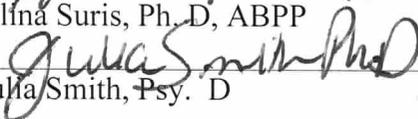


**THE IMPACT OF COGNITIVE PROCESSING THERAPY ON QUALITY OF LIFE  
AND HEALTHCARE USE IN VETERANS WITH POST-TRAUMATIC STRESS  
DISORDER DUE TO MILITARY SEXUAL TRAUMA**

APPROVED BY SUPERVISORY COMMITTEE

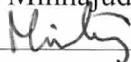


Alina Suris, Ph. D, ABPP



Julia Smith, Psy. D

Abu Minhajuddin, Ph. D



## DEDICATION

I would like to express my sincere gratitude to my committee chair Dr. Suris, and committee members Dr. Smith, and Dr. Minhajuddin for their tremendous help and encouragement. Above all, I would like to thank my family, and friends who believed in me, loved me, and supported me beyond my wildest imagination.

THE IMPACT OF COGNITIVE PROCESSING THERAPY ON QUALITY OF LIFE AND  
HEALTHCARE USE IN VETERANS WITH POSTTRAUMATIC STRESS DISORDER DUE  
TO MILITARY SEXUAL TRAUMA

by

RAHEL ABAY FEKADU

THESIS

Presented to the Faculty of the School of Health Professions

The University of Texas Southwestern Medical Center

Dallas, Texas

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF REHABILITATION COUNSELING

Copyright © 2013

by

RAHEL ABAY FEKADU

All Rights Reserved

### Abstract

**BACKGROUND:** Military Sexual Trauma (MST) is a psychological trauma that resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment (U.S. Code (1720D of Title 38)). Research indicates that MST is associated with increased likelihood of developing Posttraumatic Stress Disorder (PTSD). Veterans who are diagnosed with PTSD due to MST experience a range of comorbid disorders and psychological sequelae including impaired quality of life (Suris et al., 2006), and utilized more primary healthcare services compared to those without PTSD (Frayne, Chiu, Iqbal, Berg, Laungani, Cronkite, Pavao, & Kimerling, 2010). The current study seeks to examine the effectiveness of Cognitive Processing Therapy (CPT), compared to Present Centered Therapy (PCT), on quality of life, health related quality of life and healthcare utilization in veterans who were diagnosed with PTSD due to MST.

**SUBJECTS:** One hundred and ninety veterans with MST were enrolled in to the study and randomized into either CPT or PCT. However, due to fidelity issues data were analyzed for Eighty-six (72 female and 14 male) veterans.

**METHOD:** Data for the proposed study is taken from a larger randomized controlled clinical trial that was conducted at a large Southwestern Veteran Administration Medical Center to evaluate the effectiveness of Cognitive Processing Therapy (CPT) in comparison with Present Centered Therapy (PCT) for PTSD due to MST (Suris et al., 2013). Participants received 12 therapy sessions, bi-weekly, over a six-week period. Data were acquired using face-to-face interviews and written questionnaires at baseline, treatment completion, and at two-month, four-month, and six-month follow-ups.

**RESULTS:** Participants in both treatments did not differ in terms of health related quality of life, quality of life, and healthcare utilization. However, participants in both conditions reported improvement on three of the SF-36 subscales (General Mental Health, Role Limitation Due to Emotional Problems and Vitality), quality of life, and healthcare utilization subscales (Psychotherapy, Outpatient, Hospitalization).

**DISCUSSION:** Although we failed to reject the null hypothesis, the trend indicates that both CPT and PCT are efficacious in terms of improving subjective wellbeing and health related quality of life as well as lowering health care consumption.

*Keywords:* Military Sexual Trauma, PTSD, Quality of Life, veterans with PTSD

EFFECTS OF CPT ON PTSD	5
------------------------	---

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION .....	10
CHAPTER TWO: REVIEW OF THE LITERATURE .....	16
CHAPTER THREE: METHOD .....	36
CHAPTER FOUR: RESULTS .....	42
CHAPTER FIVE: DISCUSSION .....	47
REFERENCES .....	53

LIST OF TABLES

TABLE 1	.....	63
TABLE 2	.....	63
TABLE 3	.....	64
TABLE 4	.....	66
TABLE 5	.....	66
TABLE 6	.....	67
TABLE 7	.....	67
TABLE 8	.....	68
TABLE 9	.....	68
TABLE 10	.....	68
TABLE 11	.....	70
TABLE 12	.....	70

LIST OF FIGURES

FIGURE 1	.....	71
FIGURE 2	.....	71
FIGURE 3	.....	72
FIGURE 4	.....	72
FIGURE 5	.....	73
FIGURE 6	.....	73
FIGURE 7	.....	74
FIGURE 8	.....	74
FIGURE 9	.....	75
FIGURE 10	.....	76
FIGURE 11	.....	76
FIGURE 12	.....	77

EFFECTS OF CPT ON PTSD	8
------------------------	---

LIST OF APPENDICES

APPENDIX A .....	78
APPENDIX B .....	84
APPENDIX C .....	87

LIST OF ABBREVIATIONS

CPT – Cognitive Processing Therapy

CSA – Civilian Sexual Assault

HCU – Health Care Utilization

MST – Military Sexual Trauma

PCT – Present Centered Therapy

PTSD – Post-Traumatic Stress Disorder

QOLI – Quality of Life Inventory

SF-36 – Short Form Health Survey

OEF – Operation Enduring Freedom

OIF – Operation Iraqi Freedom

VHA – Veterans Healthcare Administration

VA – Veterans Affairs

DoD – Department of Defense

## CHAPTER ONE

### Introduction

Military Sexual Trauma (MST) is a “psychological trauma, which in the judgment of a mental health professional . . . resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment, which occurred while the veteran was serving on active duty” (U.S. Code [1720D of Title 38]). Additionally, in a military setting, the victim may be coerced into participating in unwanted sexual acts through threats of negative consequences for refusing solicitation or actual use of physical force (Department of Veterans Affairs, Veterans Health Administration, Mental Health Strategic Healthcare Group, 2010). During the prolonged wars of recent years [i.e., Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF)], the number of veterans who report experiencing MST has increased (Himmelfarb, Yaegar, & Mintz, 2006).

Military Sexual Trauma has a detrimental impact on physical and psychological wellbeing as well as social functioning. Kimerling, Gima, Smith, Street, and Frayne (2007) analyzed Veteran Healthcare Administration (VHA) administrative data for 134,894 women and 2,900,106 male veterans who screened<sup>1</sup> positive for MST, and had at least one outpatient visit to a Veteran Healthcare Administration health care facility during 2003. The investigators examined whether veterans who screened positive for MST had a higher propensity for medical and mental illness when compared with patients who screened negative. The data revealed that the likelihood of receiving a mental health diagnosis was two to three times greater for veterans who

---

<sup>1</sup> The VA conducts universal screening for MST in all service members who receives clinical care from a VA facility. During the screening, the veteran is asked questions such as “While you were in the military: (1) did you receive uninvited and unwanted sexual attention, such as touching, cornering, pressure for sexual favors, or verbal remarks.”

screened positive. MST was also positively linked to other mental health conditions such as alcohol use disorders, anxiety disorders, bipolar disorder, and schizophrenia (Kimerling, Gima, Smith, Street, & Frayne, 2007).

### **Post-Traumatic Stress Disorder**

An increasing number of military men and women are returning from combat with psychological problems, including Posttraumatic Stress Disorder (PTSD). The Diagnostic and Statistical Manual (DSM IV-TR) defines PTSD as a serious mental disorder that may develop after exposure to life threatening or other stressful event. A traumatic event such as sexual assault that is accompanied by intense fear, feelings of helplessness, and/or horror could predispose the individual to develop the disorder (American Psychiatric Association [APA], 2000). Post-Traumatic Stress Disorder is one of the mental health conditions that are frequently reported by veterans with MST (Kang, Dalanger, Mahan, & Ishii, 2005; Kimerling, Gima, Smith, Street, & Frayne, 2007; Street & Stafford, 2004; Suris, Lind, Kashner, Borman, & Petty, 2004). Studies have suggested that rates of PTSD are higher in participants who experienced sexual trauma compared to those associated with combat exposure (Suris et al., 2004; Kang, Dalanger, Mahan, & Ishii, 2005). An examination of surveys obtained from 15,000 Gulf war and 15,000 non-Gulf war veterans indicated a statistically significant increased risk of PTSD in both male and female veterans who reported experiencing sexual assault and harassment (Kang et al., 2005). In an another study 60% of females with MST had PTSD, compared to only 43% of those with other types of military related trauma (Yeager, Himmelfarb, Cammack, & Mintz, 2006). A more recent study found that female participants with Military Sexual Trauma showed increased PTSD and other

symptoms associated with trauma, referred to as “disorders of extreme stress not otherwise specified” (DESNOS) (Luterek, Bittinger, & Simpson, 2012). However, it is important to note that these studies are correlational in nature therefore causality cannot be inferred.

Veterans who report experiencing MST also endorse a wide range of comorbid disorders and psychological sequelae. A study by Kimmerling et al. (2007) found that in addition to PTSD, MST was strongly related to dissociative disorders, eating disorders, and personality disorders. An examination of psychiatric, physical and quality of life functioning in 270 female veterans indicated that, the prevalence of depressive symptoms and alcohol abuse was higher in females with MST when compared to those with adult/childhood civilian sexual assaults. Among female veterans endorsed MST, 52.5% had ongoing depressive symptoms, as compared to 37.5% of those with adult/childhood Civilian Sexual Assault histories and 34.4% of those with no sexual assault history. In addition, the study found that the prevalence for alcohol abuse was 14% among veterans who experienced MST, as compared to 6% of those with adult/childhood Civilian Sexual Assault and 5.5% with no sexual assault history (Suris, Lind, Kashner, & Borman, 2006).

Military Sexual Trauma is often linked to decreased quality of life among veterans (Suris, Lind, Kashner, Bormen, 2006). The World Health Organization defines quality of life as physical, mental, and social well-being. This definition encompasses both subjective and objective quality of life indicators that include general life satisfaction, subjective living situation, daily activities, family relations, social relations, work, school, safety, health, and family conditions. Veterans with Military Sexual Assault histories report lower satisfaction in various domains such

as marital and familial relationship, interpersonal relationships, social functioning and health functioning (Erbes, 2007; Hoge, McGurk, Thomas, Cox, Engel, & Castro, 2008; Rona, Hooper, & Wessely, 2009). Female veterans who endorsed MST also report experiencing significantly lower quality of life, and lower subjective satisfaction with health compared to those with no sexual assault history (Suris et al., 2006).

### **PTSD and Healthcare Utilization**

The cost of providing health care to the members of the military is steadily increasing and, research has shown that veterans with PTSD have an increased use of healthcare services when compared with veterans without PTSD (Sadler, Booth, & Doebbeling, 2005; Hoge, Terhakopian, Messer, & Engel, 2007; Mengeling, Sadler, Torner, & Booth, 2011). A cross sectional study using existing data of all OEF/OIF veteran users of VHA outpatient care in Fiscal Year 2006 - 2007 found that compared with veterans without a mental health diagnosis, veterans with PTSD had higher numbers of general medical diagnoses and utilized more primary healthcare services (Frayne et al., 2010). Similarly, a comparison of utilization of non-mental healthcare services of OEF/OIF veterans who were new users of Veteran Administration Healthcare services from October 7, 2001 to March 31, 2007 indicated that members with PTSD had higher utilization of services. The sample consisted of veterans without mental disorders, veterans with PTSD, and veterans with mental disorders other than PTSD. Veterans with PTSD had the greatest utilization of non-mental health, outpatient, emergency, and inpatient medical services. Total outpatient utilization was 91% higher in veterans with PTSD compared to those with no mental health diagnoses. Overall, veterans with PTSD had higher utilization of

healthcare in all categories (71%–170%) when compared to veterans without mental health disorders (Cohen, Gima, Bertenthal, Kim, Marmar, & Seal, 2009).

In light of such findings, researchers are trying to understand the added implication of Military Sexual Trauma on healthcare utilization (Zatzick, Marmar, Weiss, Browner, Metzler, Golding, Stewart, & Schellenger, 1997; Sadler, Booth, Mengeling, & Doebbeling, 2004; Suris Lind, Kashner, & Bormen, 2006; Suris & Lind, 2008; Zinzow, Grubaugh, Frueh, & Magruder, 2008; Suris et al., 2004). In 1992, congress mandated the Department of Veteran Affairs to provide healthcare to veterans who experienced sexual assault during active military duty (U.S. Code 1720D of Title 38). Consequently, the Veteran Administration (VA) provides access to sexual trauma treatment in every VA facility and standardized training materials for screening MST are available (Frayne & Turner, 2004). Cognitive Processing Therapy (CPT), originally developed to treat symptoms of PTSD in female civilian rape victims, was adapted for the treatment of PTSD symptoms in veterans including those with combat trauma as well as MST (Resick, Jordan, Girelli, Hutter, & Marhoefer-Dvorak, 1988; Resick, Nishith, Weaver, Astin, & Feuer, 2002; Monson, Schnurr, Resick, Friedman, Young-Xu, & Stevens, 2006).

