & Stoddard, 2003). Structural barriers such as lack of adequate health insurance and high treatment cost account for 70% of adults with mental illness not pursuing specialty treatment, suggesting that when doctors do recommend outpatient referrals there are often no affordable options that are realistic for patients to pursue (Walker, Cummings, Hockenberry, & Druss, 2015). In fact, the majority of uninsured and underinsured individuals with mental health concerns report that they would like to seek specialty treatment if it were financially feasible (Walker, Cummings, Hockenberry, & Druss, 2015), leaving both primary care providers and patients wanting the patient to receive mental health treatment without viable referral options.

This results in many patients being treated solely with pharmacological strategies by primary care providers with limited mental health training, leaving patients without exposure to other therapeutic interventions (Vogel, Kanzler, Aikens, & Goodie, 2017). Therefore, primary care has long been considered by many the “de-facto,” mental health system (Regier et al., 1993) with the primary care providers having no specific expertise and often offering pharmacological solutions to presenting problems.

### **Common Mental Health Presentations in Primary Care**

Research estimates that 19.5% – 27% of primary care patients present with a depressive disorder in primary care (Kroenke, Spitzer, Williams, Monahan, & Lowe, 2007; Tamburrino,

Lynch, Nagel, & Smith, 2009). Depression is particularly important to address in the primary care setting, as depression negatively affects medical health outcomes, and people who are depressed are three times more likely to be non-compliant with medical health recommendations (DiMatteo, Lepper, & Croghan, 2000). Anxiety is also prominent in primary care settings, with 19.5% of primary care patients presenting with at least one anxiety disorder (Kroenke, Spitzer, Williams, Monahan, & Lowe, 2007), and anxious patients being more likely to be higher utilizers of healthcare resources and prescription medications (Kertz & Woodruff-Borden, 2011).

While depression and anxiety are the most prevalent mental health problems to be addressed directly by primary care providers via pharmacological interventions, patients with more severe psychopathology are also likely to be high utilizers of services in primary care settings. Studies estimate that one-quarter of primary care patients diagnosed with Major Depressive Disorder screened positive for bipolar symptomatology on a self-report form (Olfson et al., 2005), and that when formally assessing patients who met criteria for Major Depressive Disorder, 18.2% of those patients met criteria for Bipolar II Disorder and 2.8% met criteria for Bipolar I Disorder (Manning, Haykal, Connor, & Akiskal, 1997). Patients with Bipolar Disorder are often misdiagnosed in primary care settings and treated solely for their depressive symptoms with antidepressants (Cerimele, Chwastiak, Chan, Harrison, & Unutzer, 2013). Additionally, patients with Borderline Personality Disorder tend to be higher utilizers of primary care and medical specialty providers, with estimates of 6% of patients meeting criteria for BPD (Gross et al., 2002) and 26% of patients with a current Major Depressive episode meeting criteria for BPD (Riihimaki, Vuorilehto, & Isometsa, 2014) in a primary care setting. Additionally, 6-9% of primary care patients meet criteria for PTSD (Craske et al., 2011; Gillock, Zayfert, Hegel, & Ferguson, 2005), with 23% prevalence rates among patients with chronic pain, depression,

anxiety, substance dependence, irritable bowel syndrome, or immigrant status (Liebshutz et al., 2007).

Therefore, primary care is not only a setting where people with mild anxiety or depression symptoms come for first line treatment. Patients with more severe psychopathology, who tend to have poorer health outcomes, lower functioning, and higher healthcare utilization cost, are likely visiting their PCPs quite often as a function of their psychopathology and poor management of comorbid medical conditions. PCPs who may feel comfortable prescribing for anxiety and depressive presentations likely do not have adequate training to identify, diagnose, and provide appropriate interventions for these disorders, which can result in patients being misdiagnosed and without the proper treatment.

### **Integrated Behavioral Health Model**

Integrated behavioral health initiatives aim to bring mental health services on-site to primary care settings to increase access to evidence-based mental health treatment and reduce burden on primary care providers. Behavioral health integration can take many forms, with many settings having behavioral health consultants on-site to facilitate “warm-handoffs,” in which primary care providers refer to the behavioral health consultants directly during a medical visit. Additionally, behavioral health consultants often provide ongoing evidence-based treatment on-site (Bridges et al, 2013, Weisberg & Magidson, 2014).

Delivery of psychological services in integrated behavioral health settings have demonstrated efficacy in many clinical randomized controlled trials, with several meta-analyses proving various short-term treatments such as cognitive behavioral therapy, interpersonal therapy, and problem solving therapy as being effective in reducing symptoms of anxiety and depression and often improving health outcomes (Bortolotti, Menchetti, Bellini, Montaguti, &

Berardi, 2008; Cape, Whittington, Buszewicz, Wallace, & Underwood, 2010; Twomey, O'Reilly, & Byrne, 2015; Wolf & Hopko, 2008). In these randomized controlled trials, providers of the interventions typically followed a set clinical protocol over a delineated number of sessions and had inclusion/exclusion criteria for certain mental health disorders. However, real-world primary care settings often are under-resourced and cannot provide systematic manualized interventions as comprehensively and adherently as demonstrated in these trials.

While some integrated behavioral health settings have the resources to offer more comprehensive treatment, most settings typically see patients for approximately 4 sessions each in order to maximize the number of patients seen (Sadock, Perrin, Grinnell, Rybarczyk, & Auerbach, 2017), with the goal often being enhancing patient functioning rather than symptom remission (Robinson & Reiter, 2007). Behavioral health providers typically engage with patients by doing a brief functional assessment of a patient's presenting source of distress, and quickly implement interventions such as psychoeducation, behavioral activation, relaxation techniques, and exposures based on initial impressions of symptom presentation (Bridges et al., 2015). This approach looks less similar to what is traditionally seen in specialty mental health clinics, bypassing clinical intervention staples such as comprehensive intakes, formal diagnosis, adherence to a particular treatment protocol, and a full course of treatment to fully address presenting problems (Shepardson, Funderbuck, & Weisburg, 2016; Weisberg & Magidson, 2014).

Effectiveness research suggests that there are psychological benefits to the integrated behavioral health model in real world settings, although many of these studies are lacking control groups and longitudinal data to confirm longevity of positive outcomes. Sadock, Perrin, Grinnell, Rybarczyk, & Auerbach (2017) found significant decreases in self-report measures (PHQ-9 and

GAD-7) after just two behavioral health sessions. McFeature and Pierce (2012) found that half of their patients showed a 50% reduction in their self-reported distress (PHQ-9) and 80% of their patients showed at least a 5 point decrease on self-reported distress after brief behavioral interventions. Bryan et al. (2012) found that 71% of patients demonstrated some improvement and 40% of patients demonstrated statistically significant improvements, with patients who had more severe symptom presentations improving more quickly. Ray-Sannerud et al. (2012) saw that improvements were maintained after two years of receiving brief interventions in the 10.5% of patients who were reachable for follow-up.

Studies such as these demonstrate that there is benefit to this integrated behavioral health model, with large amounts of patients responding to the brief, consolidated interventions being provided. However, these studies also highlight the fact that these interventions are not designed to be comprehensive. In this model, patients often exhibit symptom reduction but not symptom remission, and many patients in the studies do not respond to the interventions in a significantly notable way. Additionally, these studies primarily focus on depression and anxiety, and do not take into account patients who are presenting with other forms of psychopathology that present in a primary care setting.

Many comprehensive medical systems that do have well-resourced specialty mental health clinics have also adopted an integrated behavioral health model in their primary care settings. For example, The Veteran's Affairs Health Care System has made it a priority to adopt integrated behavioral health services despite having a robust system of specialty mental health care that veterans can access. The benefits of the integrated model embedded into their larger hospital system include detection of mental health symptomatology from non-treatment seekers, increased likelihood that the veterans will follow through with an initial referral and receive



services on site, and ability for medical and mental health professionals to collaborate (Zeiss & Karlin, 2008). This model is successful at screening for mental health disorders and providing targeted behavioral interventions on site. Additionally, this model allows for patients who need comprehensive treatment to be referred to an appropriate specialty location. However, many smaller, private settings do not have the benefit of having affordable and accessible specialty mental health care on site. This has the potential to leave integrated behavioral health systems treating patients with complex mental health presentations who need more intensive services and cannot access them because of structural barriers.

### **Incorporating Transdiagnostic Interventions in Primary Care**

Considering the broad range of symptom presentation and severity in a primary care setting as well as the short time-frame allotted to provide interventions, Shepardson, Funderbuck, and Weisburg (2016) suggest that transdiagnostic approaches may meet the unique needs of behavioral health consultants in this setting. The implementation of transdiagnostic group interventions in the primary care setting may provide additional benefits by allowing behavioral health consultants to see more patients at one time, extend the amount of time each patient has in treatment to learn and apply interventions, and provide more long-term interventions for patients with complex symptom presentations. A group such as this may be offered in lieu of individual behavioral health interventions or in addition to individual sessions for people who need a higher level of care, increasing the ability for behavioral health providers to allocate more resources to patients with complex presentations. Groups can also allow behavioral health consultants to spend the amount of time necessary to provide psychoeducational and experiential practice to patients who may need more than brief sessions to understand and integrate intervention strategies into their daily lives.

Cognitive behavioral transdiagnostic group interventions that have been implemented in primary care settings have shown preliminary evidence to be acceptable, feasible, and effective in reducing mental health symptomatology among participants with a wide range of anxiety and depressive disorders (Aguilera, Bruelhman-Senecal, Liu & Bravin, 2018; Ejeby et al., 2014; Kristjansdottir et al., 2016). Additionally, acceptance and mindfulness-based group interventions have been associated with decreases in symptoms of anxiety and depression in primary care settings (Fuchs et al., 2016). While there is preliminary evidence that transdiagnostic group interventions might be an effective solution to meet the unique barriers to treatment implementation in primary care settings, there are only a few studies that demonstrate the acceptability and effectiveness of these interventions in primary care, and they focus solely on anxiety and depression presentations.

### **DBT as a Transdiagnostic Group Intervention in Primary Care**

Dialectical Behavior Therapy (DBT) is an evidence-based treatment that was initially developed to treat Borderline Personality Disorder and suicidality (Linehan, 1993). Traditional DBT is delivered in a comprehensive format with four components including weekly individual sessions, weekly 2-hour group sessions focused on skills teaching, as needed phone coaching, and consultation team for DBT practitioners. However, DBT skills-only groups have been adapted to address a large variety of presenting problems while being delivered outside of the comprehensive DBT model (ie individual DBT treatment, phone coaching, consultation team) including for samples with chronic Major Depressive Disorder (Feldman, Harley, Kerrigan, Jacobo, & Fava, 2009), Binge Eating Disorder (Telch, Agras, & Linehan, 2000), Bipolar Disorder (van Dijk, Jeffrey, & Katz, 2013), ADHD (Hirvikoski et al., 2011), Oppositional Defiant Disorder (Nelson-Gray et al, 2006), and aggression (Shelton, Sampl, Kesten, Zhang, and

Trestman, 2009). Additionally, DBT skills-only group interventions have been administered in a variety of different settings, including community mental health centers (Blackford & Love, 2011), correctional facilities (Shelton, Sampl, Kesten, Zhang, and Trestman, 2009), and college counseling centers (Uliaszek, Rashid, Williams, & Gulamani, 2016). DBT skills-only interventions are therefore equipped to address complex presenting problems that have not typically been addressed by integrated behavioral health interventions, including personality disorders, bipolar disorder, and disorders associated with behavioral impulsivity. There is some evidence that suggests DBT skills-only interventions may be an effective transdiagnostic treatment to address the myriad of mental health problems that often present in a primary care population.

