BENCHMARKING DIALECTICAL BEHAVIOR THERAPY FOR MALE VETERANS WITH POSTTRAUMATIC STRESS DISORDER:
A PILOT STUDY

by

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This pilot study examined the application and effectiveness of Dialectical Behavior Therapy (DBT) as a treatment for male combat veterans with Posttraumatic Stress Disorder (PTSD). Participants (n=8) were recruited from the Veterans Affairs Salt Lake City Health Care System (VASLCHCS) after seeking mental health services for PTSD symptoms. Veterans completed the Clinician Administered PTSD Scale (CAPS) as well as a battery of self-report questionnaires meant to assess a broad spectrum of PTSD symptomology including depressive symptoms, suicidal ideation, anger, sleep disturbance, avoidant behaviors, increased arousal, and hypervigilance as well as general wellbeing. After preassessment, veterans attended a DBT PTSD Coping Skills Group facilitated by staff members (clinical staff and graduate level trainees) at the VASLCHCS for a minimum of 10 weeks. Upon completion of this group, veterans were administered all post treatment assessment protocols.

Matched pairs t-tests were conducted for each of the nine assessments used in the present study. Four outcome measures (the CAPS, BDI, M-PTSD and STAXI-2 AX/O) showed statistically significant change between pre- and postassessment. Additionally, a benchmark was conducted using data from published treatment studies for PTSD. Due to a small sample size in the observed data, no statistical analysis was possible; however, effect size results from the observed data were visually compared against aggregated
results of the benchmark. This comparison showed the effect sizes of the observed data were equivalent to or greater to those of the benchmark. Implications for future research and clinical practice are discussed as well as the study limitations.
To all persons who have faced the unfortunate truths of war and to all veterans at home and abroad.

To my father,
who dutiful served his country during the Vietnam War, and ultimately took his own life because he could no longer face the horror of each night spent in dreams.

*Semper Fidelis*
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CHAPTER I

INTRODUCTION

Posttraumatic Stress Disorder in the DSM

Despite evidence of catastrophic and traumatic events occurring on a global scale since the dawn of recorded history and the plethora of stress-related events which served to define world crisis points in the 20th century, a separate diagnostic category for trauma-related psychiatric disorders was absent from the academic literature and the first two editions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-I and DSM-II; American Psychiatric Association, 1952, 1968; Wilson, Friedman, & Lindy, 2001). It was not until 1980 that Posttraumatic Stress Disorder (PTSD) was acknowledged as an Axis I Anxiety Disorder by the American Psychiatric Association.

Although controversial when first introduced, the PTSD diagnosis has filled a very important gap in psychiatric theory and practice. From a historical perspective, the significant change ushered in by the construct of PTSD was the stipulation that the etiological agent was outside the individual (i.e., exposure to a traumatic event) rather than an inherent individual weakness, neurochemical imbalance, genetics or familial history or other internal factors (Foa, Keane, & Friedman, 2000; Wilson et al., 2001). In fact, a diagnosis of PTSD cannot be made unless an individual meets Criterion A; that is,
having been exposed to a traumatic event. This diagnostic requirement is the topic of much discussion and debate as experience with PTSD in both theory and practice has demonstrated that there are significant individual differences regarding the capacity to cope with catastrophic stress.

Since its formal recognition as an Axis I Anxiety Disorder and its inclusion in the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition in 1980 (DSM-III; American Psychiatric Association), a great deal of data and information has accumulated regarding the complex and chronic nature of PTSD (Foa et al., 2000; Frueh, Turner, Beidel, Mirabella, & Jones, 1996). Because of the variance in people's threshold for stress, one individual exposed to a traumatic event may be able to effectively cope with the circumstances and the consequences thereof, and thus will not develop symptoms of PTSD, whereas another individual exposed to the same event will not be able to manage and cope effectively and will develop symptoms of PTSD and related distress. Such observations have prompted the recognition that trauma, like pain, is not simply an external phenomenon that can be completely objectified. Like pain, the traumatic experience is filtered through cognitive and emotional processes before it can be fully appraised. The appraisal or interpretation of traumatic events is often a focus of treatment because of the significant role it has in the aftermath of exposure for individuals and how they are able to cope (or not) with their experience.

**A Historical Perspective**

Among various traumatic events, exposure to war and combat is “notoriously pathogenic” (p. 2309; Soloman, Shklar, & Mikulincer, 2005). PTSD is one of the most disabling and disturbing psychopathological conditions affecting the veteran population
(Rothbaum et al., 1999) because of the devastating impact of its symptoms and associated features (discussed further below). PTSD among veterans is really not a new disorder, despite its only recent acknowledgement by the American Psychiatric Association. There are written accounts of individuals reporting PTSD-like symptoms dating back centuries, and there is clear documentation in the historical medical literature starting with the Civil War Era, when a PTSD-like disorder was known as "Da Costa's Syndrome (Davidson, Hughes, Blazer, & George, 1991)." Dr. J. Da Costa coined the term after working with soldiers during the Civil War, and discovered that many presented with symptoms consistent with heart disease (i.e., rapid heart rate, heart palpitations, labored breathing) but found no physical abnormalities to account for them. He proposed that these symptoms were the results of exposure to extreme stress and trauma in combat.

In addition to Da Costa's Syndrome, individuals suffering from PTSD-like symptoms were said to have Soldier’s Heart, Combat Fatigue, War Neurosis, and/or Shell Shock before the DSM diagnosis of PTSD was developed (ncptsd.org). PTSD-like symptoms have been observed in all veteran populations that have been studied, including World War II, Korean conflict, and Persian Gulf populations, in addition to Vietnam Veterans and in United Nations peacekeeping forces deployed to other war zones around the world (ncptsd.org; Grossman, 1996). In spite of these blatant historical cues, that trauma does in fact have great impact on an individual, careful research and documentation of trauma response and PTSD did not begin in earnest until shortly after the Vietnam War concluded.
Prevalence of PTSD Among Veterans

The 1988 National Vietnam Veterans Readjustment Study (NVVRS) conducted by Kulka et al. found that approximately 30% of the 3.1 million Vietnam veterans returning from Southeast Asia from 1964 to 1975 developed PTSD at some time following the war. It was estimated that 15% of these Vietnam veterans still suffer from the traumas of war even now, decades after the war has concluded (Kulka et al., 1988, 1990a, 1990b). Recent reanalysis of the NVVRS data (Kulka et al., 1988) suggests the original statistical estimates were inflated and found that 18.7% of Vietnam veterans developed PTSD at some time following the war with an estimated 9.1% of these veterans still suffering from symptoms of this disorder today (Dohrenwend, Turner, Turse, Adams, & Marshall, 2006, 2007).

Although the reanalysis by Dohrenwend and colleagues (2006, 2007) suggests a lower prevalence of PTSD among this population, the numbers remain staggering. Additionally, recent estimates indicate that at least 17% of Iraq veterans will develop PTSD or other posttraumatic mental health problems including depression or generalized anxiety disorder (Hogue et al., 2004). This is twice the number that would be expected before a military deployment and four times that found in the general population (Hogue et al., 2004). According to the 2000 edition of the DSM (DSM IV-TR; American Psychiatric Association), between 8 and 14% of the overall population suffer from PTSD. Given the nature of PTSD and the subsequent likelihood that many individuals with symptoms of the disorder do not seek treatment services, it could be argued that the above mentioned prevalence estimates are conservative.
PTSD is very much a cross-cultural phenomenon; there are remarkably similar findings of PTSD in military veterans in other countries across the world. For example, Australian Vietnam veterans experience many of the same symptoms that American Vietnam veterans experience (Creamer, Morris, Biddle & Elliott, 1999; Forbes, Creamer & McHugh, 1999). Australia sent approximately 50,000 soldiers to Vietnam and evidence suggests their rates of PTSD are comparable to those noted in Kulka et al. (1988), with 21% prevalence of lifetime PTSD with 12% still experiencing symptoms (O'Toole, 1996). Although there are unique cultural and gender-based aspects of the disorder, PTSD carries with it no prejudice. The disorder affects men and women, adults and children, Western and non-Western cultural groups, and all socioeconomic strata.

The course of chronic PTSD usually involves periods of symptom increase followed by remission or decrease, although some individuals may experience symptoms that are unremitting and severe (Foa et al., 2000). Some veterans report a lifetime of only mild distress but experience a significant exacerbation of symptoms following retirement (Schnurr, Lunney, Sengupta, & Spiro, 2005) or other major life events including severe medical illness in themselves or their loved ones (e.g., Kangas, Henry & Bryant, 2005a, 2005b), or reminders of their military service (e.g., reunions with other veterans, media broadcasts of the anniversaries of major war events and/or learning about events of present day war or other catastrophes; Keane, Fairbank, Caddell, Zimering, & Bender, 1985; Litz, Orsillo, Kaloupek, & Weathers, 2000).

Efforts to Find Effective Treatments

Due to the staggering numbers of veterans suffering from the symptoms of PTSD as well as a large number of other victims who suffer from the repercussions of traumatic
events (civilian exposure to war and combat, natural disasters, rape/sexual assault, abuse, crime, violence, accidents, etc.), there is an intense and passionate interest in obtaining quantitative outcome data from both clinical (controlled) and real world (uncontrolled) settings that are providing treatment to individuals with PTSD to ensure appropriate and effective care is being provided. Numerous empirical studies have been done examining the effectiveness of treatments for PTSD including cognitive behavioral (Fairbank & Keane, 1982; Foa, Rothbaum, Riggs, & Murdock, 1991; Frueh et al., 1996; Humphreys, Westerink, Giarratano, & Brooks, 1999; Monson, Schnurr, Stevens & Guthrie, 2004), exposure therapy (Foa et al., 1999; Foa et al., 2005; Forbes, Phelps, & McHugh, 2001; Rothbaum et al., 1999), Eye Movement Desensitization and Reprocessing (EMDR; Carlson, Chemtob, Rusnak, Hedlund & Muraoka, 1998; Forbes, Creamer & Rycroft, 1994; Grainger, Clifford, Allen-Byrd, Doctor & Lee, 1997; Taylor et al., 2003), as well as various types of group (Foy, Ruzek, Glynn, Riney & Gusman, 2002; Kutter, Wolf, & McKeever, 2004; Makler & Sigal, 1990; Schnurr et al., 2003), and inpatient (Bolton et al., 2004; Humphreys et al., 1999; Johnson, Lubin, James, & Hale, 1997) treatment modalities.

In the simplest formulation, the central objectives in the treatment of PTSD are as follows: (1) normalization and stabilization of the stress response (i.e., alleviating or removing factors that perpetuate maladaptive and prolonged psychobiological stress response(s) within the client to ameliorate anxiety, tension, and levels of distress; e.g., first and foremost getting the individual in a safe and secure environment, away from the stressor); (2) facilitate a reduction or elimination of maladaptive psychobiological processes which include cognitive distortion, hypervigilance, startle responses,
hyperarousal processes, sleep disturbance, and affective instability (ranging on a
continuum from anger to depression to diverse forms of anxiety; i.e., treat the symptoms
and associated features; Foa et al., 2000; Wilson et al., 2001).

Dialectical Behavior Therapy

Dialectical Behavior Therapy (DBT) was created by Dr. Marsha Linehan at the
University of Washington in the early 1990s. Linehan created this treatment initially for
use with parasuicidal clients, specifically those clients who had a diagnosis of Borderline
Personality Disorder (BPD) and were exhibiting parasuicidal behaviors (Linehan, 1993a,
1993b). DBT has been found to be an effective treatment for individuals with BPD
(Linehan, Armstrong, Suarez, Allmond, & Heard, 1991), and has become a widely used
manualized treatment method. DBT is the application of a broad array of cognitive and
behavior therapy strategies in addition to the utilization of ideals from Zen practice,
specifically mindfulness, to the problems of BPD, including suicidal behaviors.

The therapy typically begins in what could be considered a very standard
cognitive-behavioral treatment program including basic assessment of symptoms,
personality and current psychological status; data collection on current behaviors;
defining precise operational treatment objectives; a collaborative working relationship
between therapist and client, including attention to orientating the client to the treatment
program and mutual commitment to treatment goals; and finally, application of standard
cognitive and behavioral therapy techniques (Linehan, 1993a).

Although DBT was created with BPD in mind, it has been applied to additional
populations including individuals with binge eating disorder (Safer, Lively, Telch, &
Agras, 2002; Telch, Agras, Linehan, 2001) female juvenile offenders (Turpin, Stewart,
Beach, 2002); adult sex offenders (Shingler, 2004), adolescents with parasuicidal behavior (Miller, 1999) and individuals with a dual diagnosis of BPD and substance dependence (Linehan et al., 1999). Of note, are studies implementing DBT for incarcerated men (McCann, Ball, Ghanizadeh, Gallietta, & Froelich, 2002) and older adults with depressive symptoms (Lynch, Morse, Mendelson, & Robbins, 2002) as these are the only two published studies to date that include males in their sample.

