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Examination of the Efficacy of Behavioral Activation in the Treatment of Co-Morbid Major Depressive Disorder and Post-Traumatic Stress Disorder

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EXAMINATION OF THE EFFICACY OF BEHAVIORAL ACTIVATION IN THE TREATMENT OF CO-MORBID MAJOR DEPRESSIVE DISORDER AND POST-TRAUMATIC STRESS DISORDER

by

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EXAMINATION OF THE EFFICACY OF BEHAVIORAL ACTIVATION IN THE TREATMENT OF CO-MORBID MAJOR DEPRESSIVE DISORDER AND POST-TRAUMATIC STRESS DISORDER

Patrick S. Mulick, Ph.D.

Western Michigan University, 2003

This study investigated the efficacy of 10-weeks of Behavioral Activation (BA) in the treatment of co-morbid Major Depressive Disorder (MDD) and Post-traumatic Stress Disorder (PTSD) in six adults using a nonconcurrent multiple baseline across participants design. This study is an attempt to expand empirical knowledge regarding BA, co-morbid PTSD and MDD, and the treatment outcome research specifically relevant to these co-morbid diagnoses. All participants met full DSM-IV criteria for both MDD and PTSD at the outset of the study. Duration of baseline for each subject varied and ran for 1, 2, 3, 4, or 5 weeks. Self-report data were gathered at each session and again at mid-point between each session. At the posttreatment assessment sessions, self-report and observer rated data indicate that 3 participants no long met criteria for either MDD or PTSD and an additional participant no longer met criteria for MDD. It is argued that BA may be an effective treatment for co-morbid PTSD and MDD and the theoretical rationale is provided.

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CHAPTER I

INTRODUCTION

The scientist-practitioner training model of the American Psychological Association (APA) provides a framework within which psychologists are trained to fulfill the dual roles of scientist and practitioner; however, modern day psychology evidences a gap between those who concentrate on the science of psychology and those who focus on the practice of psychology (Beutler, Williams, Wakefield, & Entwistle, 1995; Campbell, 1996; Cohen, Sargent, & Sechrest, 1986; Morrow-Bradley & Elliot, 1986; Persons, 1991). By examining interventions in a scientific manner, treatment outcome research is considered by some to bridge the gap between the science and the practice of psychology, (Beutler et al., 1995; Cohen et al., 1986; Kazdin, 1986, 1998, 1999; Morrow-Bradley & Elliott, 1986; Paul, 1967; Persons, 1991; Rainer, 1996; Raw, 1993). However, questions exist as to the success of treatment outcome research in disseminating this scientific knowledge to those in applied settings (Beutler, Williams, & Wakefield, 1993; Campbell, 1996, Seligman, 2000). Nonetheless, researchers frequently choose this path to answer questions that impact the practice of psychology. While there are many variations to the form of the question that is asked in treatment outcome research, generally one underlying scientific inquiry is being made, "What treatment, by whom, is most effective, for this

individual with that specific problem, under which set of circumstances?" (Paul, 1967, p. 111).

The path to answering this question has gone through three distinct generations of methodological strategies (Drozd & Goldfried, 1996). The first generation, spanning from the 1950s to the mid 1960s, employed research designs that were less sophisticated than today's standards and sought to answer the following question: "Is psychotherapy effective in producing change?" (Drozd & Goldfried, 1996, p. 171). The focus was on examining the effect of a broad range of therapies on a heterogeneous participant sample, while paying little attention to the varying therapies that were utilized. The second generation of outcome research methodology began in the late 1960s and continued into the 1980s. The main question during this generation was: "Which specific procedures were more effective in dealing with specific clinical problems?" (Drozd & Goldfried, 1996, p. 172). The major shift of this generation was to select the participants based on a specific target problem. Although the methodology utilized during this period was more rigorous than the earlier generation (e.g., random assignment), the research was criticized for its overreliance on the laboratory setting. The analogue nature of these studies yielded a limitation of reduced generalizability of findings. This limitation affected the utility of the generated knowledge in clinical settings.

In 1993 the American Psychological Association (APA) adopted the report and recommendations of the Task Force on Promotion and Dissemination of Psychological Procedures (1995), which called for an emphasis on empirically

validated treatments and established criteria that would classify treatments as well-established or probably efficacious. With the field moving toward empirically validated treatments, the methodology of treatment outcome studies moved into the third and current generation (Drozd & Goldfried, 1996). While the general question of this generation remained similar to that of the second generation, the specific focus was changed to: "Which manualized intervention is most effective in the treatment of patients diagnosed with a specific Diagnostic and Statistical Manual of Mental Disorders (DSM) Axis I disorder?" (Drozd & Goldfried, 1996, p. 172). This generation of methodological sophistication attempted to redress the criticisms of the past generation by recruiting therapists and clients from the general population to increase the generalizability of findings. This progression within the field provided more rigorous scientific methodology. Foa and Meadows (1997) provided seven parameters for methodologically sound outcome research: (1) clearly defined target symptoms; (2) reliable and valid measures; (3) use of blind evaluators; (4) assessor training; (5) manualized, replicable, specific treatment programs; (6) unbiased assignment to treatment; and (7) treatment adherence. These attributes have become the "gold standards" (Foa & Meadows, 1997, p. 453) for treatment outcome research. However, the current movement within the field of psychology might indicate the dawning of a fourth generation of research methodology.

In recent years, the APA and the National Institute of Mental Health (NIMH) have placed an emphasis, through funding and professional publications, on research that examines treatments for psychological disorders as they commonly present in

"real world" settings (Eisenberg, 1999; Foxhall, 2000; Hyman, 1998; Miklowitz & Clarkin, 1999; Niederehe, Street, & Lebowitz, 1999; Norquist, Lebowitz, & Hyman, 1999; Strum, Unützer, & Katon, 1999). Effective treatments for frequently occurring co-morbid disorders have been a stated emphasis within this current zeitgeist (Foxhall, 2000). It is apparent that the emphasis by the APA and NIMH to examine clinical conditions as they typically present in patient populations will have a dramatic impact on the types of studies being conducted (Foxhall, 2000; Niederehe et al., 1999). In turn, this will have an impact on the procedures that have been utilized during the third generation of research methodology. Many components will remain vital to ensure comprehensive and useful results, such as experimental control conditions and assessment issues. However, the previous emphasis on rigorously controlled settings and clearly defined, single disorder diagnosed participant samples will be modified (Seligman, 1995). It is possible that these modifications will lead to a new generation of research methodology.

It can be expected that future studies will be conducted in settings that are more public and diverse, such as those in which actual clients typically receive treatment (Norquist et al., 1999). In addition, there will likely be an increase in the number of studies that examine disorders commonly occurring together (Foxhall, 2000; Hyman, 1998; Norquist et al., 1999). These modifications in methodology should lead to more useful knowledge for how to treat the clients that the practicing psychologist typically sees (Foxhall, 2000; Hyman, 1998). One population that falls within the newly emphasized research domain is individuals who meet DSM-IV

criteria for co-morbid Post-Traumatic Stress Disorder and Major Depressive Disorder (C-P/D).

It has long been recognized that traumatic events can produce psychiatric symptoms in individuals who were previously well adjusted; however, the overriding notion was that the stress-induced symptoms were transient (Wilson, 1994). The DSM-I (APA, 1952) contained the diagnosis of "gross stress reaction" and DSM-II (APA, 1968) contained the diagnosis of "transient situational disturbance". As the DSM-II diagnostic label indicates, both versions of the DSM assumed that trauma-induced symptoms were temporary and would dissipate. Any symptoms that remained suggested the presence of a separate psychological disturbance (McNally, 1999). The return of Vietnam veterans and psychological symptoms they were experiencing generated a debate that helped change the professional perception of the symptoms associated with traumatic events (McNally, 1999). The APA DSM-III task force explored cases of individuals who had experienced incidents of war, rape, and natural disasters. They concluded that these types of events could give rise to a common constellation of symptoms and a unique psychological syndrome. Based on their recommendation, DSM-III (APA, 1980) was the first edition to include the diagnostic label of PTSD. The diagnosis has remained though the revisions of DSM-III-R (APA, 1987) and DSM-IV (APA, 1994), with slight modifications to the defined criteria. The criteria include symptoms from three defined symptom clusters: (1) recurrent re-experiencing of the trauma (e.g., nightmares, intrusive thoughts); (2) avoidance of the reminders of the trauma and emotional numbing; and (3) increased arousal (e.g.,

heightened startle response, insomnia). The APA DSM-IV task force further delineated the nature of trauma-related symptoms by including another diagnostic label, Acute Stress Disorder (ASD). ASD differs from PTSD primarily by the length of symptom duration and by the emphasis on dissociative symptoms. An individual qualifies for the diagnosis of ASD if she or he has a variety of the aforementioned symptoms for a minimum of 2 days to a maximum of 4 weeks (APA, 1994). The diagnosis of PTSD is satisfied if the symptoms persist for a minimum of 4 weeks.

The existence of depression has been less controversial than PTSD and the criteria for diagnosis have remained relatively consistent for many decades (Carson, Butcher, & Mineka, 1998). The criteria for a major depressive episode require that a person experience either markedly depressed mood or marked loss of interest in previously pleasurable activities most every day for at least 2 weeks (APA, 1994). Additionally, the individual must experience at least four or more of the following symptoms during the same period: fatigue or loss of energy; insomnia or hypersomnia; decreased or increased appetite or an significant increase or decrease in weight; psychomotor retardation, or agitation; diminished ability to think or concentrate; feelings of worthlessness or guilt out of proportion with past indiscretions; and recurrent thoughts of death or suicide (APA, 1994). An individual meets criteria for MDD when they have experienced one major depressive episode and there has never been a manic episode, mixed episode, or hypomanic episode (APA, 1994).

Major Depressive Disorder (MDD) and Post-traumatic Stress Disorder (PTSD) commonly present concurrently at clinics, hospitals, and Veteran Administration Medical Centers (VA), with co-morbidity rates as high as 65% (Dow & Kline, 1997). Although C-P/D has been empirically demonstrated, due to the past trends in research methodology to exclude individuals with dual diagnoses, there is limited knowledge of how to effectively treat individuals with C-P/D (Nishith, Hearst, Mueser, & Foa, 1995).

The following two chapters will include a review of the literature relevant to behavioral and cognitive-behavioral treatments for PTSD, MDD, and C-P/D and a detailed description of the experimental methodology to be utilized in this study. An argument will be made for the need for further research into behavioral treatments for individuals diagnosed with C-P/D. Furthermore, the scientific logic for this study will be demonstrated by clarifying the current content of the empirical literature and how this examination is a logical extension of treatment outcome research in this area.

CHAPTER II

REVIEW OF LITERATURE

Co-morbid Post-traumatic Stress Disorder and Major Depressive Disorder (C-P/D)

The co-morbidity of PTSD and MDD has been extensively examined and research has demonstrated co-occurrence rates that exceed that which would be expected as an effect of simple coincidence (Blanchard, Buckley, Hickling, & Taylor, 1998; Bleich, Koslowsky, Dolev, & Lerer, 1997; Breslau, Davis, Andreski, & Peterson, 1991; Carlier, Voerman, & Gersons, 2000; Cascardi, O'Leary, & Schlee, 1999; Constans, Lenhoff, & McCarthy, 1997; Dow & Kline, 1997; Favaro, Rodella, Colombo, & Santonastaso, 1999; Goldberg & Gara, 1990; Green, Lindy, Grace, & Leonard, 1992; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kroll et al., 1989; McFarlane & Papay, 1992; Mellman, Randolph, Brawman-Mintzer, Flores, & Milanes, 1992; Nishith et al., 1995; Shalev et al., 1998; Sierles, Chen, McFarland, & Taylor, 1983; Yehuda, Kahana, Southwick, & Giller, 1994). The concurrent rate in some studies has been as high as 65%, with the highest lifetime prevalence rate at approximately 95%. Numerous explanations have been suggested to account for the high C-P/D, such as the similarity of symptoms, common causation, and sequential causation (Shalev et al., 1998). Yehuda, at the NIMH National Center for PTSD Conference on diagnosis of PTSD (Boston, MA, November 7 and 8, 1995), commented that C-P/D might be illusionary because of the high symptom overlap

between PTSD and MDD (cited in Blanchard et al., 1998). This explanation suggested C-P/D is not a result of two separate disorders, but rather one single disorder whose pathology crosses over the criteria of two separate DSM disorders. Indeed, there are six symptoms that overlap the diagnostic criteria of MDD and PTSD. The overlapping symptoms are (1) a loss of interests in activities, (2) feeling detached from others, (3) a restricted range of affect, (4) disruptions of sleep, (5) increased irritability, and (6) difficulty in concentration. The first three are contained in the avoidance symptom cluster and the last three in the hyperarousal symptom cluster. To examine the distinction of PTSD and MDD scientifically, further studies have been conducted to explore the characteristics of symptomatology and the chronological onset of the two disorders.

Bleich et al. (1997) examined C-P/D following combat trauma. Their participants were 60 Israeli veterans seeking psychiatric treatment 4 to 6 years following exposure to war trauma. Each participant was interviewed using the Structured Interview for PTSD (PTSD-SI; Davidson, Smith, & Kudler, 1989) and the Schedule for Affective Disorders and Schizophrenia Lifetime Version (SADS-L; Endicott & Spitzer, 1978). All of the participants met criteria for lifetime PTSD and 87% met criteria for PTSD at the time of the interview. Furthermore, 95% of the participants met criteria for lifetime MDD, with 50% having MDD as a current diagnosis. When examining for the chronological order of symptom onset, Bleich et al. (1997) found that MDD and PTSD started together in 65% of the cases, while MDD preceded in 16% of the participants and PTSD preceded in 19% of the

participants. To control for the overlap of symptoms associated with PTSD and MDD, Bleich and his colleagues (1997) examined psychiatric diagnosis following the removal of the common symptoms. Their results demonstrated that 98% of the participants with a lifetime and 93% with a current MDD diagnosis continued to meet criteria for this disorder. Examination of the PTSD diagnosis revealed that 70% and 55% of participants still met the diagnostic criteria for lifetime and current PTSD respectively. These results demonstrated that even after the removal of common symptomatology, the majority of participants would still meet criteria for PTSD. While Bleich et al. acknowledged the lack of a control group and the retrospective nature of their study as limitations, they concluded that their results suggest that PTSD is a distinctive diagnostic category. They further stated that efforts need to be made to find effective interventions for C-P/D.

Blanchard and his colleagues (1998) reexamined the data of 158 motor vehicle accident (MVA) victims to address three questions: (1) Are PTSD and MDD distinct reactions to trauma or are they a unitary construct? (2) Within a sample of individuals who develop PTSD, are those that develop MDD similar or different than those who do not develop MDD (they specifically examine the issue of number of depressive symptoms present, 5 or 6 vs. 7 to 9, and its impact on diagnosis)? and (3) Are there differences in occurrence of the individual depressive symptoms and individual PTSD symptoms among those subgroups described in Question 2? Each participant was interviewed using the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990), the Structured Clinical Interview for DSM-III-R (SCID; Spitzer, Williams, Gibbon, &

First, 1990), and the Longitudinal Interval Follow-up Examination Base (LIFE; Keller et al., 1987). Additionally, each participant completed the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979), and the Reaction Index (Frederick, 1985).

To answer their first research question, Blanchard et al. (1998) analyzed the data using a multivariate approach to test a single factor model of PTSD and a two-factor model, with the two factors being PTSD and MDD. Of the 107 participants examined, 62 met criteria for full PTSD, 33 of which had concurrent MDD. Additionally, 45 met criteria for subsyndromal PTSD, 3 of which had concurrent MDD. They examined six indices of fit for both models. Their results demonstrated only one index suggested good fit for the one factor model, while three suggested good fit for the two-factor model. Concerned with the error variance of two of the PTSD self-report measures (Reaction Index and the IES), the authors modified their approach and conducted a second analysis on the two-factor model. This analysis revealed a good fit on all six indices. The results of the factor analytic approach provided support for the position that PTSD and MDD can be conceptualized as two distinct constructs when seen in recently traumatized individuals.

To examine the characteristics of the those individuals who had a diagnosis of C-P/D and those that had a single diagnosis of PTSD, Blanchard et al. (1998) divided the 62 participants who met criteria for full PTSD into four groups: (1) those with PTSD who became depressed after the MVA, with five or six symptoms of MDD; (2)

those with PTSD who became depressed following the MVA, with seven, eight, or nine symptoms of MDD; (3) those with PTSD who were depressed at the time of the MVA who continued to meet criteria for MDD; and (4) those with PTSD who did not meet criteria for MDD. The results demonstrated that those with C-P/D were more distressed than those with only PTSD. There were no differences between those with five or six symptoms of MDD and those with seven or more. These findings were important clinically in that they indicated that those individuals who suffer from C-P/D are more distressed and more impaired than individuals with only PTSD. Further, results demonstrated that the number of depressive symptoms an individual experiences does not seem to have an additive effect on their level of distress.

The analysis conducted to answer the last research question posed by Blanchard et al. (1998), regarding differences in individual symptoms associated with MDD and PTSD, revealed that those individuals who endorsed five or six items were not as likely to indicate suicidality or feelings of worthlessness as those individuals who endorsed seven or more symptoms. Again these results had important clinical implications for therapists who work with individuals diagnosed with C-P/D. Based on these statistical results, Blanchard et al. concluded that PTSD and MDD are different disorders with important therapeutic consequences, rather than a different manifestation of a single disorder.

Shalev et al. (1998) conducted a study that followed a number of participants for 1 year following a traumatic event and assessed the participants at 1 week, 1 month, 4 months, and 1 year after the event. Each participant was assessed using the

SCID, CAPS, BDI, STAI, IES, Hamilton Depression Rating Scale (HDRS; Hamilton, 1960), civilian version of the Mississippi Scale for Combat-Related Post-traumatic Stress Disorder (Keane, Caddell, & Taylor, 1988), and Peritraumatic Dissociation Experiences Questionnaire (Shalev, Peri, Canetti, & Schreiber, 1996). The results demonstrated that of the 211 assessed participants 44.5% met criteria for C-P/D at 1 month and 43.2% met criteria at 4 months. Additionally, 29.9% met criteria for PTSD and 19% met criteria for MDD at the 1-month assessment. Furthermore, the 4-month assessment found that 17.5% and 14.2% of the participants met criteria for PTSD and MDD, respectively. The researchers followed 58 of the participants for 1 year and found a co-morbidity rate of 61.5% at the time of that assessment. The researchers also found that the symptoms for PTSD, MDD, and C-P/D differed in their presentation of insomnia, intrusion, and auditory startle. The results did not demonstrate any chronological order in the development of PTSD and MDD. The authors concluded that PTSD and MDD should be viewed as separate, yet commonly co-occurring, disorders. A further conclusion was that the complex interaction of these two disorders and the treatment of their co-occurrence deserved further study.

The high frequency of C-P/D has been empirically demonstrated; however, due to the past research methodology in conventional efficacy studies of excluding individuals with dual diagnoses, there is limited knowledge of how to effectively treat individuals with C-P/D (Nishith et al., 1995). There is only one study that empirically examined the effectiveness of a psychological intervention focused specifically on treating C-P/D. Nishith et al. (1995) utilized a cognitive-behavioral intervention to

treat a 37-year-old woman, Jane, who was sexually assaulted in childhood and as an adult. The specific traumatic event was defined as a rape, which was perpetrated by her ex-husband and his friend and that lasted for approximately 3 hours. An independent evaluator used the SCID to make a diagnosis of C-P/D. Jane was further assessed using the PTSD Symptom Scale (PSS; Foa, Riggs, Dancu, and Rothbaum, 1993), IES, Rape Aftermath Symptom Test (RAST; Kilpatrick, 1988), Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), STAI, and the BDI. She was evaluated at pretreatment, session 18, posttreatment, and 1- and 3-months following termination. Jane was seen for 90-minute sessions once a week for 24 weeks. The treatment consisted of a combination of stress inoculation, cognitive restructuring, and imaginal and in vivo exposure. The breakdown of sessions was as follows: session 1, information gathering; session 2, treatment rationale and breathing training; sessions 3-6, PMR and relaxation via imagery; sessions 7-12, self-monitoring and cognitive restructuring; sessions 13-24, imaginal exposure in session and in vivo exposure homework.