DBT skills modules focus on increasing effective coping by improving emotion regulation, distress tolerance, mindfulness, and interpersonal effectiveness. Many of these skills can be viewed as targeting common transdiagnostic mechanisms that maintain symptomatology across a variety of mental health disorders. Emotion dysregulation is theorized to be a central factor in the etiology and maintenance of many mental health diagnoses including anxiety, depression, substance use, eating disorders, and borderline personality disorder (Gross & Levenson, 1997, Sloan et al., 2017). A pilot randomized controlled trial showed that a DBT skills-only group intervention improved emotion regulation across a transdiagnostic anxious and depressed population mediated by increased skills use (Neacsiu, Eberle, Kramer, Wiessman, & Linehan, 2014), providing preliminary evidence that emotion regulation can be specifically targeted and improved via DBT skills. Additionally, mindfulness and acceptance skills have been proven effective in decreasing worry and rumination which are viewed as transdiagnostic mechanisms that underlie anxiety and depressive disorders (Teasdale et al., 2000). Since DBT

skills appear to be effective in reducing common factors across disorders such as emotion regulation and repetitive negative thinking, a DBT group intervention may be a practical way to meet the needs of a diverse population in a setting where there are limited resources to implement long-term, individualized interventions.

### **Current Study**

DBT skills are well equipped to target transdiagnostic mechanism of various types of psychopathology, and DBT skills-only interventions have shown preliminary evidence to be effective across a variety of presenting problems and settings. Therefore, DBT skills-only group interventions may be amenable to a primary care population, where patients' presenting problems vary significantly and resources to provide individualized, diagnostically specific, evidence-based interventions are lacking. However, there are currently no studies that have examined the viability of implementing a DBT skills group in a primary care setting.

The purpose of the current study was to determine the feasibility and acceptability of a 10-week DBT skills group intervention delivered in a primary care setting. The study aimed to see whether a DBT skills group could be successfully implemented to address the unique needs of a primary care setting by modifying the length and structure of a traditional DBT skills group. Additionally, the study aimed to assess whether a DBT skills-only intervention reduced symptoms and improved functioning in a transdiagnostic population with a variety of presenting problems. Improved outcomes were operationalized by looking at a decrease in symptoms of anxiety, depression, rumination, and somatization, as well as an increase in emotion regulation and use of coping strategies.

### **Hypotheses**

1. It was hypothesized that the DBT skills-only intervention would be both feasible and acceptable, and that the intervention would attract a transdiagnostic group of participants representative of the clinical presentation common to primary care practices. Feasibility was operationalized as the majority of recruited participants attending at least half of the group sessions. Acceptability was operationalized as participants finding the group content helpful and applicable in addressing a variety of presenting problems on both quantitative and qualitative assessment measures.
2. It was hypothesized that regular attendance of the DBT skills-only intervention would be associated with reductions in participant symptoms of anxiety, depression, somatization, and rumination, as well as improvements in participant emotion regulation and coping strategies.

## **Method**

### **Study Site**

All recruited participants were patients currently receiving ongoing primary health care from medical providers at RWJ Family Medicine at Monument Square (FMMS). FMMS is a large academic family medicine practice where approximately 20 faculty physicians and 15 residents see patients. The practice has approximately 8,500 adult patients who are seen for approximately 16,000 visits per year. The practice has a well-established integrated behavioral health service for more than 8 years, which sees approximately roughly 400 patients for approximately 3000 visits per year for services. The behavioral health team is staffed by 10 advanced graduate students in Clinical Psychology who deliver evidence-based treatments which are primarily CBT focused. The services are delivered collaboratively with primary care physicians, are delivered on-site, and are provided at no cost to patients. Patients are typically

seen for short-term treatment, but there is flexibility for behavioral health externs to treat patients with more complex presenting problems on a longer term basis.

### **Participants and Recruitment**

All participants referred to the current study were adults 18 years or older who were active patients at FMMS and presenting with current mental health concerns. Patients were referred to the study through four distinct channels: 1) referred by current behavioral health externs they were actively seeing or had previously seen for individual treatment, 2) referred by behavioral health services during warm handoffs facilitated by behavioral health externs, 3) contacted from the behavioral health waitlist, or 4) by their current primary care providers. Recruitment efforts included orientation of primary care providers and behavioral health externs to help facilitate appropriate referrals. Additionally, flyers were available for behavioral health externs to distribute during sessions or warm handoffs.

Inclusion criteria for participation was kept intentionally broad to ascertain the clinical disposition of clients who would be interested in attending the group intervention. Therefore, no screener questionnaires or clinical cutoffs were included in the recruitment and enrollment process. However, participants were excluded when the level of psychopathology presented would indicate that a higher, more intensive level of care was indicated, including evidence of active psychosis, active suicidal ideation with plan and intent, active and recurrent non-suicidal self-injury, or discharge from an inpatient behavioral health hospitalization within the past year. In these instances, participants were referred for more intensive services to ensure safety.

In order to be officially enrolled in the study, participants met briefly with the author to determine eligibility, review consent procedures, and complete pre-treatment measures.

Participants were considered actively enrolled in the intervention until they expressed a desire to discontinue from the study or missed four consecutive weeks of group, after which they were asked to complete post-treatment measures.

### **Intervention**

The DBT skills group functioned as an open-enrollment group with rolling admission, meaning that new participants could attend the group at any time point and there was no official start or end to the group structure. Groups were offered for 90-minute sessions each and led by the author and another behavioral health extern with DBT training. A morning group (10:00am – 11:30am) and evening group (6:00pm – 7:30pm) were offered weekly to accommodate participants' schedules.

The DBT pilot group ran for five consecutive 10-week cycles, lasting for approximately one year. Participants were not required to attend a specific number of groups, but were encouraged by group leaders to attend all group sessions within a 10-week skills cycle. Participants had the option to repeat the group as frequently as they would like once they completed a 10-week cycle.

The group covered the following 10 DBT skills as outlined by Linehan's DBT Skills Manual (Linehan, 2015), with the exception of the Mindfulness to Control Attention skill which is outlined in the DBT-ACES skills manual (Comtois, Kerbrat, Atkins, Harned, & Elwood, 2010). These skills were chosen because they were hypothesized to be applicable across a variety of presenting problems, beneficial to a transdiagnostic population, and target factors associated with emotion dysregulation and repetitive negative thinking. All group teaching handouts and

homework worksheets were taken directly from these manuals, at times summarizing content to accommodate the shorter length of the groups, and all group teachings followed instructions as outlined in the manuals.

Session 1 – Mindfulness “what” skills: observe, describe participate. This session focused on introducing the benefits of mindfulness, providing psychoeducation about mindfulness, and included a significant amount of active practice using mindfulness skills.

Session 2 – Mindfulness “how” skills: non-judgmentally, one-mindfully, effectively. This session focused on principles of mindfulness, including taking a non-judgmental approach to life situations, mindfully engaging in one activity each moment, and doing what works in each moment to achieve goals.

Session 3 – Emotion Regulation: model of emotions and mindfulness of current emotion. This session focused on the function of emotions, how to properly identify and label certain emotions, and how to mindfully experience emotions via attention to physiological sensations.

Session 4 – Emotion Regulation: check the facts. This session focused on how interpretations, assumptions, and judgments about a situation can influence emotions, and how to think more flexibly and label distorted thinking to reduce emotional intensity.

Session 5 – Emotion Regulation: opposite action and problem solving. This session focused on how to identify action urges associated with emotions and how to act opposite to these urges to decrease emotional intensity. Additionally, it taught how to generate multiple solutions to a problem via using problem solving strategies.

Session 6 – Mindfulness to control attention. This session provided psychoeducation about the negative repercussions of worry and rumination and applied mindfulness strategies to help block repetitive negative thinking patterns.



Session 7 – Emotion regulation: ABC PLEASE skills. This session focused on reducing emotional vulnerability by engaging in daily pleasant activities, increasing values based action, engaging in activities building mastery, coping ahead for situations that are likely to cause negative emotions, and taking care of physical needs.

Session 8 – Distress tolerance: TIP and DISTRACT. This session focused on surviving crisis situations by teaching strategies that reduce physiological arousal and can help temporarily distract from negative emotions.

Session 9 – Distress tolerance: radical acceptance, turning the mind. This session focused on accepting difficult or unwanted circumstances to reduce emotional suffering, and taught strategies on how to practice acceptance and openness of aversive situations.

Session 10 – Interpersonal Effectiveness – DEAR MAN. This session provided psychoeducation about how to use assertive communication strategies to achieve stated goals in interpersonal situations.

Each group session began with a brief mindfulness exercise, skills review and homework review from the previous week, and teaching the new skill of the week. Homework was assigned weekly for participants to complete to promote skills practice and generalization.

## **Measures**

The following measures were included to determine the clinical presentation of group members, feasibility and acceptability of the group intervention, and changes in clinical outcomes over time:

**Clinical Presentation:**

*PRIME-MD Patient Health Questionnaire* (PHQ; Spitzer, Kroenke, & Williams, 1999) – This is a 60-item questionnaire was designed to facilitate recognition of mental health symptomatology and assesses specifically for symptoms of: a) somatization [includes PhQ-15 items] b) depression [includes PhQ-9 items] c) panic disorder d) generalized anxiety disorder e) eating disorders and f) alcohol use disorder. It has demonstrated diagnostic validity and was developed specifically for use in primary care settings.

*Mood Disorders Questionnaire* (MDQ; Hirshfeld, Williams, Spitzer, 2000) – This is a 13-item questionnaire with reasonable sensitivity (0.73) and specificity (0.90), designed as a preliminary screen for bipolar disorder. Practically speaking, it is fairly good at identifying people with more complex mood disorders that may require extended services and/or specialty consultation.