Empirical research and best-practice guidelines have recognized CPT as one of the gold standard treatments for PTSD (Monson, 2006; Department of Veterans Affairs & Department of Defense, 2010). CPT includes education about PTSD, formal processing of the traumatic experience through detailed narratives of the event, and cognitive restructuring. Various randomized clinical trials have supported the efficacy of CPT in treating symptoms of PTSD, including specific symptoms often seen in those with sexual assault histories (Resick et al., 2002; Resick,

Galovski, Uhlmansiek, Scher, Clum, & Young-Xu, 2008; Chard, 2005; Monson, Schnurr, Resick, Friedman, Young-Xu, & Stevens, 2006). In these studies, both clinician and self-reported symptoms of PTSD, depression and anxiety were significantly reduced from pre to post treatment. For example, Monson et al. (2006) found that in the intention to treat sample, 40% ( $n=12$ ) of the participants in the CPT condition did not meet criteria for PTSD at post treatment compared to 3% ( $n=1$ ) in the waitlist control group. In addition, 50% ( $n=15$ ) of the participants in the CPT condition showed a reliable change in total Clinician Administered PTSD Scale (CAPS) score at post-treatment versus 10% ( $n=3$ ) of those in the waitlist condition. Moreover, at one-month follow-up, 30% of the participants in the CPT condition did not meet diagnostic criteria for PTSD compared to 3% in the waitlist control group (Monson et al., 2006). Results of a recent randomized clinical trial that examined the efficacy of CPT in reducing PTSD symptomatology indicated that, veterans who received CPT had a significant reduction of severity of self-reported PTSD symptoms, compared to Present Centered Therapy (Suris, Link-Malcolm, Chard, Ahn, & North, 2013).

Data for the present study came from Suris et al. (2013) study, which was conducted at a large Southwestern Veteran Administration Medical Center, to evaluate the efficacy of Cognitive Processing Therapy compared to Present Centered Therapy, an active comparison, for PTSD resulting from Military Sexual Trauma. The present study seeks to examine the effect of CPT, compared to PCT, on quality of life, health related quality of life and healthcare utilization in veterans who were diagnosed with PTSD as a result of Military Sexual Trauma.

## CHAPTER TWO

### Military Sexual Trauma

The Veteran Health Care Act of 1992 (Public law 102-585) defines Military Sexual Trauma as “psychological trauma, which in the judgment of a mental health professional employed by the department, resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment which occurred while the veteran was serving on active duty.” Furthermore, the act specifies the “sexual harassment [is a] repeated, unsolicited verbal or physical contact of a sexual nature which is threatening in character.” According to the Department of Defense annual report, among the alleged offenses of sexual assault, the prevalence rate of rape was 31%, aggravated sexual assault was 30%, and wrongful sexual contact was 25% (Department of Defense, 2011).

Both male and female members of the military can be exposed to nonconsensual sexual acts that they may find distressing. The Department of Defense (DoD) reported that in 2011, there were 3,192 reports of sexual assault in which 2,723 service members were victims<sup>2</sup> (Department of Defense, 2011). According to these reports, 88% of the victims were females; however, while the prevalence rate of MST is higher among female service members, the actual number of males and females who report experiencing MST is roughly equal (Suris & Lind, 2008).

---

<sup>2</sup> In some cases, there were multiple reports per service member. The remaining 670 victims were U.S. civilian and other people who were not on active duty with the U.S. Armed Forces

**Prevalence**

Due to various reasons discussed below, different prevalence rates of MST have been reported in the literature. Whether the definition includes attempted or completed rape, sexual harassment, sexual assault and the type of sexual contact (i.e., oral, vaginal or anal) significantly influences the prevalence rate. Prevalence rates also vary depending on method of assessment (e.g., general open-ended question vs. specific definitions) (Peterson, Voller, Polusny, & Murdoch, 2011). In addition, prevalence is affected by method of data collection (e.g., mail in surveys, face-to-face interviews, phone contact) and population (i.e., treatment seeking vs. research). A meta-analysis of the literature suggests a prevalence rate varying from 4% to 71% for face-to-face interviews, and 17% to 30% for mail or telephone surveys. The authors speculated that low prevalence rates might be partially due to the open-ended nature of the questions used to assess MST (Suris & Lind, 2008).

The prevalence rate is greater in treatment-seeking samples compared to samples taken for research purposes only. Out of the 270 female veterans who sought treatment at a Southwestern VA Medical Center, more than one third reported a history of MST (Suris et al., 2004). Similarly, in an earlier study of 327 treatment-seeking female veterans, 43% reported experiencing rape or attempted rape (Fontana & Rosenheck, 1998). Of 558 female veterans who served in Vietnam and subsequent eras of military service, and whom had either obtained treatment at a VA facility or sought service-connected disability, 54% reported unwanted sexual contact, and 30% reported one or more completed or attempted rape (Sadler, Booth, Cook, & Doebbeling,

2003). In addition, more than three fourths of the participants reported experiencing sexual harassment during their military service.

A review of the 2002 National MST Surveillance Data, collected from approximately 1.7 million VA patients, indicated that 22% of female and 1% of male patients reported having experienced MST (Kimerling, Gima, Smith, Street, & Frayne, 2007). A more recent meta-analysis found prevalence rates between 9.5% and 33% in females and between 1% and 12% in male veterans (Turchik & Willson, 2010). While the annual report of military sexual assault incidents indicates an increase in MST reporting, this increase in the reported rates is not necessarily a reflection of increased incidence; rather, it may suggest other factors such as improved reporting practices (Department of Defense, 2011). Policy changes by the DoD during the past decade may also have played a key role in the growing reporting rates. To encourage reporting of any unwanted sexual assault or sexual harassment, the DoD implemented a two-tiered system of restricted and unrestricted reporting. Restricted reporting allows the victim to get medical assistance and counseling, while remaining anonymous. However, the victim can also file an unrestricted report and pursue the perpetrator in the military court (Turchik & Wilson, 2010).

### **Risk Factors**

Increased risk for MST has also been associated with entering the military at a younger age, previous sexual trauma, and being of enlisted rank (Sadler, Booth, Cook, & Doebbeling, 2003). In addition, females who reported rape during active duty were also less likely to have completed college than those who did not report rape (Sadler, Booth, Cook, & Doebbeling, 2003; Kimerling, Smith, Street, & Frayne, 2007). A cross sectional analysis of VHA's Administrative

Data indicated that female veterans who screened positive for MST were more likely to be Caucasian (49.1%) than African American (15.9%) and to have never been married (Kimerling, Gima, Smith, Street, & Frayne, 2007). The authors also reported that male veterans who screened positive for MST were younger and more likely to be Caucasian and single. Furthermore, according to the DoD annual report, in 2011, 51% of sexual assault victims were between the ages of 20-24 (Department of Defense, 2011).

Although it has not been adequately investigated in the military population, one study found that among female veterans, lifetime history of ‘trading sex’<sup>3</sup> or exchanging sexual favors for money, drugs, shelter, food, or other necessities, to be another risk factor for MST (Strauss et al., 2011). Out of the 200 female veterans who participated in the cross sectional study, 67% screened positive for MST and 19.7 % reported a history of ‘trading sex.’ Those who reported a lifetime history of ‘trading sex’ has a higher rate of MST (87.2%) than those who did not (62.9%).

### **Gender Differences**

Over the last few decades, the number of female veterans who served in the armed forces has increased significantly. Since the United States established an all-volunteer force, the number of females among the enlisted ranks has increased from 2% to 14% (Department of Defense, 2010). In 2011, the DoD estimated that female veterans make up approximately 15% of the entire veteran population. Moreover, in 2008, 11% of the forces that served in Iraq and Afghani-

---

<sup>3</sup> To assess for a history of trading sex, participants were asked the following two questions, “In your lifetime, have you ever had unprotected sex in exchange for money, food, a place to stay, or other things, even once?” and “In your lifetime, have you ever had unprotected sex in exchange for drugs (any kind), even once?”

stan were female (Department of Defense, 2011). Consequently, due to the nature of missions in recent years, female veterans are increasingly exposed to warzones, yet female veterans identify Military Sexual Trauma as one of the most distressing trauma they have experienced (Yaeger, Himmelfarb, Cammack, & Mintz, 2006).

Female veterans have historically been the focus of MST research due in part to the misconception sexual trauma only happens to women (Hoyt, Rielage & Williams, 2011). As a result, research on the impact of rape or sexual assault on men has stagnated (Stermac, Sheridan, Davidson, & Dunn, 1996; Rentoul & Appleboom, 1997). However, it has since been widely accepted that sexual trauma is experienced by both genders. A review of The VHA Administrative Data from 2002 through 2008 that included 213,803 Iraq and Afghanistan veterans showed a 31% MST prevalence rate in women and 1% in men (Miguen, Cohen, Ren, Bosch, Kimerling, & Seal, 2012). Prevalence rates in male veterans tend to vary across studies ranging from 0.02% to 12% with an average 1.1% lifetime rate (Hoyt, Rielage & Williams, 2012).

While the rate of victimization is comparable for both genders, one prior study has shown significant gender differences in severity of symptoms associated with sexual assault and manifestation of other comorbid conditions (Haskell, Gordon, Mattocks, Duggal, Erdos, Justice, & Brandt, 2010). In regard to gender differences in rates of depression, PTSD, pain, obesity, and Military Sexual Trauma among veterans, the study found that women were more likely to screen positive for depression compared to men. The study also found that male veterans were more likely to screen positive for PTSD compared to female veterans (Haskell et al., 2010). Chronicity of psychological symptoms tends to last longer and is more resistant to treatment in men who

report a history MST than in women (Fraser, 2011). An examination of PTSD symptom severity and symptom persistence in 175 treatment seeking male and female veterans with a history of PTSD due to MST indicated that men reported more chronic symptoms overall. More specifically, men exhibited chronic sexual problems such as low sex drive, sexual over activity, dissatisfaction with sex life, confusion about sexual feelings, and unwanted sexual feelings (O'Brien, Gaher, Pope, & Smiley, 2008).

In addition, male veterans who experienced MST were more likely than women to be diagnosed with PTSD and other anxiety disorders, bipolar disorder, personality disorders, and psychosis (Kimerling et al., 2007). Gender differences in healthcare needs, especially the prevalence of positive screenings for depression, PTSD, MST, obesity, and chronic pain, were examined among female and male OEF/OIF veterans who were receiving care within the VA Connecticut Healthcare System. The study found female veterans were more likely to screen positive for MST and Depression, but less likely to screen positive for PTSD, whereas, males were more likely to screen positive for PTSD and obesity (Haskell, Gordon, Mattocks, Duggal, Erdos, Justice, & Brandt, 2010; Yaeger, Himmelfarb, Cammack, & Mintz, 2006). However, these gender differences are not unique to veterans. Among civilian male and female victims of sexual assault, men with sexual assault histories reported more sexual dysfunction compared to women (Elliott, Mok, & Briere, 2004).

Other gender differences were found in the way men and women veterans cope with sexual assault, and their perceived sense of self-control (I.e., the belief that they should be able to defend themselves) (Rentoul & Appleboom, 1997). In accordance with common myths about

masculinity, men veterans tend to believe that they should be able to defend themselves (Rogers, 1995). Therefore, sexual assault victimization may lead men to feel shame, guilt, and humiliation beyond what a female victim may experience (Rentoul et al., 1997). This feeling of helplessness and self-perception of weakness may make it difficult for these men to acknowledge and report the incident (McMullen, 1990). Consequently, male veterans with a history of MST are more likely to seek help for other psychiatric or medical conditions instead (Kimerling, Gima, Smith, Street, & Frayne, 2007; Maguen, Cohen, Bosch, Kimerling, & Seal, 2012).

### **Comparison of Military Sexual Trauma and Civilian Sexual Trauma**

Unfortunately, sexual violence occurs in a wide variety of contexts (e.g., military setting or civilian setting). However, the literature suggests the rate of sexual assault is significantly higher for veterans than civilians (Sadler et al., 2004; Suris et al., 2004; Campbell & Raja, 2005; Schultz, Bell, Naugle, & Polusny, 2006). For instance, Sadler, Booth, Cook, and Doebbeling (2003) found one in six civilian females experienced sexual assault compared to one in three female veterans. More recently, a comparison of sexual victimization reports from both veterans and civilian women demonstrated significantly higher rates of rape for veterans (38.3%) than (16.5%) in the civilian population (Schultz, Bell, Naugle, & Polusny, 2006).