The results of the assessment conducted during session 18 demonstrated no statistical change in Jane's symptoms of PTSD or MDD. Following the last six sessions dedicated solely to imaginal and in vivo exposure, there were statistically and clinically significant improvements that were maintained at 1- and 3-month follow-up assessments. The authors chose their treatment approach based on a functional analysis of Jane's presenting symptoms. The decision was made to treat her depressive and hyperarousal symptoms with SIT first and then target her avoidance

and re-experiencing symptoms with exposure toward the end of therapy. Although the entire treatment package resulted in a significant reduction in symptomatology at the end of the 24 weeks, due to the single-case design and order of treatment administration, it was impossible to determine the effective therapeutic components. Based on the significant improvements made between session 18 and 24, with no significant improvements seen before this point, the data suggested that the exposure component was the effective technique. However, it is possible that the therapeutic techniques utilized in sessions 1-17 were necessary to obtain the improvements seen in the latter sessions. Nishith et al. (1995) concluded that more research is needed to examine which components of their treatment were effective and necessary for recovery. While this study demonstrated many of the logistical and clinical difficulties in treating C-P/D, it also provided evidence that interventions can be effective in reducing problem symptoms associated with this condition.

Treatment of PTSD and MDD Individually

While there is a dearth of research examining the effective treatment of C-P/D, there are numerous interventions that have been examined for the treatment of both PTSD and MDD as individual conditions (Blake & Sonnenberg, 1998; Rothbaum & Foa, 1996; van der Kolk, McFarlane, & van der Hart, 1996). Extensive reviews of the literature provide evidence that interventions that fall within the domain of behavioral and cognitive-behavioral are both effective and frequently utilized in treating these disorders (Dobson, 1989; Foa & Meadows, 1997; Gloaguen, Cottraux, Cucherat, &

Blackburn, 1998; Hollon, Shelton, & Loosen, 1991; Jacobson & Hollon, 1996; Sherman, 1998; Van Etten & Taylor, 1998; Waller, Mulick, & Spates 2000). Based on the empirical support for the effectiveness and utility of these interventions, in conjunction with the rationale and purpose of this study, the review of literature contained within this chapter will focus on behavioral and cognitive-behavioral interventions.

Treatments for PTSD

Individuals who develop PTSD are distinguished from those individuals who are temporarily stressed because they are "stuck" on the trauma (van der Kolk et al., 1996). The individual continues to relive the thoughts, feelings, and images; subsequently, the individual begins to organize their lives around avoiding these negative experiences (Blake & Sonnenberg, 1998; Rothbaum & Foa, 1996; van der Kolk et al., 1996). As such, the goal of therapy with traumatized individuals is to progress from reliving the traumatic experience and interpreting additional emotionally arousing stimuli as a reoccurrence of the trauma to being fully engaged in the present and responding to current events in an appropriate manner (Rothbaum & Foa, 1996; van der Kolk et al., 1996). To accomplish this, psychotherapy must address two fundamental aspects of PTSD: (1) deconditioning the anxiety, and (2) altering the victim's view of him/herself and the world by helping him/her to regain a sense of personal integrity and control (van der Kolk et al., 1996).

Waller, Mulick, and Spates (2000) conducted a meta-analysis on 20 randomized, controlled trial studies examining exposure therapy or eye-movement desensitization and reprocessing. Criteria for inclusion in this analysis dictated that at least some portion of the participants had to meet full criteria for PTSD and the target symptomatology had to be assessed using standardized measures. The results demonstrated that exposure therapy and EMDR produced generally equivalent effect sizes, with no significant difference when examining across all dependent measures ($Z = .52, p > .05$). Additionally, there were no significant differences when specific symptom clusters were examined: PTSD intrusion ($Z = .01, p > .05$), PTSD avoidance ($Z = .19, p > .05$), PTSD hyperarousal ($Z = .88, p > .05$), PTSD total ($Z = .06, p > .05$), anxiety ($Z = .62, p > .05$), and depression ($Z = 1.20, p > .05$). Based on these results, the authors concluded that EMDR-like procedures are probably as efficacious as exposure treatments, with evidence that would suggest both treatments are effective in reducing PTSD symptomatology.

While the studies examined within these reviews did not specifically examine C-P/D, many monitored the effect of the prescribed treatments on the severity level of depressive symptoms. Keane, Fairbank, Caddell, and Zimering (1989) examined the effectiveness of implosive therapy in treating 24 Vietnam veterans, who have been diagnosed with PTSD. Participants were randomly assigned to a wait-list group or a treatment group receiving 14 to 16 sessions of implosive therapy. Assessments were conducted using the BDI, Zung Depression Scale (Zung, 1965), Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943), PTSD

subscale of MMPI (Keane, Malloy, & Fairbank, 1984), STAI, Fear Survey Schedule (Geer, 1965), and therapist rating of PTSD symptomatology in which they used the PTSD symptom checklist located within the Jackson Structured Interview (Keane et al., 1985). Assessments were completed at pretreatment, posttreatment, and 6-months following therapy.

When compared to the wait-list control group, the treatment group demonstrated a significant reduction in therapist severity ratings of PTSD symptoms and the self-report ratings of anxiety and depression from pretreatment to posttreatment assessments. These improvements were maintained at 6-month follow-up. These results suggested that implosive therapy was a more effective treatment for PTSD symptomatology than the passage of time. A limitation of this study was that while the diagnosis of PTSD was established, the co-morbidity of other Axis I disorders was not assessed. Therefore, while the researchers examined the effect that implosive therapy had on symptoms associated with other anxiety and mood disorders, no conclusions could be drawn regarding the success of treatment with individuals having co-morbid conditions.

Foa, Rothbaum, Riggs, and Murdock (1991) compared prolonged exposure (PE) to stress inoculation training (SIT), supportive counseling, and a wait-list control in the treatment of 45 rape victims diagnosed with PTSD. A standardized interview and the Assault Reaction interview were used to establish each participant's diagnosis of PTSD and the severity of symptoms associated with this disorder. Additionally, all participants completed the RAST, STAI, and BDI. The assessments

were completed at pretreatment, posttreatment, and a 3-month follow-up. Participants were randomly assigned to one of the four treatments; all were delivered in the same nine-session biweekly individual format.

All conditions demonstrated reduced symptomatology associated with PTSD, anxiety, and depression; however, PE led to the most dramatic overall gains and showed continued improvement at a 3-month follow-up. PE and SIT demonstrated superiority over the other two experimental conditions in the reduction of PTSD symptoms. A close examination of the data revealed that before treatment, BDI scores placed participants in the mild depression range for all experimental conditions. The posttreatment BDI scores demonstrated that SIT was the only condition in which the self-reported level of depressive symptoms were reduced to the nondepressed range. A reduction of this magnitude in depression scores could simply be the result of nontreatment contact with a mental health professional, rather than clinical effectiveness of any of the individual therapeutic techniques.

Vaughan and his colleagues (1994) compared the efficacy of imaginal exposure (IHT), applied muscle relaxation (AMR), and eye movement desensitization (EMD) in treating individuals with PTSD. Thirty-six participants were randomly assigned to IHT, AMR, EMD, or a wait-list. The participants were assessed pretreatment, posttreatment, and 3-months following therapy termination using the PTSD-SI, Anxiety Disorders Interview Schedule Revised (ADIS-R; DiNardo, O'Brien, Barlow, Waddell, & Blanchard, 1983), HRSD, STAI, BDI, and IES.

Seventeen percent of the sample was diagnosed C-P/D, with 31% having co-morbid panic disorder, and 55% having co-morbid generalized anxiety disorder.

When examining the pretreatment vs. posttreatment pooled results of all of the treatment groups compared to the wait-list group, the treatment groups demonstrated a significantly larger reduction in PTSD and depressive symptomatology. When comparing the individual treatment groups, the only significant differences found on any of the psychological measures were those that assessed the PTSD intrusion symptom cluster. On the measures assessing intrusion symptoms, EMD demonstrated the most reduction in symptomatology. The authors conclude that all treatments were superior in treating PTSD compared to the wait-list condition; however, there was no superiority demonstrated among the treatments utilized. A limitation with this study was the authors' lack of focus on the treatment effects on the co-morbid conditions. While the authors assessed for co-morbid anxiety and mood disorders, they fail to expound on these results. Vaughan et al. (1994) reported a significant reduction in depressive symptomatology at posttreatment. However, there was no information on which treatment condition those individuals with C-P/D were assigned to or if they still met criteria for C-P/D following treatment. While these results suggest promise for the use of cognitive-behavioral techniques in the treatment of C-P/D, due to the lack of data reported, no conclusions can be drawn regarding effectiveness.

There is a strong body of evidence that supports the use of cognitive-behavioral treatments for PTSD (Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; Rothbaum, Meadows, Resick, & Foy, 2000). Among these interventions,

exposure therapy is frequently considered a first-line psychotherapeutic treatment for PTSD (Ballenger et al., 2001; Rothbaum et al., 2000). However, researchers have also suggested that the general applicability of exposure therapy might be limited by being considered too aversive by clients. Treatment outcome research has demonstrated that exposure based PTSD treatments are associated with high rates of treatment noncompliance (Foa et al., 1991; Tarrier, Pilgrim, et al., 1999; Vaughan & Tarrier, 1992), high drop-out rates (between 30% to 50%; Schnurr, 2001) and the observation that some patients fail to enroll because they are intimidated (Rothbaum et al., 2000; Scott & Stradling, 1997). These factors may be limiting the effectiveness of exposure treatments with the clinical population that practitioners regularly see. This limitation may suggest that an effective treatment for PTSD that more palatable to clients is needed.

Treatments for Depression

The belief that cognitions and behaviors play a vital role in the development and maintenance of depression led to the joining of cognitive and behavioral therapeutic techniques into what became known as cognitive-behavioral therapy (CBT) (e.g., Beck's Cognitive Therapy; Beck, Rush, Shaw, & Emory 1979). Therapies that fall within the domain of cognitive-behavioral utilize both cognitive and behavioral techniques to produce changes in the irrational beliefs and dysfunctional behaviors associated with depression. A number of studies have demonstrated the effectiveness of CBT (see reviews by Hollon et al., 1991; Jacobson

& Hollon, 1996). Dobson's (1989) meta-analysis of 28 studies that utilized CBT provided impressive results supporting the effectiveness of this treatment. He analyzed 10 studies that compared CBT to either a no-treatment or a wait-list group. The mean effect size was –2.15, suggesting that the average CBT participant did better than 98% of the control participants. Gloaguen et al. (1998) conducted a meta-analysis of 48 controlled trials, comparing the effects of CBT to wait-list, antidepressants, miscellaneous therapies, and behavior therapy. The results demonstrated that CBT was superior to wait-list ($Z = -8.72$, $p < .0001$), antidepressants ($Z = -5.16$, $p < .0001$), and miscellaneous therapies ($Z = -2.93$, $p < .001$). There was no significant difference between CBT and behavior therapy ($Z = -.07$, $p > .95$). The results of these two analyses indicated that CBT was more effective for reducing symptoms of depression than no treatment. Further, the results of Gloaguen et al. (1998) suggested that CBT was also more effective than various other psychotherapies and antidepressant medication treatments. However, evidence suggested that behavior therapy and CBT were equally effective in the treatment of depressive symptoms. In regards to the behavioral therapy and CBT comparison, Gloaguen et al. fail to state how they categorized the treatments. Furthermore, they acknowledged that the equality of the treatments may be due to the similarity of the therapeutic components of the two approaches (e.g., homework assignments and skills training).

Dismantling of Cognitive-Behavior Therapy

In the current environment of obtaining empirical support for treatments that are being utilized, it is important for scientists not only to demonstrate that a therapy is effective, but also to determine what components make a therapy effective. Borkovec and Castonguay (1998) modified the general research question suggested by Paul (1967) by making their focus more defined. Borkovec and Castonguay stated that empirical support for a therapy must be demonstrated by the investigated therapy causing some improvement beyond chance and factors common to all therapeutic relationships or beyond such factors as the passage of time and repeated assessments. To achieve this, research must be conducted to establish the efficacy of a treatment or treatment package. Once the evidence for the efficacy of a treatment has been demonstrated, researchers must utilize dismantling, constructive, and parametric research designs whose processes naturally lead to the identification of more specific cause-and-effect relationships (Borkovec & Castonguay, 1998).

This scientific rigor has proved useful in the examination of CBT. While the clinical effectiveness of CBT in the treatment of depression has been well documented (Dobson, 1989; Gloaguen et al., 1998; Hollon et al., 1991; Jacobson & Hollon, 1996), the question as to which component of CBT is responsible for the therapeutic change remained. Jacobson and his colleagues (1996b) conducted a dismantling study of Beck's Cognitive Therapy (CT; Beck et al., 1979) for depression to address this question. Jacobson et al. (1996b) randomly assigned 152 depressed participants to one of three treatments, two of which were derived from the components of CBT:

(1) behavioral activation (BA), which is the behavioral component; (2) automatic thoughts (AT), which is a combination of behavioral activation and skills to modify automatic dysfunctional thoughts; or (3) "full" CBT (CT), which consists of behavioral activation, modification of automatic dysfunctional thoughts, and changing core dysfunctional schemas. Participants in each treatment condition received their prescribed treatment over the course of 16 weeks with a maximum of 24 sessions. Assessment of the participants' symptomatology was conducted before treatment began, at the time of termination, and at 6-, 12-, 18-, and 24-month follow-ups utilizing the BDI and the HRSD, both of which measure depressive thoughts, behaviors, and emotions. There were no significant differences between the treatment groups at the time of termination (Jacobson et al., 1996b). The assessment at 6, 12, 18, and 24 months following treatment termination also revealed no significant differences in level of depression between the treatment groups (Gortner, Gollan, Dobson, & Jacobson, 1998; Jacobson et al., 1996b).

The conclusion from these results was that CT was no more effective at treating symptoms associated with depression than either of its dismantled components (Jacobson et al., 1996b). Essentially, the BA component was as successful in reducing depression, altering negative thinking, and altering negative attributional styles as was the AT and CT conditions. Stated differently, those participants who received BA improved just as much as those participants who received the additional component of modifying dysfunctional automatic thoughts and as much as those who received the entire CT treatment package. These results

suggested that BA alone might be a sufficient treatment for individuals who are suffering from depression. Furthermore, these findings suggest that interventions specifically focused on modifying an individual's thinking may not be necessary to alter that person's depressive thoughts or beliefs. Rather, exposure to naturally reinforcing contingencies produce changes in thinking just as effectively as strictly cognitive interventions (Jacobson et al., 1996b).

Porter (2000) examined the effectiveness of 10-weeks of Behavioral Activation Group Therapy (BAGT) in treating individuals who sought treatment for depression at four community mental health agencies. Porter found that there was a trend toward a significant difference in reduction in symptoms of depression between the treatment group and the wait-list control group. However, the power of these results was impacted by a low number of participants (BAGT, $n = 12$; Wait-list, $n = 22$). The true effectiveness of BAGT may better be demonstrated by examining the pretreatment and follow-up mean scores on the BDI-II for both groups. His results demonstrated that those individuals who received BAGT ($N = 26$) demonstrated a significant reduction in their symptoms of depression, as measured by the Beck Depression Inventory-Second Edition (BDI-II; Beck, Steer, & Brown, 1996), from pretreatment ($M = 37.3$) to 3-month follow-up ($M = 24.1$), $t(25) = 4.56$, $p < .05$. This reduction is not only statistically significant, but it can be argued that this a clinically significant reduction for this chronically depressed, hard to treat CMH population (Porter, 2000).

When examined within the current zeitgeist of the field of psychology for empirically validated, short-term, and cost-effective treatments, findings by Jacobson et al. (1996b) and Porter (2000) have a significant impact. The need for therapists to implement only the behavioral component of CT makes BA a more parsimonious and less costly alternative to psychotherapy (Jacobson et al., 1996b; Robinson, Wischman, & Del Vento, 1996). Additionally, behavioral approaches to treating depression are typically easier to master than cognitive interventions (Chambless & Hollon, 1998), making BA more accessible to less experienced mental health professionals. However, the examination of the effectiveness of BA specifically has been examined with participants who have a single disorder of MDD. Jacobson et al. (1996b) and Porter (2000) did not assess for the presence of PTSD. While this limited assessment was appropriate for the stated purpose of their research, the outcomes did not address the need for treatment outcome research examining commonly occurring co-morbid disorders.

Rationale and Purpose of Project

This review of the empirical literature has provided evidence as to the effectiveness of behavioral and cognitive-behavioral techniques in the treatment of PTSD and MDD individually. Even though numerous studies have demonstrated a high co-morbidity between these two disorders, this review has also indicated that there is little empirical data to guide clinicians on how to treat individuals who suffer from C-P/D. Consequently, novel treatment approaches that are well tolerated and

can be applied to individuals diagnosed with C-P/D are needed. In an effort to expand the treatment outcome research literature in this area, this study will attempt to examine the efficacy of BA in the treatment of individuals who have a dual diagnosis of MDD and PTSD.

The rationale for utilizing BA to treat the C-P/D population stems from its demonstrated effectiveness in treating MDD and the similar theoretical underpinnings of BA and the cognitive-behavioral and behavioral interventions typically used to treat PTSD. Cognitive-behavioral and behavioral therapies for PTSD place an emphasis on targeting and reducing avoidance behaviors. Typically, individuals diagnosed with PTSD organize their lives around avoiding reminders and recollections of their traumatic experiences (van der Kolk et al., 1996). The avoidance and social withdrawal behaviors serve to maintain PTSD symptomatology. The foundation for many PTSD treatments is that individuals learn a new behavioral repertoire, typically through exposure techniques, that reduces distress related to their trauma experiences (Blake & Sonnenberg, 1998). Similarly, Martell, Addis, and Jacobson (2001) state that depression results from individuals engaging in avoidance behaviors that reduce contact with positive reinforcers. Treatment with individuals who have developed this avoidant behavioral pattern involves assisting them in developing a broader and more flexible behavioral repertoire.

The tenets underlying BA view depression as the result of changes in a person's life circumstances which result in a reduction of reinforcement for that individual (Lewinsohn, 1974; Martell et al., 2001). Once symptoms of depression

develop, the negative way in which the individual responds to his or her environment acts to exacerbate the symptoms, resulting in even fewer opportunities for more prosocial or functional behavior to be reinforced. The goal of BA is to activate individuals in order to maximize the opportunities they have to contact possible reinforcers in their environment (Martell et al., 2001). Based on this underlying conceptualization and goal, the overall purposes of BA treatment for depression are to: (a) determine the life circumstances that precipitated the depressive symptoms; (b) determine the coping patterns that exacerbated the depressive symptoms; and (c) develop a treatment plan for improving the coping strategies and providing access to more reinforcing life circumstances (Martell et al., 2001). Since BA targets avoidance, withdrawal, isolation, and inactivity/routine disruptions, it is hypothesized that BA will favorably impact both PTSD and MDD symptomatology. However, the avoidance behavior will be targeted through examining the individual's general behavioral repertoire, rather than through exposure techniques, possibly making BA more acceptable to clients.

The results from Jacobson and his colleagues' (1996b) dismantling research and Porter (2000) have demonstrated promise for BA as an effective treatment for depression. However, the lack of assessment for co-morbid PTSD in these previous examinations prevented evidence on BA's effectiveness at reducing symptoms associated with this frequently co-occurring disorder. This study attempts to expand empirical knowledge regarding BA, C-P/D, and the treatment outcome research specifically relevant to C-P/D as it typically presents in patient populations.

CHAPTER III

METHODS

Participants

Adult participants (ages 18–62) were recruited through advertisements in local newspapers, recruitment flyers, word of mouth, and through direct referral from mental health providers. Criteria for inclusion in the study were (a) a minimum score of a 20 on the Beck Depression Inventory–Second Edition (BDI-II; Beck, Steer, & Brown, 1996); (b) a minimum score of 14 on the Revised Hamilton Rating Scale for Depression (RHRSD; Warren, 1996); and (c) meeting the DSM-IV (APA, 1994) criteria for Major Depressive Disorder and Post-Traumatic Stress Disorder, as measured by the Structured Clinical Interview for the DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1997) and the Clinician-Administered PTSD Scale for DSM-IV (CAPS; Blake et al., 1997), respectively.

Exclusion criteria included the presence of concurrent psychiatric disorders of bipolar or psychiatric subtypes of depression, current alcohol or other substance abuse, past or present schizophrenia or schizophreniform disorder, organic brain syndrome, and mental retardation. These diagnoses were determined by responses to the SCID structured interview questions. Participants were also excluded from the study if they had been taking psychotropic medication for less than 6 weeks, had any change in their psychotropic medication in the last 6 weeks, or had been participating

in another psychological treatment for less than 3 months. If participants were receiving other forms of treatment, they had to agree to continue receiving them at the same dose or frequency for the duration of their participation in the study.

Sixteen individuals participated in the initial assessment for this study. Of these 16 individuals, 5 did not meet the above inclusion criteria for either PTSD (2 individuals) or MDD (3 individuals); 2 were excluded for meeting DSM-IV criteria for Bipolar Disorder; 2 met criteria for the study, but chose not to participate; and 1, who was visually impaired, dropped out of the study after the fifth treatment session because the travel to and from his sessions, as well as additional life events, was too demanding. The final participant sample consisted of 6 adult participants who qualified for the diagnoses of Major Depressive Disorder and Post-traumatic Stress Disorder (C-P/D) and completed at least the treatment phase of the study.