Currently, no studies have evaluated DBT as a treatment method for male veterans with PTSD. However, BPD and PTSD have somewhat similar broad spectrum symptom characteristics (i.e., avoidant behaviors, reactive moods and instable affect, trouble controlling anger, ineffective interpersonal relationships) such that the core skill sets comprising DBT, seem appropriate to target the symptoms and associated features of PTSD. Further, it should be noted that many individuals diagnosed with BPD have experienced trauma in their pasts, exhibit symptoms of PTSD, and often meet diagnostic criteria for a PTSD diagnosis (Wagner & Linehan, 2006). The skills presented in DBT encourage increased mindfulness and self awareness, emotion stability and regulation, effective and appropriate emotional expression, increasing positive emotions and experiences, building healthy and effective interpersonal relationships while maintaining one’s own objectives and self-respect, and building distress tolerance and crisis management skills (Linehan, 1993b).

Of note, are the distinctive and defining characteristics of DBT that set it apart from typical cognitive-behavioral treatment programs. As its name suggests, its overarching characteristic is an emphasis on “dialectics”—that is, the reconciliation of opposites in a continual process of synthesis (Linehan, 1993a, 1993b). The most
fundamental dialectic within the DBT program is that of acceptance and change. Specifically, from a therapist’s perspective this means the process of fully accepting clients just as they are within a context of teaching them to change. From a client perspective this means accepting one’s own life circumstances as reality (moving away from denial), while at the same time working to make improvements and implement cognitive and behavioral changes in their lives.

Clinical Trials versus Real World Treatment Studies

The majority of published psychotherapy studies examine research conducted in clinical trials. These efficacy studies have a great deal of control regarding both the treatment protocol and participant selection. Since most treatment going on in the real world lacks this level of control, it is difficult to determine how the information gathered in clinical trials is applicable to real world settings. However, data obtained from clinical trials is vital to the progression of research and clinical practice. Although clinical trials have long been crucial in establishing treatment efficacy, researchers and clinicians alike have argued that clinical trials need to be followed up with studies that are conducted in real world settings as this process would allow for a more accurate picture of how the treatment in question is working for actual clients in real clinical settings (e.g., Chambless & Hollon, 1998; Goldfried & Wolfe, 1998). Benchmark studies take this process a step further and compare the treatment outcome results of clinical trials to those obtained in real world settings.

The current study will benchmark data gathered from a real world setting (the Salt Lake City Veterans Affairs Health Care System [SLCVAHCS]) against data obtained in the clinical trials of PTSD treatments. This benchmarking process is especially necessary
in the present study as currently there are no published studies (clinical trials or real world) that examine the effectiveness of DBT for a similar population (i.e. male veterans and/or a trauma population without the BPD diagnosis). Further, due to ethical considerations a wait list control was not considered as it would require withholding treatment from the group (a potentially very vulnerable and high risk group) for a minimum of 10 weeks. A lack of sufficient resources and limited clinical staff made utilization of a comparison control group impossible.

**Purpose of the Current Study**

This study was the first to attempt to examine the effectiveness of DBT as a treatment method for male veterans with PTSD. It was hypothesized that veterans receiving mental health treatment in the form of DBT PTSD Coping Skills will experience a reduction of distress across all symptom clusters of PTSD and associated features.
DSM Criteria for Posttraumatic Stress Disorder

The DSM IV-TR (American Psychiatric Association, 2000) defines PTSD by six criteria. The causal factor (criterion A) of PTSD states that an individual must have experienced a traumatic event in which there was perceived or actual serious danger to self or others. Additionally, criterion A states the experience must have evoked strong feelings including intense fear, helplessness and/or horror. There are three symptom clusters for PTSD including persistent re-experiencing of trauma (re-living traumatic events through intrusive thoughts, memories, nightmares, flashbacks, etc.; criterion B); emotional numbing and avoidance of thinking or talking about past trauma and of situations that trigger memories of trauma (criterion C); and heightened arousal and hypervigilance (a heightened sense of awareness of one's surroundings, exaggerated startle response; trouble falling or staying asleep; criterion D; American Psychiatric Association, 2000).

The full spectrum of symptoms must be present for more than 1 month (criterion E) and the psychological distress must cause clinically significant impairment and debilitating behavioral features such as unemployment, impulsive or violent behavior, and family discord (criterion F; American Psychiatric Association, 1994; Foa et al., 2000;
Individuals suffering from PTSD also typically experience a diverse set of secondary symptoms, including guilt (to include survivor guilt as well as guilt regarding acts of omission or commission; King & King, 1994; Kubany, 1994), impaired concentration (Bremner et al., 1992; Horowitz, 1986), memory disruption (Brenmer, Krystal, & Charney, 1995), and anger (Chemtob, Harnada, Roitblat, & Muraoka, 1994; Kubany, Gino, Denny, & Torigoe, 1994).

Several risk factors make some individuals more prone to develop PTSD than others: (1) experience of greater stressor magnitude and intensity, unpredictability, uncontrollability, real or perceived responsibility, and betrayal; (2) predisposition due to genetic factors, early age of onset and longer-lasting childhood trauma, lack of functional social support, and concurrent stressful and/or traumatic life events; (3) report of greater perceived threat or danger, suffering, upset, terror, horror and/or fear; and (4) a social environment that produces shame, guilt, stigmatization, or self-hatred (Foa et al., 2000; Wilson et al., 2001). PTSD is also associated with the increased likelihood of comorbid or co-occurring psychiatric disorders. In a large-scale study conducted by the National Center for PTSD, 88% of men and 79% of women with PTSD met diagnostic criteria for one or more psychiatric disorders. The co-occurring disorders most prevalent for men with PTSD were alcohol abuse or dependence, drug abuse or dependence, major depressive episodes, and conduct disorders. The disorders most frequently comorbid with PTSD among women were major depressive disorders, simple phobias, social phobias, and alcohol abuse or dependence (ncptsd.org).
Prominent Methods for Treating PTSD

Theory and practice around PTSD has continued to grow and develop since the early 1980s and is certainly on the forefront of the minds of many researchers and clinicians given the current global climate including the war in Iraq and related conflicts, genocide and rebel warfare in Africa, natural disasters across the world, and continued day to day traumatic events including rape and sexual violence, physical violence, crime, and accidents. Treatment for PTSD typically begins with a detailed evaluation of an individual’s current symptoms and the impact they are having on daily functioning and the development of a treatment plan that meets the unique needs of the survivor.

Generally, treatment for PTSD specific symptoms begins only after the survivor has been safely removed from a crisis situation. If a survivor is still being exposed to trauma (i.e., continued participation in a military war zone, ongoing domestic or community violence, or abuse), severely depressed or suicidal, experiencing extreme panic or disorganized thinking, or is in need of drug or alcohol detoxification, it is important to address these crisis problems as the first phase of treatment.

Through the efforts of many researchers and clinicians, several treatments have been found that seem to be effective in alleviating the symptoms of PTSD in trauma survivors. Some of the most widely used treatment modalities used in the care of individuals with PTSD include cognitive-behavioral therapies (CBT; and those treatments under the umbrella of CBT including systematic desensitization and exposure therapy), in addition to psychodynamic therapy, Eye Movement Desensitization and Reprocessing (EMDR), and psychotropic medication management. As DBT does not
incorporate psychotropic medication management, the literature reviewed will include only psychotherapeutic forms of treatment.

**Cognitive Behavior Therapy**

Cognitive therapy, initially developed by Beck (1976) to treat depression, was then developed further as a treatment for anxiety (Clark, 1986). Cognitive therapy is based on Beck’s (1976) theory that the interpretation of the event, rather than the event itself, is what determines mood states. Thus, interpretations that are negatively biased led to negative mood states. These potentially unhelpful interpretations, generally referred to as automatic (dysfunctional) thoughts, are typically seen as either inaccurate or too extreme for the situation that prompted them.

Cognitive therapy generally aims to modify automatic and dysfunctional thoughts. This occurs in steps wherein clients are taught to identify these thoughts, challenge those evaluated as inaccurate or unhelpful, and, finally, to replace them with more logical and beneficial thoughts. With respect to trauma survivors, much attention is paid to their appraisals of safety and/or danger, trust, and views of themselves (Foa et al., 2000).

Behavior therapy stems from the work of prominent psychologists including Skinner, Pavlov, Eyseneck and Wolpe. It pulls from Mowrer’s (1960) two-factor theory of conditioned fear and operant avoidance, as well as principles of classical and operant conditioning as discussed by Ivan Pavlov and B.F. Skinner, respectively (Prochaska & Norcross, 2007; Rothbaum, Meadows, Resick, & Foy, 2000). Generally, the purpose of behavior therapy is to identify and change undesirable and maladaptive behaviors. Strict behaviorists focus predominantly on actions and behaviors, paying little attention to
emotions, but still strongly emphasize the need to modify learned behaviors and ideas when they are maladaptive or destructive.

CBT for PTSD encompasses numerous techniques and involves a highly diverse set of terms and procedures, synthesizing both cognitive and behavior therapies. As noted above, treatments intended to ameliorate the symptoms of PTSD that fall under the umbrella of CBT include exposure therapy as well as systematic desensitization. As a hybrid of cognitive and behavioral parentage, cognitive behavioral theories of psychopathology and psychotherapy are less distinctive than either of their parental contributors. Some cognitive-behaviorists work from a strong behavioral framework, occasionally adding a bit of theory from cognitive therapy, whereas others work from a strong cognitive framework, adding in only bits and pieces of behavioral theory (Prochaska & Norcross, 2007).

CBT for trauma survivors typically includes learning skills for coping with anxiety (i.e., breathing retraining or biofeedback) and negative thoughts (i.e., cognitive restructuring), anger management, preparing for stress reactions (i.e., stress inoculation), handling future trauma symptoms, addressing urges to use alcohol or drugs when trauma symptoms occur (i.e., relapse prevention), and communicating and relating effectively with people (e.g., improving social skills or interpersonal relationships).

Reexperiencing and arousal symptoms that are elicited by environmental stimuli are viewed as emotional responses that result from classical conditioning. Therefore, as a result of applied behavioral analysis, the focus of treatment may not necessarily be on past trauma(s) itself, but on the conditioned responses to the trauma. Using a behaviorally based theory, although initial symptoms may be caused by the trauma, many current
symptoms may represent attempts to manage trauma-induced stress (Linehan, 1993; Rothbaum et al., 2000). Emotional processing theory (Foa & Kozak, 1986) posits that PTSD emerges out of the development of a pathological fear structure concerning the traumatic event (Foa, Steketee, & Rothbaum, 1989). Any information associated with the trauma will activate this fear structure. Under this theory, treatment would involve correcting the pathological elements of the fear structure and creating more adaptive methods of coping with the anxiety and fear provoking stimuli.

**Exposure Therapy**

Exposure therapy (EX) uses careful, repeated, and detailed exposure to a given traumatic stimulus in a safe, controlled context to help the survivor face and gain control of the fear and distress that was overwhelming during the trauma. A variety of terms have been used to describe exposure therapy including: flooding, imaginal exposure, in vivo exposure, prolonged exposure, and directed exposure.

Systematic desensitization (SD; Wolpe, 1958) is also a term that appears frequently in conjunction with EX as it can be described as a method of gradual exposure. SD is often paired with some sort relaxation training program. SD is based on the principle of reciprocal inhibition. The relaxation response was thought to be incompatible with the anxiety response elicited by exposure, meaning it is practically impossible to feel relaxed and anxious at the exact same moment; thus, short exposures were interrupted by relaxation as anxiety increased. Over time, this allowed clients to confront anxiety-provoking stimuli without an anxiety response. SD is most often conducted using imaginal exposure, although sometimes it will be used with in vivo (i.e., real life) stimuli. There is some indication that the desensitization done with in vivo stimuli produces
greater improvement than that done with imaginal (Barlow, Leitenberg, Agras, &

Successful exposure therapy activates an individual’s pathological structure, and, at the same time, introduces corrective information that can be incorporated into a new, more adaptive structure. The therapeutic strategy is to reverse the reinforcement contingencies or the neurotic paradox; intentional, prolonged contact with the feared stimuli (prolonged exposure) and the active blocking of the associated avoidance (response prevention). In the short term, clients will likely experience heightened anxiety, but through the process of extinction, they will with equal likelihood experience reduced anxiety and avoidance in the long term (Prochaska & Norcross, 2007). Of particular relevance to PTSD is a study that suggests fear activation during treatment promotes successful outcome (Foa, Riggs, Massie, & Yarczower, 1995). Of note, EX has a very promising and impressive reputation in the treatment of trauma and PTSD with populations other than military veterans. Specifically, Foa and colleagues, in addition to others, have done a great deal of research, focused predominately on the efficacy and effectiveness of EX in the treatment of rape and sexual assault survivors and have found very positive outcomes (e.g., Foa et al., 1999; Foa et al., 2005; Jaycox, Zoellner, & Foa, 2002; Rauch, Foa, Furr, & Filip, 2004).

Research Studies Evaluating CBT and EX

Numerous studies have examined CBT as a treatment for veterans with PTSD (e.g., Bolton et al., 2004; Boudewyns & Hyer, 1990; Bowen & Lambert, 1986; Chemtob, Novaco, Harnada, & Gross, 1997; Cooper & Clum, 1989; Dunn et al., 2007; Forbes et al., 2003; Frueh et al., 1996; Monson et al., 2004; Monson et al., 2006; and Monson,
Rodriguez, & Warner, 2005). Additionally, many studies have explored treatments under the CBT umbrella, specifically EX (e.g., Cooper & Clum, 1989; Keane, Fairbank, Caddell, & Zimering, 1989; Rothbaum et al., 1999) and have found that CBT appears to be an effective method of treatment for this population.