*FMMS Electronic Medical Health Record* (EMR)- In addition to use of clinical measures, documentation in the electronic medical health record used by the FMMS practice was examined to determine – 1) concurrent medical presentations 2) pharmacological treatment by PCP for mental health concerns and 3) presenting problem as defined by behavioral health extern providing individual services for the participant. Additionally, behavioral health externs were also consulted by researchers to determine most accurate presenting problem when necessary. If a patient was referred from the waitlist and had not had individual contact with a behavioral health extern, researchers conducted a brief (5 – 10 minute) unstructured clinical interview to determine a presenting problem.

**Feasibility and Acceptability:**

*Group Satisfaction Survey* - This is a brief, 4-item questionnaire created for this study. The questionnaire was administered directly after the DBT skills group to assess whether participants found the group enjoyable, helpful, applicable to their life problems, and asks for projected frequency of skills utilization. There is also space to leave qualitative feedback about the skills group (see appendix). This measure was also used to track participant attendance.

*Homework Completion Worksheet* – This is a brief, 4-item questionnaire created for this study designed to assess whether participants completed homework assignments given from the previous group they attended in order to generalize learned DBT skills. The measure assesses for homework completion, frequency of skills utilization, and perceived helpfulness of the skill. There is also space to leave qualitative feedback about the skills that were practiced for homework (see appendix).

*Group Satisfaction Exit Survey* - This is a 10-item questionnaire created for this study. This questionnaire was administered after a participant has either completed or terminated from the 10-week DBT skills group to assess whether participants found the group enjoyable, helpful, and applicable to their life problems. It also assesses for frequency of skills use and perceived helpfulness of specific skills. There is space for participants to leave qualitative feedback about the positive and negative aspects of the group (see appendix).

### **Clinical Outcomes:**

*Patient Health Questionnaire – 15* (PHQ-15; Kroenke, Spitzer, & Williams, 2002) – This is a 15-item questionnaire designed to assess for distressing physical symptoms. It asks participants to rate the intensity of 15 common physical somatization symptoms that are often associated with mental health distress. It has a maximum score of 30 and clinical cutoff scores of 5, 10, and 15 for mild, moderate, and severe somatization. It has demonstrated sufficient reliability and validity and

was developed specifically for use in primary care settings to assess for somatization. The PHQ-15 was administered as a pre-post measure as well as at each attended weekly group session.

*Patient Health Questionnaire – 9 (PHQ-9; Spitzer, Kroenke, & Williams, 1999)* - This is a 9-item questionnaire that asks patients to rate the severity/frequency of nine core symptoms of depressive disorders. It is widely used in primary care and other clinical practice to screen for depression and monitor progress in treatment. It has a maximum score of 27 and a clinical cutoff score of 10. It has high levels of validity compared to diagnoses of mental health professionals ( $\kappa = 0.65$ ), with 85% overall accuracy (75% sensitivity, 90% specificity). The PHQ-9 was administered as a pre-post measure as well as at each attended weekly group session.

*Generalized Anxiety Disorder – 7 (GAD-7; Spitzer, Kroenke & Williams, 2006)* – This is a 7-item questionnaire that asks patients to rate the severity/ frequency of seven symptoms of anxiety. It is widely used in primary care and other clinical practice to screen for anxiety disorders and monitor progress in treatment. It has a maximum score of 21, and cutoffs of 5, 10 and 15 for mild, moderate, and severe anxiety. It has good reliability, as well as criterion, construct, factorial, and procedural validity. The GAD-7 was administered at each attended weekly group session.

*Response Style Questionnaire – Rumination Response Subscale (RSQ-RRS; Treynor, Gonzales, & Nolen-Hoeksema, 2003)* – This is a 22-item measure that has been extensively used and shown to have good internal consistency and validity for predicting ruminative thought patterns. While this measure was originally intended to measure trait rumination, studies have demonstrated variability in participant scores based on clinical status and mood state, suggesting that the measure is sensitive to changes in ruminative thought patterns over time (Kasch, Klein, & Lara, 2001). In addition to examining the RSQ-RRS total score, the brooding subscale was also used as a measure of rumination that excludes items that may confound with depression symptoms

more generally (Treyner, Gonzales, & Nolen-Hoeksema, 2003). The RSQ-RRS was administered as a pre-post measure.

*Difficulties with Emotion Regulation Scale* (DERS; Gratz & Roemer, 2004) – This is a 36-item measure evaluating six domains of emotion regulation, including a) non-acceptance of emotional responses, b) difficulties engaging in goal-directed behaviors, c) impulse control difficulties, d) lack of emotional awareness, e) limited access to emotion regulation strategies, and f) lack of emotional clarity. The DERS has demonstrated good reliability, internal consistency per subscale, and high internal consistency. The DERS was administered as a pre-post measure.

**DBT Ways of Coping Checklist** (DBT-WCCL; Neacsiu, Rizvi, Vitaliano, Lynch, & Linehan, 2010) – This is a 59-item measure evaluating participant coping in response to stressors. It includes two subscales, including the DBT Skills Subscale and the Dysfunctional Coping Subscale. The DBT-WCCL has demonstrated good psychometric properties, including high internal consistency, content validity, and reliability. The DBT-WCCL was administered as a pre-post measure.

### **Analytic Plan**

Descriptive analyses were used to analyze the feasibility and acceptability of the intervention, specifically by examining frequency of group referrals, attendance, homework completion, group satisfaction, and helpfulness/frequency of use for each skill included in the intervention. Paired t-tests were used to analyze changes in outcome measures (depression, somatization, emotion regulation, rumination, effective coping) from pre-treatment to post-treatment. Missing data was accounted for by using either the data collected at the most recent time point or the pre-treatment data for participants who did not complete post-treatment measures. Hierarchical Linear Modeling analysis was used to examine changes in weekly

symptom measures over time (depression, anxiety, somatization) to determine whether length of group attendance was related to change in outcomes. Due to the longitudinal nature of the weekly data, a multilevel data structure was used where repeated measures were nested within individuals. Specifically, scores on outcome measures were entered as the dependent variable with time entered as a fixed effect predictor variable at level one (repeated-observations model). In order to determine the proportion of variance explained by the variable of time (an index of effect size in HLM analyses), we compared these models with their corresponding fully unconditional model (in which no level one variable [i.e., time] was entered). Lastly, qualitative feedback was clustered by common themes and reported via frequency of response types.

## **Results**

### **Participants**

Behavioral health externs referred approximately 97 patients to participate in the study (mean number of patients referred by extern = 8.21). An additional 17 people were referred by the author off of the behavioral health waitlist and one patient was referred during a warm hand-off. No patients were referred directly by their primary care providers. In total, 115 patients were referred over the course of the year-long study. Of the 115 people referred, 35 participants (30% of people referred) attended at least one group session. Behavioral health externs enrolled 26 of the 35 enrolled participants (74.3%) and the remaining 9 participants (25.7%) were referred from the waitlist.

Of the 35 participants enrolled in the study, 25 were female (71.4%) and 10 were male (28.6%). Ages of participants ranged from 18 – 75, with 41.31 as the mean age of participants (SD = 15.67). The majority of participants identified as Caucasian (18 participants; 51.4%), with

9 participants identifying as African-American (5.7%), 7 as Latino (20%) and 1 as Asian (2.9%). See Table 1 for demographic data.

Of the 35 enrolled participants, 16 participants (45.7%) received concurrent individual treatment with a behavioral health extern for the duration of their participation in the study. A subset of 7 participants (20%) were engaged in individual treatment with a behavioral health extern for a portion of their time in the intervention. These patients either terminated with their individual provider but decided to remain engaged in the group or entered into the group off of the waitlist and eventually became engaged in individual treatment. An additional subset of 12 participants (34.3%) were not in any individual treatment while they were enrolled in the study. These participants were either referred to the group as a maintenance treatment after termination with their individual behavioral health extern or remained on the waitlist for the duration of their participation in the intervention.

### **Clinical Presentations**

The FMMS EMR, information from behavioral health externs, and brief unstructured clinical interviews conducted by the author were used to determine a primary presenting problem for each participant enrolled in the study. Each participant was coded for one distinct presenting problem despite potential co-morbid diagnoses. Participants presented with a variety of 10 distinct presenting problems, including – anxiety disorders (10 participants, 28.6%), Major Depressive Disorder (6 participants, 17.1%), Adjustment Disorder (5 participants, 14.3%), Borderline Personality Disorder (4 participants, 11.4%), Post Traumatic Stress Disorder (3 participants, 8.6%), a substance use disorder (2 participants, 5.7%), Obsessive Compulsive Disorder (2 participants, 5.7%), Attention Deficit Hyperactivity Disorder (1 participant, 2.9%), an eating disorder (1 participant, 2.9%) and fibromyalgia (1 participant, 2.9%). Approximately

half of the participants enrolled (18 participants, 51.4%) were seeing their primary care providers concurrently for pharmacological medication management for mental health symptoms.

In addition to mental health presentations, data extracted from the FMMS EMR was also coded for co-morbid medical presentations. Common chronic medical conditions were assessed for within the participant sample including obesity, hypertension, diabetes, irritable bowel syndrome and asthma. Approximately one-third of participants (12 participants, 34.3%) were diagnosed with one chronic medical condition and 5 participants (14.3%) were diagnosed with two or more chronic medical conditions. Additionally, 18 participants (51.4%) were receiving treatment for by their primary care provider for chronic pain, including arthritis, chronic migraines, back pain, joint/muscle pain, and fibromyalgia.

The PRIME-MD and MDQ were used as measures to screen for potential clinical diagnoses. A total of 16 participants (47.1%) screened positive for medium – high somatization, 13 participants (38.2%) screened positive for moderate – severe depression, 10 participants (29.4%) screened positive for an anxiety disorder, 5 participants (14.7%) screened positive for bipolar disorder, 4 participants (11.7%) screened positive for a substance use disorder and 2 participants (5.9%) screened positive for an eating disorder. The mean PHQ-15 score at baseline was 9.62 (SD = 5.83), falling between the cutoff for low and medium symptom severity for somatization with scores ranging from 2 - 28. The mean PHQ-9 score at baseline was 8.53 (SD = 6.10), falling in the mild symptom severity for depression with scores ranging from 1 - 25. While the GAD-7 was not collected at pre-treatment making it difficult to establish a baseline level of anxiety, GAD-7 data was collected weekly. The mean GAD-7 score collected from weekly attendance data (N=21) was 7.33 (SD = 5.75), falling in the mild symptom severity range for anxiety with scores ranging from 0 – 21. See Table 2 for data on clinical presentations.



**Feasibility**

The mean number of sessions attended per participant was 6.17 sessions (SD = 6.82) with a range from 1 – 34 sessions attended by participants. Approximately one-fourth of participants (9 participants, 25.7%) attended one session. The majority of participants attended 2 – 4 total sessions, with 10 participants (28.6%) falling within that range. Cumulatively, 54.3% of the participant sample attended 4 sessions or less. This subset of the participants are considered to have not received an adequate dose of the intervention, as they attended less than half of the 10 session DBT skills group intervention.