Pilot Participant (PP): The participant was a 37-year-old married, Caucasian male. He was a police officer for 9 years during the 1980s and 1990s. Additionally, during the last 6 years of this period he concurrently served in the special operations division of the military. His military position required missions in foreign countries three or four times a year. The duration of the missions ranged from 4 days to 1 month. The participant reported many traumatic events during this period. These events included: (a) attempts on his life while serving as an undercover officer and during the course of his military service; (b) investigating transportation accidents (plane and automobile), and (c) witnessing other accidental deaths. Since he had retired from the police force and the military he had held seven or eight menial jobs.

He had been working in the automotive industry for the past 4 months. He reported that his job held no enjoyment for him, but was something that he could handle because it required little. His social contacts were limited to interactions with his wife. PP reported he had a fairly large number of friends in the past, but that he had lost contact with most of them over the past few years. He attributed this loss of social support to the severe nature of his psychological symptoms. Prior to participating in this study, PP had received individual outpatient therapy for depression and PTSD intermittently over the previous 2 years. This prior treatment included a 2-week admission to a partial hospitalization program. He had been receiving psychopharmacological treatment for the 9 months prior to his initial assessment for this study. At the time of the initial assessment, and for the duration of the treatment, he was stabilized on Zoloft (50 mg qd), Buspar (30 mg bid), and Risperdal (1 mg qd).

Participant 1 (P1): The participant was a 21-year-old, single, Caucasian female. P1 presented for treatment 7 months following a stranger sexual assault. She reported that prior to the attack she had been an outgoing, assertive individual, with lots of friends. She had been an accomplished musician and had been working toward a bachelor's degree in music. She also had held a part-time maintenance job. P1 reported that she had been very active and had tried to live a healthy lifestyle. She had maintained a regular workout schedule that consisted of running, biking, and going to the gym. She stated that since the attack her life had changed dramatically. She no longer played her musical instrument. She was still enrolled in courses, but rarely attended class, resulting in a dramatic decline in her grades. She had lost contact with

her friends and was limited in her social contact to speaking with her mother on the telephone. She stated that she had stopped exercising. The participant reported that her life had become restricted to going to work and coming home to be alone. At work, she had become very passive and felt that she allowed people to take advantage of her. The participant had received individual therapy for the first 3 months following the assault. She stated that she had not found therapy very helpful and had terminated the sessions on her own. She had been receiving psychopharmacological treatment for the past 3 months. At the time of the initial assessment, and for the duration of the treatment, she was stabilized on Wellbutrin SR (150 mg bid) and Trazodone (150 mg hs).

Participant 2 (P2): The participant was a 28-year-old, single, Caucasian female. While in the military, at the age of 20, she was sexually assaulted by two men. She stated that before the assault she had been a motivated, hard working individual, who enjoyed people. She remained in the military for a couple of years following the attack, but experienced continued harassment from the two men and other military personnel, resulting in her leaving the military. P2 stated that she drank heavily during the time following the attack in an attempt to cope with her symptoms. She was placed in detention for an alcohol related incident while in the military and since that time has limited her drinking to approximately two drinks per month. Due to the severity of her psychological symptoms, she has been unable to work for the past 5 years and is receiving full disability payments from the federal government. At the time of the initial assessment, she had very limited social contact and spent the

majority of her time alone at her apartment. The participant began receiving mental health treatment at a VA women's trauma clinic approximately 5 years ago. She received individual therapy a couple times a month for the first 4 years. During the past year, the participant had been attending group therapy once a week and receiving individual supportive therapy one time a month. The participant stated that she has not noticed much of a change in her symptomatology since beginning her mental health treatment. At the time of the initial assessment, and for the duration of the study, she was stabilized on Celexa (40 mg qhs).

Participant 3 (P3): The participant was a 56-year-old, married, Caucasian male. He is a veteran of the Vietnam War and was involved in a variety of combat situation during his tour of duty. He stated that following the war he was able to work and had a variety of professions. P3 reported that his main source of employment over the years had been as a contractor. The participant stated that he first noticed psychological difficulties about 13 years ago. He became chronically anxious and uncomfortable around people. He moved his family away from the city where they were living in a cabin in woods. He continued to work until approximately 2 years ago at which time his symptoms became so severe that he quit working. He has not worked since that time and spent the majority of his time in his room at an apartment he shares with his brother. The participant was supporting himself on Social Security disability payments. He was separated from his wife and stated that his primary responsibility was caring for his teenaged daughter. P3 stated that he drank heavily off and on from the time he returned from Vietnam until he began attending AA meetings

18 months ago. P3 stated that he has not drunk since starting AA. He presented at the VA for treatment approximately 1 year ago and has been attending a weekly group for Vietnam veterans since this time. He was stabilized on Remeron (30 mg qam) and Prazozin (4 mg qd) for the 4-month prior to the initial assessment through the termination of therapy.

Participant 4 (P4): The participant was a 42-year-old, married, Caucasian male. He reported being sexually and physically abused from the age of 5 to 21 by his mother, father, and sister. He reported various degrees of sexual abuse ranging from sexual touching to intercourse. Additionally, he reported severe physical abuse that resulted in occasional hospital visits for broken bones and lacerations. He stated that he was not sure who he really was because the abuse had started at such a young age. He stated that he always felt uncomfortable and different from other people. He had been married for approximately 18 years and had a teenaged daughter; however, he stated that he did not feel close to his wife or daughter. He stated that he only had one person that he felt close to, a male friend whom he had known since college. At the time of the initial assessment, the participant had been working as a coordinator in the ministry department of a local church for 9 years. He stated he was not happy in his job and always looking for something different. He had seen a therapist regularly for a couple of years, 12 years prior to presenting for this study. He stated that he had not found therapy to very helpful in the past. He had been stabilized on Elavil (100 mg qhs) for 4 months.

Participant 5 (P5): The participant was a 33-year-old, married, Caucasian female. She reported that her life had been quite chaotic over the past few years. She had been divorced from her first husband, had her two teenaged children removed from her custody, remarried a Palestinian man, and had moved to Palestine. At the time of the initial assessment, the participant was unemployed and living with her former mother-in-law. She had recently returned from living in Palestine. She stated that her husband was actively involved in the Palestinian liberation movement and had made her return to the United States to protect her from the escalating violence in the Middle East. Her husband had limited communication with her since her return. The participant stated that while she was living in Palestine she had witnessed a number of acts of violence (i.e., fights, riots) and had been the participant of discrimination. The participant stated that the event that caused her the greatest distress was witnessing a car explode which resulted in death of an adult and children. She reported that she felt overwhelmed and depressed and seemed to continually relive the violence that she had witnessed in the Middle East. P5 stated that she had no social life and rarely left her mother-in-law's house. She tried a couple of different anti-depressants over the last year and had been stabilized on Prozac (20 mg qam) for the last 6 months.

Setting

All assessment and treatment sessions were conducted in the PTSD Outpatient Clinic at the VA PSHCS, Seattle Division or the Research Commons Area, located in Suite 2505 of Wood Hall on Western Michigan University's main

campus. All assessment and treatment sessions were conducted in a private room. All sessions were videotaped to allow researchers to randomly review sessions to examine treatment integrity.

Assessors

All initial assessments were completed by the student investigator, with the exception of P2. Due to the nature of this subject's trauma, she was uncomfortable with a male assessor. The P2's initial assessment and all posttreatment assessments were all completed by psychology graduate students or a Ph.D.-level psychologist trained in the various assessment instruments. To ensure expertise with each instrument, the assessors completed didactic training on each measure and completed a mock assessment with the investigator.

Therapists

Five therapists were utilized for this study. All therapists had attained at least a MA in either Clinical or Counseling Psychology. Four of the therapists were pursuing Ph.D.s in their respective areas. All therapists had familiarity with cognitive-behavioral and behavioral treatments for MDD and PTSD. To assure expertise in BA, each therapist received additional training in BA techniques and interventions. The training was conducted by a licensed clinical psychologist and/or the doctoral student investigator and took approximately 10 hours. Therapists utilized the *Cognitive and Behavioral Treatment of Depression: A Research Treatment Manual* (Jacobson

et al., 1996a), and additions and adaptations by Porter (2000) with each participant. The BA manual includes specific guidelines for interventions that are prescribed and should be utilized during treatment (i.e., behavioral interventions), as well as those interventions that should not be utilized during treatment (i.e., cognitive interventions). The participants kept the BA client manual with them during treatment and they kept this manual upon their completion of the study.

Treatment Integrity

In addition to the BA training that each therapist received, a session protocol was provided for all therapists to follow (Appendix A). This protocol specified the individual components of all sessions and the order in which the components were to be completed. The same procedures were utilized for sessions 2–10 with all participants. A separate protocol that outlined the procedure for session 1 was given to therapists since this session required the therapist to explain the study in depth and specifically assess the difficulties that the participant was having. In the interest of addressing treatment fidelity and adherence to the BA protocol, one session for each participant was randomly selected and feedback provided. The feedback was provided by one of the individuals who was responsible for the training and supervision of the BA therapists in the original Jacobson et al. (1996b) study. The therapist's performance was assessed using the Behavioral Activation Therapy for Depression Scale (BATS; Appendix A), which is a scale designed to measure competence, or the quality of the application of various BA techniques and therapeutic skill. The BATS is

modified from the Mental Health Collaborative Study Psychotherapy Rating Scale (Hollon, Evans, Elkin, & Lowery, 1984) used in the NIMH Treatment of Depression Collaborative Research Program treatment outcome study (Elkin et al., 1989). For each of 11 items, the therapist's behavior is rating using a 6-point scale ranging from 0 = poor to 6 = excellent.

Behavioral Activation

As stated earlier, BA is based on the theory that depression results from changes in a person's life circumstances that result in a reduction of reinforcement for that individual (Jacobson, Martell, & Dimidjian, 2001; Martell et al., 2001). Once the depression has begun, the negative way in which the individual responds to his or her environment acts to exacerbate the depressive symptoms, resulting in even less reinforcement. The goal of BA is to activate individuals so they may maximize the opportunities they have to experience possible reinforcers in their environment (Jacobson et al., 2001; Martell et al., 2001). The treatment manual contains a total of 25 specific interventions that therapists may use with their clients. Some of the specific interventions are: (a) self-monitoring of daily activities, (b) assessment of the pleasure and mastery that is achieved by engaging in a variety of activities, (c) the assessment of increasingly more difficult tasks that may potentially produce a sense of mastery and pleasure, (d) the education and practice of specific problem-solving techniques, and (e) discussion of specific problems and the prescription of behavior therapy techniques for dealing with them (Jacobson et al., 2001; Martell et al., 2001).

The manual also contains a number of assessment techniques, such as: (a) conducting functional analyses, (b) symptom reports from the BDI-II, and (c) daily activity schedules.

During the initial session the therapist provided the participant with a rationale that underlies BA. Additionally, the therapist explained that he/she would act as a "personal trainer" or "coach" for the participant. The therapist's role was to help identify how and where the participant may be lacking reinforcement in his or her life and to collaborate with the participant to find activities and behaviors that may provide him/her with pleasure and interest that were absent from his or her life (Martell et al., 2001).

The treatment of BA was delivered in a standardized fashion, with each session containing a distinct beginning, middle, and end. The beginning of each session included greeting the client and the client completing the BDI-II and the Modified PTSD Symptom Scale (MPSS; Falsetti, Resnick, Resick, & Kilpatrick, 1993). Issues for the agenda that was followed throughout the rest of the session were established and written down. The agenda was constructed collaboratively with participant and therapist working together to determine the most important topics of the week to be addressed. The agenda for sessions 2–10 always included a discussion of the previous week's homework assignment, including reviewing the daily activity chart, and the assignment of the next week's homework. Due to the nature of the therapy, typically only one or two additional items were placed on the agenda for that

session. The duration of the beginning phase of the session was approximately 10 minutes.

During the middle of the session, therapist and participant worked together on the issues that were placed on that session's agenda. The session typically did not deviate from the established agenda, unless an extraordinary issue arose (i.e., suicidality).

The end portion of each session consisted of the therapist briefly reviewing the topics that were discussed during that day's session. Additionally, therapist and participant collaboratively came up with homework assignments that the participant completed before the next session. It was the therapist's responsibility that both parties understood the specifics of the homework assignments. As treatment progressed, the participant demonstrated more autonomy in developing his or her own homework assignments. The session ended with the participant having an opportunity to ask any questions he/she may have had and scheduling the next appointment.

Outcome Measures

Beck Depression Inventory-Second Edition (BDI-II)

The BDI (Beck et al., 1961) is one of the most widely used assessment measures of depression. It has excellent psychometric properties and is sensitive to clinical change (Lambert, Shapiro, & Bergin, 1986). This instrument has recently been revised into the BDI-II (Beck et al., 1996) to make it consistent with the criteria of

MDD according to the DSM-IV. The BDI-II contains 21 items that are designed to assess 21 different symptoms purported to be associated with depression. The BDI-II used a 4-point Likert-type scale, ranging from 0 to 3, to measure the participant's depressive symptomatology for the past 2 weeks. The total score for the BDI-II is found by summing the ratings for each of the 21 items. Guidelines for scores on this measure suggest that 0–13 falls in minimal depression range, 14–19 mild depression, 20–28 moderate depression, and 29–63 severe depression.

The psychometric evaluations conducted on the BDI-II support that it is a valid and reliable measure of depression (Steer, Ball, Ranieri, & Beck, 1997). Beck and colleagues (1996) studied 944 outpatient participants from six samples. They found alpha reliability coefficients that ranged from .79 to .90, suggesting that the variance in the scores was due primarily to true score variation and not to measurement error. The reported internal consistency was .92 and the test-retest reliability was .93 for a psychiatric sample (Beck et al., 1996). This suggests that the items are strongly consistent with each other and that participants scored similarly when tested using the BDI-II with a 1-week interval. Furthermore, when comparing the BDI-II with the BDI the correlation was .93 ($p < .001$), indicating strong concurrent validity.

The directions used in this study for the BDI-II were modified slightly to adhere to the duration between administrations of the instrument. The original instruction asked individuals to rate their symptoms over the last 2 weeks. This study required the participants complete the BDI-II twice a week; therefore, participants

were asked to rate their symptoms since the last assessment. This modification allows for a more temporal assessment of the participants' depressive symptoms.

PTSD Symptom Scale (PSS) *(Pilot participant only)*

The PTSD Symptom Scale (PSS) was developed by Foa, Riggs, Dancu, and Rothbaum (1993) to assess the presence and frequency of PTSD symptoms in individuals who have experienced a traumatic event. The PSS has 17 items that are scored on a 4-point scale (0 = not at all, to 3 = 5 or more times per week/very much/ almost always). The 17 items directly correspond to DSM-III-R criteria (4 re-experiencing, 7 avoidance, 6 arousal). The PSS demonstrated high internal consistency (α = .91) and the internal consistency for the subscales were .78, .80, and .82, respectively.

Modified PTSD Symptom Scale (MPSS)

A modified version of the PSS was developed by Falsetti and colleagues (1993). The Modified PTSD Symptom Scale (MPSS) allows for assessment of the frequency and severity of PTSD symptoms associated with a larger number of traumatic events. The MPSS contains the 17 items that are included on the PSS, with slight modifications to the wording of each item. The MPSS assesses for the frequency of the symptoms on the same 4-point scale used for the PSS. The scale assesses for the severity of the symptoms on a 5-point scale from A = not at all distressing, to E = extremely distressing (A = 0, B = 1, C = 2, D = 3, and E = 4 for

scoring purposes). The MPSS demonstrated good internal consistency in both a treatment (α = .96) and community (α = .97) samples.

The directions for completing the MPSS were modified slightly for this study to adhere to the duration between administrations of the instrument. The original instructions asked individuals to rate their symptoms over the last 2 weeks. This study required the participants complete the MPSS twice a week; therefore, the participants were asked to rate their symptoms since the last assessment.

Automatic Thoughts Questionnaire (ATQ)

The Automatic Thoughts Questionnaire (ATQ) was developed by Hollon and Kendall (1980) to measure the frequency of occurrence of automatic negative thoughts believed to be associated with depression. The items are rated on a 5-point scale (1 = not at all, 2 = sometimes, 3 = moderately often, 4 = often, and 5 = all the time). The psychometrics of the ATQ have been well demonstrated. The ATQ was found to have a correlation with the BDI and the MMPI-D that were significant at the .01 level. Furthermore, the ATQ demonstrated strong internal consistency (α = .96).

Revised Hamilton Rating Scale for Depression (RHRSD)

The Hamilton Depression Rating Scale (HDRS; Hamilton, 1960) was developed in the late 1950s as an instrument measuring the severity of depressive symptoms. There have been two modifications to the HDRS and it is now referred to as the Revised Hamilton Rating Scale for Depression (RHRSD; Warren, 1996). The

revised version contains 22 items and has descriptive anchor points for each of the values for each item. Cognitive items assessing hopelessness, helplessness, and worthlessness also have been added. Although informative, the cognitive items are supplementary and are not included in the total score for severity. Of the 17 scored items, nine are rated on 5-point scales (0–4) and eight on a 3-point scale (0–2). The total possible scores range from 0 to 52. A score of 6 or less falls within the normal, nondepressed functioning range, 7–17 indicates the mild depression range, 18–24 moderate depression, and scores higher than 25 are considered to indicate severe depression (Katz, Shaw, Vallis, & Kaiser, 1995).

Structured Clinical Interview for DSM-IV (SCID)

The SCID (First et al., 1997) is a semistructured interview, intended to be administered by a trained clinician and is designed to assess 33 frequently diagnosed DSM-IV disorders in adults. The psychometric data on the SCID confirm it to be a reliable instrument. Williams et al. (1992) examined the test-retest reliability of the SCID among 592 participants. Participants were assessed by two professionals within a 2-week period. The results demonstrated that the SCID was comparable to other structured interviews frequently utilized with a weighted Kappa of .61 for current disorders and .68 for lifetime disorders (Williams et al., 1992). The reliability of the SCID has been established in numerous studies (Segal, Hersen, & Van Hasselt, 1994).

Clinician-Administered PTSD Scale for DSM-IV (CAPS)

The CAPS (Blake et al., 1997) is a structured interview designed specifically to assess symptoms of PTSD. The CAPS provides both a dimensional and categorical approach to the assessment of PTSD and distinguishes between frequency and intensity of symptomatic experiences (Weiss, 1997). The instrument explicitly provides prompt questions for both the intensity and frequency of symptoms. Both domains are rated on a 5-point scale ranging from 0–4. The authors indicate that a frequency rating of at least a 1 and an intensity rating of at least a 2 will qualify for the presence of a symptom for diagnostic purposes (Blake et al., 1997). However, Weathers (1993) found this rule is rationally derived and may overestimate PTSD symptomatology (cited in Weiss, 1997). Psychometrics for the instrument are considered good, with a Kappa coefficient of .78 among examinees, internal consistency .94, and test-retest reliability between .90 and .98.

Consumer Satisfaction Survey

The consumer satisfaction survey is a measure designed by the investigators to gain qualitative and quantitative data on the participants' overall satisfaction with the BA intervention, the therapist, and therapy protocol (Appendix B). The survey includes four open-ended questions with space provided for participants to respond. It also includes 10 items that ask participants to rate their responses on a 4-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = not applicable). For example, "Overall, this treatment was effective in dealing with my

problems" and "This treatment was better than other treatments I have received in the past."

Weekly Self-monitoring and Tracking Data

Self-monitoring of mood and the frequency and severity of symptoms are frequently used to track fluctuation across time and environments (Nelson, 1977). No standardized psychometric data regarding these self-report ratings are available.

Daily Mood Ratings

At the end of each day, participants were asked to rate their overall mood for that day on a 10-point scale (1 = low mood, 10 = high mood; Appendix B). Each participant received the following directions, "At the end of each day, please rate your overall mood for that day. Your rating will be between 1 and 10, with 1 being a very low or depressed mood and 10 being a very high or happy mood. Please write your rating down on the sheet provided."

PTSD Symptom Frequency and Severity

At the end of each day, participants were asked to record the frequency and severity of a particular PTSD unique symptom that was determined at their first baseline session to cause them a high degree of distress (Appendix B). The participants were asked to rate the severity on a 10-point scale (1 = mild, 5 = moderate, 10 = severe). Each participant received the following directions, "At the end of each day, please record the number of times you experience (specific PTSD

problem for them) for that day. Also, rate the severity of the symptom between 1 and 10, with 1 being mild, 5 being moderate, and 10 being severe. Please keep your records on the sheet provided."