Monson and colleagues (2006) conducted a study with veterans ($n=60$) exploring the utility of Cognitive Processing Therapy (CPT; Resick & Schnicke, 1992), a unique form of treatment that blends cognitive-behavioral techniques with exposure and general psychoeducation. At post treatment 40% of their sample no longer met diagnostic criterion for PTSD and 50% had shown reliable positive change in their PTSD symptoms. They also reported additional positive effects of CPT including improvements in depressive symptoms, general anxiety, guilt, social adjustment and emotion regulation (Monson et al., 2006). Chemtob et al. (1997) examined CBT, specifically exploring its effectiveness at decreasing anger and improving anger regulation and management skills ($n=15$). Veterans in the CBT group showed greater improvement in overall anger expression, $F(1, 12) = 5.81, p < .04$, as well as their ability to effectively manage and control anger than those in the routine clinical care group. Another study exploring CBT as a treatment for PTSD symptoms, notably anger, was conducted by Bolton and colleagues (2004). This study examined the benefit of CBT based treatment intended to assist veterans with understanding PTSD and managing both stress and anger effectively. Bolton et al. reported decreased reexperiencing symptoms and lowered tendency toward extreme anger and violence as well as increased overall life satisfaction (Bolton et al., 2004).
Another CBT treatment that shows considerable promise in treating PTSD, specifically in decreasing posttraumatic nightmares, is Imagery Rehearsal Therapy (IRT). IRT intends to help alleviate the distress caused by posttraumatic nightmares as well as the intensity and frequency, by teaching clients to alter or change the endings of their nightmares, while they are awake, so that the ending are no longer upsetting. The client is then instructed to rehearse the new, nonthreatening endings and related images associated with the changed dream. Forbes and colleagues (2003) conducted a study using IRT to treat Australian veterans with chronic nightmares and found impressive effect. Specifically, they indicated PTSD symptom reduction (ES=.80); depressive symptom reduction (ES=.68) and general anxiety (ES=.53) across pre- and posttreatment.

A study conducted by Dunn and colleagues (2007) explored the effectiveness of a self-management group (SMT) in comparison to a general psychoeducational group (PGT) for veterans with diagnosed comorbid PTSD and depressive disorder. The CBT based self-management group (SMG) incorporated presentations on depression and PTSD, discussion of consequences of short and long term behaviors and interpretation of life events as well as goal setting and self-reinforcement in addition to utilizing CBT techniques to encourage cognitive and behavioral change. The results of this study suggested modest improvement in PTSD and depressive symptoms in the SMT over the PGT; however, it must be noted that these improvements declined at follow up assessment (Dunn et al., 2007).

Monson et al. (2004) conducted a study exploring CBT in couple’s therapy in which the husbands were diagnosed with military-related PTSD and noted significant effect in reduction of PTSD symptoms as assessed by a clinical interview ($d=1.60, p<$
as well as decreased depression ($d=1.55, p < .01$) and anxiety ($d=1.01, p < .05$). Frueh et al. (1996) examined the use of a multicomponent cognitive treatment for veterans designed to reduce emotional and physiological reactivity to traumatic cues, reduce intrusive symptoms and avoidant behaviors, and improve interpersonal skills and emotion modulation. They reported a significant reduction in anxiety as well as improved sleep as assessed by total number of hours slept and decreased nightmares.

Several studies examined various types of EX as a treatment for veterans with PTSD and have found positive results (Cooper & Clum, 1989; Keane et al., 1989; Rothbaum et al., 1999). Keane and colleagues looked at implosive or flooding exposure therapy as a means of reducing overall PTSD symptoms. The participating veterans who received flooding reported a significant decrease in depressive symptoms, $F(1, 22) = 4.57, p < .05$, as well as anxiety, $F(1, 22) = 4.35, p < .05$. These improvements appeared to be stable over a 6-month time period. Another study, conducted by Cooper and Clum (1989) explored exposure therapy, specifically imaginal flooding, and found it useful in decreasing some but not all symptoms, and thus concluded that it should be used in conjunction with another treatment method. Of note, there was a decrease in nightmares experienced ($z=11.1, p < .01$) as well as a decrease in avoidant behaviors ($z=3.44, p < .01$).

Eye Movement Desensitization and Reprocessing

Eye Movement Desensitization and Reprocessing (EMDR; Shapiro, 1989) is a relatively new treatment for PTSD that combines elements of exposure therapy, cognitive behavioral therapy, and movement techniques (e.g., eye movements, hand taps, sounds) that create a switching of attention back and forth across the persons midline. While the
theory and research are still evolving for this form of treatment, there is some evidence that the therapeutic element unique to EMDR, attentional alteration, may facilitate the accessing and processing of traumatic material (Foa et al., 2000) thus reducing the distress caused by PTSD symptoms.

Shapiro (1989, 1995) discovered through personal experience that back-and-forth movements of her eyes were associated with reductions in the distress caused by troublesome thoughts. EMDR is based on the idea that the distraction of focusing one’s eyes on a moving thing (e.g., the therapist’s fingers) can serve as a form of desensitization to help to make a traumatic memory less distressing (Chemtob, Tolin, van der Kolk, & Pitman, 2000).

Shapiro formulated a specific desensitization protocol that included asking trauma survivors to think of a troublesome thought or memory while tracking her fingers as she moved them back and forth across the individual’s visual field. Participants reported that during the procedure, their thoughts became less and less distressing. Although EMDR was first referred to as simply EMD or Eye Movement Desensitization, Shapiro changed the name to EMDR to emphasize the reprocessing component (i.e., the importance of fostering cognitive and emotional changes in the participant throughout the therapeutic process; Foa et al., 2000; Shapiro, 1989, 1995).

Shapiro reported that EMDR may not eliminate all PTSD symptomology, but reports strong evidence that even a single session of the treatment procedure is effective in ameliorating the intensity and distress of traumatic memories (1989). Specifically, she indicated that completion of one 50-minute session can lead to complete desensitization
of a traumatic memory by 75-80%; she later altered this estimate to 60-70% (Shapiro, 1989, 1995).

Multiple studies have been conducted to examine the use of EMDR for veterans with PTSD (e.g., Carlson et al., 1998; Feske, 1998; Forbes et al., 1994; Shapiro & Maxfield, 2002). The study conducted by Carlson et al. (1998) compared outcome data from three different treatment groups: one receiving 12 sessions of EMDR \((n=10)\), one receiving 10 sessions of biofeedback \((n=13)\), and a control group receiving routine clinical care \((n=12)\). Those participants who received EMDR showed significant decrease in PTSD symptoms, specifically intrusive thoughts, \(F(1, 29) = 26.51, p < .0001\), and avoidance, \(F(1, 29) = 12.93, p < .003\). Of note, this decrease in symptoms was stable across a 9 month period. Another study conducted by Forbes et al. (1994) examined EMDR for use with a veteran population and found significant improvements for each of the three PTSD symptom clusters (re-experiencing, avoidance and hyperarousal), as well as for overall PTSD severity.

**Dialectical Behavior Therapy**

Although Linehan’s (1993a, 1993b) DBT model draws heavily from CBT, a number of unique aspects of DBT distinguish it from typical cognitive and/or behavioral therapy programs. Specifically, and perhaps most important, is the inclusion of and focus on dialectic theory. As noted above, with respect to DBT methodology, the underlying dialectical concept is the idea of accepting reality as it is (accepting one’s self, accepting one’s past, accepting one’s current circumstances, etc.) while at the same time striving for adaptation, improvement and change. Additional tenets that set DBT apart from other CBT treatments include the acknowledgement and acceptance of behaviors as they are in
the given moment (even if these are maladaptive behaviors); the identification of and
treatment of any therapy threatening behaviors, and a very strong focus on the therapist-
client relationship. It should be noted that the concept of ‘behavior’ is quite broadly
defined in the DBT framework to include all things that people do (e.g., thinking, feeling,
acting; Linehan, 1993a; Wagner, Rizvi, & Harned, 2007). Generally, psychological
treatments, no matter the orientation, are focused on change as people rarely present for
mental health services when their lives are just as they had hoped. Slightly contrasting
this typical idea, DBT focuses on the importance of acceptance and balance, with change
coming as part of the process (Linehan, 1993a, 1993b). Much of this focus on balance
stems from Linehan’s own study of meditation and Eastern spirituality (Linehan, 1993a).

Dialectics

Dialectics theory tends to stress theory and process over that of exact structure
(Linehan, 1993a). According to Linehan, dialectic interpretation of the reality generally
has three tenets. First, for effectiveness and benefit, all things must be addressed using a
holistic approach. Exploring and analyzing parts of any whole will be of little benefit and
will have limited meaning. Second, is the idea that very little in the world is static
including reality which creates continuous opposing factors (thesis and antithesis).
Finally, is concept that although the world is full of opposing forces and continuous
change; within this tension is an interconnectedness that creates wholeness in the world
(i.e., a synthesis). As noted in Linehan’s (1993a) text, Robert Kegan (1982) discusses this
tension and the evolution of self as a process occurring across as lifetime. He writes:
As it is to understand the way the person creates the world, we must also understand the way the world creates the person. In considering where a person is in his evolutionary balancing we are looking not only at how meaning is made; we are looking too at the possibility of the person losing this balance. We are looking, in each balance, at a new sense of what is ultimate and what is ultimately at stake. We are looking, in each new balance, at a new vulnerability. Each balance suggests how the person is composed, but each suggests, too, a new way for the person to lose their composure. (p. 114)

Research Studies Evaluating DBT

Although currently there are no published studies evaluating DBT’s effectiveness as a treatment for male veterans with PTSD, there have been numerous studies testing DBT’s effectiveness with other populations. The first study examining DBT as a treatment methodology was conducted by Linehan et al. (1991), and examined DBT for chronically parasuicidal clients with BPD. They reported a significant reduction in the frequency and medical risk of parasuicidal behavior among those clients who received DBT compared to those who received treatment as usual. A similar study was conducted by Linehan, Tutek, Heard, and Armstrong (1994) to examine DBT as a treatment for female clients, diagnosed with BPD who are currently suicidal. This study also reported improvements in suicidal ideation and intension.

As noted above, DBT has been evaluated as a treatment method for populations including individuals with binge eating disorder (Safer et al., 2001; Telch et al., 2001) female juvenile offenders (Turpin et al., 2002); adult sex offenders (Shingler, 2004), adolescents with parasuicidal behavior (Miller, 1999) and individuals with a dual diagnosis of BPD and substance dependence and heroin dependent females (Dimeff, Rizvi, Brown, & Linehan, 2000; Linehan et al., 2002; Linehan, Schmidt, Dimeff, Craft, Kanter, & Comtois, 1999). Further, two studies have had male samples: one
implementing DBT for incarcerated men (McCann, Ball, Ghanizadeh, Gallietta, & Froelich, 2002), the other for older adults with depressive symptoms (Lynch, Morse, Mendelson, & Robbins, 2003). One study evaluating the effectiveness of DBT has a sample comprised of female military veterans who have been diagnosed with BPD (Koons et al., 2001). This study found that women who received DBT demonstrated significant decreases in suicidal ideation, hopelessness, depression, and anger expression.

**DBT: A Manualized Treatment**

The Skills Training Manual for Treating Borderline Personality Disorder (Linehan, 1993b) provides the manualized protocols for DBT. This text contains background and educational information for the therapist in addition to advice and guidance about how to implement DBT, specific lesson plans, handouts, and homework assignments. The manual divided into 10 chapters. The first 6 chapters provide background about the theory and development of DBT; potential issues in skills training, session formatting and appropriate structural strategies for providing treatment. The remaining four chapters provide further information and background regarding the specific skill set to be presented (i.e., core mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance), definitions and clarifications of terms as well as information regarding what will follow in the chapter to be presented to the client(s). Additionally, each of the skill chapters includes a detailed outline for each session that not only incorporates the information concerning presentation of the skills, but also specific discussion and lecture points, suggestions for practice exercises or activities, and at times even notes to the facilitators regarding things to watch for or be aware of during the discussion of specific topics. For example, in the chapter discussing distress
tolerance, Linehan (1993b) makes note of the fact that some individuals will be very resistant to self-soothing and may experience anger, guilt or other negative emotions and thus will be hesitant to practicing these types of behaviors. She encourages facilitators to keep a “watchful eye” (p. 99) on clients and their progress to monitor if these skills are being practiced.

Core Mindfulness Skills

The first of the four skill chapters is “Core Mindfulness Skills” (pp. 63-69; Linehan, 1993b). This chapter sets the framework for the entire DBT program as mindfulness is a vital and central component to the DBT process. The ideas and skills presented in this chapter aim to help the client in gaining self awareness and the ability for critical thinking. Again, DBT mindfulness skills are designed from an integration of behavioral and meditation practices.