Various studies have reported that, MST is not only more frequent, but also more traumatizing than Civilian Sexual Assault (CSA). A comparison of the rates of PTSD in veterans with MST and CSA histories found that veterans with MST were more traumatized, as indicated by psychiatric sequelae (Suris et al., 2004). Among women, the risk of developing PTSD was higher if the women were sexually assaulted while on active duty compared to those with positive

history of any type of sexual assault (Suris et al., 2004). The rate of PTSD among female veterans was found to be nine times higher for those who had a history of sexual assault while in the military than other veterans in the sample. Among women with a history of physical assault and rape, lifetime and current PTSD prevalence rates were 38.5% and 17.8%, respectively (Resnick, Kilpatrick, Dansky, Saunders, & Benjamin, 1993). The authors also found among those women who had a history of civilian rape, about 32% had lifetime PTSD and approximately 12% had current PTSD.

Military Sexual Trauma differs from Civilian Sexual Assault in a number of ways. In many cases, unlike a civilian, a military member may be required to continue to work under or alongside the perpetrator, even after the incident is reported. In addition to embarrassment and fear of retaliation, veterans hide their emotions for fear of disrupting unit cohesion (Gruber, 1998; Street & Stafford, 2004). Consequently, this military culture of promoting unit cohesion and camaraderie, either directly or indirectly, may discourage victims from reporting sexual assault. Military personnel may fear that if they report sexual victimization, the report will be ignored, the perpetrator will retaliate, or the report will be held against them (Sadler, Booth, Cook, & Doebbeling, 2003). In addition, veterans may fear that if they report the incident, they may be accused of fraternization or underage drinking (Maguen et al., 2012). Furthermore, because hyper-masculinity is commonplace within the military culture, men who report incidents of sexual assault fear ridicule from other unit members, possibly hindering a victim's inclination to report the incident while consequently exacerbating the psychological trauma the veteran is already experiencing (Kakhnovets & Holohan, 2007).

Medical and psychosocial complications of sexual trauma also appear to be less severe in Civilian Sexual Assault victims compared to those having experienced MST. Compared to victims of Civilian Sexual Assault, women with MST demonstrated higher rates of PTSD, depression, and drug and alcohol abuse (Suris et al., 2006). Among female veterans who endorsed military sexual assault, the screening prevalence for symptoms of current alcohol abuse was found to be 14%. This is significantly higher than screening prevalence for alcohol abuse in veterans with Civilian Sexual Assault (6.0%) and among those no sexual assault history (5.5%), (Suris et al., 2006). In terms of physical functioning and quality of life in women veterans with CSA, MST, and no sexual assault histories. The study reported that women with MST fared worse than did women with CSA, reporting other negative consequences in addition to the impacts of CSA (Suris & Lind, 2008). Furthermore, MST has also been associated with poorer physical health and lower satisfaction with one's health when compared to Civilian Sexual Assault (Suris, et al., 2006).

### **Psychological, Psychosocial, and Medical Sequelae**

Veterans who report experiencing MST also endorse associated psychosocial difficulties including poor interpersonal relationships, and dissatisfaction with both work and overall quality of life (Suris & Smith, 2011). Health behaviors and psychological symptoms were examined in 232 treatment seeking female veterans, the majority of whom had experienced at least one traumatic sexual event either in military or civilian life. Results revealed that women who reported experiencing MST were more likely to engage in problematic health behaviors, such as binge eating and infrequent physical activity compared to those who did not. Furthermore, women

with a history of MST were more likely than those without to self-identify as disabled. Women with MST were also rated by the board of VA benefits as having more severe symptoms and functional impairment associated with a physical or emotional injury that occurred during military service compared to those with no history of MST (Rowe, Gradus, Pineles, Batten, & Davison, 2009).

Women who were assaulted sexually or physically during military service demonstrate poorer health-related quality of life as compared to non-assaulted women veterans. A cross sectional telephone survey of 558 women veterans found that women who were raped and/or physically assaulted were more likely to report chronic health problems, prescription medication use for emotional problems, and poorer academic and economic achievements (Sadler, Booth, Nielson, & Doebbeling, 2000). Veterans who endorsed MST report PTSD symptoms and additional symptoms such as difficulties with interpersonal relationships, emotion regulation, dissociation, somatization, and self-perception at a higher rate than those who did not endorse histories of Military Sexual Trauma (Luterek, Bittinger, & Simpson, 2011).

Among treatment seeking female veterans who reported experiencing MST, the prevalence rate for symptoms of current depression was significantly higher (52.5%) than those with CSA (37.5%), and no sexual assault histories (34.4%) (Suris et al., 2006). In a similar study by Himmelfarb, Yaeger, and Mintz, (2006), MST was associated with increased psychiatric distress, poorer health outcomes, increased healthcare services use, and increased healthcare costs. The authors found that treatment-seeking female veterans with histories of MST reported more psychological distress compared to those who did not report such histories.

Although MST is commonly linked to various mental health problems, the literature also reveals a strong relationship between MST and physical health problems as well as the severity of those conditions (Hyun, Pavao, & Kimerling, 2009). MST has been associated with physical symptoms, including pelvic pain, headaches, chronic fatigue, gastrointestinal difficulties, and menstrual problems (Frayne, Skinner, Tripp, Hankin, Kriessin, & Miller, 1999; Suris & Lind, 2008). In women, MST has been strongly associated with starving behavior, and hypothyroidism (Rowe, Gradus, Pineles, Batten, & Davison, 2009). Service-related disability is also more likely in women with MST, whereas, AIDS is more common in men who reported MST (Kimerling, Gima, Smith, Street, & Frayne, 2007; Rowe et al., 2009).

Military Sexual Trauma has been found to be a strong predictor of psychological distress that manifests in various and complex ways (Suris et al., 2004). Retrospective data analysis using administrative data from the Department of Veterans Affairs revealed that veterans with PTSD due to MST had a greater number of co-morbid mental health diagnoses than those without MST (Maguen et al., 2012). Furthermore, the investigation showed that women with PTSD and MST were more likely to receive a diagnosis of comorbid depression, anxiety, and eating disorder diagnoses; whereas men were more likely to receive a comorbid substance use disorder diagnosis.

Although other psychological disorders, such as anxiety, panic disorder, and depression are common in veterans with MST, PTSD is the most frequent diagnosis associated with MST (Suris & Lind, 2008). The risk of PTSD is higher in those who report experiencing MST, compared to those with combat related trauma (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995).

### Posttraumatic Stress Disorder

Historically, “shell shock,” “war neurosis” and “battle fatigue” were among the names used to describe what it is known today as PTSD (Moor & Penk, 2011). PTSD is a psychiatric disorder characterized by the development of a specific set of symptoms following exposure to a traumatic stressor. Hours to months following the stressor, individuals experience a variety of symptoms, and if the symptoms persist for at least one month, a diagnosis of PTSD is given if the patient meets the following criteria according to the DSM–IV–TR (2000) page 596.

- A. The person has been exposed to a traumatic event in which both of the following were present:
  - i. The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
  - ii. The person’s response involved intense fear, helplessness, or horror.
- B. The traumatic event is persistently re-experienced in one (or more) of the following ways:
  - i. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions
  - ii. Recurrent distressing dreams of the event
  - iii. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes)
  - iv. Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
  - v. Physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
- C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:
  - i. efforts to avoid thoughts, feelings, or conversations associated with the trauma
  - ii. efforts to avoid activities, places, or people that arouse recollections of the trauma
  - iii. inability to recall an important aspect of the trauma
  - iv. markedly diminished interest or participation in significant activities
  - v. feeling of detachment or estrangement from others

- vi. restricted range of affect (e.g., unable to have loving feelings)
  - vii. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)
- D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:
- i. difficulty falling or staying asleep
  - ii. irritability or outbursts of anger
  - iii. difficulty concentrating
  - iv. hyper vigilance
  - v. exaggerated startle response
- E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.
- F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning

In other words, the essential characteristic symptoms resulting from exposure to the extreme trauma are persistent re-experiencing of the traumatic event, avoidance of stimuli associated with the trauma, numbing of general responsiveness, and symptoms of increased arousal (DSM – IV – TR, 2000).

### **The Prevalence of PTSD in Veterans with MST**

As previously stated, PTSD is more prevalent in people with sexual assault histories than any other type of trauma (Himmelfarb, Yaegar & Mintz, 2006; Allard, Nunnink, Gregory, Kiest, & Platt, 2011; Kang, Dalager, Mahan, & Ishii, 2005; Maguen et al., 2012; Suris & Lind, 2008; Luterek, Bittinger & Simpson, 2011). Military Sexual Trauma appears to be a significant source of traumatic stress among both men and women seeking VA disability benefits for PTSD regardless of whether it is a result of rape or other type of sexual assault (Resnick, et al., 1993). Among veterans who sought disability compensation for PTSD, 4.2% of men and 71.0% of women reported sexual assault during their military service. These rates are five to nine times higher than those reported in the male general population and three to ten times higher than re-

ported in the female population (Murdoch, Polusny, Hodges, & O'Brien, 2004; Yeager et al., 2006). In a study analyzing PTSD in female veterans with military and civilian sexual trauma, Himmelfarb et al., (2006), found that 60% of participants with MST had PTSD compared to 47% of those with pre-military and 55% of those with post-military assault.

A study that examined the impact of sexual trauma on the risk of post-war PTSD found that MST was largely associated with PTSD, even after controlling for covariates such as combat exposure (Kang et al., 2005). Similarly, female veterans who endorsed military sexual assault had a nine times increased risk of developing PTSD compared to those with no sexual assault histories (Suris et al., 2004). In a more recent study, Yeager et al. (2006) compared the rates of PTSD in female veterans who endorsed MST with rates of PTSD in female veterans with all other types of trauma. They found that both MST and other trauma significantly predicted PTSD; however, the relationship between MST and PTSD was significantly higher than the relationship between PTSD and other traumas.

### **Quality of Life**

Numerous studies have suggested that PTSD is linked with significantly increased odds of diminished functioning and dissatisfaction in most domains of life (Zatzick et al., 1997; Pietrzak, Goldstein, Malley, Johnson, & Southwick, 2009). In the previously mentioned study, using a health-related quality of life questionnaire, Suris et al. (2006) measured the impact of MST on health and overall quality of life on female veterans. The sample consisted of females with histories of no sexual assault, Military Sexual Assault, Civilian Sexual Assault, and childhood sexual assault as well as any sexual assault that did not fit in one of the aforementioned cat-

egories. Compared to the groups with civilian sexual assault, childhood sexual assault, and no sexual assault, the MST group reported significantly lower satisfaction in areas such as health, family relations, and daily activities. In addition, those with MST had impaired social functioning compared to those with Civilian Sexual Assault histories.

A study that examined the impact of PTSD on quality of life in female Vietnam veterans demonstrated a link between PTSD and functional impairments including time spent in bed, role functioning (i. e., working versus not working), subjective well-being, self-reported physical health status, and perpetration of violent interpersonal acts. The result was statistically significant even after adjusting for demographic differences and comorbid psychiatric and medical disorders (Zatzick et al., 1997). An examination of subjective quality of life in individuals with PTSD as compared to controls including medical student and patients diagnosed with schizophrenia, depression, or alcoholism revealed that individuals diagnosed with PTSD were significantly more dissatisfied in almost all domains of their life (D'Ardenne, Capuzzo, Fakhoury, Jankovic-Gavrilovic, & Priebe, 2005). More specifically, participants with PTSD fared worse in almost all areas of their lives compared to those with schizophrenia and medical students. They also scored lower on a quality of life measurement when compared with depressed females in areas such as, social relations, leisure activities, and financial situation.

### **Healthcare Utilization**

Post-Traumatic Stress Disorder and MST are often associated with poor physical and mental health functioning. Consequently, increased healthcare consumption is another factor that has been a focus of prior literature (Zatzick et al, 1997; Suris et al., 2004; Sadler et al., 2004;

Suris et al., 2006; Suris et al., 2008; Zinzow et al., 2008). A cross sectional analysis of male and female OEF/OIF veterans who utilize primary care services at the VHA indicated that male and female veterans with PTSD attend a greater number of primary care visits compared to those with no mental health condition (Frayne et al., 2010). Other studies have found that diagnosis of PTSD due to sexual assault can increase the utilization of healthcare (Zinzow et al., 2008; Suris et al., 2004).