A little less than half of the participants (16 participants, 45.7%) attended 5 or more sessions of the DBT intervention, with 4 participants (11.4%) attending 5 – 7 total sessions, 7 participants (20%) attending 8 – 10 sessions, and 5 participants (14.3%) attending more than 10 sessions. This subset of the participants attending 5 or more sessions are considered to have received an adequate dose of the intervention, as they received at least half of the skills intended to be delivered by the 10 week intervention. See Table 3 and Figure 1 to view data related to total sessions attended by participants.

The mean number of participants who attended morning group sessions each week was 1.84 participants (SD = 1.29), with a range from 0 – 5 participants attending each session. The mean number of participants who attended evening group session each week was 2.43 participants (SD = 1.33), with a range from 0 – 6 participants attending each session. The mean number of total participants who attended group sessions each week was 4.27 participants (SD = 1.64), with a range from 1 – 8 participants attending groups each week. Average participant group attendance per month was also analyzed to see whether certain times of year may have

impacted attendance trends. See Table 4 and Figure 2 to view data about attendance rates by month.

The Group Exit Survey was the primary tool used to determine participant reasons for exiting the group intervention. Participants were able to select multiple reasons for their decision to terminate their participation in the study. If participants remained non-responsive to the author's attempts to obtain data about their study termination, behavioral health externs were consulted if the participant was in individual therapy in order to determine a reason for their termination. If reasons for a participant's termination remained unknown, they were coded as lost to follow up.

Reasons for termination were analyzed both for the total sample of participants as well as for participants who attended 4 group sessions or less. For the total sample (N=35), the most common response was that participants were too busy to continue attending the group (20% of responses), with the second most common response being that participants had obligations that conflicted with the scheduled group times (18% of responses). Additionally, 18% of responses indicated that participants were still attending groups regularly when the study ended and that participants would have continued to attend sessions if the study continued. Less common responses indicated that participants terminated participation because they completed their 10 week cycle in the study (12% of responses), felt uncomfortable in a group setting (8% of responses), preferred meeting with their individual counselor (8% of responses), found services outside of FMMS (2% of responses) or were referred out of the study due to severity of clinical presentation (2% of responses). Furthermore, 12% of participants were considered lost to follow-up, leaving participant reasons for termination unclear in this subset of the sample.

Reasons for termination for participants who attended 4 or less sessions were analyzed separately to determine why participants exited the study without receiving an adequate dose of the intervention. For this subset of the participant sample (N=19), the most common response was that participants had obligations that conflicted with the scheduled group times (23.1% of responses), with the second most common response being that participants were too busy to continue attending the group (19.2% of responses). Additionally, 7.7% of responses indicated that participants were still attending groups regularly when the study ended and that participants would have continued to attend sessions if the study continued. Less common responses indicated that participants terminated participation because they felt uncomfortable in a group setting (11.5% of responses), preferred meeting with their individual counselor (7.7% of responses), found services outside of FMMS (3.8% of responses) or were referred out of the study due to severity of clinical presentation (3.8% of responses). Furthermore, 23.1% of responses were attributed to being lost to follow-up, leaving participant reasons for termination unclear in this subset of the sample. See Table 5 to view data regarding participant study termination.

### **Acceptability**

Acceptability was assessed via monitoring participant ratings of group satisfaction, helpfulness of skills, frequency of skills use, and homework completion. Acceptability measures were assessed both after treatment termination using the Group Exit Survey and at weekly group sessions using the Homework Completion Worksheet and Group Satisfaction Survey. All items were assessed with a 0 - 2 Likert scale on each measure.

Results from the Group Exit Survey (N=25) demonstrate that participants found the group to be overall enjoyable (mean = 1.88; SD = .33), helpful (mean = 1.88; SD = .33) and

satisfactory (mean = 1.84, SD = .37). Participants were asked to assess the helpfulness of each skill they learned in the group individually. Mean helpfulness ratings for the skills ranged from 1.94 (mindfulness WHAT skills) to 1.61 (TIP and distract skills), and the mean helpfulness of each of the 10 skills averaged to 1.74. See Table 6 to view the mean helpfulness ratings for each skill. Participants were also asked to rate how frequently they were using each skill they learned since termination from the group. Mean usefulness ratings from 1.62 (mindfulness WHAT skills) to 1.27 (DEAR MAN), and mean usefulness of each of the 10 skills averaged to 1.44. See Table 7 to view the mean frequency of skills use rating for each skill.

In addition to viewing data post-termination, the Homework Completion Worksheet and Group Satisfaction Survey were used to assess acceptability at each session. Items were assessed on a 0 - 2 Likert scale for each measure. Results demonstrate that on average, participants found each session enjoyable (mean = 1.9; SD = .21), the skills teaching helpful (mean = 1.89; SD = .22), and practicing the skill during the week helpful (mean = 1.71, SD = .48). Projected frequency of skills practice, actual frequency of skills practice, and homework completion were also assessed weekly. Results showed that on average, participants practiced skills (mean = 1.31; SD = .50) less than they had anticipated they would (mean = 1.76, SD = .30) during the week. Additionally, participants completed their homework less often than they practiced the skills during the week (mean = .87; SD = .49), with homework completion being the lowest reported mean in the acceptability data across each skill. See Table 8 to view comparisons of reported skill helpfulness, frequency of skill practice, and frequency of homework completion by skill.

In addition to using quantitative data, qualitative items were placed in the Group Exit Survey that asked participant for general feedback regarding what they liked and disliked about the group at termination. A total of 56 responses were generated, with 45 responses being of

positive valence (80.4%) and 11 responses being of negative valence (19.6%). Positive comments primarily focused on the support and insight participants gained from other group members (26.8% of responses) and from the group leaders (25% of responses). Negative comments primarily focused on being uncomfortable or anxious in a group setting (7.1% of responses) and constructive criticism about the group structure (7.1% of responses). Comments about group structure specifically related to having too much content covered per week and the scheduled times the group was offered. The ratio of positive to negative qualitative responses indicates that the group was deemed acceptable by participants.

The Group Exit Survey also asked participants to identify the most and least helpful skills they learned during their time in the intervention. A total of 19 responses were generated, with 12 responses being of positive valence (63.2%) and 7 responses being of negative valence (36.8%). The smaller ratio of positive to negative qualitative responses about specific skills indicates that while participants may have found the overall skills teaching helpful, they were likely to have preferences or constructive criticism about specific skills. Mindfulness skills received 8 positive responses (42.1% of responses), reflecting quantitative data that demonstrated mindfulness skills as the most helpful and frequently used by participants. DEAR MAN received 3 out of the 7 negative responses (15.8% of responses), reflecting quantitative data that found DEAR MAN the skill used least frequently by participants.

The Homework Completion Worksheet and Group Satisfaction Survey were also used to collect qualitative feedback from participants at weekly sessions. 278 qualitative responses were collected over the course of the study, with 232 responses being of positive valence (83.4%) and 46 responses being of negative valence (16.6%). The ratio of positive to negative responses in weekly data mirrors the ratio found in qualitative post-treatment data, further confirming that

participants found the group acceptable at all time points. Positive feedback primarily focused on the helpfulness (21.6% of responses) and applicability (22.3% of responses) of learned skills. Negative feedback also focused on applicability of learned skills (9.4%), and centered around having difficulty applying the skills or not being able to find a situation where the skill could be applied during the week. See Table 9 to view more information about qualitative data.

### **Mental Health and Physical Health Outcomes**

Outcome data was first analyzed using an intent-to-treat sample ( $N=35$ ), with missing data being accounted for by replacing missing data with responses from pre-treatment surveys or with most recently collected data (in the case of PhQ-15 and PhQ-9 data which was also collected on a weekly basis). Paired t-tests were used to compare means from pre and post treatment survey responses. Results indicated a clinically significant reduction in PHQ-15 ( $p < 0.01$ ;  $d = .51$ ), PHQ-9 ( $p < .01$ ;  $d = .49$ ), RSQ-RRS total ( $p < .01$ ;  $d = .54$ ), DERS total ( $p < .05$ ;  $d = .40$ ) and DERS clarity subscale ( $p < .05$ ;  $d = .44$ ) scores. Additionally, there was a clinically significant increase in DBT-WCCL skills use subscale scores ( $p = .001$ ;  $d = .63$ ). There were no clinically significant changes in the RSQ-RRS brooding subscale, although it trends towards significance ( $p = .06$ ;  $d = .34$ ), DBT-WCCL dysfunction subscale, or other DERS subscale scores. These findings indicate that participant somatization, depression, rumination, emotion regulation and skills use changed significantly at treatment termination compared to baseline scores, with medium effect sizes indicated for decreased somatization, decreased rumination, and increased skills use. See Table 10 to view paired t-test results.

Outcome analyses were also conducted with individuals who only provided pre- and post-outcome data. This was done to determine whether the strength of results was substantially impacted by conservative efforts to account for missing data. Post-treatment responses from 24

participants were collected and used to conduct these analyses. Results indicated a clinically significant reduction in PhQ-15 ( $p < 0.01$ ;  $d = .52$ ), PhQ-9 ( $p = .001$ ;  $d = .78$ ), RSQ-RRS total ( $p < .01$ ;  $d = .66$ ), DERS total ( $p < .05$ ;  $d = .481$ ) and DERS clarity subscale ( $p < .05$ ;  $d = .53$ ) scores. Additionally, there was a clinically significant increase in DBT-WCCL skills use subscale scores ( $p = .001$ ;  $d = .80$ ). There were no clinically significant changes in the RSQ-RRS brooding subscale, although it trends towards significance ( $p = .06$ ;  $d = .40$ ), DBT-WCCL dysfunction subscale, or other DERS subscale scores. These findings indicate that participant somatization, depression, rumination, emotion regulation and skills use changed significantly at treatment termination compared to baseline scores, with a large effect size indicated for increased skills use and medium effect sizes for decreased somatization, depression, and rumination. See Table 11 to view paired t-test results.

Lastly, outcome data was analyzed for participants who were considered to receive an adequate dose of the intervention (attended 5 or more group sessions) to see whether results were more robust with increased exposure to skills teaching and practice. 16 participants attended 5 or more group sessions over the duration of the study. Results indicated a clinically significant reduction in PhQ-15 ( $p < 0.01$ ;  $d = .59$ ), PhQ-9 ( $p < .01$ ;  $d = .79$ ), DERS total ( $p < .01$ ;  $d = .66$ ), DERS clarity subscale ( $p < .05$ ;  $d = .56$ ), and DBT-WCCL dysfunction subscale ( $p < .05$ ;  $d = .56$ ) scores. Additionally, there was a clinically significant increase in DBT-WCCL skills use subscale scores ( $p < .001$ ;  $d = 1.15$ ). Changes in the RSQ-RRS total trend closely towards significance ( $p = .05$ ;  $d = .53$ ). No significant changes were observed in the RSQ-RRS brooding subscale or other DERS subscale scores. These findings indicate that participant somatization, depression, rumination, emotion regulation and skills use changed significantly at treatment termination compared to baseline scores, with a large effect size indicated for increased skills use

and medium effect sizes for decreased somatization, decreased depression, decreased emotion regulation, and decreased dysfunctional coping. See table 12 to view paired t-test results.