DBT presents three primary states of mind: “reasonable mind,” “emotional mind,” and “wise mind” (see p. 63; Linehan, 1993b). An individual in “reasonable mind” is able to think rationally and logically. They are able to evaluate facts and empirical data, weigh the pros and cons of a given situation and understand the consequences of their actions. An individual in “emotional mind” is, simply stated, controlled by their emotions. It is likely they will be impulsive, struggle to find reason and logic, and may feel out of control. “Wise mind” is the integration of “emotional” and “reasonable” mind and allows for logical and rational analysis of any given situation as well as emotional considerations. Attaining and maintaining “wise mind” is a major goal throughout the DBT process.
**Interpersonal Effectiveness Skills**

The interpersonal effectiveness skills taught in DBT are not unlike those presented in many programs intended to improve one’s assertiveness and interpersonal interactions and problem solving (Linehan, 1993b). The goal of this chapter is to provide skills intended to improve one’s ability to have their objectives met within a given relationship, maintain their self-respect, learn how to be assertive (versus passive or aggressive), while at the same time being effective and appropriate towards others (i.e., avoiding manipulation of others, etc.; Linehan, 1993b).

This chapter covers situations in which one must implement interpersonal effectiveness strategies (see pp. 71-73; Linehan, 1993b), specifically, (1) “attending to relationships” (e.g., “ending hopeless relationships,” “resolving conflicts before they become overwhelming”), (2) “balancing priorities and demands” (e.g., “asking others for help when necessary,” “reducing low priority demands”), (3) “balancing wants and shoulds” (e.g., “getting others to take your opinions seriously,” “saying no to unwanted requests”), and (4) “building mastery and self-respect” (e.g., “interacting in a way that makes you feel effective and competent,” “standing up for your beliefs and values”).

There is also discussion of factors that can negatively impact an individual’s interpersonal effectiveness (e.g., “worry thoughts,” “emotions,” “indecision,” “environmental factors;” see pp. 75-76; Linehan, 1993b).

**Emotion Regulation Skills**

The third skill set presented in DBT is the emotion regulation skills, intended to work with clients to alleviate emotional intensity and labiality. These are often viewed as the most challenging to teach as well as the most challenging to practice (Linehan,
Often individuals with BPD (and PTSD) experience intense and labile emotions including frequent anger, depression, anxiety or intense frustration (Linehan, 1993a, 1993b). Many times, these individuals will try to avoid their intense emotions. DBT works to challenge this from a framework of mindfulness, validation and nonjudgment or criticism. Linehan describes seven specific emotion regulation skills (see pp. 86-88): (1) “identifying and labeling emotions;” (2) “identifying obstacles to changing emotions;” (3) “reducing vulnerability to ‘emotional mind’;” (4) “increasing positive emotional events;” (5) “increasing mindfulness to current emotions;” (6) “taking opposite action to the emotion felt;” and (7) “applying distress tolerance techniques.”

Distress Tolerance Skills

The fourth and final skill set discussed is the Distress Tolerance Skills (Linehan 1993b) notes that most approaches to mental health care come from a perspective of changing or eliminating stressful situations or circumstances, where as very few consider the potential utility in exploring the meaning of an event and accepting or even tolerating the situation and the related consequences (whatever those may be, both positive and negative). DBT emphasizes the importance of being able to effectively tolerate emotional discomfort and distress as they are (1) part of everyday life and cannot be fully avoided, no matter how hard an individual may try and (2) because learning to tolerate these things is part of working toward change (Linehan, 1993a, 1993b). The skills presented in the distress tolerance section focus on tolerating and surviving a crisis situation while at the same time accepting the reality as it is in the moment (a perfect example of the use of dialectic theory).
Skills for appropriate distress tolerance are presented (see pp. 98-100) including (1) "distraction," (2) "self soothing," (3) "improving the moment," and (4) "thinking of pros and cons." Additionally, acceptance skills are presented, again stemming from dialectical theory. These include (1) "turning the mind toward acceptance" (i.e., choosing to accept reality as it is), (2) "radical acceptance" (i.e., full acceptance of one’s entire reality), and (3) "willingness versus willfulness" (see pp. 101-103). Of note is the importance of ensuring clients understand the difference between acceptance and approval and willingness and willfulness as many initially understand willingness and acceptance to be terms for approval. Acceptance of a situation or willingness towards it in no way means approval of the circumstances. Acceptance of a situation and willingness to change allows an individual to move to a place where change can happen, even if the individual strongly disapproves (which likely is the case) of the situation at hand (Linehan, 1993b).

**Research Question**

This study was the first to attempt answering the question: Is DBT effective in treating male Veterans with PTSD? Data were collected pre- and posttreatment to determine changes in PTSD symptoms and associated features after completion of a 12-week DBT PTSD Coping Skills Group. Scores and data were collected from a clinician-administered interview as well as a battery of self-report questionnaires intended to cover a broad array of PTSD symptoms including anger, depression, suicidal ideation, nightmares and other sleep disturbances, and social avoidance and isolation. Each of these measures was evaluated using matched pairs t-tests to explore DBT’s effect on
overall PTSD symptoms and associated features. Additionally, the effect sizes of the observed data were compared against that of an aggregate of published studies.
CHAPTER III

METHODOLOGY

Participant Recruitment and Characteristics

Participant Recruitment

Recruitment for this study was conducted over a 22-month period beginning May, 2006. Potential participants were recruited by one of two methods: (1) referral from a VA staff member after completion of a PTSD assessment or (2) responding to recruitment posters placed around the SLCVAHCS. Those participants referred to the principal investigator by a VA staff member received referral after they completed a diagnostic assessment for PTSD with a PCT staff member. This assessment includes a semistructured clinical interview and review of the Veterans Affairs Military Stress Treatment Assessment (VAMSTA; Fontana et al., 2006). The VAMSTA is an assessment measure created by the Department of Veterans Affairs that includes the Posttraumatic Stress Disorder Checklist (PCL; Weathers, Litz, Herman, Huska & Keane, 1993) as well as questions addressing substance abuse, depressive symptoms, suicidal ideation, family and community support, activities/hobbies, general well-being and life satisfaction, religion/spirituality and past mental health treatment. The VAMSTA is typically used to aid in initial
diagnosis, but is also given as a follow-up measure after veterans have participated in some form(s) of intervention.

Those referred included veterans whose assessment provided evidence for a PTSD diagnosis and were deemed appropriate for a subsequent referral to the DBT PTSD Coping Skills Group for treatment services. Additionally, recruitment posters were strategically placed in the mental health building providing brief details about the study as well as contact information for the principal investigator and her supervisor, the director of the PCT. It should be noted that three veterans who were not referred by PCT clinical staff upon their referral to the DBT group, expressed interest in participating in the study after viewing a recruitment poster.

Selection criteria focused primarily on the individual having a veteran status. For the purpose of this study, veterans are defined as individuals who were participants within the military, either as active combatants or in support roles, in wars or related activities (Fairbank, Friedman, & Southwick, 2001). Further, selection was based on each veteran’s willingness to participate in the study and their ability and commitment to participate in the DBT PTSD Coping Skills Group for a minimum of 10 weeks.

Participants were required to be able to read at the eighth grade level, and be clinically stable enough to attend and concentrate on a task requiring approximately 2 hours for the purpose of completing the structured interview and battery of assessment questionnaires at both pre- and posttreatment. Participants were not excluded from the study if they had a dual mental health diagnosis (i.e., one or more diagnoses in addition to PTSD, commonly depressive and/or substance use disorders)
unless the symptoms and features of the comorbid disorder(s) made them unable to fulfill inclusion requirements for any reason.

Uncontrolled participant characteristics included but were not limited to branch of service, time in service, duty station(s), length of time in a war zone, time since military discharge, religious preference, sexual preference, socio-economic status, age, race/ethnicity, gender (although it should be noted no females were referred to the DBT PTSD Coping Skills group during the recruitment period) and marital status. Participants were excluded if they exhibited behaviors that could be considered or diagnosed as psychosis, high suicidal ideation and intention, mania, or severe cognitive impairment to the extent they could not comprehend or meaningfully participate in the study procedures.

Participant Characteristics and Demographics

Eighteen veterans were referred to the principal investigator or expressed interest directly after viewing a recruitment poster during the allotted recruitment period. Of these, 9 agreed to participate in the study and completed all pretreatment protocols. The remaining nine veterans declined to participate in the study for reasons discussed below. Eight of these veterans followed through with the recommendation to participate in the DBT Coping Skills Group and were willing and able to present for and complete the posttreatment assessment protocols. One veteran was administratively withdrawn from the study as he failed to attend a single group session after completing the pretreatment protocols. Attempts were made to contact this participant to inquire about his reasons for not attending the group and completing the study, but he was not able to be reached. The remaining 8 participants
completed all assessment protocols (see Table 1 for participant characteristics and demographics). As above, it should be noted that women were not purposely excluded from participation in this study. The sample size is exclusively male only because those were the only interested and willing participants. No women were referred to the principal investigator by a PCT staff member nor did any express interest directly after viewing a recruitment poster. Additionally, it should be noted that all participants were compensated by issuance of a $20.00 check upon completion all study protocols.

Outcome Measures

Clinician Administered PTSD Scale

The Clinician Administered PTSD Scale (CAPS; Blake et al., 1990) was one of the first diagnostic interviews for PTSD and now is considered the gold standard for PTSD assessment and diagnosis for both military veteran and civilian trauma survivors (Foa & Tolin, 2000). Consisting of 30 items, the CAPS assesses all 17 symptoms of PTSD as well as a range of associated, frequently observed features including guilt (both survivor guilt as well as guilt regarding acts of commission or omission), dissociation, derealization, depersonalization, and reduction in awareness of surroundings. This measure is intended to (1) briefly assess stressful life experiences that may or may not have occurred during the client's lifetime and (2) how these events have affected the client (Blake et al., 1990). Also contained in the CAPS are ratings for social and occupational functioning and an assessment of the validity of client responses. If
Table 1
Demographic Characteristics of Participants

<table>
<thead>
<tr>
<th>Demographic Data</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>9 (8 completed, 1 withdrawn)</td>
</tr>
<tr>
<td>Mean Age (and SD)</td>
<td>58 (2.54)</td>
</tr>
<tr>
<td>Married / Unmarried</td>
<td>6 / 2</td>
</tr>
<tr>
<td>Employed / Unemployed / Retired</td>
<td>5 / 1 / 2</td>
</tr>
<tr>
<td>Race (Caucasian / Hispanic)</td>
<td>7 / 1</td>
</tr>
<tr>
<td>Mean Years of Education(^a) (and SD)</td>
<td>3.33 (1.03)</td>
</tr>
<tr>
<td>Mean Years of Military Service (and SD)</td>
<td>6.2 (6.34)</td>
</tr>
<tr>
<td>Branch of Service (Army / Navy / USMC)</td>
<td>4 / 1 / 3</td>
</tr>
<tr>
<td>Duty Station: Vietnam</td>
<td>8</td>
</tr>
<tr>
<td>Mental Health Treatment(^b) (Yes / No)</td>
<td>4 / 4</td>
</tr>
</tbody>
</table>

\(^a\) Years of Post-High School Education (i.e., college or technical/vocational school).
\(^b\) Treatment currently or within the previous 3-month period. This includes psychotherapy and psychotropic medication management. Of the eight veterans who completed the study, one received substance abuse treatment services, one received individual psychotherapy, one received both individual psychotherapy and psychotropic medication management, and one was prescribed psychotropic medication for management of his symptoms.
administered completely (i.e., all questions regarding associated features, functional impairments, and validity ratings), the interview takes approximately 1 hour to complete (Foa et al., 2000).

The CAPS demonstrates an unusual strength in identifying clients with and without PTSD (Foa et al., 2000). Weathers and colleagues (1992) found test-retest correlations between .90 and .98 across three different clinicians and 60 separate veteran subjects. Internal consistency was reported with alpha at .94 across all three primary symptom clusters, and construct validity also was impressive with a correlation of .91 to the Mississippi Scale, .77 with the Keane PTSD Scale of the MMPI-2, and .89 with the SCID-PTSD symptom score (Foa et al., 2000).

Mississippi Scale for Combat-Related PTSD

The Mississippi Scale for Combat-Related PTSD (M-PTSD; Keane, Caddell, & Taylor, 1988) is a 35-item self-report scale designed to measure combat-related PTSD as well as some symptoms of typical associated features of the disorder. The M-PTSD is a 5-point Likert-type scale designed in such a way to be sensitive to subtle changes in the symptom complex as they result from therapeutic interventions. Likert-type scales present possible responses in a continuum format. This can include a continuum of levels of agreement with given statements, degrees of satisfaction or levels of distressed experienced.

Using 107 (175 maximum score) as a cutoff score, the M-PTSD had a strong reported sensitivity (92%) and specificity (.84%) with a kappa of .77 (Keane et al., 1988). The M-PTSD requires approximately 10-15 minutes to complete. Internal consistency for the entire scale was $\alpha = .94$. Test-retest reliability over a 1-week
period was estimated at \( r = .97 \) \((p<.0001)\) with a coefficient alpha of .94. Test-retest has also been reported as .64 over a 6-week period, when tested on chronic PTSD veterans (Keane et al., 1988).