An examination of the relationships between sexual assault, psychiatric sequelae, and mental health service use among male and female Vietnam veterans indicated that both male and female sexual assault survivors were more than twice likely to use emergency room services as with those veterans with no history of sexual assault (Zinzow et al., 2008). Moreover, female SA survivors were twice likely to use mental health services and more likely to use emergency room services compared to those with no sexual assault histories. Suris et al. (2004) also found considerable association between types of sexual trauma (i.e., Civilian Sexual Assault, childhood sexual assault, and military sexual assault), and increased psychiatric distress, poorer health outcomes, increased healthcare services usage, and increased healthcare costs. Although the study did not find any additional increase in cost of care associated with a history of military sexual assault, the authors asserted that cost of service and health care utilization are significantly higher in those veterans with sexual assault histories (Suris et al., 2004).

### **Treatments for MST related PTSD**

Due to the increasing MST rates, congress mandated the VA provide treatment for sexual trauma that occurs while victims are on active duty (Veterans Health Care Act of 1992, Public

Law 102-585). During the early 1990s, the VA began implementing Cognitive Processing Therapy (CPT) and Prolonged Exposure Therapy (PE) nationwide (Suris, Davis, Kashner, Gillaspay & Petty, 1998). These evidence based cognitive treatments are now commonly used in the treatment of PTSD due to MST (Foa, Hembree, & Rothbaum, 2007; Ehlers & Clark, 2000). The goal of treatment for both CPT and PE is to change one's persisting maladaptive cognitive, behavioral and emotional reactions to the trauma through either detailed narratives of the trauma, or gradual exposure (in the case of PE) thereby reducing PTSD symptoms. A randomized clinical trial that compared CPT and PE to a control group has shown that both interventions were highly efficacious in reducing symptoms of PTSD and depression (Resick et al., 2002). A long-term follow-up of this investigation found that treatment gains for patients who received both CPT and PE were maintained for over five years following completion of treatment (Resick, Williams, Monson, Gradus, & Suvak, 2012).

### **Cognitive Processing Therapy (CPT)**

Cognitive Processing Therapy is a cognitive behavioral treatment modality originally developed by Patricia Resick and implicated as efficacious for the treatment of PTSD due to civilian sexual assault. The educational, narrative, and cognitive components of CPT target PTSD symptoms commonly seen in sexual assault victims through challenging cognitive distortions that impede effective coping (Zappert & Westrup, 2008).

A study that examined the efficacy of CPT in nineteen sexual assault survivors with significant PTSD symptoms found that compared to controls, participants in the CPT condition demonstrated significant reductions in PTSD symptoms from pre- to post-treatment and main-

tained improvement for 6 months (Resick and Schnicke., 1992). Similarly, Monson et al. (2006) found that compared to controls, 40% of the participants who received CPT did not meet PTSD criteria and 50% showed clinically significant reduction in PTSD symptoms, at post-treatment. Additionally, in the larger study, Suris, Link-Malcolm, Chard, and North (2013) found that compared to those who received Present Centered Therapy (PCT), veterans who received CPT had a significantly greater reduction in self-reported PTSD symptom severity (Suris et al., 2013).

### **Present-Centered Therapy (PCT)**

In the previously referenced larger study, PCT was used as an active comparison treatment. PCT is a non-trauma focused manualized therapy for the treatment of PTSD. Its primary mechanisms of change are altering maladaptive relational patterns or behaviors, psycho education and the use of problem solving strategies to focus on current issues (Classen et al., 2011). PCT makes connections between PTSD and current problems as well as emphasizing problem solving and improving relationships. A study by Classen et al. (2011) examined the efficacy of Trauma-Focused Group Psychotherapy and Present-Focused Group Psychotherapy, with a waitlist control in 166 childhood sexual assault victims who were at risk for PTSD. Although the investigators did not find any significant differences between the two treatments in terms of reducing PTSD risk, Present Focused Group Therapy was observed to be more effective in reducing overall PTSD symptoms than the waitlist controls (Classen et al., 2011).

Present Centered Therapy utilizes a daily journaling as opposed to written trauma accounts. In the present study, the number of sessions of PCT was extended from 10 to 12 to match the time/attention components of CPT. PCT has been successfully used as a comparison

condition in randomized controlled trials of Cognitive Behavioral Therapies (Schnurr et al., 2007; McDonagh et al., 2005).

In summary, extensive research has emphasized the link between MST and PTSD as well as other psychological and psychosocial sequelae such as depression, alcohol abuse, and eating disorders. Strong relationships have also been found between MST and physical health problems as well as the severity of these conditions (Hyun, Pavao, & Kimerling, 2009). Consequently, individuals diagnosed with PTSD due to MST reported diminished sense of wellbeing and low satisfaction with quality of life, including impaired interpersonal relationship, low satisfaction with work, and perception of impaired health functioning (Suris et al., 2004). Encouragingly, both CPT and PCT have been shown to reduce these negative symptoms, and, it is important to continue exploring whether one of these treatments is more efficacious.

### **Objectives of the Current Study**

The present study is part of a larger randomized, controlled clinical trial that evaluated the efficacy of individual CPT in the treatment of post-traumatic and depressive symptoms related to MST. The parent study hypothesized, when compared to PCT, individuals who received CPT would report less severe self- and clinician-reported post-traumatic symptoms over time, as well as fewer depressive symptoms.

The purpose of the present study is to evaluate the impact of CPT on quality of life, use of health care services and cost of care as compared to PCT in individuals with PTSD due to MST. The hypotheses of the current study are:

- I. As measured by the Short Form (SF-36), participants treated with CPT will report better health related quality of life as compared to those treated with PCT at post-treatment, two-month, four-month, and six-month follow-ups.
- II. As measured by the Quality of Life Inventory (QOLI), participants treated with CPT will report better quality of life as compared to those treated with PCT at post-treatment, two-month, four-month, and six-month follow-ups.
- III. As measured by Health Care utilization Questionnaire (HCU), participants treated with CPT will report lower utilization of healthcare as compared to those who were treated with PCT at two-month, four-month, and six-month follow-ups.

## **CHAPTER THREE**

### **METHOD**

#### **Study Design**

The larger study was a randomized controlled clinical trial conducted at a Southwestern VA Medical Center. The study was open to both male and female participants. Participants received 12 therapy sessions, biweekly, over a six-week period. Data were acquired using face-to-face interviews and written questionnaires at baseline, treatment completion, and two-month, four-month, and six-month follow-ups.

#### **Participants**

One hundred and twenty nine veterans with a history of MST were randomized to receive either CPT or PCT. However, forty-three participants were excluded after determining one of the therapists was not delivering treatment according to the specified protocol. Consequently, data was analyzed for eighty-six (72 female and 14 male) veterans. Participants were reimbursed for their participation at baseline, post-treatment, and follow-up assessments sessions.

#### **Recruitment Procedure**

Participants were recruited through various methods, which included informational letters, posted advertisements, promotions of the study in therapy groups, staff meetings, and at Vet Centers. In addition, recruitment methods included identification by the Principal Investigator or Study Coordinator through ordinary clinical activities and referrals by other healthcare professionals. Patients who met study eligibility requirements (see inclusion and exclusion criteria be-

low) were contacted by one of the Study Coordinators and invited to participate. Informed consent was obtained prior to participant enrollment. The parent study was conducted in compliance with the Institutional Review Board of the VA North Texas Health Care System, Dallas VA Medical Center.

### **Criteria for Inclusion of Participants**

1. Be a veteran or active duty service member, from any era, with a current diagnosis of PTSD due to MST
2. Have experienced MST no less than 3 months prior to entering the trial
3. Identify that MST is the trauma that is causing the most distress currently (if they have other sexual traumas)
4. Have at least one clear memory of the trauma (sufficient to write trauma account)
5. Consent to be randomized into treatment
6. Did not receive other psychotherapy for PTSD during the 6-weeks of active treatment
7. Be on a stable regimen of antidepressants/psychotropic medication for a minimum of six weeks prior to entering the trial

### **Criteria for Exclusion of Participants**

1. Prior CPT or PCT treatment
2. Current substance dependence
3. Prior substance dependence that has not been in remission for at least three months
4. Any current psychotic symptoms
5. Current mania or unstable Bipolar Disorder

6. Prominent current suicidal or homicidal ideation
7. Severe cognitive impairment or history of Organic Mental Disorder
8. Current involvement in a violent relationship

### **Baseline Assessments**

After working with referring clinicians to determine potential participants' suitability for the study, the Study Coordinator verified the initial eligibility of the participants, which was then confirmed by the PI. Consent and baseline sessions were then scheduled with one of the two Assessment Technicians (ATs). During the consent session, participants were informed about the purpose of the study, the protocol, the two treatment conditions, the use of random assignment, time commitment for both treatment and assessments, and the schedule of payments for assessment. The AT also disclosed information regarding video/audio taping of sessions, and reviewed the informed consent form.

Using the Life Events Checklist (LEC) and the Clinician Administered PTSD Scale (CAPS), the AT interviewed the participants about their trauma history. If the participant experienced more than one instance of MST, then he/she was asked to specify the instance of MST currently producing the most current distress. Once eligible participants were randomized into one of the two treatment groups (PCT or CPT), therapy sessions began no later than 30 days from the date of completion of the baseline assessment. In order to obtain an accurate assessment of current severity of PTSD symptoms, the CAPS was re-administered if the therapy phase of the study was initiated one month or more post baseline assessment.

### **Instruments and Measurements**

To ensure consistency with the DSM-IV-TR requirements of Criterion A for the diagnosis of PTSD in the larger study, MST was specified as “an attempted or completed sexual assault that occurred while the veteran was on active duty.” The list of assessments and corresponding assessment points that were used for the original study are as follows:

1. The Clinician Administered PTSD Scale (CAPS) is a semi-structured clinical interview instrument based on the DSM-IV that can be used to assess current, and lifetime PTSD symptoms (Blake et al., 1995). It provides frequency and severity scores for symptoms within the three PTSD symptom clusters (i.e., re-experiencing, avoidance, and hyper-arousal), as well as an overall severity score. Frequency (i.e., 0 = *never* to 4 = *daily or almost every day*) and intensity (0 = *none* to 4 = *extreme*) ratings for each item are summed to generate a severity score. Research has shown that the CAPS has excellent psychometric properties. The test-retest reliability ranges from .77 to .96 (Blake et al., 1995), and .72 to .90 (Weathers, Ruscio, & Keane, 1999) Internal consistency ranges from .85 to .87 (Blake et al., 1995) and .80 to .90 (Weathers et al., 1999).
2. PTSD Check List (PCL) is a 17-item self-report measurement of severity of the DSM-IV-TR posttraumatic symptoms as they relate to a specific traumatic event (Blanchard, Alexander, Buckley, & Forneris, 1996). Participants rate the extent to which they have experienced each symptom in the past month using a five-point scale ranging from 1-*Not at all* to 5-*Extremely*. Research has shown that the PCL has excellent psychometric properties. Internal consistency was .93 and test retest reliability was .96 (Blanchard et al., 1996)

3. Quick Inventory of Depressive Symptoms (QIDS) is a 16-item depression inventory used to rate the overall severity of the nine DSM-IV-TR symptoms of major depression within a 7 day period (Rush et al., 2003). Although test-retest reliability data is not available, the QIDS has demonstrated acceptable psychometric properties with an internal consistency of .86 (Rush et al., 2003).
4. Quality of Life Inventory (QOLI) is a 32-item measure that assesses areas of satisfaction and dissatisfaction in 16 life domains. These areas are rated by respondents in terms of importance to their overall happiness and satisfaction. Test-retest reliability has been found to be .73 ( $p < .001$ ) over a two-week interval and Internal consistency .79 (Frisch, Cornell, Villanueva, & Retslaff, 1992; Mchorney, Ware, & Raczek, 1993).
5. Short Form (SF-36) is a 36-item self-report questionnaire that measures the health related quality of life from eight dimensions including physical and emotional wellbeing. Internal consistency for each subscale ranges from .67 to .94 (physical-functioning index (.93), role—physical (.89), bodily pain (.82), general health (.77), Vitality (.85), social functioning (.80), role—emotional (.85), and mental health (.84) (Ware & Sherbourne, 1992); Mchorney et al., 1993).
6. Health Care Utilization (HCU): is a 38-item questionnaire that measures treatment participation in individual, group, family/couples psychotherapy as well as self-help groups, day treatment, hospitalization(s), residential programs, and outpatient medical visits (Schnurr et al., 2007). The psychometric properties of this measure have not been investigated.

**Statistical Analysis**

Using the SPSS software version 20, each hypothesis was tested using a repeated measures mixed factorial analysis of variance procedure in order to assess the effects CPT and PCT on health related quality of life, quality of life and healthcare utilization. For variables with significant main effect of treatment, pairwise comparisons between treatment conditions at each time point was conducted. For variables with significant main effect of time, both multivariate tests and pairwise comparison were conducted to determine time effects across treatment conditions. Data was summarized using means (M) and standard deviations (SD), and range, or numbers (n) and percentages, as appropriate. Statistical significance was determined using a type I error rate of 0.05.