HLM was used to analyze weekly measures of somatization, depression, and anxiety over time. Number of sessions attended was significantly predictive of reduction in PHQ-15 somatization scores ( $\beta = -0.17$ ;  $SE = .03$ ;  $t = -5.03$ ;  $p < .001$ ), PhQ-9 depression scores ( $\beta = -0.27$ ;  $SE = .04$ ;  $t = -7.25$ ;  $p < .001$ ), and GAD-7 anxiety scores ( $\beta = -0.16$ ;  $SE = .04$ ;  $t = -4.45$ ;  $p < .001$ ), suggesting that participant attendance had an impact on decrease in mental health symptomatology over time. See Table 13 to view weekly outcome results.

### **Discussion**

The primary aim of this study was to determine whether a modified DBT skills group intervention could be feasibly and acceptably piloted in a primary care setting. Results support feasibility and acceptability of incorporating a DBT skills-only intervention with a transdiagnostic population in a primary care practice that integrates behavioral health. Additionally, results indicate that the group intervention may be related to improvement in clinical outcomes and increased participant skills use.

### **Participants**

Participants who attended the group were diverse in age, race/ethnicity, and presenting problem, with 40% of participant's primary clinical presentation being something other than anxiety, depression, or adjustment disorder. With research in integrated behavioral health settings focusing primarily on anxiety and depression diagnoses, this sample demonstrates the importance of offering transdiagnostic interventions like DBT skills which have a wide array of clinical application across disorders.



Additionally, this present sample is unique in the frequency of participants presenting with chronic pain, with 51.4% of the sample seeing their primary care provider for medical treatment to address their pain symptoms. This suggests that a group intervention focused on general coping skills may be well-suited for primary care patients experiencing chronic pain. With chronic pain resulting in high utilization of primary care services, a group intervention that is clinically useful to patients with chronic pain can be beneficial for patients and reduce medical costs. Previous research has shown the economic value of psychological interventions targeting chronic pain delivered in an interdisciplinary setting (Gatchel, McGeary, McGeary & Lippe, 2014; Gatchel & Okifuji, 2006). However, a transdiagnostic group that is not specifically advertised for chronic pain may be more marketable to a wider array of patients in comparison to a specialized chronic pain intervention, while still having the same level of clinical utility and economic benefit.

### **Feasibility**

This study hypothesized that group feasibility would be evidenced with the majority of participants attending at least half of the 10-week group intervention. Results showed that 45.7% of participants attended five or more group sessions. While these results are slightly less than predicted, they demonstrate that a substantial number of participants received an adequate dose of the intervention and were regular group attenders. Additionally, group attendance trends closely modeled other studies who successfully piloted group interventions in primary care settings, with the majority of participants attending a maximum of 1 – 2 sessions in these studies (Aguilera, Bruehlman-Senecal, Liu, & Bravin, 2018; Fuchs et al., 2016). Similar to our study, these studies also had a cohort of participants who attended consistently for a considerable number of sessions despite high levels of initial participant drop-out.

When assessing for reasons for terminating participation in the study, the most commonly cited reasons by participants were busy schedules and schedule conflicts, reflecting the practical barriers that frequently result in less individual session attendance in integrated primary care settings. While overall session attendance was low, variability in group attendance among participants may be indicative of the variability in time, resources, and practical barriers found in primary care patient populations across both individual and group interventions. Therefore, findings may suggest that low-retention rates of participants is not synonymous with the unfeasibility of groups in primary care settings. Conversely, integrated behavioral health clinicians may benefit to anticipate that a subset of participants will not attend many sessions with the expectation that a cohort of participants will attend consistently and benefit from the intervention.

Morning and evening groups were run simultaneously to see if time of day resulted in increased participation. While both morning and evening groups had low attendance rates per week (mean morning group = 1.84 participants; mean evening group = 2.43 participants; mean total group participation = 4.27 participants), evening groups were more well attended, suggesting it may be more beneficial for primary care settings to run group interventions in the evening hours. Additionally, the majority of participants who attended the morning group consistently were unemployed and had flexible schedules, and reported verbally to group leaders that they would have attended the evening groups if that was the only option available. Therefore, the evening groups may have been more populated if participants were not split across morning and evening sessions. Results indicate that it may not be feasible for groups in primary care settings to be well attended during typical hours of operation. While evening groups may be an overall more feasible option for participants, there may be potential barriers for

primary care practices who primarily operate during regular business hours. These practices may need to be flexible about available hours to run successful group interventions in primary care.

Attendance data was also analyzed to see attendance varied by time of year. Results demonstrated that attendance reduced significantly in August and January, which may suggest that summer and winter recesses might reduce dips in attendance and better protect the practice's resources. However, any breaks in the group intervention may also negatively influence attendance rates, as it may disrupt the continuity and reduce attendance rates for participants who came consistently. Future studies could demonstrate the feasibility of seasonal group interventions (ie February – April; May – July; September – December) in comparison to a group with open enrollment rolling admission to see which would recruit and retain the most participants while utilizing less of the practice's overall resources.

### **Acceptability**

The DBT group intervention was found to be highly acceptable among participants, receiving high rates of enjoyment, satisfaction, and helpfulness across all participants in both post-treatment and weekly surveys across quantitative and qualitative responses. Additionally, participants reported frequent skill use in both post-treatment and weekly surveys. In general, participant ratings of skill helpfulness were substantially higher than their reported frequency of skills use, suggesting that participants found skills widely applicable even if they were not using them consistently. Frequency of homework completion was the least highly rated, with participants reporting an average of 43.5% homework completion on a weekly basis. The low prevalence of homework completion may be related to the modifications made in this DBT skills group intervention in comparison to a traditional DBT skills group where homework completion is strongly emphasized and homework non-completion is specifically targeted within the

treatment. In contrast, while in this study homework was reviewed with participants as part of each weekly group, homework non-completion was not especially highlighted or targeted by group leaders. Additionally, it was more difficult to maintain consistent homework review when participants were less likely to attend sessions weekly, as even participants who were consistent attenders often had gaps within their attendance. Nevertheless, despite lower homework completion ratings, participants did rate high levels of skills use at treatment termination. This suggests that formal homework completion may have been less of a critical outcome, especially with the clinically significant increases in effective skills use demonstrated on the DBT-WCCL.

Qualitative responses demonstrate that many participants had positive and impactful experiences participating in the intervention and could see practical benefits in their current functioning that they associated with their group participation - “This group saved my life;” “The people in my life said they saw a change in my behaviors;” “Now I can face my problems and I believe I am able to handle it with all the techniques I have learned”. Participants commented frequently on the validation and support that they received from other group members, indicating that the social support people experienced may be related to improvement in outcomes. Responses indicated that participants felt connected with groupmates and gained insight from hearing other people’s experiences – “Meeting others and hearing their experiences helped me to feel I was not alone. Meeting people I would not normally meet, different ages, backgrounds, etc. was a gift;” “I loved hearing things from other people. It helped me get out of my own head and think about things more rationally ... I loved how attending the group made me feel less alone.” Additionally, frequent positive comments about receiving validation from the group leaders further indicate that participants benefitted from social support provided in the group setting. People also commented on the usefulness of group leaders modeling the skills

through their instruction – “I enjoyed the group leaders ... They truly showed no judgment when we shared, and it was easier to practice not judging myself when they were modeling it;” “The leaders were kind, compassionate, caring, and non-judgmental ... Their willingness to be vulnerable while maintaining an appropriate leader’s position really facilitated growth.” Qualitative responses also highlighted the benefits of an experiential, skills-based group, suggesting that participants appreciated the value of learning and focusing on particular skills – “I liked learning concrete skills that could be put into practice immediately;” “The skills I learned helped me really work through some difficult issues I was having with myself and others in my life. Now I can be happy and free;” “I was glad it was an interactive group. To learn the material without practicing it wouldn’t have been nearly as effective.”

While the group was found to be highly acceptable, examining negative qualitative responses highlighted that participants sometimes felt overwhelmed with the amount of content included in some of the sessions. In designing the intervention, we combined some skills together to ensure that the skills deemed the most applicable for a transdiagnostic population could be included within a 10-week intervention. However, data may reflect that this decision may have made it difficult for participants to fully learn and effectively implement certain skills. Opposite Action/Problem Solving and ABC Please skills were particularly challenging for group leaders to teach, and leaders often needed to rush through session content to cover all included material. Future iterations of this intervention would benefit to keeping group content simple and avoid teaching more than one skill per week. Whether the intervention would benefit from expanding beyond 10 weeks or would benefit from removing skills that were rated as least helpful is a research question that would need further exploration.

Participant ratings were also examined by skill to see which parts of the DBT group intervention were most acceptable. Mindfulness skills were overall considered the most helpful and most frequently practiced skills by participants on both quantitative and qualitative measures. Qualitative responses highlighted that mindfulness improved participant coping (“mindfulness helps calm me and it’s easier to cope with the things going on around me;” “mindfulness is helping me to cope with extreme negative emotions”), increased present awareness (“I have a tendency towards rushing through life and this helped me to take a step back;” “These skills helped me to live in the moment;” “Remembering to be present and do one thing at a time helps me”) decreased rumination and judgment (“mindfulness helps me control rumination;” “It gives me something to focus on instead of my negative self-talk”) and was used frequently in practical situations (“I practiced this skill while driving to help myself relax instead of getting anxious;” “It helped abundantly during an anxiety exposure; “I realized that I judge my partner too much and mindfulness can help me improve my relationship”).

There are several potential reasons for the positive response to mindfulness by group members. Each group began with a brief introduction to mindfulness and a mindfulness exercise. Therefore, participants had frequent and repetitive exposure to mindfulness principles at every group session they attended. Additionally, mindfulness principles are often woven into the teachings of other skills, further increasing participant exposure to mindfulness. Mindfulness teachings are also more basic, straightforward, and easy to practice than some of the other skills taught that require following multi-step directions and completing complicated worksheets. This may explain why participants completed their homework assignments most frequently for all three mindfulness sessions compared to the other skills taught. Qualitative feedback highlighted participant frustration with some of the skills that are more complex and require several steps to

complete (“check the facts was great, but it was a tad time consuming for me to do so it seemed tough in the moment;” “opposite action was a bit harder to practice than just talking about it;” “ABC Please was harder once I got back to my schedule and I had to find the time to prioritize skills practice”), further suggesting that mindfulness was favored because of the ubiquity and simplicity of the skills. This may also explain why some skills that were determined as helpful on a weekly basis (ie ABC Please, TIP/Distract, model of emotions, check the facts) resulted in less weekly homework completion and lower overall helpfulness ratings post-treatment. Our data mirror results found by Lindenboim, Comtois, and Linehan (2007) that demonstrated DBT patients were most likely to use mindfulness and crisis survival skills on a daily basis. While our sample reported less severe distress than a traditional DBT sample and therefore less likely to use crisis survival skills as frequently, the wide applicability and ease of practicing mindfulness on a daily basis was replicated in our sample.