**Beck Depression Inventory**

The Beck Depression Inventory (BDI; original and revisions; Beck, Ward, Mendelsohn, Mock & Erbaugh, 1961; Beck, Steer, & Garbin, 1988; Beck & Steer, 1984; Beck, Steer, & Brown, 1996) is a 21-item self-report measure designed to assess for depressive symptoms. Each of the 21 questions contains four statements reflecting increasing severity of a given symptom of depression. Each of the questions of the BDI attempts to assess a specific symptom or attitude which appears to be specific to depressed clients, and which are consistent with descriptions of depression contained in the psychiatric literature (Beck et al., 1961).

The BDI requires approximately 7 to 10 minutes to complete. Beck et al. (1988) analyzed the BDI and reported test-retest reliability estimates from 10 studies. These estimates ranged from .48 to .86 in psychiatric patients and .60 to .83 in non-psychiatric samples. It should be noted that the time elapsed between assessments across these studies varied between a few hours to a matter of months (Beck et al., 1988). Another review conducted by Yin and Fan (2000) found a test-retest reliability coefficient of .72 across 20 studies using the BDI.
Beck Scale for Suicide Ideation

The Beck Scale for Suicide Ideation (BSSI; Beck, Steer, & Ranieri, 1988) is a 21-item self-report measure of which only the first 19 are scored. The final two are items used to record information concerning previous suicide attempts. Each of the 19 questions has three possible responses, increasing in intensity from no suicidal ideation to intense and severe suicidal ideation. This measure asks respondents to answer questions about how they have been feeling over the past week, including the present moment.

The internal consistency for the BSSI is excellent for both adult and adolescent populations (Beck & Steer, 1991; Kumar & Steer, 1995; Beck et al., 1988). The paper and pencil version of the BSSI was found to have coefficient alphas ranging from .87 (Beck & Steer, 1991) to .93 (Beck et al., 1988). The computer administered version also has high coefficients that range from .90 (Beck & Steer, 1991) to .96 (Beck et al., 1988). The validity of the BSSI has been tested and both the paper and pencil method and the computer version produced a high correlation (e.g., $r = .90$) with clinician ratings (Beck et al., 1988), self-report (Beck & Steer, 1991; Cochrane-Brink, Lofchy, & Sakinofsky, 2000), and related indices of suicidality (e.g., previous attempts, BDI-IA scores on the suicidal ideation item; Beck & Steer, 1991).

Pittsburgh Sleep Quality Index

The Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1988) is a seven-item self-report measure that assesses sleep quality and disturbances over a one month time interval. Nineteen individual items generate seven component scores: subjective sleep quality, sleep latency, sleep duration,
habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime
dysfunction (Buysse et al., 1988). Each of the seven component scores is weighted
equally on a 0 to 3 scale. The scores are then totaled to provide a global PSQI score,
which has a range of 0 to 21, with a higher score indicating more severe sleep
disturbance.

Clinical and psychometric properties of the PSQI were assessed over an 18-
month period with "good" sleepers (healthy subjects, n = 52) and "poor" sleepers
(depressed patients, n = 54; sleep-disorder patients, n = 62). Acceptable measures of
internal homogeneity, consistency (test-retest reliability), and validity were obtained
(Buysse et al., 1988). A global PSQI score greater than 5 yielded a diagnostic
sensitivity of 89.6% and specificity of 86.5% (kappa = 0.75, p < .001) in
distinguishing good and poor sleepers (Buysse et al., 1988).

Pittsburgh Sleep Quality Index-PTSD Addendum

The PSQI Addendum for PTSD (PSQI-A) was created by Germain, Hall,
Krakow, Shear, and Buysse in 2004. It consists of seven items that focus on the
frequency of seven "disruptive nocturnal behaviors (DNB)" reported by PTSD
patients. Participants are instructed to indicate the frequency of each of these seven
factors. These items include frequency of hot flashes; general nervousness; memories
or nightmares of traumatic experience(s); severe anxiety or panic not related to
traumatic memories; bad dreams not related to traumatic memories; episodes of terror
or screaming during sleep without fully awakening; and episodes or acting out
dreams, such as kicking, punching, running, or screaming. Similar to the original
PSQI, the PSQI-A assesses the frequency of these DNB during the month preceding completion of the questionnaire.

The seven items of the PSQI-A yielded a Cronbach’s $\alpha = .85$ indicating internal consistency (Germain et al., 2004). To test for convergent validity a group of women diagnosed with PTSD were evaluated on the PSQI-A and the CAPS. The scores were positively and significantly correlated ($r = .56, p < .001$; Germain et al., 2004).

State-Trait Anger Expression Inventory-2

The State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999) is a 57-item self-report measure designed with two subscales. The first subscale measures state anger (S-Ang) through several subdomains, including feeling angry (S-Ang/F; i.e., “I feel annoyed”), feeling like expressing anger verbally (S-Ang/V; i.e., “I feel like yelling at someone”), and feeling like expressing anger physically (S-Ang/P; i.e., “I feel like hitting someone”). The trait anger (T-Ang) subscale measures anger as a general temperament characteristic or predisposition of the individual through two subdomains: Angry Temperament (T-Ang/T; i.e., “I am a hotheaded person”) and Angry Reaction (T-Ang/R; ). The STAXI-2 also assesses inward (AX-I; i.e., “I withdraw from people.”) and outward (AX-O; i.e., “I argue with others.”) anger expression. Finally, Anger Control both outwardly (AC-O; i.e., “I control my angry feelings.”) and inwardly (AC-I; i.e., “I keep things in.”) are also assessed.

The STAXI-2 requires approximately 15 minutes to complete. The State-Trait Anger Scale within the STAXI-2 has alpha coefficients for the S-Anger and T-Anger of .93 and .87, respectively, which indicates a high degree of internal consistency.
(Hersen, Hilsenroth, & Segal, 2004). The alpha coefficients for the Anger Expression (AX) index, ranged from .75 to .82 (Spielberger & Reheiser, 2003).

Outcome Questionnaire – 45.2

The Outcome Questionnaire – 45.2 (OQ-45) is a 45-item self-report outcome/tracking instrument designed for repeated measurement of client progress through the course of therapy and following termination (Lambert et al., 1996). The OQ covers three domains that have been found to be important when measuring outcomes in psychotherapy: symptom distress, social role performance and interpersonal relations (Lambert, 1983). Items are rated on a 5-point Likert scale.

Lambert and colleagues report that the OQ-45 is highly reliable, and criterion validity studies reveal high correlations with other measures of psychological distress, social distress and interpersonal functioning (Lambert et al., 1996; Umphress, Lambert, Smart, Barlow, & Clouse, 1997). The OQ-45 is sensitive to changes during treatment and seems to be effective in both clinical and non-clinical populations (Lambert et al., 1996).

Social Avoidance and Distress Scale

The Social Avoidance and Distress Scale (SAD) was developed in 1969 by Watson and Friend. The scale is divided into two subscales designed to assess social avoidance (i.e., being with, talking to, or escaping from others for any reason) and social distress (i.e., reported experience of a negative emotion, such as upset, distress, tension, or anxiety in social interactions, or a complete lack of emotion (Watson & Friend, 1969).
The SAD is composed of a series of 28 true-false questions and is scored by giving one point for each question the client answers correctly. If the subject answers the question incorrectly they receive no points for that question. The higher the score the more socially anxious and avoidant the individual, the lower the score on the test the less socially anxious the individual will be. Watson and Friend (1969) report a Kuder-Richardson-20 (KR-20) reliability statistic of .94.

**Benchmark Analysis**

**Brief Overview of Benchmarking Process**

Benchmark studies compare data from published clinical trials to that of real world treatment studies in an attempt to gain further insight regarding both the efficacy of the clinical trials as well as the effectiveness of real world treatment protocols. Typically the first step involves a thorough literature review to find methodologically rigorous clinical trials that are a close fit to the treatment protocol and/or population the new study is designed to evaluate. To calculate a benchmark for the clinical trials, a meta-analysis aggregating the pre-post results in effect size units is completed.

After data collection has been completed for the real world treatment study, calculations are done to find the pre- and postoutcome data in effect size units for this specific treatment and population. After completing both the meta-analysis and the real world study, researchers are able to compare the effect size units of the real world clinical setting under review to that of the clinical trials and make conclusions based on the similarities and/or differences in the outcome data.
Literature Search Procedures

Potential studies for inclusion in this benchmark analysis were retrieved through searches in PsycInfo, the PILOTS database (a large interdisciplinary index to worldwide literature concerning traumatic stress) hosted and organized by the National Center for PTSD and the reference lists of relevant articles, book chapters and other academic texts. The descriptive terms in the literature searches included: military, veterans, posttraumatic stress disorder (PTSD), traumatic stress, combat related, treatment, outcome, clinical trials, efficacy, benchmark, key words and acronyms for all outcomes measures used in this study (e.g., Clinician Administered PTSD Scale, CAPS), psychotherapy, psychoeducation, groups, and intervention. Finally, a search through the Journal of Traumatic Stress was conducted because this journal publishes a high frequency of articles that were discovered in the initial computer database searches. The initial literature search was not limited by publication year; however, all studies included in the benchmark were published in 1996 or later.

Inclusion Criteria for Benchmark

For the purpose of this study, all studies that were located through the literature search were considered for inclusion in the benchmark analysis. However, many studies were excluded, because they did not fit the necessary selection and inclusion criteria necessary for an appropriate benchmark analysis. These criteria include:
1. The study must be published in English, no matter the language the work was originally conducted under as there were no resources available for appropriate and accurate translation.

2. The study participants must be military veterans.

3. Study participants must be male (studies having a sample comprised wholly or in majority by female veterans were excluded from this study given the sample (i.e., all male) of this study).

4. Participants had to meet DSM diagnostic criterion for PTSD. Studies including participants with dual diagnosis were not excluded as PTSD generally is not a ‘stand alone’ disorder, meaning one will often have one or more comorbid disorders.

5. Participants had to receive some form of psychotherapy intended to ameliorate the symptoms and associated features of PTSD.

6. Outcome measures used to assess symptom change had to match those used in the current study (i.e., CAPS, M-PTSD, BDI, BSSI, PSQI, PSQI-A, STAXI-2, OQ-45, SAD).

7. The published study must provide adequate quantitative information to permit calculation of an effect size statistic (i.e., pre- and postmean and standard deviation scores for all matching outcome measures).

8. The study design must include pre- and postassessment measures. It should be noted if studies included follow up assessments, only the pre- and postinformation was included in the benchmark analysis.
Male Requirement

Because the current study had only male participants in the sample, it seemed appropriate to restrict the studies in the benchmark analysis to those with an exclusively male sample. Additionally, because this study intended to explore the effectiveness of DBT as a treatment method for veterans, and given that DBT was developed initially for a female population, it seemed that under these circumstances including studies with females may skew the data. It should be noted that although the Monson et al. (2006) study reported six female veterans in their sample (males=54), it was added to the analysis due to the limited number of studies meeting the inclusion criteria.

PTSD Diagnosis

To be considered for inclusion in this benchmark, studies must have consisted of participants (military veterans) who met the diagnostic criteria for PTSD as determined by (a) the DSM (i.e., DSM-III, DSM-III-R, DSM-IV, or DSM-IV-TR; American Psychiatric Association, 1980, 1987, 1994, 2000), (b) a formalized diagnostic interview such as the CAPS (Blake et al., 1990), the Structured Clinical Interview for DSM (SCID; Spitzer, Williams, Gibbon & First, 1992), or the Structured Interview for PTSD (SIP; Davidson, Smith & Kudler, 1989) or (c) having pretest scores on self report measures of PTSD that are typically considered to warrant a diagnosis of the disorder (i.e., the Posttraumatic Stress Disorder Checklist (PCL; Weathers et al., 1993) or the Mississippi Scale for Combat-Related PTSD (M-PTSD; Keane et al., 1988). A score of 50 or above on the 17 item PCL (Weathers et
al., 1993), or 107 or above on the 35-item M-PTSD (Keane et al., 1988) are generally considered to indicate PTSD in a veteran population in a reliable and valid manner.

PTSD Psychotherapy

Although PTSD is still a relatively new diagnosis, there is a huge amount of literature concerning effective treatment methods for ameliorating the symptoms and associated features of the disorder. However, because of its infant status (in comparison to many other psychiatric diagnoses such as major depressive disorder), much of this research remains in initial stages, where new treatment approaches are being tested regularly as clinicians and researchers work to find the most efficacious treatments possible. Because of this and the limitations to the current study design (as discussed further below), to be included in the benchmark analysis, studies had to involve professional therapists (master’s degree or higher) or graduate students were under close supervision of professional staff. This stipulation excludes forms of support and intervention such as Alcoholics Anonymous groups or other peer-led formats.

Additionally, the treatment provided had to have some supporting empirical evidence to suggest its effectiveness and benefit in decreasing the symptoms of PTSD. Specifically, there must be some discussion or indication that pilot or preliminary studies already conducted show the treatment’s effectiveness, there is reference to and incorporation of already established and supported treatment approaches and theory. Discussion of the treatment process and related theory should come from a psychological framework and perspective. Further, the study should include a discussion of the beneficial or curative factors of the treatment (i.e., specific
versus common factors). Finally, the study should include discussion of a manualized and thus replicable treatment approach that was utilized in treatment implementation.