Design

A nonconcurrent multiple baseline across participants design (Watson & Workman, 1981) was used to demonstrate the effects of treatment on participants' individual and overall symptoms of depression and post-traumatic stress. The multiple baseline design consisted of 6 participants. Participants were randomly assigned to a predetermined baseline length of 2, 3, or 4 weeks (5, 7, or 9 data points, respectively), with the exception of the pilot participant (see below for explanation of pilot participant). Of the remaining 5 participants, 2 were randomly assigned to 2-week baseline, 2 were randomly assigned to a 3-week baseline and 1 was randomly assigned to a 4-week baseline. No matter which baseline length the participant was assigned to, the BA intervention was initiated once the participant's data had stabilized. Baseline stability was determined by the frequency of the participant's PTSD symptoms, as measured by the MPSS. A baseline was deemed stable if there were at least three consecutive data points that were within 4 points and/or absent of a downward trend. The selection of PTSD symptomatology as the criteria for baseline stability is based on the empirical evidence for the efficacy and effectiveness of BA on depressive symptomatology (Jacobson et al., 1996b; Porter, 2000). Evidence indicates that BA will have a positive impact on the participants' depressive

symptoms; however, there is no empirical evidence to guide what impact BA may have on PTSD symptomatology. Therefore, stability of PTSD symptoms should be established to demonstrate efficacy of BA in treating these symptoms.

Procedures

The investigator or a trained research assistant conducted initial telephone screening (Appendix B). During these initial screening procedures, individuals were assessed for history of a traumatic event and symptoms associated with depression and traumatic stress. Additionally, individuals were asked about current use of psychotropic medication and current participation in psychotherapy. Individuals who did not have a history of a traumatic event, were not experiencing symptoms of depression and/or traumatic stress, had been taking psychotropic medications for less than 6 weeks, and/or who had been enrolled in an alternative form of psychotherapy for less than 3 months were deemed ineligible at this stage of screening.

Eligible individuals were invited to participate in an intake/assessment interview at the Seattle VAMC PTSD Outpatient Clinic or Western Michigan University Research Commons area in Wood Hall. During this interview participants were completely informed about the nature of the study. Upon signing the Informed Consent document (Appendix C), interested participants completed a brief demographic questionnaire, the BDI-II, MPSS, and ATQ. If the individual met the cutoff scores on the BDI-II, he or she was interviewed using the SCID, the CAPS, and the RHRSD. Initial interview sessions took approximately 2 hours to complete.

Individuals who met the above criteria were telephoned within a week and invited to participate in the study. If they chose to participate the individual was assigned a research participant code number that was used on all subsequent forms. At this point, participants were assigned to a research therapist and scheduled for their first appointment. Beginning with the first session and continuing through the termination of the therapeutic intervention, each participant had daily and weekly tasks he or she was asked to complete. At the end of each day, participants were asked to complete a daily activity chart (Appendix B), provide an overall mood rating for that day, and to monitor a specified PTSD symptom that had been determined by the therapist and participant to be a primary concern. Furthermore, each participant was asked to complete a BDI-II and MPSS on the day that was the midpoint between his or her therapy sessions. Researchers made a "reminder call" to each participant on the day that these self-report measures were to be completed. The therapist collected all between-session work at the weekly therapy session.

Before each therapy session participants were asked to complete the BDI-II and MPSS to examine current self-report symptom severity and assess for current suicidality. During the initial session, the therapist provided a detailed explanation of the logistical procedures for the remainder of the study. Further, the therapist conducted an assessment of the primary problem symptoms that the participant was currently experiencing. Finally, the therapist reviewed the tasks that the participant was asked to complete between sessions. Following the initial session, the therapist met weekly with the participant to collect between-session materials and to monitor

current symptom levels. During the baseline sessions therapists provided participants with supportive therapy only. Therapists questioned participants about their general functioning and whether there were any important events from the past week that they would like to discuss. If the participant had a topic for discussion, the therapist would provide empathic listening, but did not engage in any form of structured or directive therapy. The length of the baseline sessions ranged from 15 to 45 minutes. The therapist did not introduce the BA intervention until the participant had reached the predetermined baseline length, the symptom data had reached a stable baseline, and the primary investigator had determined it appropriate to initiate the intervention with the participant. All participants were offered 10 weeks of BA in the standardized form that is described in the treatment section above.

Ten sessions or 12 weeks after the introduction of BA treatment, whichever was first, all participants attended a posttreatment assessment at which he/she completed the BDI-II, MPSS, ATQ, and a client satisfaction survey. At this time, participants were also interviewed using the RHRSD, CAPS and SCID.

The research data and session progress notes were kept in personal folders in a locked cabinet at the individual sites. The student investigator was in charge of maintaining the filing system and research folders. A master list was used to ensure the confidentiality of research data. The master list was the only link between the participant's name and research number.

Procedures for Pilot Participant

While the majority of the procedures used with the PP were the same as those used with other participants, the PP procedures differed in a number of important ways. First, rather than random assignment, the pilot participant was assigned to a 1-week baseline to facilitate the exploration of the research protocol. Second, the PSS was used as the PTSD self-report measure, rather than the MPSS. Due to revisions in the selection of assessment instruments, the PSS was not included in the PP's pretreatment assessment. However, the PSS was administered during and between every baseline and therapy session as well as at the posttreatment assessments. The pilot participant facilitated the change of instrumentation to the MPSS for the other dissertation participants because of the desire for self-report data on the frequency and severity of PTSD symptoms. Third, while the PP did complete the PSS and the BDI-II between sessions, he did not provide daily mood or PTSD symptom frequency and severity ratings. Fourth, the student investigator was the therapist for the PP. Finally, the PP returned for a 1-month follow-up "check-in" session, which entailed completing the self-report measures.

CHAPTER IV

RESULTS

Self-Report Data

PP: Figures 1 and 3 (Appendix D) demonstrate a noticeable decrease in PP's self-reported PTSD and MDD symptoms from the baseline phase to the termination of treatment. At the time of the initiation of the treatment phase, PP's scores for both PTSD and depression self-report measures were in the severe range (27 and 21, respectively). There was a reduction in scores for all measures over the course of treatment, with a noticeable decrease occurring towards the end of treatment. At the time of the posttreatment assessment, the participant's PTSD and MDD self-report scores were 14 and 12, respectively. At the point of the 1-month "check-in" session, there was a further reduction in these scores to 8 and 7, respectively. PP's self-report scores at the time of the posttreatment and 1-month "check-in" session fall in the mild range on all measures. There was a reduction of 43 points in the participant's ATQ scores (Table 1; Appendix E) from pre- to post-assessment.

P1: P1 was randomly assigned to a 2-week baseline. During this 2-week baseline period the participant's self-report data indicated an upward trend on all measures. Due to the absence of a downward trend in the data, and the high level of clinical distress the participant was reporting, the treatment phase was initiated following this 2-week period. Figures 1, 2, and 3 (Appendix D) indicate a clear

reduction in P1's self-reported PTSD frequency, PTSD severity, and depressive symptomatology from baseline to the termination of the treatment phase. P1 had a MPSS-F score of 43, MPSS-S score of 62, and BDI-II score of 35 at the initiation of BA. The participant's self-report scores at the time of the post-assessment were 20, 7, and 9, respectively. There was a reduction of 31 points in the participant's ATQ scores (Table 1) from pre- to post-assessment. The participant's daily mood ratings are shown in Figure 4 (Appendix D). The participant failed to complete the assessment task of rating her mood during the baseline phase. The participant did rate her daily mood consistently during the treatment phase. The data indicate that while the data fluctuate considerably over the course of treatment, overall the participant experienced a consistent improvement in her mood over the course of the treatment phase. The participant also provided daily rating of the frequency and severity of her emotional reactions to cues in her environment, which is shown in Figure 5 (Appendix D). Again, she failed to regularly complete this task during the baseline phase. The average severity of the emotional reaction during the baseline phase was 8.3. The average severity rating over the last 2 weeks of the treatment phase had been reduced to 2.3.

P2: P2 was randomly assigned to a 3-week baseline phase. At the end of this period the participant's data were determined to meet the criteria for stability and the treatment phase was initiated. The treatment phase was terminated 12 weeks after the initiation of BA, with the participant having attended 9 BA sessions. Figures 1, 2, and 3 indicate relative stability of P2's self-report data for all measures across all phases.

P2 had a MPSS-F score of 31, MPSS-S score of 41, and BDI-II score of 28 at the initiation of BA. The participant's self-report scores at the time of the post-assessment were 32, 44, and 28, respectively. The data demonstrate a reduction of 6 points in the participant's ATQ scores (Table 1) from pre- to post-assessment. The participant's daily mood ratings are shown in Figure 4. P2's mood rating remained relatively stable across all phases of the study. The participant's average mood rating during the baseline phase was 5.9 and 5.5 during the treatment phase. The participant's daily ratings of the frequency and severity of her nightmares are shown in Figure 5. She successfully completed this task for 2 of her 3 baseline weeks. During these 2 completed weeks she had 9 nightmares with the average severity rating of 5.8. Examining the last 3 weeks of the treatment phase the participant also completed her daily rating 2 of the 3 weeks. During this period of time the participant experienced 11 nightmares with an average severity rating of 5.6.

P3: P3 was randomly assigned to a 3-week baseline phase. At the end of this period the participant's data were determined to meet the criteria for stability and the treatment phase was initiated. The treatment phase was terminated 12 weeks after the initiation of BA, with the participant having attended 9 BA sessions. Figures 1, 2, and 3 indicate some variability in P3's self-report data. At the initiation of treatment, P3's MPSS-F score was 35. The participant's scores remained relatively stable for this measure across the treatment phase, with a score of 39 at the post-assessment. The data demonstrate much more variability in the participant's MPSS-S scores (Figure 2). At the termination of the baseline phase, P3 had a MPSS-S score of 25. There was

an initial drop in the participant's scores for this measure immediately following the implementation of BA. Subsequently, there was a consistent upward trend in the data, with a post-assessment MPSS-S score of 37. There was also considerable variability in the participant's self-reported depression scores (Figure 3). At the termination of the baseline phase the participant's BDI-II score was 29. There was an upward trend in the participant's data during the initial BA sessions with his highest score of 40 occurring between BA sessions 6 and 7. The participant's scores began to decline following BA session 7, with P3's post-assessment BDI-II score of 32 almost returning to the level of his baseline. The data indicate an increase of 6 points in the participant's ATQ scores (Table 1) from pre- to post-assessment. The participant's daily mood ratings are shown in Figure 4. The participant recorded the daily frequency and severity of his nightmares, which is shown in Figure 5. This participant failed to complete these daily tasks of recording his mood or the frequency and severity of intrusive memories with enough consistency to be able to empirically examine these data.

P4: P4 was randomly assigned to a 2-week baseline phase. At the end of this period it was determined that the participant's data did not meet the criteria for stability and the baseline was extended. Following the 4th week of baseline, the data demonstrated a stable baseline and the treatment phase was initiated. Figures 1, 2, and 3 indicate a gradual, but steady reduction in P4's self-reported PTSD frequency, PTSD severity, and depression symptomatology from baseline to the termination of the treatment phase. P4 had a MPSS-F score of 32, MPSS-S score of 40, and BDI-II

score of 36 at the initiation of BA. The participant's self-report scores at the time of the post-assessment were 20, 20, and 28, respectively. However, closer examination of the participant's MPSS-S scores (Figure 2) indicates a downward trend across all phases. There was a reduction of 28 points in the participant's ATQ scores from pre- to post-assessment (Table 1). The participant's daily mood ratings are shown in Figure 4. The participant's average daily mood rating was 5.0 for both the baseline and treatment phases. The participant recorded the daily frequency and severity of his nightmares, which is shown in Figure 5. During the 4-week baseline phase the participant reported that he experienced seven nightmares, with an average severity rating of 5.0. Over the last 4 weeks of the treatment phase the participant experienced four nightmares with an average severity rating of 5.25.

P5: P5 was randomly assigned to a 4-week baseline phase. At the end of this period it was determined that the participant's data did not meet the criteria for stability and the baseline was continued. Following the 5th week of baseline, the data indicated a stable baseline and the treatment phase was initiated. The participant dropped out of the study after the completion of the treatment phase and, therefore, post-assessment data were not available. Figures 1, 2, and 3 indicate considerable variability in P5's self-report data. At the initiation of treatment the participant's MPSS-F score was 31 (Figure 1). There was a slight reduction in the participant's scores across the treatment phase, with a score of 23 at BA session 10. The data indicate much more variability in the participants MPSS-S (Figure 2) and BDI-II (Figure 3) scores. At the termination of the baseline phase, P3 had a MPSS-S score of

35. There was a reduction in the scores across the treatment phase, with a BA session 10 MPSS-S score of 14. However, examination of the data across all phases indicates a consistent downward trend from the beginning of the baseline to the termination of treatment. There was also considerable variability in the participant's BDI-II scores, with no consistent pattern demonstrated. The noticeable fluctuation in the participant's daily mood ratings is shown in Figure 4. The average daily mood rating was 4.2 for the baseline phase and 4.5 for the treatment phase. The participant recorded the daily frequency and severity of her nightmares, which is shown in Figure 5. During the 5 weeks of the baseline phase, the participant reported 12 nightmares, with an average severity rating of 5.3. Over the last 5 weeks of the treatment phase, the participant reported 9 nightmares with an average severity rating of 4.0.

Observer-Rated Data

PP: At the point of the post-assessment, PP no longer met criteria for either PTSD or MDD, as determined by the structured interviews. The participant's pre- and post-assessment CAPS data are presented in Table 2 (Appendix E). There was an overall reduction in the CAPS score of 32 points. The most notable reduction in symptomatology for the CAPS occurred with the avoidance symptom cluster. PP also had a drop in his pre- to post-assessment RHRSD score of 22 points (Table 3; Appendix E).

P1: At the time of post-assessment, P1 no longer met criteria for either PTSD or MDD as determined by the structured interviews. The pre- and post-assessment

CAPS data are included in Table 4 (Appendix E) and demonstrate an overall reduction in the CAPS score of 51 points. Again, the largest reduction was seen in the avoidance symptom cluster. However, a noticeable reduction in the re-experiencing cluster also occurred. There was a reduction of 13 points in the participants RHRSD score from pre- to post-assessment (Table 3).

P2: At the time of post-assessment, P2 no longer met criteria for MDD as determined by the SCID. However, while there was a reduction in CAPS scores, P2 still met diagnostic criteria for PTSD. The pre- and post-assessment CAPS data are included in Table 5 (Appendix E) and demonstrate an overall reduction in the CAPS score of 21 points. Again, the largest reduction was seen in the avoidance symptom cluster. There was a reduction of 12 points in the participant's RHRSD score from pre- to post-assessment (Table 3).

P3: At the time of post-assessment, P3 still met criteria for MDD and PTSD as determined by the SCID and the CAPS. The pre- and post-assessment CAPS data are included in Table 6 (Appendix E) and demonstrate an overall reduction in the CAPS score of 5 points. There was no change in the participant's RHRSD score from pre- to post-assessment (Table 3).

P4: At the time of post-assessment, P4 no longer met criteria for either PTSD or MDD as determined by the structured interviews. The pre- and post-assessment CAPS data are included in Table 7 (Appendix E). There was a reduction in pre- to post-assessment total CAPS score of 32 points. The largest reduction was seen in the

re-experiencing symptom cluster. There was a reduction of 3 points in the participants RHRSD score from pre- to post-assessment (Table 3).

P5: P5's pre-assessment CAPS scores are included in Table 8 (Appendix E) and her pre-assessment RHRSD is included in Table 2. As stated earlier, P5 dropped out of the study following the final treatment session and did not attend a post-assessment session. Therefore, no posttreatment observer data could be collected.

Participant Satisfaction

PP: The participant's average response to the 10 Likert scale items was 3.5, with no score falling below 3. PP reported that he was extremely pleased with the progress he had made over the course of his BA treatment. Additionally, he stated that he had learned new skills that helped him to manage his PTSD and depressive symptoms rather than allowing "his symptoms to manage him." He stated that the most helpful thing about the treatment was being taught how to examine his own life to determine when and where he was being passive and how to become active in those situations. He reported that completing and reviewing his daily log was a vital tool in this process. The participant stated that it had been years since he had felt like he had this much control in his life. He expressed that he was able to take the skills that he had learned and apply them to other areas that he was struggling with in his life. His only complaint was that he wished he that the treatment had lasted longer than 10 sessions.

P1: The participant's average score on the 10 Likert items was 3.3, with no score falling below 3. The participant reported that the aspect of therapy that was most helpful was keeping track of daily activities and reviewing them during the sessions. P1 stated that by doing this task she realized that she was "doing a lot of nothing." The participant also commented that she found it helpful to establish small goals for herself so she did not feel overwhelmed with tasks. She found that she was more successful at completing her homework tasks if she established a small reward for herself, such as getting a cup of coffee, but only if she goes with a friend.

P2: The participant's average score on the 10 Likert items was 3.5, with no score falling below 3. The participant stated that the best thing about the treatment was the lessening of her depression and the great work that the therapist did. The participant commented that she did not think that 10 sessions were enough.

P3: The participant's average score on the Likert items was 2.9, with a minimum score of 2 and a maximum of 4. The participant commented that the most helpful aspect of BA was "insight into my inactivity and the results." He expressed that he wished that there could have been more sessions.

P4: The participant's average score on the Likert items was 2.0, with a minimum score of 1 and a maximum of 3. The participant commented that the most helpful aspect of BA was writing down his daily routine and setting clear goals. He expressed that he would have liked therapy to focus more on "the deeper root of the symptoms."

P5: No satisfaction data for P5 were collected as this measure was completed at the post-assessment session.

Treatment Adherence Ratings

One session was randomly selected from each participant to be viewed and rated for therapist treatment adherence. An overall adherence rating score for each participant's therapist was collected (PP = 44, P1 = 41, P2 = 52, P3 = 53, P4 = 37, and P5 = 43). The individual item ratings ranged from 2 (mediocre) to 6 (excellent). The actual individual item ratings of the therapists' performances are provided in Table 9 (Appendix E).

CHAPTER V

DISCUSSION

The present study provides moderate support for the efficacy of a 10-week BA intervention in treating both PTSD and MDD symptomatology. The data indicate that 3 participants no longer met criteria for either PTSD or MDD at the end of treatment, while an additional participant no longer met criteria for MDD. While the data demonstrate that participants are still experiencing some symptomatology, overall the symptoms are occurring with less frequency and severity than before the BA intervention.

Individual Participant's Data

PP: Ideally, it would have been desirable to extend the baseline to demonstrate further symptom stability with this participant. However, the self-reported lengthy duration of the symptom presentation and PP's extensive treatment history provide evidence of the chronic nature of his symptoms. Both the self-report and the observer rated data indicate that there was a substantial decrease in the participant's symptomatology from the end of the baseline phase to the termination of treatment. There are two noticeable spikes in the data that occurred when the participant completed the measures between session 5 and session 6 and when he completed the measures at session 8. There were specific events surrounding both of these increases

in symptom severity. In the first instance, there had been an abundance of news in press and on TV regarding a specific political figure's actions while in Vietnam and on an American missionary plane being shot down in a South American country. Both of these events related closely to PP's own past traumatic experiences. In the second instance, there had been significant marital discord that had occurred over the course of the days preceding the appointment. In both cases, the issues were placed on that session's agenda and made part of the therapeutic process. Specifically, the participant was asked to describe his behavioral response after encountering these triggers. This behavioral response, the effect this response had on his psychological well-being, and alternative behavioral responses were discussed in detail. PP reported at future sessions that similar events and situations were no longer having such a severe impact on his symptoms. The client's ability to apply the information learned in session to situations outside the clinic provides evidence that the educational components of BA were understandable and applicable for this client. This development of knowledge and skills should assist in relapse prevention. At the termination of treatment, the participant had begun to re-engage in many activities that he had previously stopped doing. For instance, he used to have a successful side business as a magician/entertainer; however, his symptoms and discomfort around people had forced him to quit this type of work. By the end of treatment, he had begun his business again and he was conducting multiple large shows each weekend.

P1: The data clearly demonstrate that the participant's PTSD and MDD symptomatology began to improve soon after the initiation of the treatment phase of

the study. This participant's improvement was consistently demonstrated across the self-report measures, the mood ratings, frequency and severity ratings of emotional reactions to cues, and the observer rated data. Individually, this participant demonstrates the strongest support for the efficacy of BA.