## CHAPTER FOUR

### Results

#### Demographics

One hundred and twenty nine veterans with a history of MST were randomized to receive either CPT or PCT. However, due to data fidelity issue discussed previously, data was analyzed for eighty-six (72 female and 14 male) veterans. Demographic information for the two treatment groups is provided in Table 1. The overall mean age of the participants was 46.0 years ( $SD = 9.7$  years). With the mean age of 44.4 years ( $SD = 10.6$  years), participants in the CPT group were slightly younger compared to those in PCT group with a mean age 48.4 years ( $SD = 8.1$  years). The overall mean of education was 14.3 years ( $SD = 2.2$  years). The mean education was 14.4 years ( $SD = 2.1$  years) for participants in CPT and 14.1 years ( $SD = 2.3$  years) for participants in PCT. Eighty percent of the participants ( $n = 41$ ) in the CPT, and Eighty-nine percent ( $n = 31$ ) in the PCT were female. Ethnically, 43% ( $n = 22$ ) of the participants in the CPT group were Caucasian, 39% ( $n = 20$ ) were Black/African American, 8% ( $n = 4$ ) were Hispanic, and 10% ( $n = 5$ ) identified as other. In the PCT group, 43% ( $n = 150$ ) of the participants were Caucasian, 46% ( $n = 16$ ) were Black/African American, 2.9% ( $n = 1$ ) were Hispanic, and 8.6% ( $n = 3$ ) identified as other.

No significant differences ( $\alpha = .05$ ) between treatment groups with regard to age ( $p = .06$ ), education ( $p = .50$ ), gender ( $p = .32$ ), or ethnicity, ( $p = .68$ ), were found. Except for SF-36 Social Functioning subscale ( $p = .01$ ), an analysis of one-way ANOVA indicated no significant

baseline differences ( $\alpha > .05$ ) between treatment groups on any of the dependent variables measured. Additional information is provided in Table 2.

**Question:** *As measured by the SF-36, do participants treated with CPT report improved health-related quality of life compared to those treated with PCT? If so, at what time point does the difference occur?*

Results indicated that participants in the two treatments groups did not differ in terms of health related quality of life. See Table 6. A repeated measures mixed factorial analysis of variance (ANOVA) was conducted to evaluate the effects of CPT, compared to PCT, on mean T scores of SF-36 concept subscales across five time periods (i.e. baseline, post-treatment, two-month, four-month, and six-month follow-ups). The SF-36 Subscales are as follows; Physical Functioning, Role Limitation due to Physical Problems, Social Functioning, Bodily Pain, General Mental Health, Role Limitations due to Emotional Problems, Vitality, and General Health Perceptions.

No statistically significant interactions or main effect of treatment conditions was observed for Physical Functioning ( $p = .23$ ), Role Limitation due to Physical Problems ( $p = .36$ ), Bodily Pain ( $p = .54$ ), General Mental Health ( $p = .22$ ), Role Limitations due to Emotional Problems ( $p = .26$ ), Vitality ( $p = .75$ ), and General Health Perceptions ( $p = .23$ ). A statistically significant main effect of treatment conditions was observed for Social Functioning, [ $F(1, 71.40) = 4.26, p = .04$ ], see Table 9. Furthermore, statistically significant main effect of time was observed for the following variables; General Mental Health, [ $F(4, 117.22) = 3.30, p = .01$ ] Role Limitation Due to Emotional Problems, [ $F(4, 232.26) = 2.58, p = .038$ ], and Vitality, [ $F(4,$

259.38) = 8.70,  $p = .00$ ]. Additionally, non-significant tests for time by treatment interactions revealed that the participants in both treatment groups experienced similar improvements over-time in terms of all SF- 36 subscales ( $p > .07$ ). Additional details are provided in Table 3.

Follow-up pairwise comparisons of time yielded statistically significant differences between two-month and four-month follow-ups on the General Mental Health subscale, ( $p = .04$ ). More specifically, participants reported a lower mean at four-month follow-up compared to baseline, post treatment, two-month, and six-month follow-up, indicating a decline in quality of mental health. On the Role Limitation due to Emotional Problems subscale, statistically significant improvement was noted from baseline to post treatment ( $p = .04$ ). On the Vitality subscale, significant improvements were observed at four-month compared to baseline ( $p = .00$ ), at four month compared to post treatment ( $p = .01$ ), at four month compared to two month follow-up ( $p = .02$ ) and at six-month compared to four-month ( $p = .01$ ). More specifically, results indicate that means scores of vitality improved steadily across time before declining at six-month follow-up. Although we found significant between groups differences for Social Functioning, a follow up pairwise analysis did not indicate statistically significant differences between time points ( $p = 1.00$ ). See Table 10 Figures 1 through 8 for additional information.

**Question:** *As measured by the QOLI, do participants treated with CPT report improved quality of life as compared to participants treated with PCT? If so at what time point do the participants differ?*

No actual differences were observed between the two treatments in terms of quality of life. See Table 7. A repeated measures mixed factorial analysis of variance (ANOVA) was con-

ducted to evaluate the effects of CPT and PCT on QOLI mean raw scores across five time points. Neither a statistically significant main effect of treatment condition, [ $F(1, 81.90) = 0.06, p = .81$ ], nor interaction, [ $F(4, 61.89) = 0.20, p = .93$ ] was observed. However, a statistically significant main effect of time was found, [ $F(4, 61.89) = 2.90, p = .02$ ], see Table 11. Follow-up pairwise comparisons of time indicated a statistically significant increase in quality of life at six-month follow-up compared to baseline ( $p = .04$ ). Additional Information is presented in Table 4 and Figure 9.

**Question:** *as measured by HCU, do participants treated with CPT report lower utilization of healthcare services compared to those who were treated with PCT? If so at what time point do the two groups differ?*

There were no statistically significant differences in terms of health care utilization between the two treatment groups. See Table 8. A repeated measures mixed factorial analysis of variance (ANOVA) was conducted to evaluate the effects of CPT and PCT on Healthcare Utilization subscales (i.e., Number of psychotherapy visits, Number of hospitalization days, and Number of outpatient visits). At post treatment, data was collected using a different healthcare utilization questionnaire, therefore health care utilization data was analyzed across four time points, (i.e., baseline, two-month, four-month, and six-month follow-up). Neither a statistically significant main effect of treatment condition, [ $F(1, 72.01) = .29, p = .59$ ] nor interaction, [ $F(3, 57.15) = .13, p = .94$ ] was observed for the Number of psychotherapy visits. Similarly for the Number of hospitalization days and the Number of outpatient visits, no statistically significant main effect of treatment, [ $F(1, 79.69) = 1.15, p = .29$ ], [ $F(1, 76.73) = .08, p = .78$ ], respective-

ly, nor interaction, [ $F(3, 66.49) = .90, p = .45$ ], [ $F(3, 69.16) = .35, p = .79$ ] respectively, were observed. Additional information is provided in Figures 10 through 13.

However, statistically significant main effect of time on all three Health Care Utilization subscales; Number of psychotherapy visits, [ $F(3, 57.15) = 37.73, p = .00$ ], Number of hospitalization days, [ $F(3, 66.49) = 26.93, p = .00$ ], and Number of outpatient visits, [ $F(3, 69.16) = 18.69, p = .00$ ] were found suggesting a change in healthcare utilization over time. For additional information, please refer to Table 12. A follow-up pairwise analysis of time indicated that the Number of psychotherapy visits has decreased significantly at two-month follow-up compared to baseline ( $p = .00$ ) and remained at that lower level through four-month ( $p = .00$ ) and six-month follow-up ( $p = .00$ ). The Number of hospitalization days also decreased at two-month follow-up ( $p = .00$ ) compared to baseline and it also stayed at the decreased level at four-month ( $p = .00$ ), and six-month follow-up ( $p = .00$ ). Similarly, the Number of outpatient visits has significantly decreased at two-month follow-up ( $p = .00$ ) compared to baseline and remained at a lower level at four-month ( $p = .00$ ), and six-month follow-up ( $p = .00$ ). For additional information, please see Table 5 and Figures 10 through 13.

## CHAPTER FIVE

### DISCUSSION

Previous research has shown Cognitive Processing Therapy to be superior to other modalities in reducing PTSD and related symptoms (Resick & Schnicke, 1992; Monson et al., 2006, Suris et al., 2013). The aim of this study was to investigate the effect of CPT compared to PCT, on quality of life, health related quality of life, and healthcare utilization in veterans with PTSD due to MST. We hypothesized that compared to participants in the PCT group, participants in the CPT group would report improved health related quality of life, quality of life, and lower health care utilization. We also hypothesized that participants in the CPT group would continue to improve at post-treatment, two-month, four-month, and six-month follow-up on all outcome measures.

Overall no statistically significant interactions were observed on any of the outcome measures. However, the statistically significant effect of time indicated that participants in both the CPT and PCT groups showed improvement across time in terms of increased health related quality of life, quality of life, and decreased health care consumption. This finding is similar to the finding of the parent study, which found participants in both treatment conditions improved significantly in terms of PTSD symptoms, as measured by the CAPS (Suris et al., 2013).

The first objective of the current study was to examine the effect of CPT compared to PCT on health care related quality of life, as measured by SF-36 Subscale scores. Although not in the predicted direction, a statistically significant difference between treatment groups was ob-

served for the SF-36 Social Functioning Subscale. No additional statistically significant between-group differences were observed for health related quality of life. A pairwise comparison indicated a statistically significant effect of time for General Mental Health, Role Limitation due to Emotional Problems and Vitality subscales. Interestingly, on the General Mental Health subscale, there appears to be a trend in which participants reported a steady improvement at post treatment and two-month follow-up before reporting a statistically significant decline in quality of mental health at the four-month follow-up and improving again at six-month follow-up. In terms of SF-36 Role Limitation due to Emotional Problems, the trend indicates improvement in functional limitations at each follow-up, but a statistically significant reduction of functional limitations was noted at the two-month follow-up. Similarly, on the Vitality subscale, a trend indicated improvements at each time point, however, statistically significant improvements were observed at four-month compared to baseline, post-treatment, and two month follow-up. In addition, participants reported improved vitality at the six-month, as compared to four-month follow-up ( $p = .01$ ). Although no statistically significant treatment differences were found between the two groups, results indicate that both treatments are equally efficacious in improving health related quality of life. This is an important finding because perception of health related quality of life has wide-reaching implications in various aspects of life. How a Veteran thinks about their health could have a significant impact on whether, or how often they will seek healthcare. It could also affect employment status in several ways: whether the veteran seeks and maintains employment, as well as whether a veteran obtains and maintains a service-connected disability status.

The second objective of this study was to examine the effect of CPT compared to PCT on quality of life as measured by the Quality of Life Inventory. Previous literature suggests a strong link between PTSD and diminished dissatisfaction in most domains of life (Zatzick et al., 1997; Pietrzak, Goldstein, Malley, Johnson, & Southwick, 2009). Based on such findings, we hypothesized that participants would report improved quality of life after receiving CPT compared to PCT. Although we did not find a statistically significant effect of treatment, there appears to be a trend indicating that participants in the CPT groups fared slightly better. A pairwise comparison yielded a statistically significant effect of time at the six-month follow-up compared to baseline. Furthermore, this trend suggests a steady improvement in quality of life across all follow-up time points. Similar to the first objective, this finding indicates that both CPT and PCT have a positive impact on improving quality of life. Quality of life has a significant implication in various aspects of veterans' lives, such as employment, and disability status (Zatzick et al., 1997). Therefore, greater satisfaction with level of wellbeing could potentially lead to an increase in healthy behaviors and satisfaction in other life domains.

The final objective of this study was to examine the effect of CPT compared to PCT on health care consumption as measured by the Health Care Utilizations subscales. Research has shown that sexual assault survivors were more than twice as likely to use healthcare services compared to veterans with no history of sexual assault (Zinzow et al., 2008). Consequently, we hypothesized that participants treated with CPT would report decreased healthcare utilization compared to those treated with PCT. We did not find a statistically significant main effect of treatment condition on any of the subscales. Similar to the other variables, statistically signifi-

cant main effect of time was observed for all of the Health Care Utilization subscales. More specifically, a follow-up pairwise analysis of time indicated that participants reported a statistically significant decline in the number of psychotherapy visits at the two-month, four-month, and six-month follow-up time points compared to baseline. We also observed a statistically significant decrease on the number of hospitalization days at two-month follow-up compared to baseline. Although we observed a slight increase compared to two-month follow-up, the Number of hospitalization days continued to decrease at four-month, and six-month follow-up. Finally, on the Number of outpatient visits, participants reported a significant decline in outpatient visits over all across all the time points. Specifically, statistically significant decline in outpatient visits was observed at two-month follow-up and on all the subsequent follow-ups. In light of the ever increasing cost of health care, the finding that both CPT and PCT are efficacious in decreasing the frequency of healthcare visits, could positively impact VHA's healthcare cost of veterans with MST and PTSD. Although contrary to prior literature, the present study did not yield statistically significant differences between the two treatment groups on any of the outcome measures (except for Social Functioning), it does offer further support for the efficacy of both CPT and PCT in improving subjective wellbeing and health related quality of life. Furthermore, the present study extends the current literature by incorporating the use of quality of life and health related quality of life measures, which extends beyond symptomology, in assessing the effect of CPT and PCT on PTSD due to MST. The primary strength of the current study is the accurate representation of the VA population in terms of its wide range of ethnicities and age groups, and inclusion of both genders.