Using these criteria, eight studies were included in the benchmark (i.e., Bolton et al., 2004; Carlson et al., 1998; Chemtob et al., 1997; Dunn et al., 2007; Fontana & Rosenheck, 1997; Forbes et al., 2003; Humphreys et al., 1999; Monson et al., 2006).

**Statistical Methods and Data Analysis**

**Introduction to Analytical Methods**

Data from this study were compiled and evaluated using one-tailed matched pair $t$-tests and a visual comparison against the benchmark. The results of the $t$-tests are presented in Table 2.

Change observed in the group converted to a standardized mean difference (i.e., Cohen’s $d$; Hedges & Olkin, 1985) was compared to the magnitude of the aggregated standardized mean difference of published PTSD treatment outcome studies. Due to the low sample size, the treatment effect was visually compared to the benchmark rather than conducted a statistical analysis.

**Calculating Effect Sizes for Observed Data**

To obtain effect sizes for the observed data, the first three steps required in calculating the benchmark are necessary. First, $g_{ij}$ was generated for each outcome measure, where $i$ is used to denote the present study and $j$ refers to the specific outcome measure. This was done by finding the difference between the pre- and posttreatment scores on a given outcome measure and dividing this difference by the standard deviation of the pretest score:
Table 2

Matched Pair \( t \)-Test

<table>
<thead>
<tr>
<th></th>
<th>Mean Diff</th>
<th>SD Diff</th>
<th>Mean</th>
<th>Lower</th>
<th>Upper</th>
<th>( r^2 )</th>
<th>df</th>
<th>Sig. (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPS Frequency</td>
<td>8.125</td>
<td>2.949</td>
<td>1.043</td>
<td>5.660</td>
<td>10.590</td>
<td>7.793</td>
<td>7</td>
<td>0.000</td>
</tr>
<tr>
<td>CAPS Intensity</td>
<td>9.000</td>
<td>4.472</td>
<td>1.581</td>
<td>5.261</td>
<td>12.739</td>
<td>5.692</td>
<td>7</td>
<td>0.000</td>
</tr>
<tr>
<td>CAPS Total</td>
<td>17.125</td>
<td>6.128</td>
<td>2.167</td>
<td>12.002</td>
<td>22.248</td>
<td>7.904</td>
<td>7</td>
<td>0.000</td>
</tr>
<tr>
<td>M-PTSD</td>
<td>12.375</td>
<td>10.225</td>
<td>3.615</td>
<td>3.827</td>
<td>20.923</td>
<td>3.423</td>
<td>7</td>
<td>0.005</td>
</tr>
<tr>
<td>BDI</td>
<td>1.250</td>
<td>6.563</td>
<td>2.320</td>
<td>-4.237</td>
<td>6.737</td>
<td>0.539</td>
<td>7</td>
<td>0.303</td>
</tr>
<tr>
<td>PSQI</td>
<td>3.125</td>
<td>2.532</td>
<td>0.895</td>
<td>1.008</td>
<td>5.242</td>
<td>3.491</td>
<td>7</td>
<td>0.005</td>
</tr>
<tr>
<td>PSQI-A</td>
<td>1.750</td>
<td>3.105</td>
<td>1.098</td>
<td>-0.846</td>
<td>4.346</td>
<td>1.594</td>
<td>7</td>
<td>0.077</td>
</tr>
</tbody>
</table>
Table 2 (Continued)

<table>
<thead>
<tr>
<th></th>
<th>Mean Diff</th>
<th>SD Diff</th>
<th>Mean</th>
<th>Lower</th>
<th>Upper</th>
<th>t^a</th>
<th>df</th>
<th>Sig. (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAXI A/O</td>
<td>3.000</td>
<td>3.295</td>
<td>1.165</td>
<td>0.245</td>
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<td>2.575</td>
<td>7</td>
<td>0.018</td>
</tr>
<tr>
<td>STAXI A/I</td>
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<td>5.423</td>
<td>1.917</td>
<td>-3.159</td>
<td>5.909</td>
<td>0.717</td>
<td>7</td>
<td>0.248</td>
</tr>
<tr>
<td>STAXI C/O</td>
<td>0.375</td>
<td>4.502</td>
<td>1.592</td>
<td>-3.389</td>
<td>4.139</td>
<td>0.236</td>
<td>7</td>
<td>0.410</td>
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<tr>
<td>STAXI C/I</td>
<td>0.125</td>
<td>5.566</td>
<td>1.968</td>
<td>-4.528</td>
<td>4.778</td>
<td>0.064</td>
<td>7</td>
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<tr>
<td>S-Ang/F</td>
<td>1.250</td>
<td>3.059</td>
<td>1.082</td>
<td>-1.307</td>
<td>3.807</td>
<td>1.156</td>
<td>7</td>
<td>0.286</td>
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<tr>
<td>S-Ang/V</td>
<td>1.500</td>
<td>3.464</td>
<td>1.225</td>
<td>-1.396</td>
<td>4.396</td>
<td>1.225</td>
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<tr>
<td>S-Ang/P</td>
<td>1.625</td>
<td>3.739</td>
<td>1.322</td>
<td>-1.501</td>
<td>4.751</td>
<td>1.229</td>
<td>7</td>
<td>0.129</td>
</tr>
<tr>
<td>T-Ang/T</td>
<td>0.125</td>
<td>3.980</td>
<td>1.407</td>
<td>-3.202</td>
<td>3.452</td>
<td>0.089</td>
<td>7</td>
<td>0.466</td>
</tr>
</tbody>
</table>
Table 2 (Continued)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean Diff</th>
<th>SD Diff</th>
<th>Mean</th>
<th>Lower</th>
<th>Upper</th>
<th>t^a</th>
<th>df</th>
<th>Sig. (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Ang/R</td>
<td>1.375</td>
<td>4.373</td>
<td>1.546</td>
<td>-2.281</td>
<td>5.031</td>
<td>0.889</td>
<td>7</td>
<td>0.201</td>
</tr>
<tr>
<td>OQ45.2</td>
<td>7.000</td>
<td>15.119</td>
<td>5.345</td>
<td>-5.639</td>
<td>19.639</td>
<td>1.310</td>
<td>7</td>
<td>0.116</td>
</tr>
<tr>
<td>SAD</td>
<td>1.250</td>
<td>1.753</td>
<td>0.620</td>
<td>-0.215</td>
<td>2.715</td>
<td>2.017</td>
<td>7</td>
<td>0.042</td>
</tr>
<tr>
<td>BSSI</td>
<td>3.375</td>
<td>6.718</td>
<td>2.375</td>
<td>-2.241</td>
<td>8.991</td>
<td>1.421</td>
<td>7</td>
<td>0.099</td>
</tr>
</tbody>
</table>

^a One tailed t critical values (df = 7) at α = 0.05 (1.895); for α = 0.01 (2.998)

Note: The above acronyms refer to the following: CAPS (Clinician Administered PTSD Scale); M-PTSD (Mississippi PTSD Scale); BDI (Beck Depression Inventory 2); PSQI (Pittsburgh Sleep Quality Index); PSQI-I (PSQI – Addendum for PTSD); AX-O (STAXI Anger Expression-Out); AX-I (STAXI Anger-Expression-In); AC-O (STAXI Anger Control-Out); AC-I (STAXI Anger Control-In); S-Ang/F (STAXI State Anger/Feeling Angry); S-Ang/V (STAXI State Anger/Feeling like Expressing Anger Verbally); S-Ang/P (STAXI State Anger/Feel like Expressing Anger Physically); T-Ang/T (STAXI Trait Anger/Angry Temperament); T-Ang/R (STAXI Trait Anger/Angry Reaction); OQ45.2 (Outcome Questionnaire 45.2); SAD (Social Avoidance & Distress Scale); and BSSI (Beck Scale for Suicide Ideation).
In this formula, $M_{ij,\text{pre}}$ and $M_{ij,\text{post}}$ are the means for the pre and post treatment scores on outcome measure $j$, respectively. $SD_{ij,\text{pre}}$ is the pretreatment standard deviation for that same measure within the given treatment condition (i.e., DBT).

Next, as $g$ is always upwardly biased it is corrected to yield $d_{ij}$, the unbiased estimator of effect size,

$$d_{ij} = c_{[n(\text{y})]-1} g_{ij}$$

where $n_{ij}$ is the number of participants included in the sample for the given outcome measure $j$, and $c_{[n(\text{y})]-1}$ is approximated as in Hedges (1981) as

$$c_{[n(\text{y})]-1} \approx 1 - \frac{3}{4(n_{ij} - 1) - 1}$$

Lastly, the variance of $d_{ij}$ can be estimated by using Morris' (2000) formula,

$$\hat{\sigma}_{d_{ij}}^2 = [c_{[n(\text{y})]-1}]^2 \left( \frac{2(1 - r_{ij})}{n_{ij}} \right) \left( \frac{n_{ij} - 1}{n_{ij} - 3} \right) \left( \frac{1 + n_{ij}}{2(1 - r_{ij})} \right) d_{ij}^2 - d_{ij}^2$$

where $r_{ij}$ is test-retest correlation for the measure. The resulting effect sizes, $(d_{ij})$ are reported in Table 3.

Calculating the Benchmark

The benchmark, $d_{ij}$, was calculated by aggregating the data of the matching outcome measures (i.e., those assessments that match those used in the present study).
Table 3

Effect Sizes of Observed Data

<table>
<thead>
<tr>
<th>Measure</th>
<th>$M_{pre}$</th>
<th>$M_{post}$</th>
<th>$SD_{pre}$</th>
<th>$D$</th>
<th>$r$</th>
<th>$\text{var } d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPS Total</td>
<td>87.125</td>
<td>70.000</td>
<td>11.909</td>
<td>1.278</td>
<td>0.888</td>
<td>0.204</td>
</tr>
<tr>
<td>M-PTSD</td>
<td>117.875</td>
<td>102.375</td>
<td>12.710</td>
<td>1.084</td>
<td>0.646</td>
<td>0.113</td>
</tr>
<tr>
<td>BDI</td>
<td>22.625</td>
<td>20.000</td>
<td>6.093</td>
<td>0.383</td>
<td>0.685</td>
<td>0.212</td>
</tr>
<tr>
<td>PSQI</td>
<td>28.125</td>
<td>25.000</td>
<td>2.800</td>
<td>0.992</td>
<td>0.742</td>
<td>0.176</td>
</tr>
<tr>
<td>PSQI-A</td>
<td>12.125</td>
<td>10.375</td>
<td>5.167</td>
<td>0.301</td>
<td>0.826</td>
<td>0.058</td>
</tr>
<tr>
<td>STAXI AX-O</td>
<td>21.875</td>
<td>18.875</td>
<td>4.883</td>
<td>0.546</td>
<td>0.742</td>
<td>0.103</td>
</tr>
<tr>
<td>STAXI AX-I</td>
<td>23.250</td>
<td>21.875</td>
<td>3.576</td>
<td>0.342</td>
<td>0.058</td>
<td>0.273</td>
</tr>
<tr>
<td>STAXI AC-O</td>
<td>19.500</td>
<td>19.125</td>
<td>4.840</td>
<td>0.069</td>
<td>0.519</td>
<td>0.133</td>
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<tr>
<td>STAXI AC-I</td>
<td>18.875</td>
<td>18.750</td>
<td>4.911</td>
<td>0.023</td>
<td>0.340</td>
<td>0.183</td>
</tr>
</tbody>
</table>

Note: The above acronyms refer to the following: CAPS (Clinician Administered PTSD Scale); M-PTSD (Mississippi PTSD Scale); BDI (Beck Depression Inventory 2); PSQI (Pittsburgh Sleep Quality Index); PSQI-I (PSQI – Addendum for PTSD); AX-O (STAXI Anger Expression-Out); AX-I (STAXI Anger-Expression-In); AC-O (STAXI Anger Control-Out); and AC-I (STAXI Anger Control-In).
Table 3 (Continued)

<table>
<thead>
<tr>
<th>Measure</th>
<th>$M_{pre}$</th>
<th>$M_{post}$</th>
<th>$SD_{pre}$</th>
<th>$D$</th>
<th>$r$</th>
<th>$\text{var } d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-Ang/F</td>
<td>10.500</td>
<td>9.250</td>
<td>4.408</td>
<td>0.252</td>
<td>0.747</td>
<td>0.077</td>
</tr>
<tr>
<td>S-Ang/V</td>
<td>11.125</td>
<td>9.625</td>
<td>4.155</td>
<td>0.321</td>
<td>0.730</td>
<td>0.086</td>
</tr>
<tr>
<td>S-Ang/P</td>
<td>9.125</td>
<td>7.500</td>
<td>4.155</td>
<td>0.348</td>
<td>0.620</td>
<td>0.118</td>
</tr>
<tr>
<td>T-Ang/T</td>
<td>9.625</td>
<td>9.500</td>
<td>3.623</td>
<td>0.031</td>
<td>0.672</td>
<td>0.091</td>
</tr>
<tr>
<td>T-Ang/R</td>
<td>10.750</td>
<td>9.375</td>
<td>2.121</td>
<td>0.576</td>
<td>-0.202</td>
<td>0.368</td>
</tr>
<tr>
<td>OQ45.2</td>
<td>95.375</td>
<td>88.000</td>
<td>16.440</td>
<td>0.399</td>
<td>0.512</td>
<td>0.390</td>
</tr>
<tr>
<td>SAD</td>
<td>25.125</td>
<td>23.875</td>
<td>2.167</td>
<td>0.513</td>
<td>0.643</td>
<td>0.127</td>
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<td>BSSI</td>
<td>8.375</td>
<td>5.000</td>
<td>6.760</td>
<td>0.444</td>
<td>0.533</td>
<td>0.150</td>
</tr>
</tbody>
</table>

Note: The above acronyms refer to the following: S-Ang/F (STAXI State Anger/Feeling Angry); S-Ang/V (STAXI State Anger/Feeling like Expressing Anger Verbally); S-Ang/P (STAXI State Anger/Feel like Expressing Anger Physically); T-Ang/T (STAXI Trait Anger/Angry Temperament); T-Ang/R (STAXI Trait Anger/Angry Reaction); OQ45.2 (Outcome Questionnaire 45.2); SAD (Social Avoidance & Distress Scale); and BSSI (Beck Scale for Suicide Ideation).
of each treatment study \((i)\) included in the meta-analysis to obtain a single treatment
effect size for each outcome measure \((j)\). To calculate \(d_{j,*}\) it is necessary to follow the
steps listed above to generate \(g_y, d_y\) and \(\hat{\sigma}^2_{d(y)}\).