Surprisingly, post-treatment data showed that radical acceptance was also considered to be helpful and frequently used by participants, indicating that principles of acceptance may appeal to a transdiagnostic population. It also may be possible that principles of mindfulness and acceptance have specific applicability to a population presenting with high levels of chronic pain, as previous studies have shown acceptance-based interventions to be effective in chronic pain presentations (McCracken, 1998; McCracken and Eccleston, 2003; Veehof, Oskam, Schreurs, & Bohlmeijer, 2011).

DEAR MAN and TIP/Distract were most likely to be rated as the least helpful and useful across acceptability measures. Our qualitative data indicated that participants found TIP less helpful if they did not experience their emotions as overwhelming and out of their control. Additionally, qualitative data demonstrated that participants did not always understand the

purpose of DEAR MAN – “I didn’t like DEAR MAN because it basically encouraged me to continue acting fake around people;” “DEAR MAN makes me feel selfish. I don’t want anyone to do anything for me, so I try not to ask for anything;” “I avoided using this skill in order to keep the peace.” Other comments indicated that while the skill was helpful, it was only applicable to a small subset of life circumstances and would take more practice to implement successfully, and was therefore used less frequently – “This skill will take a lot more practice for me to get;” “This is the hardest skill but will really help me out with the things I want.” Future iterations of this DBT intervention may consider removing TIP/Distract and DEAR MAN and instead focusing more on principles of mindfulness and acceptance. Conversely, future iterations may consider adding more of the interpersonal effectiveness modules to give the DEAR MAN skill more context and more effectively communicate the importance of assertiveness and clarifying interpersonal objectives.

### **Mental Health and Physical Health Outcomes**

Because there was no control group in this pilot study, outcome results must be interpreted accordingly. Additionally, there was no standardization in the amount of individual therapy that participants were concurrently receiving while enrolled in the group, with a range from participants receiving no individual treatment to being in weekly concurrent treatment for the duration of their participation in the group. Therefore, for many participants there is no way to differentiate whether changes in outcomes were related to individual treatment or the group intervention, or whether participating in the group in tandem with individual treatment was specifically related to clinically significant improvements in outcome. Results related to outcome measures can be used to determine whether the group intervention may possibly be related to



clinical improvements and therefore indicate whether primary care practices may consider implementing similar groups because of the practical benefits (time, resources, etc).

Clinically significant reductions were observed in participant somatization, depression, rumination and emotion dysregulation, with small – medium effect sizes in the intent-to-treat sample and more robust medium effect sizes in the sample that received an adequate dose of the treatment. The number of sessions participants attended was significantly related to reduction in somatization, depression, and anxiety symptoms over time. Clinically significant reductions were not found in the brooding subscale of the RRS-RSQ, suggesting that decreases in rumination may be better explained by reduction in global depressive symptomatology than by specific reductions in ruminative thought processes. However, results showed a decrease in rumination that approached significance, which indicates that there was a modest reduction in ruminative thought processes. While the majority of the DERS subscales did not show clinical significance, all samples saw significant improvements in the emotional clarity subscale, suggesting that group attendance was related to increased insight and understanding about experienced emotions.

Additionally, clinically significant increases in participant skills use were found in both the intent-to-treat and adequate treatment dose samples, with a very large effect found in participants who attended five or more group sessions. Furthermore, a significant reduction was found in the use of dysfunctional coping strategies in participants who received an adequate dose of the intervention with a medium effect size. These results suggest that participant skillfulness likely increases even when attending 1 - 4 sessions, but that participants become progressively more effective and skillful with increased exposure and practice of skills over time. These robust findings in increased participant skillfulness further confirm participant report that skills were acceptable, helpful, and used frequently at study termination.

While similar studies have shown reductions in anxiety and depression symptoms in primary care samples using similar measures (Aguilera, Bruehlman-Senecal, Liu, & Bravin, 2018; Fuchs et al., 2016; Pack and Condren, 2014; Radford, Crane, Eames, Gold & Owens, 2012), this study is unique in the demonstrated reductions in participant somatization. These findings are particularly relevant due to the high prevalence of chronic pain in our sample, and have crucial implications for primary care populations. As only one participant in this study presented to group to address functional impairment related to chronic pain, this improvement in somatization is an indirect outcome for patients managing pain in addition to mental health comorbidities. Additionally, reductions found in rumination and emotion dysregulation may point to key mechanisms that mitigate DBT skills use and reduction in symptomology. Future research would be necessary to establish whether reduction in rumination or emotion dysregulation could serve a mechanistic function to explain clinical improvements.

Considering participants consistently rated mindfulness and acceptance based skills the most applicable and frequently practiced skill from the intervention, it would be interesting to determine whether the DBT intervention presents unique content that is novel to the primary care setting or instead reflects similar results found from other piloted mindfulness and acceptance based group interventions, such as Acceptance and Commitment Therapy and Mindfulness Based Stress Reduction groups (Fuchs et al., 2016; Radford, Crane, Eames, Gold & Owens, 2012). Determining whether the DBT emotion regulation skills in this intervention bring an added clinical benefit compared to a group solely focused on mindfulness and acceptance has important implications for deciding the most efficient and effective way to deliver a transdiagnostic group intervention for primary care patients.

### **Limitations and Future Directions**

The most noteworthy limitation of this study is the lack of control group, which restricts any serious conclusions about improvement in clinical outcomes. However, these results establish evidence for the benefit of more robust randomized controlled trial that can differentiate whether the group alone or the group concurrent with individual treatment is causally related to improvement in outcomes. Additionally, future research can compare the DBT group intervention with other mindfulness-based interventions to see whether there is an added benefit specific to the DBT skills included in the intervention.

While the study recruited and enrolled enough participants to make the group feasible, another limitation of this study is the small sample size considering that the intervention was conducted over 50 weeks with two group sessions offered per week. This small sample size made it difficult to control for specific variables during analyses. Additionally, only 30% of referred participants agreed to enroll in the group intervention. Future iterations of this study may alter or enhance recruitment strategies to increase patient participation.

The majority of referrals for this study came directly from behavioral health externs who were actively working with patients. While this was an effective recruitment strategy for some participants, it is also likely that many patients in this referral source were less motivated to pursue additional treatment in a group format because they were already actively receiving services. With a previous study by Sharp, Power, and Swanson (2004) indicating that 95% of primary patients prefer individual to group treatment when given the option, the low interest in participating in the group intervention makes sense in a patient population who were likely already satisfied with the individual services they were receiving. Considering low clinical resources and high rates of referrals in primary care settings, practices may benefit from providing group only as the first line of treatment and seeing more acute patients individually as

needed. This strategy may be an effective way to increase group participation and free clinicians to spend individual sessions with more severe clinical presentations.

Additionally, future iterations of this study may benefit to focus more effort and attention on recruiting patients from other sources before they engage in individual treatment, including through warm hand-offs, the waitlist, and directly from primary care providers. Approximately half of the patients who were recruited off of the waitlist enrolled in the study, suggesting the waitlist to be a successful referral source. However, due to limits on the study coordinator's schedule and time, outreach to the waitlist was not done on a regular basis. Including consistent waitlist outreach to the study procedures (ie weekly phone calls) would likely have increased patient participation. The higher rates of participation from waitlisted patients further emphasizes the potential benefits of offering the group intervention as the primary or first-line treatment option.

Throughout the study, only one participant was recruited directly from a warm hand-off, even though the same behavioral health externs who were frequently referring their individual patients were conducting the warm hand-offs. Behavioral health externs were notified about referral procedures via emails which primarily focused on referring patients in their individual caseloads. Additional training and orientation for behavioral health externs specifically about including group information within the warm hand-off procedures would likely have increased recruitment and participation.

No referrals were made directly from primary care providers throughout the course of the intervention. The site supervisor met with the team of physicians when the study was initially being integrated into the practice to orient the team about the group intervention and provide referral flyers. However, no ongoing orientation or information was provided to the primary care

team, which is likely the reason for lack of referrals coming directly from physicians. Previous studies emphasize close collaboration with primary care providers and weekly attendance of physician team meetings as essential components to sustaining successful group-based interventions in primary care (Craner, Sawchuk, & Smyth, 2016; Eisenstat, Ulman, Siegel, & Carlson, 2013; Graffy et al, 2009). Implementing closer working relationships between the study coordinator and key physicians in the practice and actively soliciting referrals during team meetings would have likely increased physician participation in the recruitment and referral process. It would be interesting to determine whether patients would be more receptive to attending a group intervention when referred directly from their trusted primary care provider versus through a warm hand-off with an unfamiliar behavioral health extern. It is also probable that physicians will most likely default to standard and familiar referral practices (ie referring through warm hand-offs and electronic medical record) to connect patients to behavioral health services instead of having to identify which patients are a good fit for the group intervention. With more active recruitment from warm hand-offs and the waitlist, the behavioral health team could ensure that any patients referred by physicians would have the opportunity to be connected to the group intervention.

## **Conclusions**

Clinical benefits of this intervention that were not precisely captured by the data were expressed frequently to the researchers by patients, behavioral health externs, and the site supervisor numerous times over the course of the study. Having the option to refer patients with higher acuity to an in-house service reduced significant clinical burden on individual therapists. Behavioral health externs consistently expressed gratitude for the clinical improvement seen in their patients once they began attending the group and they frequently reported that their

patients' group attendance enhanced the individual work they were doing with the patients. Additionally, having an in-house referral option reduced the stress of finding outside referrals for patients, and many behavioral health externs referred their patients to the group with the intention of transitioning them out of individual care. Behavioral health externs reported that having patients who were engaged and attending the group consistently made the termination of individual services more seamless and at times more feasible.

There was a strong sense of camaraderie and community built among the participants who attended the group on a consistent basis. These participants expressed their enjoyment and satisfaction with the group to group leaders on a frequent basis and would often share the functional improvements they were noticing in their lives with pride to the group leaders and members. Many participants are continuing to attend the group past the termination of the study and plan to complete multiple cycles of the intervention.

This was a small pilot study with restricted resources, which may have limited the scope of the intervention's impact within the FMMS practice. With more resources devoted to participant recruitment, it is likely that the intervention would produce even more clinical and administrative benefits to the practice as a whole. The clinical utility of future research trials is evident, with there being benefits in examining the causality between group attendance and clinical outcomes, as well as comparing the differences in concurrent individual versus group-only attendance outcomes. Continuing to research the most efficient ways to implement transdiagnostic interventions into primary care settings will not only reduce burden on primary care practices, but will increase access to effective treatments to a larger majority of the population than is possible in specialty mental health settings. Therefore, future iterations of this

research could have meaningful and practical implications on reducing the barriers that prevent marginalized populations from accessing evidence-based mental health services.