At the start of treatment, the participant indicated that she would like to focus on being more assertive in her work environment. The first sessions were spent reviewing the participant's daily activity chart and discussing instances when she had been passive in her interactions with people. Therapy also targeted the participant becoming more socially engaged. By the end of the treatment phase, the participant stated that she had become more assertive in her dealing with co-workers and was participated in increased social activity during the week. The participant stated that she had even begun dating a man. The acquaintance had asked her out on a couple of occasions over the last 6 months, but she had turned him down. In efforts to change her behavioral routine, she had agreed to go out with him and had discovered she enjoyed his company.

P2: The self-report data for P2 demonstrate a relatively stable baseline across all phases of the study. There was some evidence of a slight downward trend in all treatment phase data, until BA session 8 at which point there is a clear upward trend. It is important to note that the day before BA session 8 the participant was told that she was going to have to have a hysterectomy in the coming month. Obviously, this news was very distressing to the participant and likely had a negative impact on her psychological symptoms. Nonetheless, the participant no longer met criteria for MDD

at the termination of the intervention. The fact that the participant did not meet criteria for MDD may seem contradictory to the participant's BDI-II scores. This can be explained by the fact that the participant's response to SCID questions indicated that she no longer experienced a depressed mood or anhedonia, therefore, not meeting DSM-IV criteria for depression. Additionally, there was a 12-point reduction in her RHRSD score. Researchers have noted that self-report measures are typically more conservative measures of change for depressive symptoms (Dobson, 1989). When considering the participant's level of activity over the course of the intervention phase, there was a clear increase in the amount of socializing in which she engaged. Additionally, one of her established therapy goals was to become more assertive. Over the course of treatment the participant indicated that she was increasing her assertiveness with others and also demonstrated more assertive behavior during treatment sessions.

P3: The self-report data and observer rated data both indicate that P3 did not demonstrate any significant improvement in his C-P/D symptomatology. In fact, the self-report data suggest an increase in the severity of his PTSD symptoms. The failure of the participant to complete the between session assignments of rating his mood and the frequency and severity of his nightmares are consistent with his high level of inactivity throughout the study. The focus of therapy with P3 had been attempting to increase his level of activity outside of his home. The participant would agree to homework assignments of activities outside of the home and would comment that he should get out more; however, he would not follow through with the assignments.

Each week the therapist attempted to revise the assignments to greater facilitate their completion, but the participant's poor follow through continued throughout the treatment phase. It is important to note that homework assignments and the daily tracking activities are considered essential components of BA (Martell et al., 2001). By failing to complete these vital tasks it could be argued that P3 did not receive an adequate dose of BA. Additionally, the chronic nature of the participant's symptoms might have made them more resistance to change. The expressed goal of BA is to change the individual's behavioral repertoire. With this particular participant, the trauma had occurred over 30 years ago allowing for decades of dysfunctional behavior to be negatively reinforced. Finally, this participant's primary source of support was also disability payments. This financial dependency on the remaining disabled could have had some negative impact on his therapeutic progress.

P4: The daily mood ratings and daily frequency and severity of P4's nightmares are not as suggestive of improvement with this participant as the self-report measure and observer rated data. In many ways, P4 was the most unique participant of this study. His trauma was certainly the most lengthy in duration and the earliest in his life. The focus of therapy with many of the other participants was focused on helping them return to doing things that they enjoyed before the trauma. Given the young age when abuse began this focus was impossible for P3. For this participant, the goal was not to return to a similar pre-trauma behavior repertoire, rather it was to develop a completely new behavioral repertoire. Additionally, this was the only participant who stated his previous treatment had been psychoanalytical.

Initially, the participant struggled with the behavioral nature of the therapy session. Despite these difficulties, P4 demonstrated a consistent reduction in all depressive and PTSD symptomatology across the treatment phase. At the termination of treatment, the participant seemed to be gaining an effective understanding of the therapeutic concepts of BA and had made substantial gains in effectively analyzing the impact his avoidance behaviors had on his psychological symptoms.

P5: The chaos that this participant described at her initial assessment appeared to continue throughout her participation in the study. This chaos is clearly represented in the participant's self-report depression data. There is substantial variation in her daily mood ratings and her scores on the BDI-II. Her chaos was also evident in her living environment throughout the study. She changed her living arrangements a number of times throughout the study, found and quit two jobs, and had sporadic tumultuous communication with her husband who remained in the Middle East. Toward the end of the treatment phase, she received an email from him stating that he was filing for divorce. While the focus of therapy was to develop a behavioral repertoire that she could utilize to better manage her stress, the continuing occurrence of distressing events each week did not facilitate the practice of her new repertoire. The relationship between her current behavioral repertoire and the chaos in her life was discussed with the participant, but did not seem to result in significant therapeutic gains. There does seem to be an indication of some improvement in her PTSD symptomatology. The self-report measure scores for the frequency and severity of PTSD symptoms indicate some improvement from the end of baseline to the

termination of treatment. The participant's daily rating of the severity of her nightmares seems to support this reduction.

Overall Participant Data

There are a number of interesting points to address concerning these participants as a whole. First, when examining the efficacy of an intervention within a multiple baseline design improvement would occur immediately upon the initiation of the treatment. However, for those participants who demonstrated improvement in this study, it appeared to occur toward the latter end of the treatment phase. It is possible that the improvement at this point was associated with the participants' attainment of an effective understanding of how depression is a consequence of their context, or their person-environment interactions, and application of this understanding to analyzing and modifying their behavior. Martell et al. (2001) state that the goal of BA is not simply getting a client to become active, rather it is getting the client to engage in the right activities. "The client is taught to look carefully at her life and to become an expert on her daily behaviors and the consequences of her behaviors" (Martell et al., 2001, p. 54). The client must increase those activities that are going to increase his or her contact with reinforcers in his or her environment. The process of analyzing one's activities and resulting moods takes time and practice, which may account for more improvement in later sessions.

Second, it is important to note that the focus of treatment never involved educating about or conducting in vivo or imaginal exposure. The sessions consisted of

discussing the individual's current avoidant behavioral repertoire and the way that they consistently responded to stress in their lives. Time was spent on exploring ways in which they could behaviorally respond in a manner that was more reinforcing in these situations. The data suggest that the process of helping participants become engaged in more reinforcing activities and developing the skills for being able to examine their own behavioral repertoire might have been effective at reducing symptoms they were experiencing.

Third, for the majority of the participants, the CAPS data indicate that BA had the greatest effect on those symptoms that fall in the avoidance cluster of PTSD. The improvement in avoidance symptoms is not unexpected given the rationale behind and therapeutic techniques utilized in BA. The expressed purpose of BA is to help individuals develop a broader, more flexible, behavioral repertoire. By expanding the restricted, or dysfunctional repertoire there is a high likelihood that an individual who suffers from PTSD will naturally encounter situation that they had been avoiding (i.e., people, places, and/or activities). While there is a clear indication that the avoidance cluster was most impacted, the data suggest that BA was also effective at reducing the severity of participants' re-experiencing and hyperarousal symptoms. Even though they still reported re-experiencing and hyperarousal symptoms with some frequency, the CAPS data demonstrate that every participant experienced at least some reduction in the overall intensity of symptoms. These data, in combination with qualitative data that participants provided on the satisfaction survey, suggest that while BA did not

eliminate symptoms, it appeared to give participants the skills needed to effectively manage them.

Fourth, given the high overlap of symptomatology between PTSD and MDD and BA's prior empirical evidence for its effectiveness in treating MDD, it is necessary to examine whether BA was treating both PTSD and MDD or simply the latter. When looking at the pre- and post-assessment CAPS data it is possible to examine the specific symptoms where participants demonstrated improvement. When looking at only those symptoms where a participant experienced at least a 2-point reduction in their total score (frequency + intensity) there are varying results. PP had a total of 9 symptoms with this level of reduction; 4 of these symptoms were overlapping and 5 were PTSD-unique. P1 showed a reduction in 13 symptoms, 5 overlapping and 8 PTSD-unique. P2 had a reduction in 6 symptoms, 2 overlapping and 4 PTSD-unique. P3 had a reduction in 3 symptoms, 1 overlapping and 2 PTSD-unique. And, P4 had a reduction in 12 symptoms, with 2 being overlapping and 10 PTSD-unique. These data demonstrate that each individual improved in a greater number of PTSD unique symptoms than in those symptoms that overlap the two disorders. The reduction in various PTSD unique symptoms, along with C-P/D common symptoms, indicates that BA had some efficacy in treating symptoms of both disorders. This finding could warrant further investigation into BA as a treatment for PTSD when it occurs alone.

Fifth, one of the therapeutic components that the participants stated was the most helpful was the recording of the daily activities and the monitoring of their

symptoms. Most stated that by tracking what they did during the day, their high level of inactivity and/or participation in activities that were not reinforcing became apparent. The monitoring of daily activity is considered the most essential component of BA (Martell et al., 2001). It serves a number of purposes within the context of the treatment. For example, the assessment of general activity level, the assessment of activity and mood connections, observing the breadth or restriction of activity, monitoring avoidance behaviors, and evaluating progress toward goals are all accomplished by consistently completing this task (Martell et al., 2001). The positive effect of self-monitoring on a person's mood is not a contemporary concept. In the 1970s, behavioral psychologists conducted research that provided support for the positive effects of self-monitoring on an individual's depressive symptoms (Fuchs & Rehm, 1975; Lewinsohn & Libet, 1972; MacPhillamy & Lewinsohn, 1974; Shaw, 1976). While the therapeutic effects of monitoring behaviors on PTSD symptomatology have not been examined as extensively, there have been two recent studies that have demonstrated that some individuals experience a reduction in their PTSD symptomatology following a period of symptom self-monitoring (Reynolds & Tarrier, 1996; Tarrier, Sommerfield, Reynolds, & Pilgrim, 1999). This research provides evidence that suggests the reduction in C-P/D symptomatology experienced by the participants in this study was possibly a result of the self-monitoring of symptoms and behaviors.

Finally, while examining therapeutic aspects that might have contributed the improvement seen in this study, it is prudent to discuss nonspecific factors of

psychotherapy. Frank (1961, 1982) and Frank and Frank (1991) have suggested that there are four nonspecific factors that are components of almost all effective psychotherapies. They are (1) an emotionally charged, confiding therapeutic relationship; (2) a designated healing setting; (3) a rationale; and (4) a treatment procedure. It has been suggested that these factors mediate the clinical change that clients demonstrate in treatment studies. Ilardi and Craighead (1994) review the specific role that nonspecific factors play in the demonstrated effectiveness of CBT. They suggest that nonspecific factors may play a more significant role during the early stages of therapy, while the changes that occur later in the therapy process may be attributed to specific factors of CBT. The experimental control of the baseline phase in this study should reduce the impact of the nonspecific factors to a great extent. During the baseline phase, the participants were free to discuss any issues that were of importance to them. The therapist engaged in empathic listening and nondirective therapy during this stage. The criteria of a stable MPSS-F baseline controlled for the impact of "therapy contact" by necessitating a stable frequency of their PTSD symptoms before BA could be introduced. With the exception of P5, the BDI-II data are also stable for all participants before the initiation of BA. However, the effect of the nonspecific factors on the severity of participants' PTSD symptoms cannot be ruled out so easily. Examination of participants' MPSS-S data indicates that participants P1, P2, P4, and P5 had a downward trend in the self-report severity data from their first baseline session through the termination of BA treatment. This reduction of severity across both the baseline and treatment phases of the study could

indicate that nonspecific therapy factors are causal in reducing the severity of PTSD symptomatology. Obviously the effects of nonspecific factors on clinical change can never be entirely ruled out; however, the utilization of a baseline phase in this study strengthens the support for BA mediating the reduction in C-P/D symptomatology, specifically PTSD frequency and depressive symptoms.

Therapists Integrity Ratings

In general, the ratings of the therapists' level of competence were evaluated to be in the good to very good range. Therefore, the competence ratings for the therapists were judged by the expert rater to be more than acceptable and the rater indicated that all therapists would likely be selected to participate in a BA outcome study based on evaluation of the therapists' performances. During the discussion regarding the overall ability of the therapists, the rater indicated that these rating were very acceptable, it was unusual to have scores higher than this, and that these scores are similar to the ratings of those therapists in the BA replication study currently being completed at the University of Washington. In general, the rater was very pleased with the quality of the BA being conducted by the study therapists.

Limitations and Future Directions

There are a couple of limitations that should be addressed within this study. First, the high frequency of the administration of the self-report measures may have been too taxing on the participants. While the data were beneficial, participants made

frequent comments during the study regarding the number of times they completed measure. The frequent measurement may have resulted in participants being less diligent regarding careful assessment of their PTSD and MDD symptomatology. Second, there were five different therapists utilized with these 6 participants adding another factor to be considered when interpreting the results. While all therapists were rated as being competent in administering BA, experimental control would have been strengthened had one therapist been able to deliver the therapy to all participants. However, the diversity of therapists utilized may enhance the generalizability of these results to applied settings.

The current results provide some support for BA as a treatment for C-P/D. Given these findings it would be important for future research to examine the effectiveness of BA with a larger number of participants. While it has been shown that some of these participants experienced significant improvement, other participants did not make substantial therapeutic gains. These findings make it difficult to predict how well this treatment may generalize to other individuals and other traumatic experiences. Undoubtedly, other individuals who experience other types of traumas will respond differently to BA. However, the diversity in the types of traumatic events experienced by participants in the study is encouraging and suggests that BA may be applicable for varying kinds of traumas. Certainly, these results suggest that BA for C-P/D is worthy of further empirical investigation. Future research, with larger sample sizes, may provide further evidence as to the characteristics of individuals for whom this might be an effective treatment.

Additionally, almost all of participants commented that they would have liked the treatment phase to be longer in duration. Given the chronicity of many of the participants' psychological difficulties, it is reasonable to suggest that 10 sessions were not enough to demonstrate substantial reductions in symptomatology. Future research might involve expanding the number of therapy sessions to determine if there is a dose effect associated with the administration of BA. Finally, if future research continues to show that BA is most effective in reducing the frequency and intensity of those symptoms in the avoidance cluster, it might be beneficial to examine the effectiveness of a combination treatment to address the other symptom clusters. For instance, one interesting question to explore might be, "Does beginning with a specified number of BA sessions limit the drop-out rates and noncompliance issues of exposure therapy, while enhancing the therapeutic effects of both therapies?"

Conclusion

The current investigation has provided some support for the efficacy of BA in concurrently treating the symptoms associated with PTSD and MDD. While the evidence is not overwhelming, it does provide a starting point from which future research can progress. One finding that should not be overlooked is that fact that participants evaluated BA positively. Given what many consider to be the aversive nature of exposure treatments, the palatability of BA should not go unnoticed.

It is always difficult to determine the most effective way to treat psychological disorders when they co-occur. Specialized interventions typically only focus on one

disorder or the other. The standard techniques utilized to treat PTSD typically only address those areas that were impacted by the traumatic experience. With BA the client is taught to examine all areas of his or her life, trauma related and otherwise, to determine where he or she needs to become more active and engaged. This difference might indicate that BA is more suited for treating individuals with co-morbid conditions such as C-P/D.

Appendix A

Treatment Integrity Materials

Procedures for FIRST SESSION:

1. Get the client's research binder from the shelf in the Trauma Research Laboratory.

2. Get videotape from file cabinet at end of hall, turn on video camera and recording equipment in AV room.

3. Have client complete the BDI-II and MPSS. Be sure to review the BDI-II making sure to look at suicide item.

4. Review confidentiality in general and related to the study.

5. Explain the structure for this and future sessions

   - Complete BDI-II and MPSS
   - Set the Agenda
   - Review homework and Daily Activity Log
   - Discussion of issues on agenda
   - Establish next weeks homework

6. Psychoeducational component:

   - Explain BA (behavioral conceptualization of depression)
   - Collaborative empiricism (personal trainer)
   - Importance of homework assignment

7. Functional assessment of client's difficulties. Also, ask the client to report on a "typical" day.

8. Homework for week 1:

   - Introduce Self-help manual
     i. Have the client read the introduction by next session
   - Explain Daily Activity Log
     i. Have the client complete during the week.
   - Have client complete BDI and MPSS at mid-point of week
   - Complete Activity Check-list
     i. Have the client complete by next session
   - Brainstorm goals
     i. Long-term
     ii. Short-term

9. Set up appointment for next session.

Procedures for SESSION 2:

1. Client completes BDI-II and MPSS and it is reviewed by therapist (**Make sure to check suicide item!**).

Beginning

2. Set the agenda. Therapist will ask the client if are any major concerns or issues that have occurred are arisen that he/she would like to discuss during the session.
    - Review of homework and Daily Activity Log
    - Goal setting...Long-term and Short-term
    - Other issues of importance
    - Establish next weeks homework

3. Review homework and Daily Activity Log.

Middle

4. Discussion of other issues on the agenda.
    - Goal setting is the priority for this therapy session. Help client to establish short-term therapy goals and long-term goals. We will use these to guide the following sessions. Take time to clearly define these goals.
    - Topics on agenda will be discussed at length. Topics not on the agenda will typically not be discussed, unless an extraordinary issue (i.e., suicide) comes to the therapist attention.

End

5. Establish homework for next session.

6. Review of session topics.

7. Client feedback or questions.

8. Set up next appointment.

Behavioral Activation Therapy for Depression Scale

Therapist: _____ Client: _____ Date of Session: _____
Tape ID Number: _____ Rater: _____ Date of Rating: _____
Session Number: _____ ( ) Videotape ( ) Audiotape ( ) Live Observation

Directions: For each item, assess the therapist on a scale from 0 to 6, and record the rating on the line next to the item number. Descriptions are provided for even-number scale points. If you believe the therapist falls between two of the descriptions select the intervening odd number (1,3,5). For example, if the therapist set a very good agenda but did not establish priorities, assign a rating of 5 rather than 4 or 6.

If the descriptions for a given item occasionally do not seem to apply to the session you are rating, feel free to disregard them and use the more general scale below:

0	1	2	3	4	5	6
Poor	Barely Adequate	Mediocre	Satisfactory	Good	Very Good	Excellent

Please do not leave any item blank. For all items, focus on the skill of the therapists, taking into account how difficult the client seems to be.

This scale is designed to provide a partial evaluation of a behavior activation therapist. This is a scale to measure competence (the quality with which the various techniques and therapeutic skills were applied). This scale is modeled after the "cognitive therapy scale" and has been modified to apply to the interventions used in behavioral activation treatment for depression (BA).
Furthermore, the scale is not intended to be used for the initial interview or final session of a client.

Part I. GENERAL THERAPEUTIC SKILLS

___ 1. AGENDA

0 Therapist did not set agenda.

2 Therapist set agenda that was vague or incomplete.

4 Therapist worked with client to set a mutually satisfactory agenda that included specific target problems (e.g., anxiety at work, dissatisfaction with marriage).

6 Therapist worked with client to set an appropriate agenda with target problems, suitable for the available time. Established priorities and then followed the agenda.

___ 2. FEEDBACK

0 Therapist did not ask for feedback to determine client's understanding of, or response to, the session.

2 Therapist elicited some feedback from the client, but did not ask enough questions to be sure the client understood the therapist's line of reasoning during the session or to ascertain whether the client was satisfied with the session.

4 Therapist asked enough questions to be sure that the client understood the therapist's line of reasoning throughout the session and to determine the client's reactions to the session. The therapist adjusted his/her behavior in response to the feedback, when appropriate.

6 Therapist was especially adept at eliciting and responding to verbal and non-verbal feedback throughout the session (e.g., elicited reactions to session, regularly checked for understanding, and helped summarize commitments to activation at end of session).

___ 3. UNDERSTANDING

0 Therapist repeatedly failed to understand what the client explicitly said and thus consistently missed the point. Poor empathic skills.

2 Therapist was usually able to reflect or rephrase what the client explicitly said but repeatedly failed to respond to more subtle communication. Limited ability to listen and empathize.

4 Therapist generally seemed to grasp the client's experience as reflected by both what the client explicitly said and what the client communicated in more subtle ways. Good ability to listen and empathize.

6 Therapist seemed to understand the client's experience thoroughly and was adept at communicating this understanding through appropriate verbal and non-verbal responses to the client (e.g., the tone of the therapist's response conveyed a sympathetic understanding of the client's "message"). Excellent listening and empathic skills.

___ 4. INTERPERSONAL EFFECTIVENESS

0 Therapist had poor interpersonal skills. Seemed hostile, demeaning, or in some other way destructive to the client.

2 Therapist did not seem destructive, but had significant interpersonal problems. At times, therapist appeared unnecessarily impatient, aloof, insincere or had difficulty conveying confidence and competence.

4 Therapist displayed a satisfactory degree of warmth, concern, confidence, genuineness, and professionalism. No significant interpersonal problems.

6 Therapist displayed optimal levels of warmth, concern, confidence, genuineness, and professionalism, appropriate for this particular client in this session.

___ 5. COLLABORATION

0 Therapist did not attempt to set up a collaboration with client (e.g. monopolized the session or required client to take full responsibility).