**Limitations**

One major limitation of this study is the small sample size. Although 129 veterans were enrolled in the study, due to the low treatment fidelity previously discussed, the sample size was reduced to 86 participants. This makes it difficult to accurately quantify the extent of change and increases the likelihood of type II error. In light of previous trials that found CPT to be superior in terms of improving PTSD symptomology, small sample size could be among the reasons why the current study failed to report significant findings. Another limitation of this study was the substantial amount of missing data in the form of both partially completed questionnaires as well as attrition at various follow-up time points. Missing data could result in decreased power and potentially affect the outcome of a study (Acuna & Rodriguez, 2003). Although our study included both male and female veterans, the numbers of each were disproportionate.

**Conclusion**

In summary, while none of our hypotheses were supported, the results suggest that both CPT and PCT are equally efficacious in improving subjective health related quality of life and wellbeing, as well as reducing healthcare consumption. We found a statistically significant main effect of treatment on SF-36 Subscale Social Functioning in which participants in PCT fared better in terms of social functioning. We also found statistically significant main effect of time for SF-36 Subscales (i.e., General Mental Health, Role Limitation due to Emotional Problems and Vitality), Quality of Life Inventory and all of the Health Care Utilization subscales.

Based on previous research, we know that Cognitive Behavioral Therapies are superior in treating PTSD symptoms than present centered therapy (Schnurr et al., 2007). Similarly, the

larger study by Suris et al. (2013) had found a significant reduction in self-reported PTSD symptoms in participants who were treated with CPT compared to those treated with PCT. Consequently, we presumed that decreased PTSD symptoms would result in improved health related quality of life and subjective wellbeing, as well as decreased health care consumption in participants treated with CPT. One reason we attribute to the lack of a significant main effect of treatment is the small sample size that could likely make any effect undetectable. Another reason could be that although CPT is superior at reducing PTSD symptomology, PCT, which focuses on problem solving strategies and altering maladaptive cognitions (Classen et al., 2011), could be equally effective in impacting quality of life and reducing healthcare consumption. Future studies should seek to assess the effects of CPT on quality of life and Health care usage, in a larger sample of veterans.

### References

- Allard, C. B., Nunnink, S., Gregory, A. M., Klest, B., & Platt, M. (2011). Military sexual trauma research: A proposed agenda. *Journal of Trauma & Dissociation*, 12(3), 324-345.
- American Psychiatric Association (Ed.). (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR®*. American Psychiatric Pub.
- Acuna, E., & Rodriguez, C. (2004). The treatment of missing values and its effect on classifier accuracy. In *Classification, Clustering, and Data Mining Applications* (pp. 639-647). Mayaguez, Puerto Rico: Springer Berlin Heidelberg.
- Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D., Charney, D. S., & Keane, T. M. (1995). The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress*, 8(1), 75-90.
- Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy*, 34(8), 669-673.
- Chard, K. M. (2005). An evaluation of cognitive processing therapy for the treatment of post-traumatic stress disorder related to childhood sexual abuse. *Journal of Consulting and Clinical Psychology*, 73(5), 965.
- Classen, C. C., Palesh, O. G., Cavanaugh, C. E., Koopman, C., Kaupp, J. W., Kraemer, H. C., ... & Spiegel, D. (2011). A comparison of trauma-focused and present-focused group therapy for survivors of childhood sexual abuse: A randomized controlled trial. *Psychological Trauma: Theory, Research, Practice, and Policy*, 3(1), 84.

- d'Ardenne, P., Capuzzo, N., Fakhoury, W. K., Jankovic-Gavrilovic, J., & Priebe, S. (2005). Subjective quality of life and posttraumatic stress disorder. *The Journal of Nervous and Mental Disease, 193*(1), 62-65.
- Department of Defense. (2010). Population representation in the military services: Fiscal year 2010 summary report. Retrieved from department of defense website:  
<http://prhome.defense.gov/rfm/MPP/ACCESSIONPOLICY/PopRep2010/summary/PopRep10summ.pdf>
- Department of Defense.(2011). Department of defense annual report on sexual harassment and violence at the military service academies academic program year 2010-2011 (6495.01). Retrieved from website: <http://www.sapr.mil/index.php/annual-reports>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy, 38*(4), 319-345.
- Elliot, D.M., Mok, D.s., & Briere, J. (2004). Adult sexual assault: Prevalence, symptomology, and sex differences in the general population. *Journal of Traumatic Stress, 17*(3), 203-211.
- Foa, E., Hembree, E., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences therapist guide*. New York, NY: Oxford University Press.
- Fontana, A., & Rosenheck, R. (1998). Focus on Women: Duty-related and sexual stress in the etiology of PTSD among women veterans who seek treatment. *Psychiatric Services, 49*(5), 658-662.
- Fraser, C. (2011). Family issues associated with military deployment, family violence, and military sexual trauma. *Nursing Clinics of North America, 46*(4), 445-455.

- Frayne, S. & Turner, C. (Eds.).(2004). Military sexual trauma. Department of veterans affairs employee education system (Independent study course). Washington, DC: U.S. Government Printing Office.
- Frayne, S. M., Chiu, V. Y., Iqbal, S., Berg, E. A., Laungani, K. J., & Pavao, J. (2011). Medical care needs of returning veterans with PTSD: their other burden. *Journal of General Internal Medicine*, 26(1), 33-39.
- Frayne, S. M., Skinner, K. M., Sullivan, L. M., Tripp, T. J., Hankin, C. S., Kressin, N. R., & Miller, D. R. (1999). Medical profile of women veterans administration outpatients who report a history of sexual assault occurring while in the military. *Journal of Women's Health & Gender-Based Medicine*, 8(6), 835-845.
- Friedman, M. J. (2011). *Treating PTSD in military personnel: A clinical handbook*. B. A. Moore, & W. E. Penk (Eds.). New York, NY: Guilford Press.
- Frisch, M. B., Cornell, J., Villanueva, M., & Retzlaff, P. J. (1992). Clinical validation of the Quality of Life Inventory. A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychological Assessment*, 4(1), 92.
- Haskell, S. G., Gordon, K. S., Mattocks, K., Duggal, M., Erdos, J., Justice, A., & Brandt, C. A. (2010). Gender differences in rates of depression, PTSD, pain, obesity, and military sexual trauma among Connecticut war veterans of Iraq and Afghanistan. *Journal of Women's Health*, 19(2), 267-271.
- Himmelfarb, N., Yaegar, D., & Mintz, J. (2006). Posttraumatic stress disorder in female veterans with military and civilian sexual trauma. *Journal of Traumatic Stress*, 19(6), 837-846.

- Hoge, C., Terhakopian, A., Castro, C., Messer, S., & Engel, C. (2007). Association of posttraumatic stress disorder with somatic symptoms, health care visits, and absenteeism among Iraq war veterans. *American Journal of Psychiatry*, *164*(1), 150-153.
- Hoyt, T., Rielage, J. K., & Williams, L. F. (2012). Military sexual trauma in men: exploring treatment principles. *Traumatology*, *18*(3), 29-40.
- Hoyt, T., Klosterman Rielage, J., & Williams, L. F. (2011). Military sexual trauma in men: A review of reported rates. *Journal of Trauma & Dissociation*, *12*(3), 244-260.
- Hyun, J., Pavao, J., & Kimerling, R. (2009). Military sexual trauma. *PTSD Research Quarterly*, *20*(2), 1-7.
- Kakhnovets, R., & Holohan, D. R. (2007). Addressing military sexual trauma: Initial steps in treating the male patient. *Federal Practitioner*, *24*(7), 16-29.
- Kang, H., Dalager, N., Mahan, C., & Ishii, E. (2005). The role of sexual assault on the risk of PTSD among Gulf War veterans. *Annals of Epidemiology*, *15*(3), 191-195.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, *52*(12), 1048.
- Kimerling, R., Gima, K., Smith, M. W., Street, A., & Frayne, S. (2007). The Veterans Health Administration and military sexual trauma. *Journal Information*, *97*(12).
- Luterek, J. A., Bittinger, J. N., & Simpson, T. L. (2011). Posttraumatic sequelae associated with military sexual trauma in female veterans enrolled in VA outpatient mental health clinics. *Journal of Trauma & Dissociation*, *12*(3), 261-274.

- Maguen, S., Cohen, B., Ren, L., Bosch, J., Kimerling, R. Seal, K. (2012). Gender differences in military sexual trauma and mental health diagnosis among Iraq and Afghanistan veterans with posttraumatic stress disorder. *Women's Health Issues, 22*(1), e61-e66.
- McDonagh, A., Friedman, M., McHugo, G., Ford, J., Sengupta, A., Mueser, K., ... & Descamps, M. (2005). Randomized trial of cognitive-behavioral therapy for chronic posttraumatic stress disorder in adult female survivors of childhood sexual abuse. *Journal of Consulting and Clinical Psychology, 73*(3), 515.
- McHorney, C. A., Ware Jr, J. E., & Raczek, A. E. (1993). The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Medical Care, 24*7-263.
- McMullen, R. (1990). *Male rape: Breaking the silence on the last taboo*. London: Heretic Books.
- Mengeling, M. A., Sadler, A. G., Torner, J., & Booth, B. M. (2011). Evolving comprehensive VA women's health care: patient characteristics, needs, and preferences. *Women's Health Issues, 21*(4), S120-S129.
- Monson, C. M., Schnurr, P. P., Resick, P. A., Friedman, M. J., Young-Xu, Y., & Stevens, S. P. (2006). Cognitive processing therapy for veterans with military-related posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 74*(5), 898.
- Murdoch, M., Polusny, M. A., Hodges, J., & O'Brien, N. (2004). Prevalence of in-service and post-service sexual assault among combat and noncombat veterans applying for Department of Veterans Affairs posttraumatic stress disorder disability benefits. *Military Medicine, 169*(5), 392-395.

- Murdoch, M., Pryor, J. B., Polusny, M. A., & Gackstetter, G. D. (2007). Functioning and psychiatric symptoms among military men and women exposed to sexual stressors. *Military Medicine, 172*(7), 718-725.
- Nishith, P., Resick, P. P., & Griffin, M. G. (2002). Pattern of change in prolonged exposure and cognitive-processing therapy for female rape victims with posttraumatic stress disorder. *Journal of Consult Clinical Psychology, 70*(4), 880-886.
- Norušis, M. J. (1992). *SPSS/PC+ professional statistics version 5.0*. SPSS, Inc..
- O'Brien, C., Gaher, R. M., Pope, C., & Smiley, P. (2008). Difficulty identifying feelings predicts the persistence of trauma symptoms in a sample of veterans who experienced military sexual trauma. *The Journal of Nervous and Mental Disease, 196*(3), 252-255.
- Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Johnson, D. C., & Southwick, S. M. (2009). Subsyndromal posttraumatic stress disorder is associated with health and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom. *Depression and Anxiety, 26*(8), 739-744.
- Rentoul, L., & Appleboom, N. (1997). Understanding the psychological impact of rape and serious sexual assault of men: a literature review. *Journal of Psychiatric and Mental Health Nursing, 4*(4), 267-274.
- Resick, P. A., & Schnicke, M. K. (1992). Cognitive processing therapy for sexual assault victims. *Journal of Consulting and Clinical Psychology, 60*(5), 748.
- Resick, P. A., Galovski, T. E., Uhlmansiek, M. O. B., Scher, C. D., Clum, G. A., & Young-Xu, Y. (2008). A randomized clinical trial to dismantle components of cognitive processing therapy for posttraumatic stress disorder in female victims of interpersonal violence. *Journal of Consulting and Clinical Psychology, 76*(2), 243.