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Table 1  
*Patient Demographics (N = 35)*

Characteristic	Value n, (%)
<b>Age</b>	
18 - 29	10 (28.6)
30 - 39	9 (25.7)
40 - 49	3 (8.6)
50 - 59	8 (22.9)
60 - 69	3 (8.6)
70 - 79	2 (5.7)
<b>Gender</b>	
Female	25 (71.4%)
Male	10 (28.6%)
<b>Race/Ethnicity</b>	
Caucasian	18 (51.4)
African-American	9 (25.7)
Latino	7 (20)
Asian	1 (2.9)
<b>Individual Tx</b>	
Concurrent	16 (45.7%)
Partial	7 (20%)
None	12 (34.3%)

Table 2

*Patient Clinical Presentations*

Characteristic	Value n, (%)
Presenting Problem (N=35)	
Anxiety	10 (28.6)
Depression	6 (17.1)
Adjustment Disorder	5 (14.3)
BPD	4 (11.4)
PTSD	3 (8.6)
SUD	2 (5.7)
OCD	2 (5.7)
Chronic Pain	1 (2.9)
ADHD	1 (2.9)
Eating Disorder	1 (2.9)
Screened Positive on Measures (N=34)	
Somatization	16 (45.7)
Depression	13 (38.2)
Anxiety	10 (29.4)
Bipolar Disorder	5 (14.7)
SUD	4 (11.7)
Eating Disorder	2 (5.9)
Somatization - PHQ-15 (N=34)	
Minimal	5 (14.7)
Low	13 (38.2)
Medium	9 (26.5)
High	7 (20.6)
Depression - PHQ-9 (N=34)	
None	9 (26.5)
Mild	12 (35.3)
Moderate	8 (23.5)
Moderately Severe	3 (8.8)
Severe	2 (5.9)
Anxiety - GAD-7 (N=21)	
None	8 (38.1)
Mild	11 (52.4)
Moderate	2 (9.5)
Severe	3 (14.3)

Table 3

*Total Sessions Attended*

Session Number	Value n, (%)
1 session	9 (25.7)
2-4 sessions	10 (28.6)
5-7 sessions	4 (11.4)
8-10 sessions	7 (20)
11+ sessions	5 (40.3)

Table 4

*Average Attendance Rates by Month*

Month	Morning Group	Evening Group	Total Attendance
April	1.5	2.5	4.0
May	2.2	2.2	4.4
June	3.0	2.0	5.0
July	3.3	1.8	5.0
August	2.4	0.6	3.0
September	3.0	2.0	5.0
October	1.5	3.5	5.0
November	1.3	3.0	4.3
December	2.0	3.0	5.0
January	0.8	2.8	3.6
February	2.0	4.3	6.3
March	1.0	3.5	4.5

Table 5  
*Reasons for Participant Study Termination*

Termination Reason	Value n, (%)
Total Sample (N=35)	
Too Busy	10 (20)
End of Study	9 (18)
Schedule Conflict	9 (18)
Completed Cycle	6 (12)
Lost to Follow Up	6 (12)
Uncomfortable	4 (8)
Prefer Individual	4 (8)
Referred Out	1 (2)
Found Tx Elsewhere	1 (2)
Attended 4 Sessions or Less (N=19)	
Lost to Follow Up	6 (23.1)
Schedule Conflict	6 (23.1)
Too Busy	5 (19.2)
Uncomfortable	3 (11.5)
Prefer Individual	2 (7.7)
End of Study	2 (7.7)
Referred Out	1 (3.8)
Found Tx Elsewhere	1 (3.8)

Table 6  
*Skill Helpfulness at Termination*

Skill (N)	Value
Mindfulness WHAT (16)	1.94
Radical Acceptance (16)	1.81
Mindfulness HOW (14)	1.79
Model of Emotions (13)	1.77
Opposite Action/Problem Solving (13)	1.77
ABC Please (12)	1.75
Check the Facts (13)	1.69
DEAR MAN (11)	1.64
Mindfulness for Attention (16)	1.62
TIP/Distract	1.61

*\*\*the N for each skill is varied because participants were only asked to rate skill helpfulness if they attended that session.*

Table 7  
*Frequency of Skill Use at Termination*

Skill (N)	Value
Mindfulness WHAT (16)	1.62
Radical Acceptance (16)	1.56
Mindfulness HOW (14)	1.50
Mindfulness for Attention (16)	1.50
Check the Facts (13)	1.46
ABC Please (12)	1.45
Opposite Action/Problem Solving (13)	1.38
TIP/Distract (18)	1.33
Model of Emotions (13)	1.31
DEAR MAN (11)	1.27

*\*\*the N for each skill is varied because participants were only asked to rate skill helpfulness if they attended that session.*

Table 8

*Helpfulness, Skills Practice and Homework Completion at Weekly Sessions*

Skill	Helpfulness	Practice	HW Completion
Mindfulness WHAT	1.75	1.63	1.22
Mindfulness HOW	1.93	1.53	1.11
Model of Emotions	1.91	1.07	1.08
Check the Facts	1.88	1.02	0.86
Opposite Action/Problem Solving	1.88	1.37	1.10
Mindfulness for Attention	1.95	1.4	1.31
ABC Please	1.98	1.56	0.98
TIP/Distract	1.96	1.45	0.86
Radical Acceptance	1.85	1.32	0.94
DEAR MAN	1.83	1.30	0.72



Table 9

*Qualitative Response Frequencies*

	Positive Responses	Negative Responses
Post Treatment General Feedback (responses = 56)	45 (80.4%)	11 (19.6%)
General	6	0
Group Members	15	2
Group Leaders	14	1
Group Setting	1	4
Group Structure	0	4
Helpfulness of Skills	9	0
Post-Treatment Skills Specific Feedback (responses = 19)	12 (63.2%)	7 (36.8%)
Helpfulness of Skills	7	6
Application of Skills	5	1
Weekly Feedback (responses = 278)	232 (83.4%)	46 (16.6%)
General	56	0
Group Members	9	4
Group Leaders	6	0
Group Setting	0	7
Skills Acquisition	39	0
Helpfulness of Skills	60	9
Application of Skills	62	26

Table 10

*Intent-to-treat Sample Paired T-Test Results (N=34)*

Measure	Mean	SD	p	cohen's d	Effect Size
PhQ-15	2.03	3.96	0.01**	0.51	Medium
PhQ-9	2.41	4.97	0.00**	0.49	Small
RSQ-RRS Total	5.21	9.71	0.00**	0.54	Medium
RSQ-RRS Brooding	1.09	3.20	0.06	0.34	Small
DERS Total	5.91	14.71	0.03*	0.40	Small
DERS Non-Accept	1.18	3.73	0.08	0.32	Small
DERS Goals	0.12	4.01	0.87	0.03	None
DERS Impulse	1.06	3.25	0.07	0.33	Small
DERS Awareness	0.94	4.77	0.26	0.20	None
DERS Strategies	1.35	6.10	0.21	0.22	Small
DERS Clarity	1.06	2.41	.015*	0.44	Small
DBT-WCCL Skills Use	-0.24	0.38	0.00**	0.63	Medium
DBT-WCCL Dysfunction	0.12	0.37	0.06	0.32	Small

\*p &lt; .05; \*\*p &lt; .01

Table 11

*Post-Treatment Data Collection Sample Paired T-Test Results (N=24)*

Measure	Mean	SD	p	cohen's d	Effect Size
PhQ-15	2.21	4.27	0.02*	0.52	Medium
PhQ-9	3.71	4.74	0.00**	0.78	Medium
RSQ-RRS Total	7.08	10.76	0.00**	0.66	Medium
RSQ-RRS Brooding	1.48	3.68	0.06	0.40	Small
DERS Total	8.04	16.72	0.02*	0.48	Small
DERS Non-Accept	1.60	4.29	0.08	0.37	Small
DERS Goals	1.60	4.70	0.87	0.34	None
DERS Impulse	1.44	3.73	0.07	0.39	Small
DERS Awareness	1.28	5.55	0.26	0.23	None
DERS Strategies	1.84	7.08	0.21	0.26	Small
DERS Clarity	1.44	2.73	0.014*	0.53	Small
DBT-WCCL Skills Use	-0.33	0.41	0.00**	0.80	Large
DBT-WCCL Dysfunction	0.16	0.43	0.07	0.38	Small

\*p &lt; .05; \*\*p &lt; .01

Table 12  
*Adequate Dose of Intervention Sample Paired T-Test Results*  
 (N=16)

Measure	Mean	SD	p	cohen's d	Effect Size
PhQ-15	2.56	4.35	0.03*	0.59	Medium
PhQ-9	3.94	5.00	0.00**	0.79	Medium
RSQ-RRS Total	6.88	13.01	0.05*	0.53	Medium
RSQ-RRS Brooding	1.50	4.21	0.18	0.36	Small
DERS Total	11.86	17.88	0.02*	0.66	Medium
DERS Non-Accept	1.81	4.83	0.15	0.38	Small
DERS Goals	1.31	4.56	0.27	0.29	Small
DERS Impulse	1.63	4.10	0.13	0.40	Small
DERS Awareness	2.19	5.95	0.16	0.37	None
DERS Strategies	3.31	7.80	0.11	0.43	Small
DERS Clarity	1.63	2.99	0.04*	0.56	Medium
DBT-WCCL Skills Use	-0.46	0.40	0.00**	1.15	Large
DBT-WCCL Dysfunction	0.23	0.42	0.05*	0.54	Medium

\*p < .05; \*\*p < .01

Table 13  
*Weekly Measure HLM Results*

Measure	$\beta$	SE	t	% of Variance
PhQ-15	-0.17	0.03	-5.04***	9.73
PhQ-9	-0.27	0.04	-7.25***	20.72
GAD-7	-0.16	0.04	-4.44***	11.38