2 Therapist attempted to collaborate with client, but had difficulty either defining a problem that the client considered important or establishing rapport.

4 Therapist was able to collaborate with client, focus on a problem that both client and therapist considered important, established rapport and shared some responsibility with client.

6 Collaboration seemed excellent; therapist encouraged client as much as possible to take an active role during the session (e.g., by offering choices) and shared responsibility with the client so they could function as a "team."

___ 6. PACING AND EFFICIENT USE OF TIME

0 Therapist made no attempt to structure therapy time. Session seemed aimless.

2 Session had some direction, but the therapist had significant problems with structuring.

4 Therapist was reasonably successful at using time efficiently. Therapist maintained appropriate control over flow of discussion and pacing.

6 Therapist used time very efficiently by tactfully limiting peripheral and unproductive discussion and by pacing the session as rapidly as was appropriate for the client.

Part II: CONCEPTUALIZATION, STRATEGY, AND TECHNIQUE

___ 7. FUNCTIONAL ANALYSIS OF ACTIVITY

0. Therapist did not explore consequences (e.g. mood shifts, exacerbation of problematic situation) of client's behaviors and the context in which behavior occurred. Therapist did not encourage client to change activity patterns.

2 Therapist relied heavily on prescribing generic behaviors rather than doing a functional analysis.

4 Therapist, for the most part, helped client to understand mood-behavior relationships within context, collaborated with client in examining these relationships rather than prescribing behavior out of context. Used questioning appropriately.

6 Therapist was especially adept at guiding the client through a detailed analysis of the function of specific behaviors within context. Therapist skillfully used questioning and instruction to teach client to conduct a functional analysis independently.

___ 8. FOCUSING ON KEY BEHAVIORS

0 Therapist did not attempt to encourage client to report specific behaviors, consequences, goals, avoidance-patterns, or life situations.

2 Therapist used appropriate techniques to target behaviors; however, therapist had difficulty finding a focus or focused on behaviors that were irrelevant to the client's key problems.

4 Therapist focused on specific behaviors relevant to the target problem. However, therapist could have focused on more central behaviors or avoidance-patterns that offered greater promise for progress.

6 Therapist very skillfully focused on key behavioral patterns and behaviors, etc. that were most relevant to the problem area and offered considerable promise for progress.

___ 9. BA STRATEGY FOR CHANGE (Note: For this item, focus on the quality of the therapist's strategy for change, not on how effectively the strategy was implemented or whether change actually occurred)

0 The therapist missed important opportunities to utilize the BA conceptualization of depression (e.g. that depression results from decrease in positive reinforcement following significant life events or chronic stressors, and that secondary problem behaviors and avoidance may exacerbate depression keeping the client stuck in a "vicious cycle", etc.).

2 The therapist superficially used the BA model, concepts, process or structure but not in a timely manner or in a manner that was relevant to the client.

4 The therapist chose relevant model, concepts, process, or structure of BA in a general way that was relevant to the client and timed in such a fashion as to bring the client "on board" with the treatment so as to facilitate activation.

6 The therapist did an outstanding job of using relevant model, concepts, process, or structure of BA; applied these to the client in a timely manner, used the client's life circumstances in description and incorporated client's words in a fashion consistent with BA and checked the client's understanding and elicited feedback.

___10. APPLICATION OF BEHAVIORAL ACTIVATION TECHNIQUES (Note: For this item, focus on how skillfully the techniques were applied, not on how appropriate they were for the target problem or whether change actually occurred.)

0 Therapist did not apply any behavioral activation techniques (e.g. was silent or passive or used non-behavioral techniques).

2 Therapist used behavioral activation techniques, but there were significant flaws in the way they were applied (e.g. therapist put exclusive focus on increasing pleasant events, without doing an adequate functional analysis).

4 Therapist applied behavioral activation techniques (e.g. used activity charts, TRAP model and other tools) with moderate skill.

6 Therapist very skillfully and resourcefully employed behavioral activation techniques (e.g. used the strategies in an especially adept fashion in considering context and client variables).

___11. HOMEWORK

0 Therapist did not attempt to incorporate homework relevant to behavioral activation therapy.

2 Therapist had significant difficulties incorporating homework (e.g., did not revisit previous homework, did not explain homework in sufficient detail, assigned inappropriate homework).

4 Therapist reviewed previous homework and assigned behavioral activation therapy homework generally relevant to issues dealt with in session. Homework was explained in sufficient detail.

6 Therapist reviewed previous homework and carefully assigned homework drawn from behavioral activation therapy for the coming week. Assignment seemed "custom tailored" to help client incorporate or experiment with new behaviors discussed during session, etc.

Part III. ADDITIONAL CONSIDERATIONS

2. (a) Did any special problems arise during the session (e.g., non-adherence to homework, interpersonal issues between therapist and client, hopelessness about continuing therapy, relapse)?

YES NO

___(b) If yes:

0 Therapist could not deal adequately with special problems that arose.

2 Therapist dealt with special problems adequately, but used strategies or conceptualizations inconsistent with behavioral activation therapy.

4 Therapist attempted to deal with special problems using a behavioral activation framework and was moderately skillful in applying techniques.

6 Therapist was very skillful at handling special problems using behavioral activation therapy framework.

3. Were there any significant unusual factors in this session that you feel justified the therapist's departure from the standard approach measured by this scale?

YES (Please explain below) NO

Part IV: OVERALL RATINGS AND COMMENTS

14. How difficult did you believe this client was to work with?

0	1	2	3	4	5	6
Not difficult, Very receptive			Moderately difficult			Extremely difficult

15. How would you rate the clinician overall in this session, as a behavioral activation therapist:

0	1	2	3	4	5	6
Poor	Barely Adequate	Mediocre	Satisfactory	Good	Very Good	Excellent

16. If you were conducting an outcome study in behavioral activation therapy, do you think you would select this therapist to participate at this time (assuming this session is typical)?

0	1	2	3	4
Definitely Not	Probably Not	Uncertain-Borderline	Probably Yes	Definitely Yes

17. COMMENTS AND SUGGESTIONS FOR THERAPIST'S IMPROVEMENT:

Appendix B

Instrumentation

	M	TU	W	TH	F	SA	SU
Daily Mood Rating 1-10 (1 = not depressed; 5 = depressed; 10 = severely depressed)							
PTSD Symptom _____ Number of times per day							
Severity of symptom 1-10 (1 = mild; 5 = moderate; 10 = severe)							

Satisfaction Survey

We are interested in your overall thoughts and opinions regarding the treatment that you received during this study. We appreciate any feedback you have, whether it be positive or negative. Thank you.

What aspect(s) of this treatment did you find helpful?

What aspect(s) of this treatment did you not find helpful?

If you could change one thing about this treatment what would it be?

In your opinion, what is the most important part of this treatment?

General comments or suggestions:

CONTINUE TO NEXT PAGE...

Please circle your answer according to the following scale:

NA = Not applicable

1 = Strongly Disagree 2 = Disagree 3 = Agree 4 = Strongly Agree

1. Overall, this treatment was effective in dealing with my problems.	**NA 1 2 3 4**
2. This treatment helped me with my depressive symptoms.	**NA 1 2 3 4**
3. This treatment helped me with my symptoms surrounding my traumatic experience (s).	**NA 1 2 3 4**
4. This treatment was easy to understand.	**NA 1 2 3 4**
5. I will use the skills that I learned in this treatment in the future.	**NA 1 2 3 4**
6. This treatment was better than other treatments I have received in the past.	**NA 1 2 3 4**
7. This treatment was more helpful than the medication I have tried.	**NA 1 2 3 4**
8. This treatment was more helpful than other "talk" therapy I have tried.	**NA 1 2 3 4**
9. I would recommend this treatment to a friend or family member in need.	**NA 1 2 3 4**
10. I would have liked to have more sessions with this treatment.	**NA 1 2 3 4**

Screening Number: _____

Initials:_____
Date/Time:_____

SCRIPT FOR INITIAL PHONE CONTACT:

"Clinical researchers at Western Michigan University are conducting a study to assess the effectiveness of a psychological treatment for depression and traumatic stress. Treatment would take place once a week for 10 weeks and sessions will last approximately 50 minutes.

If you are experiencing problems with depression and have experienced some traumatic event such as an automobile accident, witnessing or victim of physical violence, combat, rape, or some natural disaster, you are encouraged to schedule an appointment for an intake interview to determine participation in the study. Participation in the interview in no way obligates you to participate in the study, but serves to give both you and the researchers a better understanding of how appropriate the therapy would be for you. If you were to choose to participate in the study, you would be expected to complete the 10-week course of treatment. There would also be a short follow-up interview that would be conducted 3-months after completion of your therapy.

I have a few questions I would now like to ask you? Would you like me to go ahead and proceed?" (If no, ask if there is a better time to call back or would he/she rather have the phone number to a mental health agency.)

1. "What sorts of symptoms are you experiencing that led you to call." Ask specifically about depressed mood, fatigue, loss of interest, feeling blue, nightmares, flashbacks, change of appetite, change of sleep patterns.

   _____

2. "Have you experienced a traumatic event in your past?" If yes, "Do you mind saying in general was it an automobile accident, witness or victim of violence, or a natural disaster?"

   _____

   - "Approximately, when did this event happen?"_____

3. "Are you currently taking any medication for psychological problems? If yes, what?" _____

4. If yes, explain, "In order to participate, we ask that you are stabilized on your medication, meaning you must have been taking it for at least 6 weeks. When did you start taking your medication?" _____

5. "Are you currently participating in any sort of therapy for any psychological conditions?" _____

6. If yes, explain, "In order to participate, we ask that you have been in that therapy for at least 3 months. How long have you been doing that therapy?" _____

7. If he/she meets screening criteria, ask participant: "Would you like to continue with this process and come in for an intake interview?"
   - If yes, set up an appointment _____ (date/time)
   - If no, give referral numbers
     - Psychology Clinic- 387-8302
     - Delano- 226-5600
     - Family and Children Services- 344-0202
     - Gryphon Help Line- 381-HELP

8. Final question, "Would you mind telling me how you heard about this study?"
   - Mental health agency referral _____
   - Newspaper_____
   - Word of mouth _____

DAY	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
6 – 7 am							
7 – 8 am							
8 – 9 am							
9 - 10 am							
10 – 11 am							
11 – 12 pm							
12 – 1 pm							
1 – 2 pm							
2 – 3 pm							
3 – 4 pm							
4 – 5 pm							
5 – 6 pm							
6 – 7 pm							
7 – 8 pm							
8 – 9 pm							
9 – 10 pm							
10 – 11 pm							
11 – 12 am							
12 – 6 am							

Appendix C

Informed Consent

Western Michigan University
Department of Psychology
Consent to Participate in Research
Principal Investigator: Galen Alessi, Ph.D.
Co-Principal Investigator: Amy Naugle, Ph.D.
Student Investigator: Patrick Mulick, MA

I have been invited to participate in a research project entitled "Examination of the Efficacy of Behavioral Activation in the Treatment of Comorbid Major Depressive Disorder and Post-traumatic Stress Disorder." This research is intended to study how effective a particular individual treatment for depression and traumatic stress is with adults. This project is Patrick Mulick's dissertation project.

During my initial interview, I will be asked to provide some personal information on a brief questionnaire; complete a Beck Depression Inventory, a form asking questions about symptoms of depression that I have experienced during the past weeks; complete the Modified PTSD Symptom Scale, a form asking questions about symptoms of traumatic stress that I have experienced; and complete the Automatic Thoughts Questionnaire, a form asking questions about my thoughts. During my intake interview I will be interviewed using the Structured Clinical Interview of the DSM-IV, the Clinician-Administered PTSD Scale of DSM-IV, and the Revised Hamilton Rating Scale for Depression to further assess my symptoms of depression, traumatic stress, and general mental health. The initial interview should take no longer than 2 hours to complete. Only those persons who qualify for the diagnosis of Major Depressive Disorder and Post-traumatic Stress Disorder will be eligible to participate. Some additional diagnoses will exclude me from the study.

If I am eligible to participate in the study, I will be assigned to a research therapist and schedule my first appointment. I have been told that I will have one 50-minute session a week for approximately 3 months. Beginning with the first session, and continuing through the termination of the Behavioral Activation treatment, I will be asked to complete daily and weekly therapeutic tasks. The Beck Depression Inventory and the Modified PTSD Symptom Scale will be administered at each session. At the end of treatment, I will again be asked to complete the three questionnaires and be interviewed with the psychological interviews given at my initial assessment. I will also be asked to complete a 5-minute Client Satisfaction Survey. I have been told that three months after treatment has ended, I will be asked to return to complete the same three questionnaires and be interviewed for the last time with the same psychological interviews already given. There is a possibility that treatment sessions may be videotaped to assure therapy in accurately executed. Videotapes will be stored in a locked file drawer and only project personnel will have access to those tapes.

As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate measures will be taken; however, no compensation of treatment will be made available to me except as otherwise specified in this consent form. One potential risk of my participation in this project is that I may experience unpleasant emotions, including anger, frustration, depression, and disappointment, as I recall my problems and experiences and

actively work to change certain behaviors in order to reduce my symptoms of depression and traumatic stress. My research therapist is prepared to make a referral should emergency care become necessary. I will be responsible for the cost of emergency care should such care become necessary.

I may benefit from participating in this study in several ways. Primarily, I may experience a significant reduction in my symptoms of depression and traumatic stress as a result of this treatment. Also, I may learn more about psychological treatment and individual therapy that may assist me in making future decisions regarding mental health care. I, and others seeking treatment for depression and traumatic stress, in the future may benefit from the knowledge that is gained by this research.

All research information collected from me is confidential. This means that my name will not appear on any research questionnaire forms I complete or on any other research forms that contain personal information that I have provided. These forms will be kept in a research folder in a locked cabinet in this clinic during my participation in this study. At the end of my participation in the study my research folder will be moved to a locked cabinet in the Department of Psychology where it will be stored for three years following after the completion of the study. It will then be destroyed. Patrick Mulick will keep a separate master list with the names and research code numbers of participants. The master list will be the only link between the number on the recording forms my identity. Once all the data are collected and analyzed, the master list will be destroyed.

I may refuse to participate or quit at any time during the study without prejudice or penalty or effect on my relationship with Western Michigan University. I am aware of alternative treatment services, such as other individual, group, or medication therapy, should this be the case. If I have any questions or concerns about the study, I may contact either Dr. Galen Alessi at (616) 387-7740, Dr. Amy Naugle at (616) 387-4726, or Patrick Mulick at (616) 387-4485. I may also contact the chair of Human Subjects Institutional Review Board at (616) 387-8293 or the vice president for research at (616) 387-8298 with any concerns that I have.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right hand corner. Subjects should not sign this document if the corner does not have a stamped date and signature.

My signature below indicates that I have read and/or had explained to me the purpose and requirements of the study and that I agree to participate.

_____ _____

Signature Date

Consent obtained by: _____ _____

Initials of Researcher Date

Appendix D

Figures

Figure 1. Self-Report PTSD Symptom Frequency (MPSS-F).

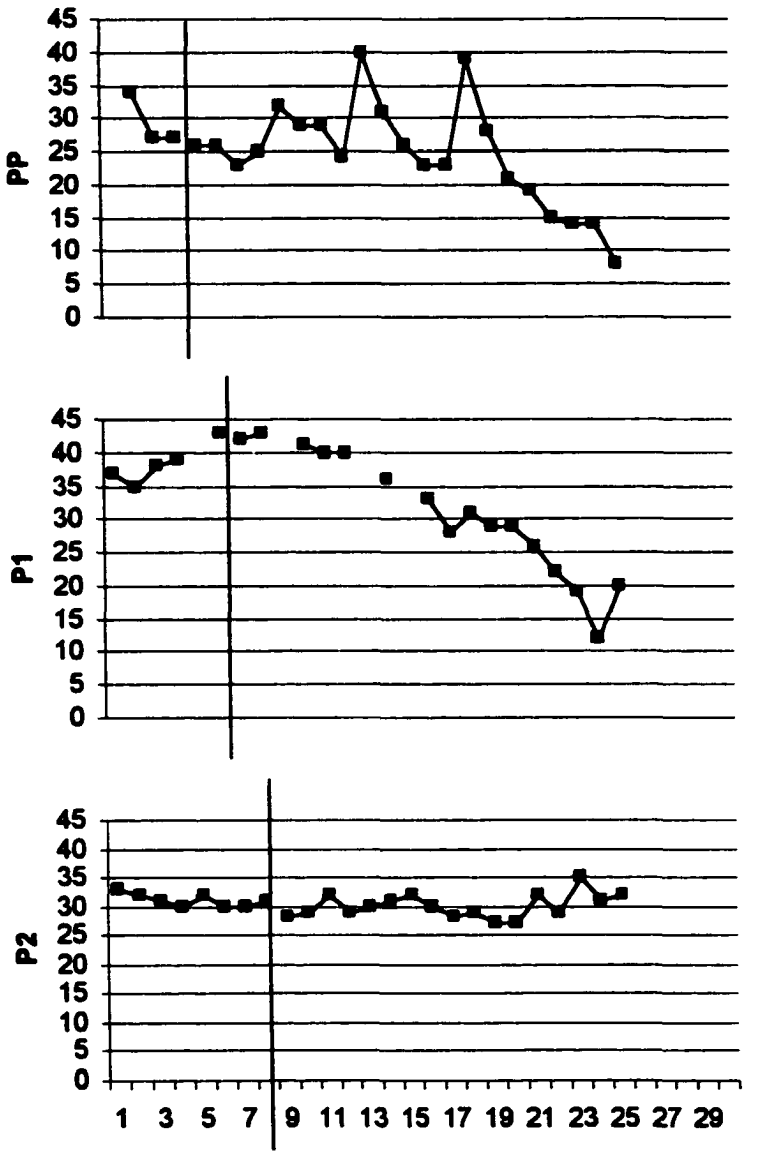


Figure 1. Self-Report PTSD Symptom Frequency (MPSS-F) continued.

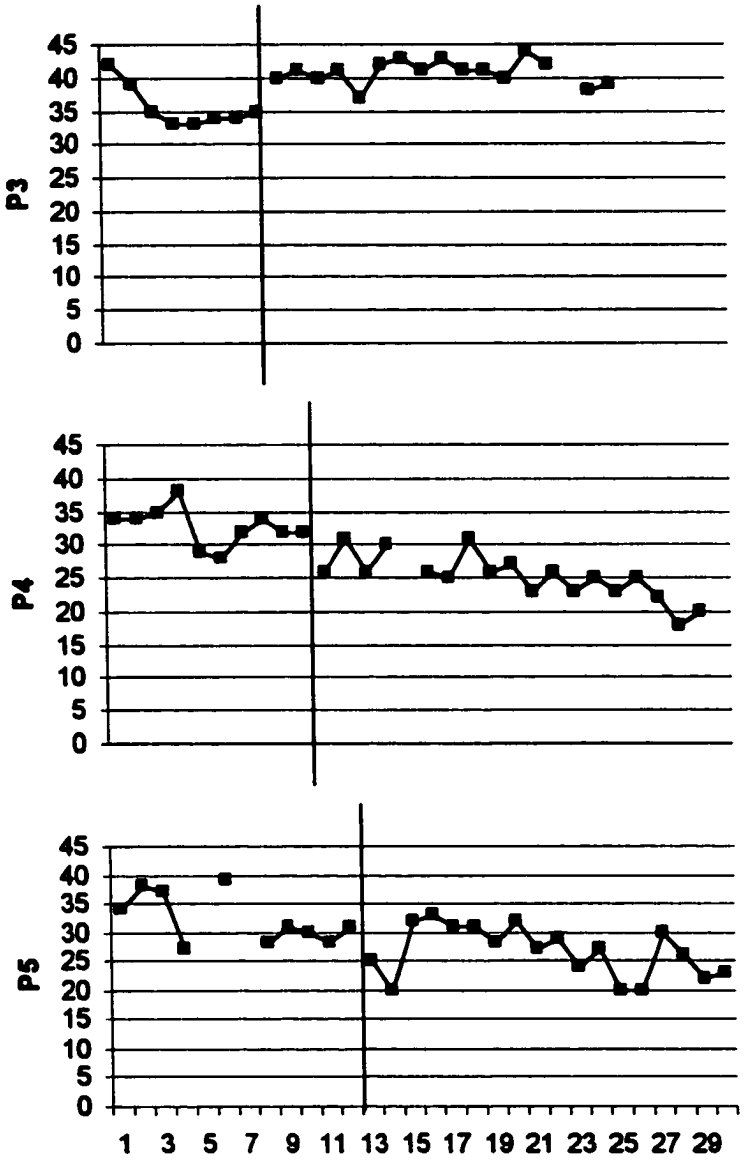


Figure 2. Self-Report PTSD Symptom Severity (MPSS-S).