A test-retest correlation was estimated as \(r_{ij} = .50\) for the benchmark. It should
be noted however, this may be a conservative estimate, as the test-retest reliability for
the CAPS, M-PTSD and BDI (the three assessment measures being compared in the
observed data and the benchmark analysis) are considerably larger than .50.
Specifically, the reliability for the CAPS ranges from .77 to .96 for the three symptom
clusters and from .90 to .98 for the 17-item core symptom scale (Blake et.al.,1995);
for the M-PTSD reliability is estimated at .97 (Keane, et al., 1988); and the 1-week
test-retest correlation of the BDI is reported as \(r = .93\) (Beck & Steer, 1987). Because
the estimated variance is conservative, it may result in an inflated variance.

To aggregate and calculate to final effect size or \(d_{j,*}\) for each measure, the
value of \(d_j\) was divided by the \(\hat{\sigma}^2_{d(j*)}\). Next, divide one (1) by \(\hat{\sigma}^2_{d(j*)}\). These two
calculations are aggregated and summed across the studies and finally, the \(d_{j,*}\) is
generated by

\[
d_{j,*} = \frac{\sum_i d_{j,*}}{\sum_i \frac{1}{\hat{\sigma}^2_{d(j*)}}} = \sum_i \frac{d_{j,*}}{\hat{\sigma}^2_{d(j*)}} / \sum_i \frac{1}{\hat{\sigma}^2_{d(j*)}}
\]

(5)

The benchmark aggregation resulted in a CAPS efficacy benchmark of
\(d_{CAPS,*} = 0.722\) (Table 4), a M-PTSD efficacy benchmark of \(d_{MPTSD,*} = 0.160\) (Table
5), and a BDI efficacy benchmark of \(d_{BDI,*} = 0.375\) (Table 6).
Table 4

Clinician Administered PTSD Scale: Benchmark Data

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Treatment Type</th>
<th>N</th>
<th>M_pre</th>
<th>M_post</th>
<th>SD_pre</th>
<th>d</th>
<th>r</th>
<th>var d</th>
<th>( \frac{d}{var\ d} )</th>
<th>( \frac{1}{var\ d} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monson et al.</td>
<td>2006</td>
<td>CPT</td>
<td>30</td>
<td>76.73</td>
<td>52.14</td>
<td>14.24</td>
<td>1.682</td>
<td>0.5</td>
<td>0.090</td>
<td>18.703</td>
<td>11.121</td>
</tr>
<tr>
<td>Fontana &amp; Rosenheck</td>
<td>1997</td>
<td>LS</td>
<td>333</td>
<td>87.79</td>
<td>76.43</td>
<td>17.27</td>
<td>0.656</td>
<td>0.5</td>
<td>0.004</td>
<td>179.127</td>
<td>272.934</td>
</tr>
<tr>
<td>Fontana &amp; Rosenheck</td>
<td>1997</td>
<td>SS</td>
<td>222</td>
<td>102.66</td>
<td>82.77</td>
<td>18.12</td>
<td>1.094</td>
<td>0.5</td>
<td>0.007</td>
<td>150.466</td>
<td>137.544</td>
</tr>
<tr>
<td>Fontana &amp; Rosenheck</td>
<td>1997</td>
<td>GPU</td>
<td>230</td>
<td>97.08</td>
<td>81.76</td>
<td>17.35</td>
<td>0.880</td>
<td>0.5</td>
<td>0.006</td>
<td>144.811</td>
<td>164.538</td>
</tr>
<tr>
<td>Dunn et al.</td>
<td>2007</td>
<td>SMT</td>
<td>50</td>
<td>75.94</td>
<td>73.93</td>
<td>19.18</td>
<td>0.103</td>
<td>0.5</td>
<td>0.020</td>
<td>5.075</td>
<td>49.183</td>
</tr>
<tr>
<td>Dunn et al.</td>
<td>2007</td>
<td>PGT</td>
<td>51</td>
<td>76.05</td>
<td>77.1</td>
<td>16.63</td>
<td>-0.062</td>
<td>0.5</td>
<td>0.020</td>
<td>-3.132</td>
<td>50.364</td>
</tr>
</tbody>
</table>

Note: The acronyms listed above refer to the following: CPT (Cognitive Processing Therapy); SMT (Self-Management Therapy); PGT (Psychoeducational Group Therapy); LS (Long-stay PTSD Units); SS (Short-stay PTSD Units); and GPU (General Psychiatric Units).
Table 5
Mississippi PTSD Scale: Benchmark Data

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Type</th>
<th>N</th>
<th>(M_{pre})</th>
<th>(M_{post})</th>
<th>(SD_{pre})</th>
<th>(D)</th>
<th>(r)</th>
<th>(\text{var} d)</th>
<th>(\frac{d}{\text{var} d})</th>
<th>(\frac{1}{\text{var} d})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fontana &amp; Rosenheck</td>
<td>1997</td>
<td>LS</td>
<td>333</td>
<td>135.32</td>
<td>134.99</td>
<td>16.31</td>
<td>0.020</td>
<td>0.5</td>
<td>0.003</td>
<td>6.711</td>
<td>332.427</td>
</tr>
<tr>
<td>Fontana &amp; Rosenheck</td>
<td>1997</td>
<td>SS</td>
<td>222</td>
<td>133.69</td>
<td>130.03</td>
<td>15.21</td>
<td>0.240</td>
<td>0.5</td>
<td>0.005</td>
<td>51.604</td>
<td>215.182</td>
</tr>
<tr>
<td>Fontana &amp; Rosenheck</td>
<td>1997</td>
<td>GPU</td>
<td>230</td>
<td>136.90</td>
<td>133.13</td>
<td>14.68</td>
<td>0.256</td>
<td>0.5</td>
<td>0.005</td>
<td>56.845</td>
<td>222.078</td>
</tr>
<tr>
<td>Carlson et al.</td>
<td>1998</td>
<td>EMDR</td>
<td>10</td>
<td>117.50</td>
<td>92.80</td>
<td>14.30</td>
<td>1.580</td>
<td>0.5</td>
<td>0.330</td>
<td>4.778</td>
<td>3.026</td>
</tr>
<tr>
<td>Carlson et al.</td>
<td>1998</td>
<td>BAR</td>
<td>13</td>
<td>119.40</td>
<td>114.20</td>
<td>18.30</td>
<td>0.266</td>
<td>0.5</td>
<td>0.085</td>
<td>3.127</td>
<td>11.754</td>
</tr>
<tr>
<td>Carlson et al.</td>
<td>1998</td>
<td>RCC</td>
<td>12</td>
<td>117.90</td>
<td>12.90</td>
<td>17.60</td>
<td>5.550</td>
<td>0.5</td>
<td>2.139</td>
<td>2.594</td>
<td>0.467</td>
</tr>
</tbody>
</table>

Note: The acronyms listed above refer to the following: LS (Long-stay PTSD Units); SS (Short-stay PTSD Units); GPU (General Psychiatric Units); EMDR (Eye Movement Desensitization and Reprocessing); BAR (Biofeedback Assisted Relaxation); and RCC (Routine Clinical Care).
Table 6

Beck Depression Inventory 2: Benchmark Data

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Type</th>
<th>N</th>
<th>M&lt;sub&gt;pre&lt;/sub&gt;</th>
<th>M&lt;sub&gt;post&lt;/sub&gt;</th>
<th>SD&lt;sub&gt;pre&lt;/sub&gt;</th>
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<th>r</th>
<th>var d</th>
<th>d/var d</th>
<th>1/var d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monson et al.</td>
<td>2006</td>
<td>CPT</td>
<td>30</td>
<td>25.39</td>
<td>17.42</td>
<td>9.86</td>
<td>0.787</td>
<td>0.5</td>
<td>0.046</td>
<td>17.032</td>
<td>21.635</td>
</tr>
<tr>
<td>Chemtob et al.</td>
<td>1997</td>
<td>AT</td>
<td>8</td>
<td>22.25</td>
<td>14.62</td>
<td>9.16</td>
<td>0.740</td>
<td>0.5</td>
<td>0.212</td>
<td>3.494</td>
<td>4.718</td>
</tr>
<tr>
<td>Chemtob et al.</td>
<td>1997</td>
<td>RC</td>
<td>7</td>
<td>25.50</td>
<td>21.28</td>
<td>11.41</td>
<td>0.322</td>
<td>0.5</td>
<td>0.180</td>
<td>1.783</td>
<td>5.544</td>
</tr>
<tr>
<td>Forbes et al.</td>
<td>2003</td>
<td>IRT</td>
<td>12</td>
<td>27.75</td>
<td>22.75</td>
<td>10.54</td>
<td>0.441</td>
<td>0.5</td>
<td>0.101</td>
<td>4.365</td>
<td>9.891</td>
</tr>
<tr>
<td>Bolton et al.</td>
<td>2004</td>
<td>UP</td>
<td>105</td>
<td>27.55</td>
<td>26.31</td>
<td>9.69</td>
<td>0.127</td>
<td>0.5</td>
<td>0.010</td>
<td>13.163</td>
<td>103.614</td>
</tr>
<tr>
<td>Bolton et al.</td>
<td>2004</td>
<td>SM</td>
<td>62</td>
<td>28.77</td>
<td>25.49</td>
<td>9.09</td>
<td>0.356</td>
<td>0.5</td>
<td>0.017</td>
<td>20.509</td>
<td>57.548</td>
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<tr>
<td>Bolton et al.</td>
<td>2004</td>
<td>AM</td>
<td>30</td>
<td>29.31</td>
<td>26.69</td>
<td>9.11</td>
<td>0.280</td>
<td>0.5</td>
<td>0.036</td>
<td>7.887</td>
<td>28.160</td>
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</tbody>
</table>

Note: The acronyms listed above refer to the following: CPT (Cognitive Processing Therapy); AT (Anger Treatment); RC (Routine Care); IRT (Imagery Rehearsal Therapy); UP (Understanding PTSD); SM (Stress Management); and AM (Anger Management).
Table 6 (Continued)

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Type</th>
<th>N</th>
<th>$M_{pre}$</th>
<th>$M_{post}$</th>
<th>$SD_{pre}$</th>
<th>$D$</th>
<th>$r$</th>
<th>var $d$</th>
<th>$\frac{d}{\text{var } d}$</th>
<th>$\frac{1}{\text{var } d}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dunn et al.</td>
<td>2007</td>
<td>SMT</td>
<td>50</td>
<td>36.5</td>
<td>33.74</td>
<td>7.75</td>
<td>0.351</td>
<td>0.5</td>
<td>0.022</td>
<td>16.253</td>
<td>46.352</td>
</tr>
<tr>
<td>Dunn et al.</td>
<td>2007</td>
<td>PGT</td>
<td>51</td>
<td>39.09</td>
<td>36.12</td>
<td>8.21</td>
<td>0.356</td>
<td>0.5</td>
<td>0.021</td>
<td>16.817</td>
<td>47.198</td>
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<tr>
<td>Humphreys et al.</td>
<td>1999</td>
<td>CBT+</td>
<td>38</td>
<td>30.20</td>
<td>17.90</td>
<td>9.20</td>
<td>1.310</td>
<td>0.5</td>
<td>0.052</td>
<td>24.948</td>
<td>19.049</td>
</tr>
<tr>
<td>Carlson et al.</td>
<td>1998</td>
<td>EMDR</td>
<td>10</td>
<td>20.10</td>
<td>6.90</td>
<td>7.50</td>
<td>1.609</td>
<td>0.5</td>
<td>0.339</td>
<td>4.746</td>
<td>2.950</td>
</tr>
<tr>
<td>Carlson et al.</td>
<td>1998</td>
<td>BAR</td>
<td>13</td>
<td>23.60</td>
<td>15.80</td>
<td>10.80</td>
<td>0.676</td>
<td>0.5</td>
<td>0.108</td>
<td>6.268</td>
<td>9.271</td>
</tr>
<tr>
<td>Carlson et al.</td>
<td>1998</td>
<td>RCC</td>
<td>12</td>
<td>24</td>
<td>23.50</td>
<td>9.90</td>
<td>0.470</td>
<td>0.5</td>
<td>0.088</td>
<td>0.532</td>
<td>11.327</td>
</tr>
</tbody>
</table>

Note: The acronyms listed above refer to the following: SMT (Self-Management Therapy); PGT (Psychoeducational Group Therapy); CBT+ (Cognitive Behavioral Therapy in Conjunction with Psychotropic Medication); EMDR (Eye Movement Desensitization and Reprocessing); BAR (Biofeedback Assisted Relaxation); and RCC (Routine Clinical Care).
CHAPTER IV

RESULTS

Results of the Matched Pairs $t$-test

Matched pairs $t$-tests were conducted for each of the nine assessments used in the present study (see Table 2). Of these nine assessments, four measures, the PSQI, the CAPS, the M-PTSD and the Anger Out (AX-O) score of the STAXI-2 showed statistically significant change between pre- and postassessment. The remaining assessment measures did not show statistical change.