- Resick, P. A., Jordan, C. G., Girelli, S. A., Hutter, C. K., & Marhoefer-Dvorak, S. (1988). A comparative outcome study of behavioral group therapy for sexual assault victims. *Behavior Therapy, 19*(3), 385-401.
- Resick, P. A., Nishith, P., Weaver, T. L., Astin, M. C., & Feuer, C. A. (2002). A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic posttraumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology, 70*(4), 867.
- Resnick, H., Kilpatrick, D., Dansky, B., Saunders, B., & Best, C. (1993). Prevalence of civilian trauma and PTSD in a representative sample of women. *Journal of Consult Clinical Psychology, 61*(6), 985-991.
- Rogers, P. (1995). Male rape: the impact of a legal definition on the clinical area. *Medicine, Science, and the Law, 35*(4), 303.
- Rowe, E. L., Gradus, J. L., Pineles, S. L., Batten, S. V., & Davison, E. H. (2009). Military sexual trauma in treatment-seeking women veterans. *Military Psychology, 21*(3), 387-395.
- Rush, A. J., Trivedi, M. H., Ibrahim, H. M., Carmody, T. J., Arnow, B., Klein, D. N., ... & Keller, M. B. (2003). The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): a psychometric evaluation in patients with chronic major depression. *Biological Psychiatry, 54*(5), 573-583.
- Sadler, A. G., Booth, B. M., & Doebbeling, B. N. (2005). Gang and multiple rapes during military service: health consequences and health care. *Journal of the American Medical Women's Association (1972), 60*(1), 33.

- Sadler, A. G., Booth, B. M., Cook, B. L., & Doebbeling, B. N. (2003). Factors associated with women's risk of rape in the military environment. *American Journal of Industrial Medicine, 43*(3), 262-273.
- Sadler, A. G., Booth, B. M., Mengeling, M. A., & Doebbeling, B. N. (2004). Life span and repeated violence against women during military service: Effects on health status and outpatient utilization. *Journal of Women's Health, 13*(7), 799-811.
- Sadler, A. G., Booth, B. M., Nielson, D., & Doebbeling, B. N. (2000). Health-related consequences of physical and sexual violence: women in the military. *Obstetrics & Gynecology, 96*(3), 473-480.
- Schnurr, P. P., Friedman, M. J., Engel, C. C., Foa, E. B., Shea, M. T., Chow, B. K., Resick, P. A., & Thurston, V. (2007). Cognitive behavioral therapy for posttraumatic stress disorder in women a randomized controlled trial. *Journal of American Medical Association, 297*(8), 820-830.
- Schultz, J. R., Bell, K. M., Naugle, A. E., & Polusny, M. A. (2006). Child sexual abuse and adulthood sexual assault among military veteran and civilian women. *Military Medicine, 171*(8), 723-728.
- Stermac, L., Sheridan, P. M., DAVIDSON, A., & Dunn, S. (1996). Sexual assault of adult males. *Journal of Interpersonal Violence, 11*(1), 52-64.
- Strauss, J. L., Marx, C. E., Weitlauf, J. C., Stechuchak, K. M., Straits-Tröster, K., Worjolah, A. W., Sherrod, C. B., Olsen, M. K., Butterfield, M. I., & Calhoun, P. S. (2011). Is military sexual trauma associated with trading sex among women veterans seeking outpatient mental health care? *Journal of Trauma & Dissociation, 12*(3), 290-304.

Street, A., & Stafford, J. (2004). Military sexual trauma: Issues in caring for veterans. *Iraq War Clinician Guide*, 66-69.

Suris, A., & Lind, L. (2008). Military sexual trauma: A review of prevalence and associated health consequences in veterans. *Trauma, Violence & Abuse*, 9(4), 250-269.

Suris, A., Lind, L., Kashner, T. M., & Borman, P. D. (2007). Mental Health, Quality of Life, and Health Functioning in Women Veterans Differential Outcomes Associated with Military and Civilian Sexual Assault. *Journal of Interpersonal Violence*, 22(2), 179-197.

Suris, A., Lind, L., Kashner, T. M., Borman, P. D., & Petty, F. (2004). Sexual assault in women veterans: an examination of PTSD risk, health care utilization, and cost of care. *Psychosomatic Medicine*, 66(5), 749-756.

Suris, A., Link-Malcolm, J., Chard, K., Ahn, C., & North, C. (2013). A randomized clinical trial of cognitive processing therapy for veterans with PTSD related to military sexual trauma. *Journal of Traumatic Stress*.

Suris, A., & Smith, J. (2011). Sexual assault in the military. In B. Moore & P. Walter (Eds.), *Treating PTSD in military personnel* (pp. 255-269). New York, NY: The Guilford Press.

Turchik, J. A., & Wilson, S. M. (2010). Sexual assault in the US military: A review of the literature and recommendations for the future. *Aggression and Violent Behavior*, 15(4), 267-277.

Weathers, F. W., Keane, T. M., & Davidson, J. R. (2001). Clinician-Administered PTSD Scale: A review of the first ten years of research. *Depression and Anxiety*, 13(3), 132-156.

- Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M. (1993, October). The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility. In *annual meeting of the international society for traumatic stress studies, San Antonio, TX* (Vol. 141, No. 7).
- Weathers, F. W., Ruscio, A. M., & Keane, T. M. (1999). Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. *Psychological Assessment, 11*(2), 124.
- Yaeger, D., Himmelfarb, N., Cammack, A., & Mintz, J. (2006). DSM-IV diagnosed posttraumatic stress disorder in women veterans with and without military sexual trauma. *Journal of General Internal Medicine, 21*(S3), S65-S69.
- Zappert, L. N., & Westrup, D. (2008). Cognitive processing therapy for posttraumatic stress disorder In a residential treatment setting. *Psychotherapy Theory, Research, Practice, Training, 45*(3), 361-376.
- Zatzick, D. F., Marmar, C. R., Weiss, D. S., Browner, W. S., Metzler, T. J., Golding, J. M., ... & Wells, K. B. (1997). Posttraumatic stress disorder and functioning and quality of life outcomes in a nationally representative sample of male Vietnam veterans. *American Journal of Psychiatry, 154*(12), 1690-1695.
- Zinzow, H. M., Grubaugh, A. L., Frueh, B. C., & Magruder, K. M. (2008). Sexual assault, mental health, and service use among male and female veterans seen in Veterans Affairs primary care clinics: a multi-site study. *Psychiatry Research, 159*(1), 226-23

## TABLES

Table 1  
Demographic Data

	Total ( <b>n = 86</b> )	CPT ( <b>n = 51</b> )	PCT ( <b>n = 35</b> )	Test, <i>p</i> -value
Age mean (SD )	46.0 (9.7)	44 (10.6)	48.4 (8.1)	F = 3.23, <i>p</i> = .06
Education mean (SD)	14.3 (2.2)	14.4 (2.1)	14.1 (2.3)	F = 0.05, <i>p</i> = .50
Gender, n (%)				$\chi^2 = 39.12, p = .32$
Female	72 (84.0)	41 (80.4)	31(88.6)	□
Male	14 (16)	10 (19.6)	4 (11.4)	
Ethnicity, n (%)				$\chi^2 = 135.40, p = .84$
White (non-Hispanic)	37 (43)	22 (43.1)	15 (42)	
Black/African-American	36 (41)	20 (39.2)	16 (45.7)	
Hispanic	5 (5.8)	4 (7.8)	1 (2.9)	
Other	8 (9.3)	5 (9.8)	3 (8.6)	

Table 2  
One way ANOVA: Baseline Assessments

	F	df	P
<b>SF-36 Subscales</b>			
physical Functioning	0.87	1/84	0.35
Role Limitation Due to Physical problems	1.48	1/84	0.23
Bodily Pain	0.00	1/84	0.98
General health	0.03	1/84	0.86
Vitality	1.48	1/84	0.23
Social Functioning	6.43	1/84	0.01
Role Limitation Due to Emotional problems	0.53	1/84	0.47
Mental Health	0.12	1/84	0.73
Quality of Life	1/84	0.01	0.94
<b>Health Care Utilization Subscales</b>			
Number of psychotherapy visits	1/84	0.16	0.69
Number of hospitalization days	1/84	1.94	0.17
Number of outpatient visits	1/84	0.34	0.56

Table 3

SF-36 Subscales Descriptive Statistics												
Variables	Total				CPT				PCT			
	n	M	SD	Range	n	M	SD	Range	n	M	SD	Range
<b>Physical Functioning</b>												
Baseline	86	53.14	30.48	0.00 - 100.00	51	55.69	29.88	0.00 - 100.00	35	49.43	31.38	5.00 - 100.00
Post-treatment	59	49.64	27.51	0.00 - 100.00	32	51.88	26.36	0.00 - 100.00	27	47.00	29.10	0.00 - 47.00
2 month follow-up	60	49.67	25.72	0.00 - 100.00	35	52.43	26.22	0.00 - 100.00	25	45.80	25.03	5.00 - 100.00
4 month follow-up	62	53.06	28.89	0.00 - 100.00	33	58.18	26.16	15.00 - 100.00	29	47.24	26.98	0.00 - 100.00
6 month follow-up	62	54.03	30.35	0.00 - 100.00	35	57.71	32.18	57.94 - 32.64	27	49.26	27.66	0.00 - 100.00
<b>Role Limitation due to Physical Problems</b>												
Baseline	86	28.20	38.31	0.00 - 100.00	51	32.35	40.09	0.00 - 100.00	35	22.14	35.24	00.00 - 100.00
Post-treatment	59	31.78	40.16	0.00 - 100.00	32	27.34	36.12	0.00 - 100.00	27	37.04	44.60	00.00 - 100.00
2 month follow-up	60	27.50	37.31	0.00 - 100.00	35	32.86	39.65	0.00 - 100.00	25	20.00	33.07	00.00 - 100.00
4 month follow-up	62	28.23	38.27	0.00 - 100.00	33	34.09	41.37	0.00 - 100.00	29	21.55	33.89	00.00 - 100.00
6 month follow-up	62	34.27	37.67	0.00 - 100.00	35	39.29	39.43	38.24 - 39.52	27	27.78	34.90	36.00 - 72.00
<b>Bodily Pain</b>												
Baseline	86	56.51	21.08	0.00 - 90.00	51	56.47	20.77	0.00 - 90.00	35	56.57	21.82	00.00 - 90.00
Post-treatment	59	55.76	24.01	0.00 - 90.00	32	54.38	23.13	0.00 - 90.00	27	57.41	25.36	00.00 - 90.00
2 month follow-up	60	56.83	22.44	0.00 - 90.00	35	54.00	23.29	0.00 - 90.00	25	60.80	21.00	10.00 - 90.00
4 month follow-up	62	57.74	19.62	0.00 - 90.00	33	55.15	18.22	20.00 - 90.00	29	60.69	21.03	00.00 - 100.00
6 month follow-up	62	58.06	22.96	0.00 - 90.00	35	57.43	25.13	57.35 - 25.50	27	58.89	20.25	20.00 - 90.00
<b>General Health Perceptions</b>												
Baseline	86	85.00	57.03	30.00 - 85.00	51	56.86	10.81	35.00 - 85.00	35	57.29	11.14	00.00 - 90.00
Post-treatment	59	56.36	11.45	30.00 - 90.00	32	56.25	12.05	35.00 - 90.00	27	56.48	11.08	30.00 - 75.00
2 month follow-up	60	58.08	11.09	35.00 - 90.00	35	57.57	12.09	35.00 - 90.00	25	58.80	9.71	45.00 - 80.00
4 month follow-up	62	60.40	11.50	30.00 - 90.00	33	61.06	11.16	40.00 - 90.00	29	59.66	12.02	30.00 - 85.00
6 month follow-up	62	58.15	9.11	40.00 - 80.00	35	59.14	9.59	59.56 - 9.40	27	56.85	8.45	40.00 - 75.00