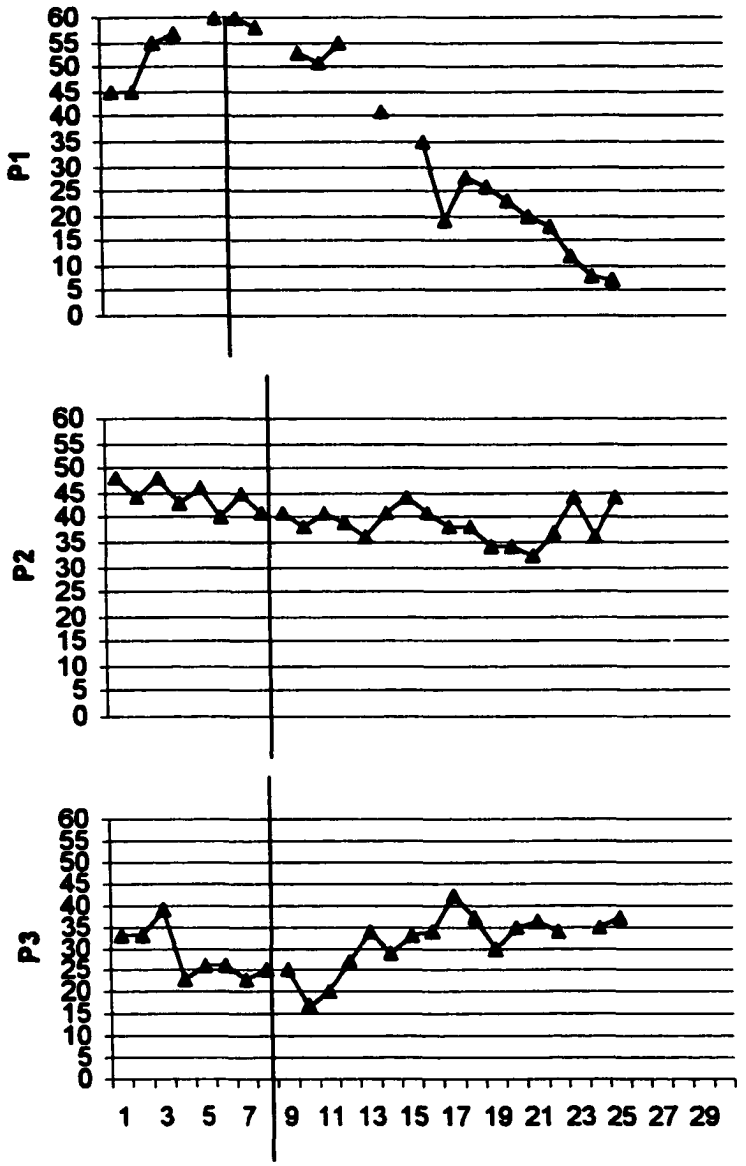


Figure 2. Self-Report PTSD Symptom Severity (MPSS-S) continued.

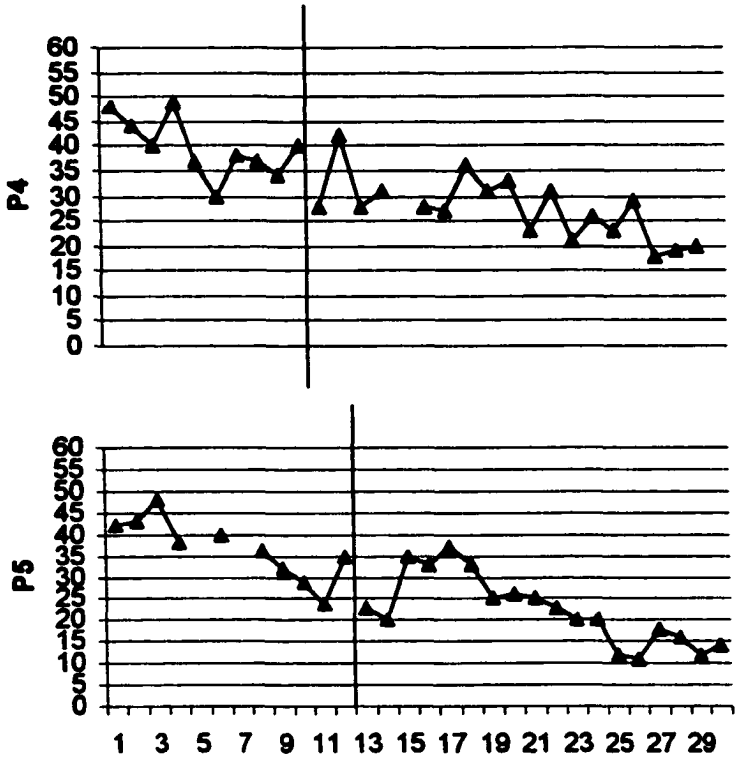


Figure 3. Self-Report Depression Symptoms (BDI-II).

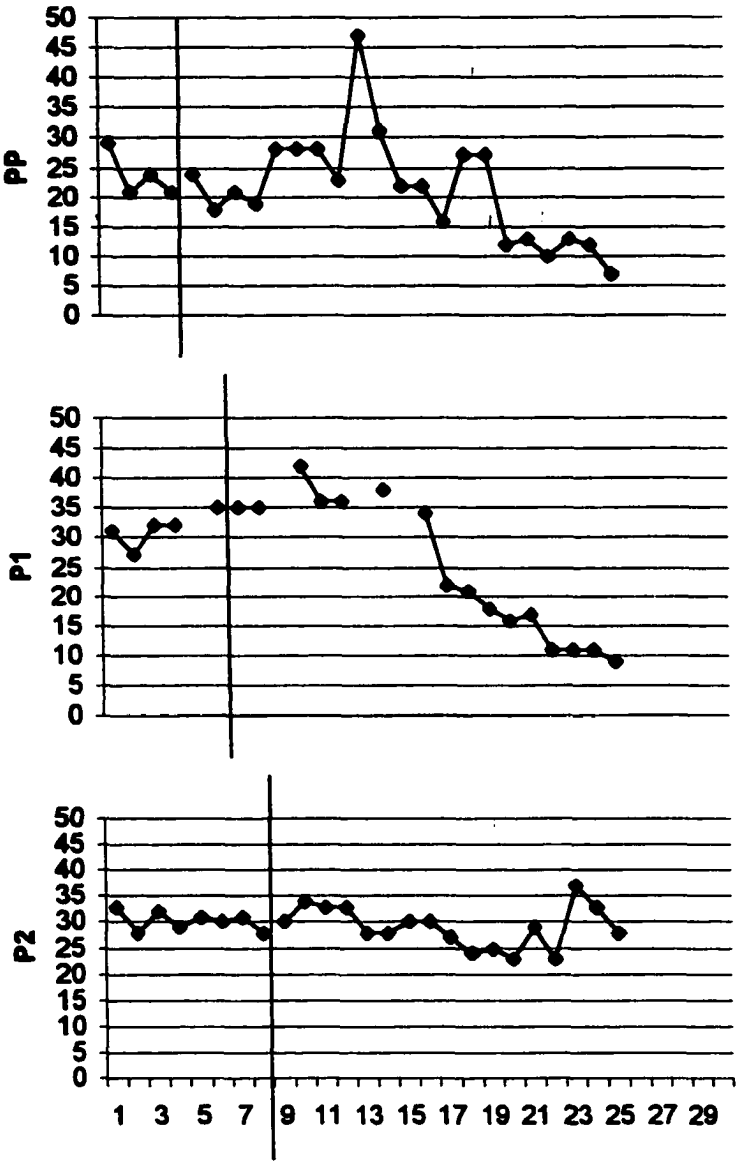


Figure 3. Self-Report Depression Symptoms (BDI-II) continued.

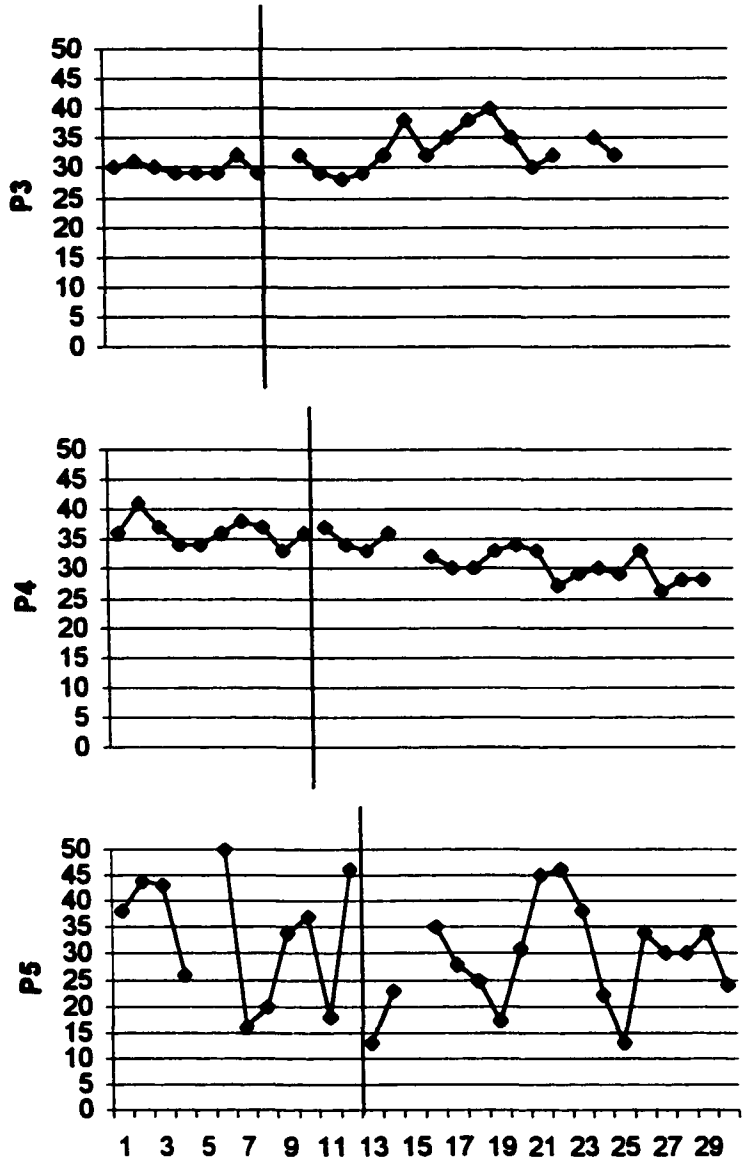


Figure 4. Daily Mood Ratings.

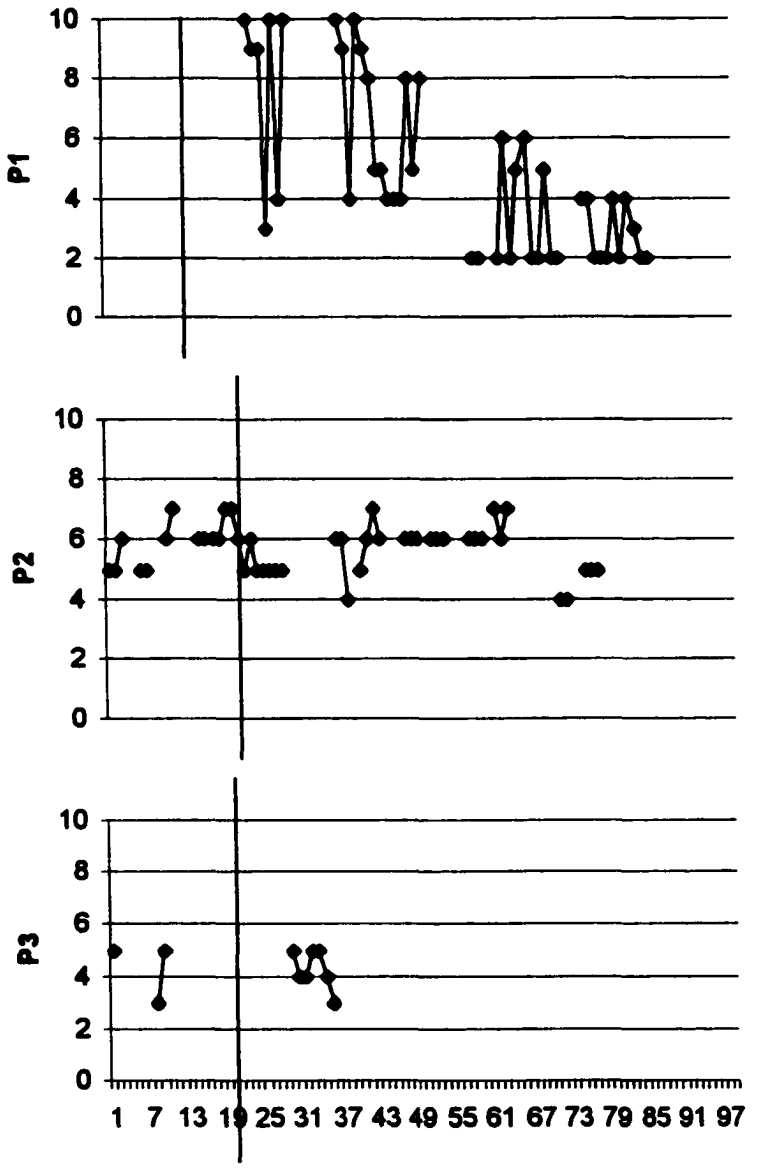


Figure 4. Daily Mood Ratings continued.

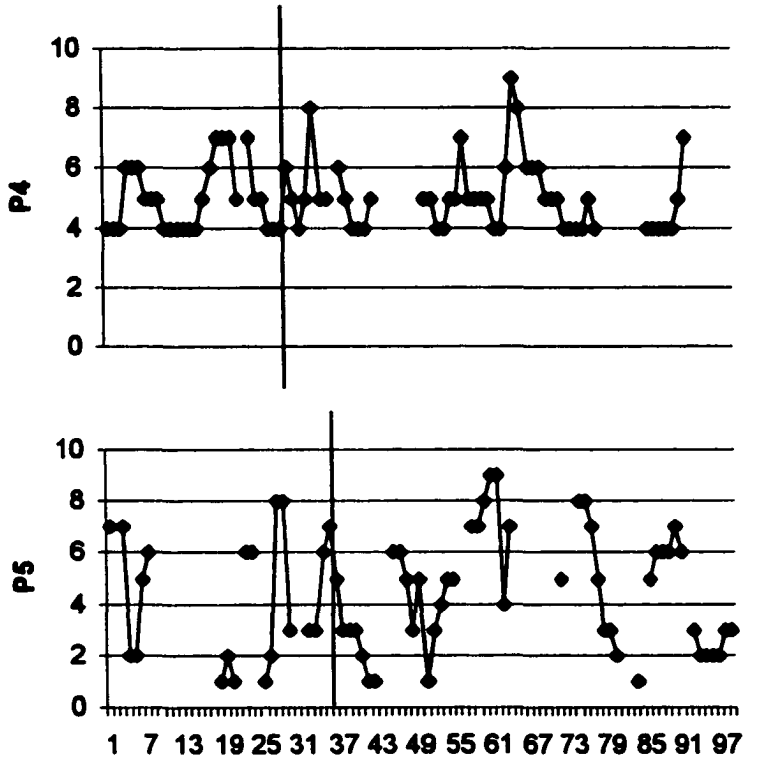


Figure 5. Daily PTSD Symptom Frequency and Severity Rating.

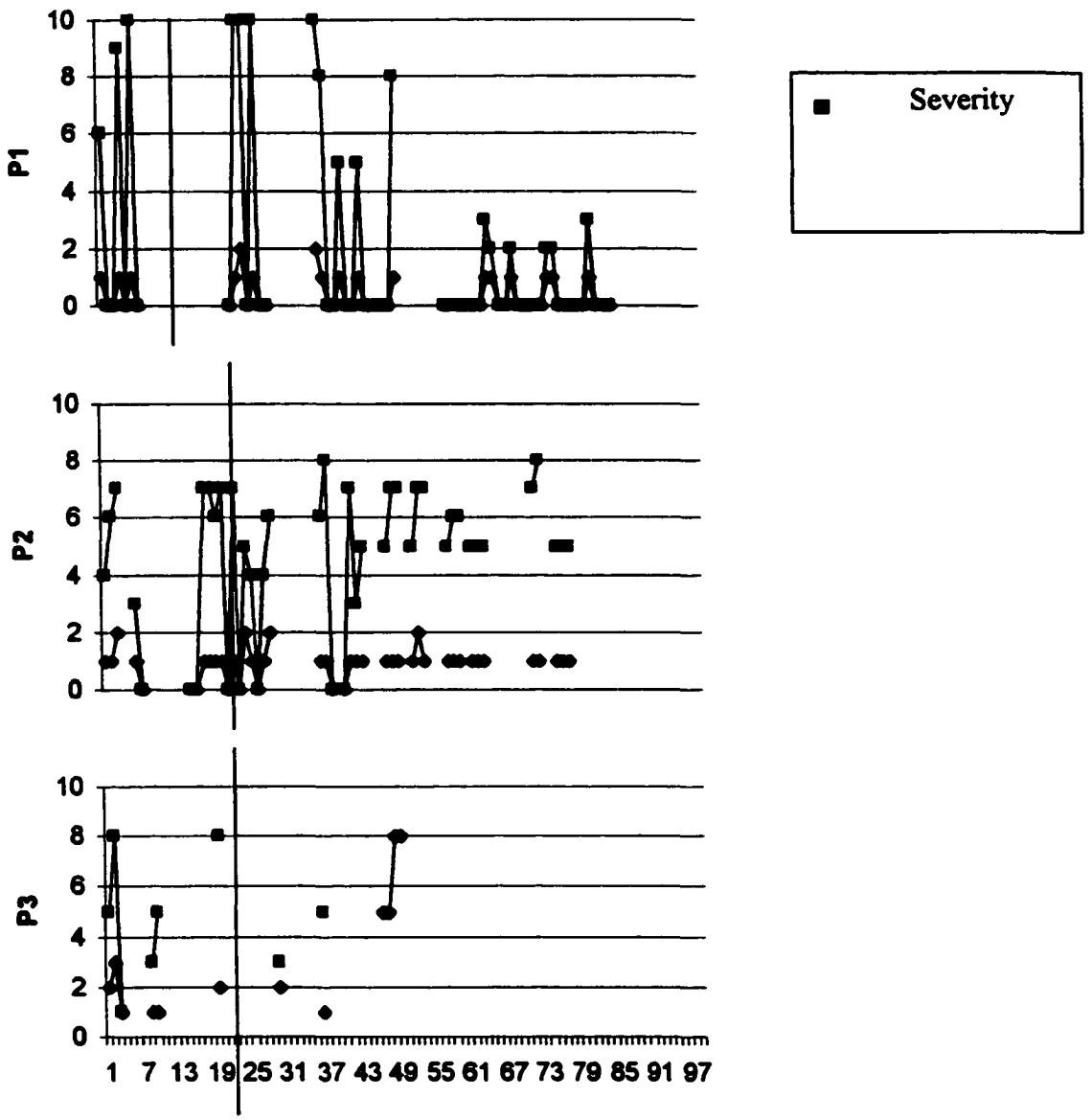
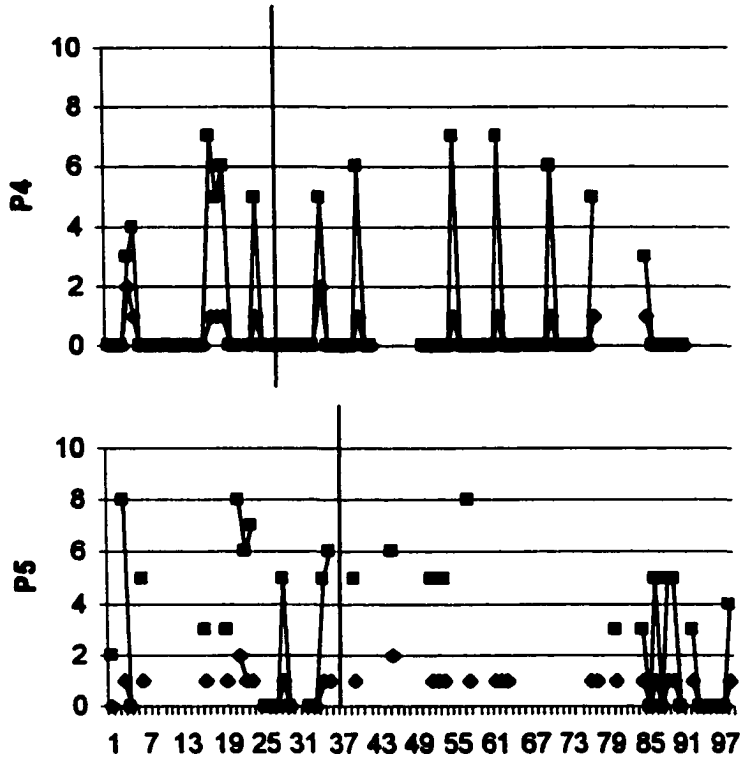


Figure 5. Daily PTSD Symptom Frequency and Severity Rating continued.