Visual Comparison of Effect Sizes and Benchmarks

Typically when conducting a benchmark analysis, the results of the benchmark would be statistically compared to the outcome results of the observed data. However, due to the limited sample size, this sort of statistical analysis is not possible. Therefore, a visual comparison was done to evaluate the relationship between the benchmark effect sizes and those of the observed data (i.e., benchmark CAPS to observed CAPS, benchmark BDI to observed BDI, and benchmark M-PTSD to observed M-PTSD.

When calculations were completed to generate the $d$ scores for the observed data, the following resulted: $d_{\text{CAPS}} = 1.278$, $d_{\text{M-PTSD}} = 1.084$, and $d_{\text{BDI}} = 0.383$ for the observed data (see Table 3). As noted above, the benchmark aggregation resulted in a CAPS
efficacy benchmark of $d_{CAPS+} = 0.722$ (see Table 4), a M-PTSD efficacy benchmark of $d_{MPTSD+} = 0.160$ (see Table 5), and a BDI efficacy benchmark of $d_{BDI+} = 0.375$ (see Table 6). The effect sizes for the CAPS (i.e., $d_{CAPS+} = 0.722$ [benchmark] versus $d_{CAPS} = 1.278$ [observed data]) and M-PTSD (i.e., $d_{MPTSD+} = 0.160$ [benchmark] versus $d_{MPTSD} = 1.084$ [observed data]) show the results of the observed data are clearly higher than the benchmark; however the effect sizes for the BDI are fairly similar to one another (i.e., $d_{BDI+} = 0.375$ [benchmark] versus $d_{BDI} = 0.383$ [observed data]).
CHAPTER V

DISCUSSION

The purpose of this study was to address the question: is DBT an effective treatment method for veterans with PTSD? In order to address this question, the principal investigator recruited military veterans who presented for a PTSD evaluation and were subsequently referred to a DBT PTSD Coping Skills Group. At pre- and posttreatment, a structured clinical interview was administered in addition to a battery of outcome measures intended to access symptoms and associated features of PTSD. Due to problems in recruitment, only eight veterans comprise the sample for this study.

Results from the matched pair t-test of the observed data suggest considerable improvement or positive change in symptoms across four measures; the CAPS, the M-PTSD, the PSQI, and the Anger Out (AX-O) score of the STAXI-2. This indicates overall PTSD symptoms decreased as well as specific improvements being noted in sleep quality and outward anger expression. The remaining measures did not show statistically significant change; however, none of the measures showed a decline or negative change. All showed stability or modest improvement across pre- and posttreatment assessment. A visual comparison of the observed data effect sizes $d$ and the aggregated benchmark data $d_+$ showed greater effect in the observed data for the CAPS and the M-PTSD. The effect
sizes for the BDI across both groups were quite similar to one another. These results are consistent with those seen in the matched pairs $t$-tests.

Implications of the Results

The resulting data and outcome of the present study are quite promising and suggest DBT may be an effective treatment method for male veterans with PTSD. However, as with any research, this project had significant limitations which would need to be addressed and remedied in future studies.

Limitations to Data Collection

Challenges in Participant Recruitment

A major limitation of the current study is the low sample size. Of note, are the challenges the principal investigator experienced in participant recruitment that contributed to this. First, clinicians failed to refer veterans to the principal investigator at the time of their initial assessment and referral to group, thus potential participants were already actively engaged in the group at the time they became aware of the study and expressed desire in participating. These veterans had to be excluded despite their interest because their previous involvement in the treatment group would potentially alter their baseline or pre treatment scores.

Of those veterans referred to the principal investigator, four potential participants reported they would be interested in participating, but felt overwhelmed. Specifically, these veterans noted they had just been diagnosed with PTSD and subsequently had been given referrals for group psychotherapy and/or psychoeducation, individual
psychotherapy, and/or to a psychiatrist or other professional with prescribing rights to explore options for psychotropic medication management for symptoms of PTSD and co-morbid disorders. Additionally, two of these veterans reported they were also currently involved with the legal system after being arrested for charges including domestic violence and assault. Further, due to compounding effect of the PTSD symptoms and possible related features and co-morbid disorder and the impact of their legal involvement, they were also experiencing a great deal of stress at home and at their places of employment. A common theme that came up when talking with these veterans was, “I just can’t handle one more thing related to PTSD right now.” In a related vein, three potential participants said they would be interested in participating, but could not take any more time away from work as they were delving deep into their vacation and flex time for other VA and or court appointments that were of greater importance.

Two veterans declined to participate in the study, noting a distrust of others and a lack of desire to retell their stories and experiences. These two veterans expressed feelings of distrust toward VA staff members, military personnel and employees of the United States government because they feel their rights were violated and they are not being cared for appropriately.

Finally, during the duration of the study the PCT saw a slight shift in the general population and demographics of the veterans presenting to the PTSD assessment group (the preliminary step to being referred to DBT PTSD Coping Skills Group). Specifically, more and more Iraq veterans were attending the group. Generally, veterans of the Iraq war are referred to groups and treatment services other than the DBT PTSD Coping Skills
group (i.e., the Iraq Veterans Readjustment Group) and thus the number of potential participants decreased slightly.

Adherence and Control

Adherence to the manualized DBT treatment protocols as well as other control factors including therapists and veterans’ time in group were further limitations to the present study. Due to confidentiality concerns as well as the fact that the present study did not have sufficient funding to participate in strict adherence practices (e.g., videotaping group sessions and having them professionally coded by staff members at Behavioral Tech, LLC [company led by Dr. Linehan]) to monitor adherence and appropriateness of material being presented, adherence to the manualized treatment went only as far as PCT staff agreeing to use the manual and “stick to it as closely as possible.”

Also related to control is the issue of rotating therapists. Because the VASLCHCS is a training facility for many professional groups including psychologists and social workers, there is often a quick turnover in attending therapists within the DBT PTSD Coping Skills group, as it is part of one of the major training rotations. During the course of the recruitment period for the current study, approximately five therapists transitioned through as facilitators. It is important to consider therapist effects in determining overall outcome and the present study did not include any measures to explore this. Schnurr (2007), in her discussion of the “rocks and hard places of psychotherapy outcome research,” notes the importance of the therapist and therapist skill as a considerable factor impacting outcome. Additionally, given the nature of PTSD and for many the
circumstances of the etiological event that caused it, distrust of others is a major concern when transitioning therapists though the group quickly. Several participants complained that there were just establishing a working rapport and sufficient level of trust with a new therapist when they left the rotation and were replaced by someone new. Compounding the lack of strict adherence protocols with the relatively quick turn over in therapists (and the variety of problems associated with this) provides little hope of adequate standardization of treatment being delivered.

Finally, due to both staffing issues at the VASLCHCS that led some veterans to remain in the DBT group longer than usual as well as scheduling conflicts between the principal investigator and study participants (e.g., veterans being out of town) at the time of ideal posttreatment assessment, the number of groups attended by each participant between pre- and postassessment was not uniform. On average veterans attended 14 group sessions between pre- and postassessment; however, the total number of session attended ranged from 10 to 18. This study did not include any assessment of potential differences in outcome based on time in group (i.e., number of sessions attended) due to lack of power.

Limitations to Research Design and Methodology

Small Sample Size for the Current Study

As noted above, a large limitation of this study is the very small sample size (n=8). This low sample size seriously restricts power and limits the statistical analysis that can be conducted with this data. Additionally, the few tests that can be conducted are
not as meaningful as they would be if there were a larger *n*. Some ways to increase sample size in the future would be to have better communication between the principle investigator and the clinical staff of the PCT to ensure all veterans referred to the Coping Skills Group were given information concerning the study and given the opportunity to participate before they begin the group. Additionally, having a shorter assessment time both pre and post assessment may have increased numbers of willing participants.

Small Number of Studies Included in the Benchmark

Another limitation of the current study is the small number of studies included in the benchmark analysis and thus the aggregate. Although there is a large body of research concerning treatment for PTSD, there are surprising few clinical trials. Thus, even allowing for rather loose selection and inclusion criteria for the benchmark, it was challenging to find appropriate studies to include.

Possibility of Poor Reliability of Outcome Measures as an Outcome Tool

Another possible limitation of this study was the selection of outcome measures used to assess change from pre- to posttreatment. The assessments in the present study were selected initially because of the constructs they measured and because most were referenced in the VAMSTA (Fontana, Ruzek, McFall, Rosenheck, 2006). The OQ-45.2 was used because it was easily accessible to the primary investigator and provides a reliable measure of important areas of functioning including symptom distress, social role performance and interpersonal relations. Of concern, however, is that although all of the assessments administered in the present study have been used as outcome measures in
other research, the OQ-45.2, PSQI, PSQI-A, STAXI-2, and BSSI have not been evaluated for use with a veteran population. Thus, it could be argued that these assessments are not adequate to use as outcome measures with this population as there is no evidence providing reliability and/or validity data for this population.

Potential Differences in Client Factors and Demographics

Because data was collected in a real world setting in the present study, there is a possibility that there may be differences in client characteristics and demographics between those who presented for treatment services on their own and agree participate in a research study versus those who agree to participate in a clinical trial, including being randomized into treatment and/or put on a wait-list. In a related area, although the sample of each study included in the benchmark was comprised exclusively of military veterans, it could be argued that the eight veterans recruited from the VASLCHCS are characteristically different from those included in the other studies.

Implications for Future Research

DBT is a very widely used manualized treatment with considerably empirical evidence supporting its effectiveness with a variety of populations. The results of the present study show promise that it may be an effective method for treating male veterans with PTSD and plead for further evaluation and exploration of its utility with this population. Future studies should strive to implore greater adherence and overall control measures to ensure more reliable and valid data. Additionally, for the sake of control, continuity of care, and standardization of treatment being provided, therapists should
remain consistent throughout study protocols. Further, the outcome measures used to determine pre/post treatment change should be carefully chosen and examined to ensure the validity of the outcome data as well as minimizing the time required to complete assessment.

Again, due to ethical considerations for the need of continuity of care and limited financial and staffing resources, this study did not consider the inclusion of a waitlist or comparison control group. However, future studies should include strictly controlled studies, including clinical trials that implement some sort of comparison group.

Additionally, it is recommended that future research include a qualitative analysis of the veteran’s overall experience in group. Most (n=7) of the participants of the present study provided some informal qualitative information and feedback concerning their experience in the group, specifically what they found beneficial and not. This information was outside the scope of this study and thus not included in this manuscript, but could provide very important information as to the overall effectiveness of the DBT PTSD Coping Skills Group.

Conclusions

Although the current study provided only a pilot examination of the effectiveness of DBT as a treatment method for male veterans with PTSD, the results were promising. Given the increased rates of veterans presenting for PTSD treatment services at VA hospitals across the county due to the current war in Iraq, it is crucial that work continues to progress in efforts to find and improve effective and efficient treatment methods. The
basic tenets and underlying theory of DBT seems very applicable for use with a male veteran population with PTSD. As noted above, many individuals with BPD have experienced one or more traumatic events during their lifetime; many of these being long term, sustained exposure (e.g., continued childhood sexual abuse). Because of this the majority of diagnostic criteria for BPD overlap with many descriptions of complex trauma and PTSD (e.g., Briere & Spinazzola, 2005; Wagner, Rizvi & Harned, 2007). This sustained exposure to trauma common among individuals diagnosed with BPD is similar to that of the sustained exposure experienced by military personnel in combat. Further, because BPD is a very complicated disorder, the treatment, DBT, was developed to provide skills and strategies for managing a vast multitude of concerns and problems in an effective manner and is in no way a “one size fits all” type of treatment (Wagner et al., 2007).

During posttest assessment, one participant of the current study reported feeling that his involvement in the DBT PTSD Coping Skills group allowed him to no longer “just survive... but to actually live again.” Given the results of this study (albeit preliminary) it is possible that further research and analysis will find DBT to be worthy of “joining the ranks” so to speak among evidence based treatments for this complicated population and will perhaps offer others the opportunity to “actually live again.”
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