\*p < .05; \*\*p < .01; \*\*\*p < .001

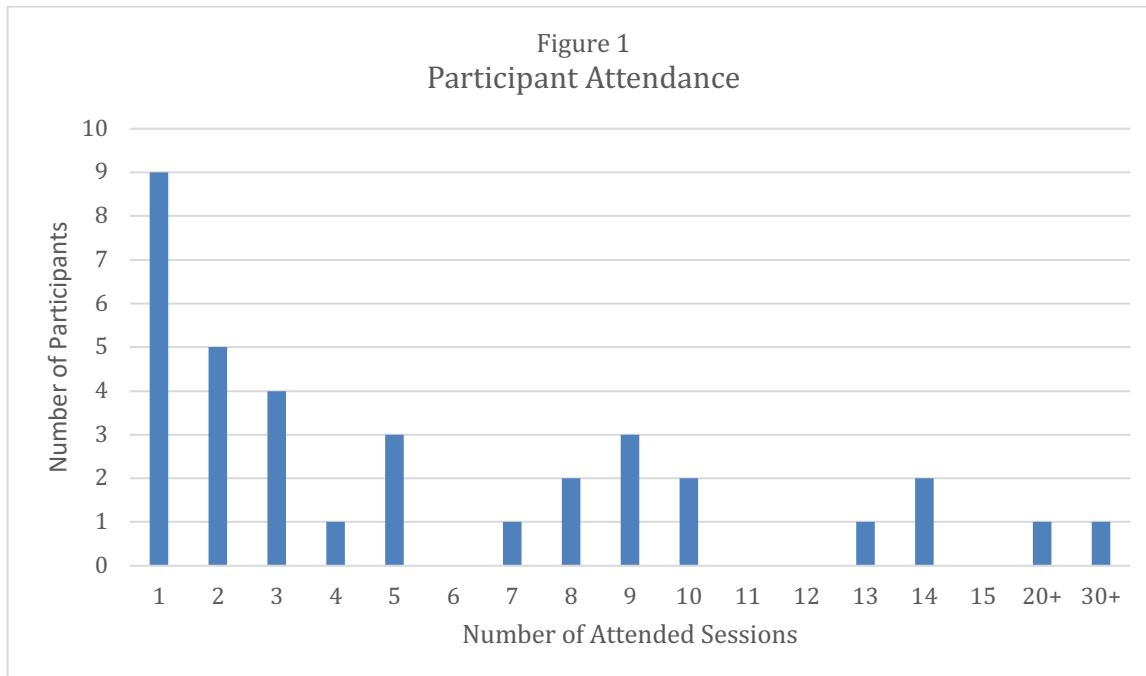


Figure 1. Participant attendance

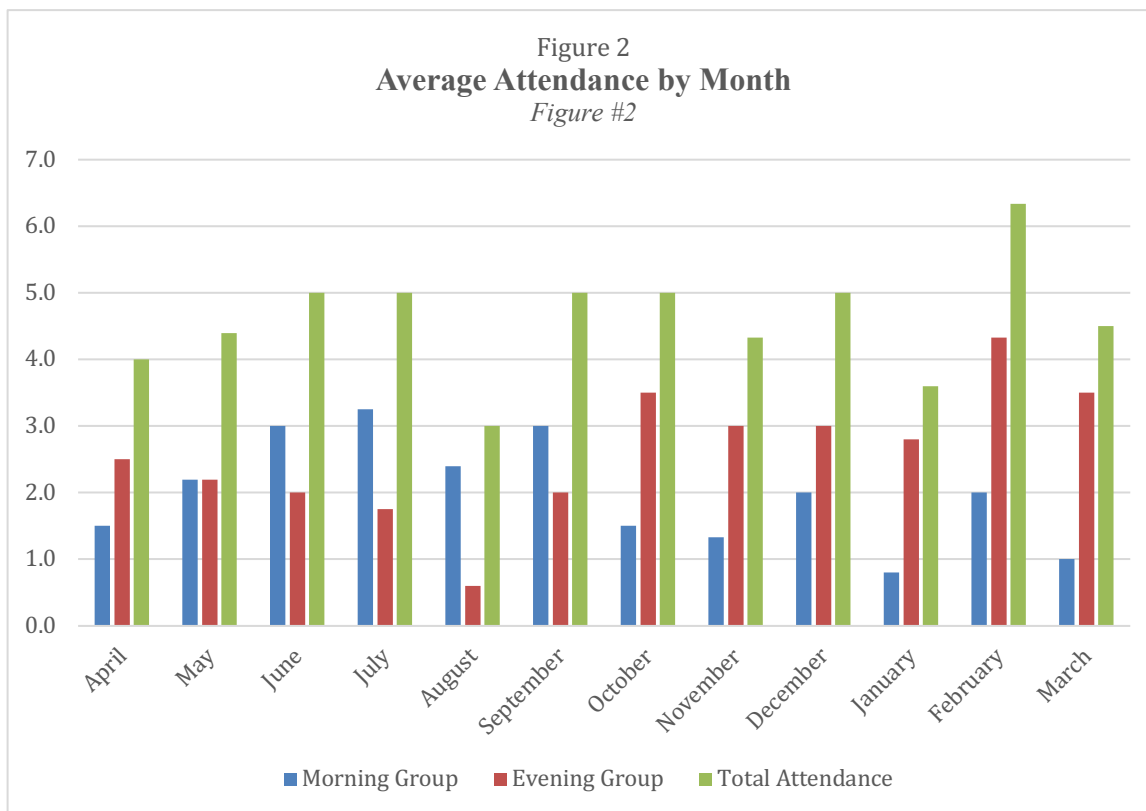


Figure 2. Average attendance by month

**Appendix A**

**Homework Completion Worksheet**

1. Did you complete your homework worksheets from the LAST group you attended?  
Yes, ALL of it                      Yes, PART of it                      No, NONE of it

2. How often do you use the skills you learned at the LAST group you attended?  
Frequently                      Occasionally                      Never

3. How helpful do you find the skills that you learned at the LAST group you attended?  
Very Helpful                      Somewhat Helpful                      Not at all Helpful

4. Please provide any feedback about practicing these skills that you want to share:

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**Group Satisfaction Survey**

1. Did you enjoy today's group?

Very Much

Somewhat

Not at all

2. How helpful do you find the skills that you learned today?

Very Helpful

Somewhat Helpful

Not at all Helpful

3. How often are you planning on using the skills you learned today?

Very Often

Occasionally

Never

4. Please provide any feedback about today's group that you would like to share:

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### Group Satisfaction Exit Survey

1. How much did you enjoy your time attending the group?

Very Much

Somewhat

Not at all

2. How helpful do you find the skills that you learned during group?

Very Helpful

Somewhat Helpful

Not at all Helpful

3. Below is the list of skills that you may have learned during group. Please rate how often you currently use each skill and how helpful you find each skill:

- a. Observe, Describe, Participate – (*being mindful using your five senses, labeling your experiences using just the facts, throwing yourself into the moment*)

How helpful do you find observe, describe, and participate?

Very Helpful

Somewhat Helpful

Not at all Helpful

I Didn't Learn this Skill

How often do you use observe, describe, and participate?

Frequently

Occasionally

Never

I Didn't Learn this Skill

- b. Non-judgmentally, One-mindfully, Effectively – (*evaluating situations without judgments, doing one thing at a time, doing what works to achieve goals in any situation*)

How helpful do you find non-judgmentally, one-mindfully, and effectively?

Very Helpful

Somewhat Helpful

Not at all Helpful

I Didn't Learn this Skill

How often do you use non-judgmentally, one-mindfully, and effectively?

Frequently

Occasionally

Never

I Didn't Learn this Skill

- c. Model of Emotions and Mindfulness of Current Emotions – (*observing, describing, and labeling emotions, letting emotions come and go without judgments*)

How helpful do you find the model of emotions and mindfulness of current emotions?

Very Helpful

Somewhat Helpful

Not at all Helpful

I Didn't Learn this Skill

How often do you use the model of emotions and mindfulness of current emotions?

Frequently                      Occasionally                      Never                      I Didn't Learn this Skill

- d. Check the Facts – (*examining thoughts and checking the facts of thoughts to change unwanted emotions*)

How helpful do you find check the facts?

Very Helpful                      Somewhat Helpful                      Not at all Helpful                      I Didn't Learn this Skill

How often do you use check the facts?

Frequently                      Occasionally                      Never                      I Didn't Learn this Skill

- e. Opposite Action and Problem Solving – (*acting opposite to unwanted emotions and actively solving problems*)

How helpful do you find opposite action and problem solving?

Very Helpful                      Somewhat Helpful                      Not at all Helpful                      I Didn't Learn this Skill

How often do you use opposite action and problem solving?

Frequently                      Occasionally                      Never                      I Didn't Learn this Skill

- f. Mindfulness to Control Attention – (*using mindfulness skills to help manage worry or rumination*)

How helpful do you find mindfulness to control attention?

Very Helpful                      Somewhat Helpful                      Not at all Helpful                      I Didn't Learn this Skill

How often do you use mindfulness to control attention?

Frequently                      Occasionally                      Never                      I Didn't Learn this Skill

- g. ABC PLEASE – (*accumulating positive emotions, building mastery, coping ahead of time with emotional situations, taking care of your mind by taking care of your body*)

How helpful do you find ABC PLEASE skills?

Very Helpful                      Somewhat Helpful                      Not at all Helpful                      I Didn't Learn this Skill

How often do you use ABC PLEASE skills?



Frequently	Occasionally	Never	I Didn't Learn this Skill
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- h. TIP and DISTRACT – (*changing body chemistry using temperature, exercise, paced breathing, and paired muscle relaxation, and using distraction when feeling intense negative emotions*)

How helpful do you find TIP and DISTRACT?

Very Helpful	Somewhat Helpful	Not at all Helpful	I Didn't Learn this Skill
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How often do you use TIP and DISTRACT?

Frequently	Occasionally	Never	I Didn't Learn this Skill
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- i. Radical Acceptance, Turning the Mind, and Willingness – (*choosing to accept painful events and emotions, readiness to enter and participate fully in life and living*)

How helpful do you find radical acceptance, turning the mind, and willingness?

Very Helpful	Somewhat Helpful	Not at all Helpful	I Didn't Learn this Skill
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How often do you use radical acceptance, turning the mind, and willingness?

Frequently	Occasionally	Never	I Didn't Learn this Skill
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- j. DEAR MAN – (*using assertiveness to communicate what you want to another person*)

How helpful do you find DEAR MAN?

Very Helpful	Somewhat Helpful	Not at all Helpful	I Didn't Learn this Skill
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How often do you use DEAR MAN?

Frequently	Occasionally	Never	I Didn't Learn this Skill
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- 4. Of all the skills you learned, which did you find the most helpful? Why?

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5. Of all the skills you learned, which did you find the least helpful? Why?

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6. Please circle ALL reasons that led to you exiting the group:

- |   |  |
|---|--|
| The time didn't work well with my schedule              | I completed a full 10 weeks of the group                                   |
| I became too busy with other responsibilities to attend | I did not find the group helpful   |
| I prefer meeting with my individual counselor           | I did not feel comfortable sharing personal information in a group setting |
| I found mental health services elsewhere                | Other: _____   |

7. Please rate your overall satisfaction with the group:

- Very Satisfied                      Somewhat Satisfied                      Not at all Satisfied

8. What things did you enjoy about attending this group?

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9. What things did you dislike about attending this group? What changes would you recommend to make the group more enjoyable for you?

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10. Please provide any feedback about the group that you would like to share:

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