Appendix E

Tables

Table 1. Automatic Thoughts Questionnaire Scores.

Participant	Pre-ATQ	Post-ATQ
PP	95	52
P1	78	47
P2	70	64
P3	76	82
P4	136	108
P5	125	NA

Table 2. CAPS Scores for Pilot Participant.

Symptom	Pre-F	Pre-I	Pre-T	Post-F	Post-I	Post-T
Intrusive memories	3	4	7	4	1	5
Nightmares	2	3	5	1	3	4
Flashbacks	3	3	6	1	3	4
Psych distress	2	2	4	2	2	4
Physio distress	1	4	5	1	2	3
Avoid thoughts etc.	4	2	6	4	2	6
Avoid activities etc.	2	2	4	2	1	3
Lack memory	2	2	4	0	0	0
Anhedonia	4	4	8	0	0	0
Detached	2	4	6	2	1	3
Restricted affect	2	2	4	1	1	2
Foreshortened future	4	4	8	1	1	2
Sleep troubles	2	2	4	3	2	5
Irritability	1	2	3	0	0	0
Concentration dif	1	2	3	2	1	3
Hypervigilance	2	3	5	4	3	7
Startle response	4	4	8	4	3	7
Total Re-experiencing	11	16	**27**	9	11	**20**
Total Avoidance	20	20	**40**	10	6	**16**
Total Hyperarousal	10	13	**23**	13	9	**22**
Total Symptoms	41	49	**90**	32	26	**58**
Subjective distress	3			1		
Social functioning	3			1		
Occupational func	3			1		

Table 3. Revised Hamilton Rating Scale for Depression Scores.

Participant	Pre-RHRSD	Post-RHRSD
PP	26	4
P1	17	4
P2	25	13
P3	23	23
P4	19	16
P5	24	NA

Table 4. CAPS Scores for Participant 1.

Symptom	Pre-F	Pre-I	Pre-T	Post-F	Post-I	Post-T
Intrusive memories	2	4	6	1	1	2
Nightmares	1	4	5	1	2	3
Flashbacks	2	4	6	0	0	0
Psych distress	3	2	5	2	1	3
Physio distress	2	3	5	2	2	4
Avoid thoughts etc.	3	3	6	2	1	3
Avoid activities etc.	4	3	7	2	1	3
Lack memory	2	3	5	1	3	4
Anhedonia	4	4	8	0	0	0
Detached	4	3	7	0	0	0
Restricted affect	3	2	5	0	0	0
Foreshortened future	1	1	2	0	0	0
Sleep troubles	2	2	4	3	2	5
Irritability	3	3	6	2	1	3
Concentration dif	2	1	3	0	0	0
Hypervigilance	4	4	8	2	2	4
Startle response	0	0	0	2	1	3
Total Re-experiencing	10	17	**27**	6	6	**12**
Total Avoidance	21	19	**40**	5	5	**10**
Total Hyperarousal	11	10	**21**	9	6	**15**
Total Symptoms	42	46	**88**	20	17	**37**
Subjective distress	3			1		
Social functioning	3			1		
Occupational func	2			0		

Table 5. CAPS Scores for Participant 2.

Symptom	Pre-F	Pre-I	Pre-T	Post-F	Post-I	Post-T
Intrusive memories	2	2	4	2	2	4
Nightmares	3	3	6	3	3	6
Flashbacks	1	3	4	1	3	4
Psych distress	2	3	5	2	1	3
Physio distress	2	3	5	2	1	3
Avoid thoughts etc.	2	3	5	3	2	5
Avoid activities etc.	4	3	7	2	2	4
Lack memory	2	3	5	2	0	2
Anhedonia	3	3	6	2	3	5
Detached	4	3	7	1	1	2
Restricted affect	2	2	4	1	2	3
Foreshortened future	0	0	0	0	0	0
Sleep troubles	4	4	8	4	3	7
Irritability	2	3	5	2	2	4
Concentration dif	1	1	2	0	0	0
Hypervigilance	3	3	6	4	3	7
Startle response	2	2	4	1	2	3
Total Re-experiencing	10	14	**24**	10	10	**20**
Total Avoidance	17	17	**34**	11	10	**21**
Total Hyperarousal	12	13	**25**	11	10	**21**
Total Symptoms	39	44	**83**	32	30	**62**
Subjective distress	3			2		
Social functioning	3			3		
Occupational func	4			4		

Table 6. CAPS Scores for Participant 3.

Symptom	Pre-F	Pre-I	Pre-T	Post-F	Post-I	Post-T
Intrusive memories	3	3	6	4	3	7
Nightmares	1	3	4	1	3	4
Flashbacks	0	0	0	0	0	0
Psych distress	1	2	3	2	2	4
Physio distress	2	3	5	0	0	0
Avoid thoughts etc.	3	3	6	4	2	6
Avoid activities etc.	0	0	0	0	0	0
Lack memory	4	3	7	4	4	8
Anhedonia	4	3	7	4	4	8
Detached	4	4	8	4	3	7
Restricted affect	4	4	8	3	3	6
Foreshortened future	2	2	4	1	1	2
Sleep troubles	4	4	8	4	4	8
Irritability	3	3	6	4	3	7
Concentration dif	4	3	7	4	3	7
Hypervigilance	2	3	5	4	2	6
Startle response	4	3	7	4	2	6
Total Re-experiencing	7	11	**18**	7	8	**15**
Total Avoidance	21	19	**40**	20	17	**37**
Total Hyperarousal	17	16	**33**	20	14	**34**
Total Symptoms	45	46	**91**	47	39	**86**
Subjective distress	3			4		
Social functioning	4			4		
Occupational func	4			4		

Table 7. CAPS Scores for Participant 4.

Symptom	Pre-F	Pre-I	Pre-T	Post-F	Post-I	Post-T
Intrusive memories	1	4	5	1	1	2
Nightmares	2	4	6	1	2	3
Flashbacks	1	3	4	0	0	0
Psych distress	4	3	7	1	2	3
Physio distress	4	4	8	0	0	0
Avoid thoughts etc.	4	3	7	4	1	5
Avoid activities etc.	4	3	7	1	4	5
Lack memory	2	4	6	4	3	7
Anhedonia	0	0	0	1	1	2
Detached	4	3	7	4	4	8
Restricted affect	4	3	7	4	3	7
Foreshortened future	1	2	3	0	0	0
Sleep troubles	3	3	6	4	3	7
Irritability	0	0	0	0	0	0
Concentration dif	4	2	6	1	1	2
Hypervigilance	4	3	7	2	2	4
Startle response	2	3	5	2	2	4
Total Re-experiencing	12	18	**30**	3	5	**8**
Total Avoidance	19	18	**37**	18	16	**34**
Total Hyperarousal	13	11	**24**	9	8	**17**
Total Symptoms	44	47	**91**	30	29	**59**
Subjective distress	4			1		
Social functioning	3			0		
Occupational func	1			0		

Table 8. CAPS Scores for Participant 5.

Symptom	Pre-F	Pre-I	Pre-T
Intrusive memories	3	3	6
Nightmares	2	2	4
Flashbacks	1	2	3
Psych distress	2	1	3
Physio distress	3	4	7
Avoid thoughts etc.	4	4	8
Avoid activities etc.	3	3	6
Lack memory	2	3	5
Anhedonia	3	3	6
Detached	4	3	7
Restricted affect	4	3	7
Foreshortened future	0	0	0
Sleep troubles	3	3	6
Irritability	3	2	5
Concentration dif	3	2	5
Hypervigilance	0	0	0
Startle response	2	2	4
Total Re-experiencing	11	12	**23**
Total Avoidance	20	19	**39**
Total Hyperarousal	11	9	**20**
Total Symptoms	42	40	**82**
Subjective distress	3		
Social functioning	3		
Occupational func	3		

Table 9. Behavioral Activation Therapy for Depression Scale Ratings.

	PP	P1	P2	P3	P4	P5
GENERAL THERAPEUTIC SKILLS						
Agenda	4	3	5	5	2	3
Feedback	3	3	3	3	4	3
Understanding	4	4	5	5	3	4
Interpersonal effectiveness	5	4	5	5	4	4
Collaboration	3	4	4	4	2	3
Pacing and efficient use of time	3	4	5	5	4	4
CONCEPTUALIZATION, STRATEGY, & TECHNIQUE						
Functional analysis of activity	4	3	5	5	2	4
Focusing on key behaviors	5	4	5	5	3	4
BA strategy for change	5	5	5	5	4	5
Application of BA techniques	4	4	5	5	2	5
Homework	4	3	5	6	0	4
TOTAL SCORE	**44**	**41**	**52**	**53**	**37**	**43**

Appendix F

The Neurobiology of Post-traumatic Stress Disorder: A Brief Review

The Neurobiology of Post-traumatic Stress Disorder: A Brief Review

PTSD is a complex disorder involving memory systems, emotions, the sympathetic nervous system, and neuroendocrine systems. Research to this point has focused mainly on the Hypothalamic-Pituitary-Adrenal Axis HPA (Bremner, Southwick, & Charney, 1999; Yehuda, 1998, 2001; Yehuda, Giller, Levengood, Southwick, & Siever, 1995).

Hypothalamic- Pituitary- Adrenal Axis (HPA)

The HPA axis is composed of a region of the brain called the hypothalamus, a small gland called the pituitary, and another set of glands called the adrenals. Each of these glands interacts with one another to control and provide the body with the hormone cortisol.

Hypothalamus

The hypothalamus is a small region of the brain that sits directly below the thalamus. The hypothalamus is known for its role is controlling appetite, body temperature, and hormones. Many hormones that are secreted throughout the body are controlled in some manner either directly or indirectly by the hypothalamus. The Hypothalamus produces a polypeptide called Corticotropin Releasing Factor (CRF) in the medical parvocellular neurons of the paraventricular nucleus of the hypothalamus (mpPVN). The hypothalamus mpPVN receives inputs from many areas of the brain thought to be involved with the stress response including medullary catecholaminergic neurons, surrounding hypothalamic nuclei, and forebrain structures including the prefrontal cortex, hippocampus, amygdala, and septum by way of intermediary

hypothalamic nuclei. Glucocorticoid secretion is initiated by activation of mpPVN neurons, which release CRF in the median eminence of the hypothalamus where it travels through a local blood vessel to the pituitary gland.

CRF has been implicated in the regulation of a wide range of behaviors including arousal, motor function, feeding, and reproduction (Yehuda, 1998). It functions directly on neurons as well as in the pituitary gland. Release of CRF results in simultaneous stimulation of Locus Ceruleus noradrenergic circuits which produces increased arousal and improved selective attention as well as decreased vegetative functions such as appetite and sex drive. In PTSD, CRF secretion is increased (Yehuda, 1998, 2001; Yehuda et al., 1995).

Pituitary

The pituitary gland, which is responsible for the production and secretion of a wide range of hormones, is located just beneath the hypothalamus. The portal blood system bathing the median eminence of the hypothalamus transport CRFs to the anterior pituitary, where they activate corticotrophs. Corticotrophs, in turn, initiate the processing and secretion of several products including adrenocorticotropin hormone (ACTH), and beta-endorphin (beta-end). ACTH is secreted into the general circulatory system (Nutt, 2000).

Adrenal glands

The systematic blood circulation eventually carries ACTH to the adrenal cortex, where cortisol is produced and secreted. Cortisol maintains physiologic integrity in ways that remain poorly understood (Yehuda, 2001), and its receptors are

found in virtually every cell in the body. It is involved in the stress response as an "anti-stress" hormone and functions to contain or shut down the neural defensive reactions that are initiated by stress.

The Function of the HPA Axis

The HPA axis is involved in the regulation of energy and metabolic activity throughout the body (Bremner, Southwick, & Charney, 1999; Nutt, 2000; Yehuda, 1998, 2001; Yehuda et al., 1995). Glucocorticoid levels display a diurnal rhythm, with higher levels in the morning than in the evening in humans, anticipating increased bodily demands during the day. This rhythm appears to be driven by one of the brain's main biologic clocks, the suprachiasmatic nucleus, as well as by the pattern of food intake (Bremner, Southwick, & Charney, 1999). Activation of the HPA axis by events that are deemed stressful by organisms occurs in the context of this diurnal regulation and is mediated by several supposed brain pathways with direct connections to mpPVN neurons. Glucocorticoids have feedback inhibitory effects on their own release, at several levels of the axis and in additional brain regions. In normal subjects, the HPA responds to stress by increasing cortisol (Yehuda, 1998, 2001).

HPA in PTSD and Depression

There are several interesting abnormalities in the HPA noted in the PTSD and Depression. In Depression, there is an increase in CRF with a marked increase in cortisol. It appears that the normal negative feedback within the HPA is dysfunctional, and there is non-suppression with the Dexamethasone suppression test

(DST), an indication of the level of negative feedback within the HPA (Dubovsky & Buzan, 1999). In PTSD, there is an increase in CRF, a blunted ACTH response, and decreased plasma and urinary cortisol (Yehuda, 2001). Furthermore, on DST, there is hyper-responsiveness of suppression, indicating relatively strong negative feedback (Yehuda, 1998). Yehuda (1998, 2001) hypothesizes that the primary alteration of the HPA in PTSD is enhanced negative feedback inhibition resulting from increased glucocorticoid receptor sensitivity, especially in the pituitary. The low cortisol is thus a response to this increased negative feedback. She supports this theory with data that Metyrapone, a compound that blocks the production of cortisol and thus removes negative feedback inhibition, results in increased ACTH response in PTSD subjects.

The Hippocampus and PTSD

The hippocampus is a horseshoe shaped region of the subcortical brain. As part of the limbic system, located in the temporal lobe, it has a role in emotion and sexuality. It, together with the parahippocampal gyrus, is implicated in learning and remembering Wade & Tavris, 2002). Hippocampal neurons have great capacities in their plasticity and activity. This is evident in their heightened ability for long-term potentiation and depression, dendritic remodeling, synaptic turnover and dentate gyrus neurogenesis (Bremner, Southwick, & Charney, 1999). As a result of this, they are also particularly vulnerable to damage through strokes, seizures, and stressful experiences. The hippocampus is thought to sustain damage from stress through the action of adrenal steroids. High levels of glucocorticoids released during stress are associated with neuronal damage to neurons in the CA3 region of the hippocampus

(Bremner, Southwick, & Charney, 1999). An injection of glucocorticoids in human subjects is followed by acute cognitive impairment of declarative memory in human subjects. Furthermore, it has been shown that stress inhibits the ability of the hippocampus to regenerate neurons. There are two types of adrenal steroid receptors found in the hippocampus. This connection between the hippocampus and the adrenal cortex is postulated to signify a functional loop between the hippocampus and the HPA axis (Bremner, Southwick, & Charney, 1999). The hippocampus has an inhibitory effect on the HPA axis. Thus, if the hippocampus senses excess glucocorticoids (resulting from stress), it can exert a protective action and inhibit HPA activity in a normal organism. In prolonged and severe stress, damage to the hippocampus from high glucocorticoids is postulated to impair this regulation and a feed-forward cycle results as a progressive hippocampal damage results in progressively less inhibition of the HPA axis (Bremner, Southwick, & Charney, 1999).

Hippocampal damage has been demonstrated in PTSD with MRI studies (Bremmer et al., 1997). In this study, it was found that survivors of childhood physical and/or sexual abuse with PTSD had a 12% reduction in left hippocampal volume as compared to controls and that deficits in short-term memory were correlated with severity of abuse. These findings have been replicated in combat vets, and have included both left and right damage in different studies (Newport & Nemeroff, 2000). It is postulated that decreased inhibition on the HPA from the hippocampus may explain the chronically increased CRF in PTSD, although this may

also be related to increased positive input from the amygdale or prefrontal cortex (Bremner, Southwick, & Charney, 1999).

Adrenergic Hyperresponsiveness

Many symptoms of PTSD are related to increased sympathetic activity (Bremner, Southwick, & Charney, 1999). Alpha 1-adrenergic stimulation can be blocked by Prazosin which is currently being studied for treatment of nightmares and sleep disturbance in PTSD. (Raskind et al., 2000). PTSD patients demonstrate evidence of increased secretion of Norepinephrine and Epinephrine with increased urinary concentrations of both documented in several studies. IV yohimbine, which causes increased NE activity, has been shown to cause flashbacks and panic attacks in PTSD patients (Bremner, Southwick, & Charney, 1999).

Thyroid Axis Disturbance in PTSD

There is some evidence of a correlation between PTSD and hyperthyroidism. Several studies have shown an increase in the function of the Hypothalamic-pituitary-thyroid axis with particular elevations in T3 in PTSD (Yehuda, 1998). An exaggerated TRH stimulation response has been noted in PTSD patients. Most depressed patients demonstrate a blunted response to TRH stimulation (Hendrick, Altshuler, & Whybrow, 1998).

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Appendix G

Human Subjects Institutional Review Board
Letters of Approval

Human Subjects Review Board

Kalamazoo, MI [illegible]
616 387 8293

WESTERN MICHIGAN UNIVERSITY

Date: 29 August 2000

To: C. Richard Spates, Principal Investigator
Patrick Mulick, Student Investigator for dissertation

From: Sylvia Culp, Chair Sylvia Culp

Re: HSIRB Project Number: 00-08-04

This letter will serve as confirmation that your research project entitled "Examination of the Efficacy of Behavioral Activation in the Treatment of Comorbid Major Depressive Disorder and Post-traumatic Stress Disorder" has been **approved** under the **full** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 29 August 2001

Department of Veterans Affairs

REPORT OF SUBCOMMITTEE ON HUMAN STUDIES

Project/Program Title: Examination of the Efficacy of Behavioral Activation in the Treatment of Co-morbid Post-traumatic Stress Disorder and Major Depressive Disorder

Principal Investigator: Mr. Patrick Mulick

VAMC: VAPSHCS Review Date: 3/11/2002

Reviewing Institution: University of Washington Identification No: 02-1299-C 01

COMMITTEE FINDINGS

1. The information given in the Informed Consent under the Description of Research by Investigator is complete, accurate. and understandable to a research subject or surrogate who possesses standard reading and comprehension skills.	☑	YES
	☐	NO
	☐	NA
2. The informed consent is obtained by the principal investigator or a trained and supervised designate under suitable circumstances.	☒	YES
	☐	NO
	☐	NA
3. Every effort has been made to decrease risk to subject(s)?	☒	YES
	☐	NO
4. The potential research benefits justify the risk to subject(s)?	☒	YES
	☐	NO
5. If subject is incompetent and surrogate consent is obtained, have all of the following conditions been met: a) the research can t be done on competent subjects; b) there is no risk to the subject, or if risk exists the direct benefit to subject is substantially greater; c) If an incompetent subject resist, he/she will not have to participate; d) If there exists any question about the subject's competency, the basis for decision on competency has been fully described.	☒	YES
	☐	NO
6. If the subject is paid, the payment is reasonable and commensurate with the subject's contribution.	☐	YES
	☐	NO
	☒	NA
7. Members of minority groups and women have been included in the study population whenever possible and scientifically desirable.	☑	YES
	☐	NO

8. Comments: (Indicate if Expedited Review) Expedited Review ☐

RECOMMENDATION: ☒ APPROVED ☐ DISAPPROVE/REVISE

SIGNATURE OF CHAIRMAN	DATE
Richard Brzustowicz, Jr., Human Subjects Review Administrator	April 16, 2002

VA FORM OCT 1995 **10-1223** EXISTING STOCK OF VAF 10-1223, JAN 1990, WILL NOT BE USED

Department of Veterans Affairs

Memorandum

Date: April 17, 2002

From: Chairman, Research and Development Committee

Subj: Proposal reviewed by R&D on April 11, 2002

To: Miles McFall, M.D. (S-116MHC)
Patrick Mulick, Ph.D. (S-116MHC)

1. We have received all of the relevant information for your project "Examination of the Efficacy of Behavioral Activation in the Treatment of co-morbid PTSD and Major Depressive Disorder" and approval is now granted. Your Research and Development Information System (RDIS) number is (#0013).

2. You must inform the office of any significant changes to your protocol (such as design modification, change in PI, etc.). **If this project has a human study component you must send us a copy of each IRB action, eg., an approved modification, annual renewal or termination.**

3. If the project is non-VA funded, you must send us a copy of the notification of award (NIH) or other statement of funding award.

William Schubach

William Schubach, M.D.

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