Table 3 continued  
SF-36 Subscales Descriptive Statistics

Variables	Total				CPT				PCT			
	n	M	SD	Range	n	M	SD	Range	n	M	SD	Range
<b>Vitality</b>												
Baseline	86	52.44	11.68	15.00 - 100.00	51	51.18	10.98	15.00 - 80.00	35	54.29	12.55	30.00 - 85.00
Post-treatment	59	56.86	10.90	25.00 - 80.00	32	58.59	11.16	40.00 - 80.00	27	54.81	10.42	25.00 - 75.00
2 month follow-up	60	57.67	12.02	30.00 - 90.00	35	58.86	13.12	40.00 - 90.00	25	56.00	10.31	40.00 - 80.00
4 month follow-up	62	63.55	14.44	30.00 - 90.00	33	62.88	12.56	30.00 - 85.00	29	64.31	16.51	5.00 - 100.00
6 month follow-up	62	56.85	9.68	35.00 - 80.00	35	57.71	10.31	57.94 - 10.38	27	55.74	8.85	35.00 - 70.00
<b>Social Functioning</b>												
Baseline	86	54.39	16.53	22.22 - 100.00	51	50.76	13.93	22.22 - 77.78	35	59.68	18.69	20.00 - 100.00
Post-treatment	59	52.92	13.11	25.00 - 87.50	32	53.47	14.79	22.22 - 77.78	27	52.26	11.03	33.33 - 77.78
2 month follow-up	60	51.11	15.87	22.00 - 100.00	35	48.57	15.96	22.22 - 88.89	25	54.67	15.36	33.33 - 100.00
4 month follow-up	62	52.69	15.45	11.00 - 100.00	33	51.18	14.42	11.11 - 77.78	29	54.41	16.63	33.33 - 100.00
6 month follow-up	62	53.41	14.49	22.00 - 100.00	35	52.06	13.42	51.31 - 12.84	27	55.14	15.86	22.22 - 100.00
<b>Role Limitations due to Emotional Problems</b>												
Baseline	86	18.95	33.50	0.00 - 100.00	51	18.95	33.50	0.00 - 100.00	35	14.28	21.82	0.00 - 100.00
Post-treatment	59	31.25	34.85	0.00 - 100.00	32	32.25	34.85	0.00 - 100.00	27	30.86	43.29	0.00 - 100.00
2 month follow-up	60	36.19	36.49	0.00 - 100.00	35	36.19	36.49	0.00 - 100.00	25	22.67	32.94	0.00 - 100.00
4 month follow-up	62	33.33	40.83	0.00 - 100.00	33	33.33	40.83	0.00 - 100.00	29	24.14	37.69	0.00 - 100.00
6 month follow-up	62	33.33	39.61	0.00 - 100.00	35	33.33	40.20	33.33 - 40.20	27	22.22	34.59	0.00 - 100.00
<b>General Mental Health</b>												
Baseline	86	54.98	12.70	20.00 - 92.00	51	54.59	12.05	36.00 - 88.00	35	55.54	13.75	20.00 - 92.00
Post-treatment	59	56.20	13.25	8.00 - 80.00	32	57.25	14.77	8.00 - 76.00	27	54.96	11.35	32.00 - 80.00
2 month follow-up	60	59.20	11.98	20.00 - 88.00	35	61.26	12.57	20.00 - 88.00	25	56.32	10.70	40.00 - 76.00
4 month follow-up	62	52.58	19.27	20.00 - 96.00	33	55.27	17.93	84.00 - 55.00	29	49.52	20.57	20.00 - 96.00
6 month follow-up	62	57.61	11.21	36.00 - 80.00	35	58.40	11.24	58.47 - 11.40	27	56.59	11.30	0.00 - 100.00

Table 4  
Quality of Life Descriptive Statistics

	Total				CPT				PCT			
	n	mean	SD	Range	n	M	SD	Range	n	M	SD	Range
Baseline	86	-0.31	1.91	-4.44 - 4.44	51	-0.29	2.14	-4.44 - 4.44	35	-0.33	1.57	-3.13 - 2.75
Post-treatment	60	0.25	2.13	-4.56 - 4.25	33	0.43	2.27	-4.38 - 4.25	27	0.02	1.96	-4.56 - 3.81
2 month follow-up	60	0.25	2.07	-5.44 - 5.19	35	0.48	2.08	-3.88 - 5.19	25	-0.08	2.07	-5.44 - 4.31
4 month follow-up	63	0.35	2.28	-5.00 - 4.13	33	0.40	2.32	-4.13 - 4.13	30	0.30	2.28	-5.00 - 4.06
6 month follow-up	61	0.45	2.22	-4.75 - 4.75	34	0.57	2.43	-4.75 - 4.75	27	0.29	1.95	-3.56 - 3.81

Table 5  
Health Care Utilization Subscales Descriptive Statistics

	Total				CPT				PCT			
	n	M	SD	Range	n	M	SD	Range	n	M	SD	Range
Number of psychotherapy visits												
Baseline	86	4.59	3.74	0.00 - 25.00	51	4.73	4.04	0.00 - 25.00	35	4.40	3.31	0.00 - 14.00
2 month follow-up	63	0.60	1.40	0.00 - 6.00	51	0.59	1.36	0.00 - 6.00	26	0.62	1.47	0.00 - 6.00
4 month follow-up	63	0.87	1.81	0.00 - 72.00	51	0.94	2.01	0.00 - 9.00	30	0.80	1.58	0.00 - 6.00
6 month follow-up	62	0.92	1.78	0.00 - 9.00	51	0.89	1.91	0.00 - 9.00	27	0.96	1.63	0.00 - 6.00
Number of hospitalization days												
Baseline	86	11.9	20.88	0.00 - 111.00	51	14.47	25.22	0.00 - 111.00	35	8.11	11.42	0.00 - 67.00
2 month follow-up	63	4.22	13.76	0.00 - 61.00	51	5.08	14.91	0.00 - 61.00	26	3.00	12.12	0.00 - 61.00
4 month follow-up	63	5.24	17.23	0.00 - 72.00	51	5.55	17.81	0.00 - 61.00	30	4.90	16.87	0.00 - 72.00
6 month follow-up	62	5.45	16.71	0.00 - 61.00	51	7.11	19.66	0.00 - 61.00	27	3.30	11.87	0.00 - 61.00
Number of outpatient visits												
Baseline	86	19.9	20.17	0.00 - 115.00	51	20.91	23.25	0.00 - 115.00	35	18.31	14.76	0.00 - 50.00
2 month follow-up	63	3.78	4.74	0.00 - 24.00	51	3.30	3.44	0.00 - 16.00	26	4.46	6.16	0.00 - 24.00
4 month follow-up	63	3.29	4.19	0.00 - 20.00	51	3.36	4.42	0.00 - 17.00	30	3.20	3.99	0.00 - 20.00
6 month follow-up	62	4.26	4.27	0.00 - 24.00	51	4.26	3.79	0.00 - 17.00	27	4.26	4.89	0.00 - 24.00

Table 6  
ANOVA Results for SF-36 Subscales

physical functioning	F	df	P
Treatment condition	1.43	1/75.39	0.23
Time	1.60	1/61.54	0.19
Interaction	0.15	1/61.54	0.96
Role Limitations Due to Physical Problems	F	df	P
Treatment condition	0.83	1/94.26	0.36
Time	0.78	1/227.10	0.54
Interaction	2.21	1/227.10	0.07
Social Functioning	F	df	P
Treatment condition	4.26	1/71.40	0.04
Time	0.56	1/253.36	0.69
Interaction	1.34	1/253.36	0.26
Bodily Pain	F	df	P
Treatment condition	0.38	1/89.17	0.54
Time	0.18	4/127.94	0.95
Interaction	0.52	4/127.94	0.72
General Mental Health	F	df	P
Treatment condition	1.54	1/92.45	0.22
Time	3.30	4/117.22	0.01
Interaction	0.50	4/117.22	0.74
Role Limitations Due to Emotional Problems	F	df	P
Treatment condition	1.26	1/102.96	0.26
Time	2.58	4/232.26	0.04
Interaction	0.49	4/232.26	0.74
Vitality	F	df	P
Treatment condition	0.10	1/79.70	0.75
Time	8.70	4/259.38	0.00
Interaction	1.17	4/259.38	0.33
General Health Perceptions	F	df	P
Treatment condition	0.02	1/70.25	0.90
Time	1.65	4/63.25	0.17
Interaction	0.52	4/63.25	0.72

Table 7  
ANOVA results for Quality of Life

	F	df	p
Treatment condition	0.06	1/81.90	0.81
Time	2.90	4/61.89	0.03
Interaction	0.20	4/61.89	0.94

Table 8

ANOVA results for Health Care Utilization Subscales

Number of psychotherapy visits	F	df	p
Treatment condition	0.29	1/72.01	0.59
Time	37.74	3/57.15	0.00
Interaction	0.13	3/57.15	0.94
Number of hospitalization days	F	df	p
Treatment condition	1.15	1/79.69	0.29
Time	26.93	3/66.49	0.00
Interaction	0.90	3/66.49	0.45
Number of outpatient visits	F	df	p
Treatment condition	0.08	1/76.73	0.78
Time	18.69	3/69.16	0.00
Interaction	0.35	3/69.16	0.79

Table 9

SF-36 Pairwise Comparisons of Treatment Condition

Variable	Treatment conditions		Mean diff	Std. Error	p
Social Functioning	CPT	PCT	-4.30	2.10	0.00

Table 10

SF-36 Pairwise Comparisons of Time

General Mental Health	TIME	Mean Diff.	Std. Error	p
Baseline	Post treatment	-1.34	1.77	1.00
	2-month follow-up	-4.02	1.90	0.36
	4-month follow-up	2.71	2.72	1.00
	6-month follow-up	-2.35	1.99	1.00
Post treatment	2-month follow-up	-2.68	1.74	1.00
	4-month follow-up	4.05	2.69	1.00
	6-month follow-up	-1.00	2.11	1.00
2 month follow-up	4-month follow-up	6.73	2.27	0.04
	6-month follow-up	1.68	1.88	1.00
4 month follow-up	6-month follow-up	-5.06	2.25	0.27

Table 10 Continued

Role Limitation Due to Emotional Problems				
Baseline	Post treatment	-14.12	4.86	0.04
	2-month follow-up	-13.73	5.61	0.15
	4-month follow-up	-12.62	5.78	0.30
	6-month follow-up	-12.17	5.91	0.40
Post treatment	2-month follow-up	0.39	5.10	1.00
	4-month follow-up	1.50	5.88	1.00
	6-month follow-up	1.96	6.20	1.00
2 -month follow-up	4-month follow-up	1.11	5.09	1.00
	6-month follow-up	1.56	5.95	1.00
4 month follow-up	6-month follow-up	0.45	5.03	1.00
Vitality				
Baseline	Post treatment	-3.90	1.88	0.39
	2-month follow-up	-4.73	1.88	0.12
	4-month follow-up	-10.82	1.84	0.00
	6-month follow-up	-4.05	1.85	0.30
Post treatment	2-month follow-up	-0.83	2.01	1.00
	4-month follow-up	-6.93	1.99	0.01
	6-month follow-up	-0.15	1.99	1.00
2 month follow-up	4-month follow-up	-6.10	1.99	0.02
	6-month follow-up	0.68	1.99	1.00
4 month follow-up	6 month follow-up	6.77	1.96	0.01
Social Functioning				
Baseline	Post treatment	2.23	2.41	1.00
	2-month follow-up	3.46	2.41	1.00
	4-month follow-up	2.14	2.37	1.00
	6-month follow-up	1.48	2.38	1.00
Post treatment	2-month follow-up	1.23	2.59	1.00
	4-month follow-up	-0.09	2.56	1.00
	6-month follow-up	-0.75	2.56	1.00
2 month follow-up	4-month follow-up	-1.31	2.56	1.00
	6-month follow-up	-1.98	2.57	1.00
4 month follow-up	6 month follow-up	-0.66	2.53	1.00

Table 11

## Quality of Life Pairwise Comparisons of Time

	TIME	Mean Diff.	Std. Error	<i>p</i>
Baseline	Post treatment	-0.54	0.19	0.06
	2-month follow-up	-0.54	0.23	0.20
	4-month follow-up	-0.62	0.26	0.21
	6-month follow-up	-0.73	0.25	0.04
Post Treatment	2-month follow-up	0.00	0.18	1.00
	4-month follow-up	-0.08	0.23	1.00
	6-month follow-up	-0.19	0.22	1.00
2 month follow-up	4-month follow-up	-0.08	0.24	1.00
	6-month follow-up	-0.19	0.25	1.00
4 month follow-up	6-month follow-up	-0.11	0.24	1.00

Table 12

## Health Care Utilization Pairwise Comparisons of Time

		Mean diff.	Std. Error	<i>p</i>
Number of psychotherapy visits				
Baseline	2-month follow-up	3.91	0.39	0.00
	4-month follow-up	3.63	0.35	0.00
	6-month follow-up	3.61	0.36	0.00
Two-month follow-up	4-month follow-up	-0.28	0.21	1.00
	6-month follow-up	-0.30	0.21	0.97
Four-month follow-up	6-month follow-up	-0.02	0.16	1.00
Number of hospitalization days				
Baseline	2-month follow-up	7.39	1.75	0.00
	4-month follow-up	6.48	1.69	0.00
	6-month follow-up	6.49	0.72	0.00
Two-month follow-up	4-month follow-up	-0.90	2.05	1.00
	6-month follow-up	-0.90	1.58	1.00
Four-month follow-up	6-month follow-up	0.00	1.51	1.00
Number of outpatient visits				
Baseline	2-month follow-up	15.66	2.27	0.00
	4-month follow-up	16.27	2.19	0.00
	6-month follow-up	15.34	2.12	0.00
Two-month follow-up	4-month follow-up	0.61	0.61	1.00
	6-month follow-up	-0.32	0.69	1.00
Four-month follow-up	6-month follow-up	-0.93	0.54	0.53

Figures

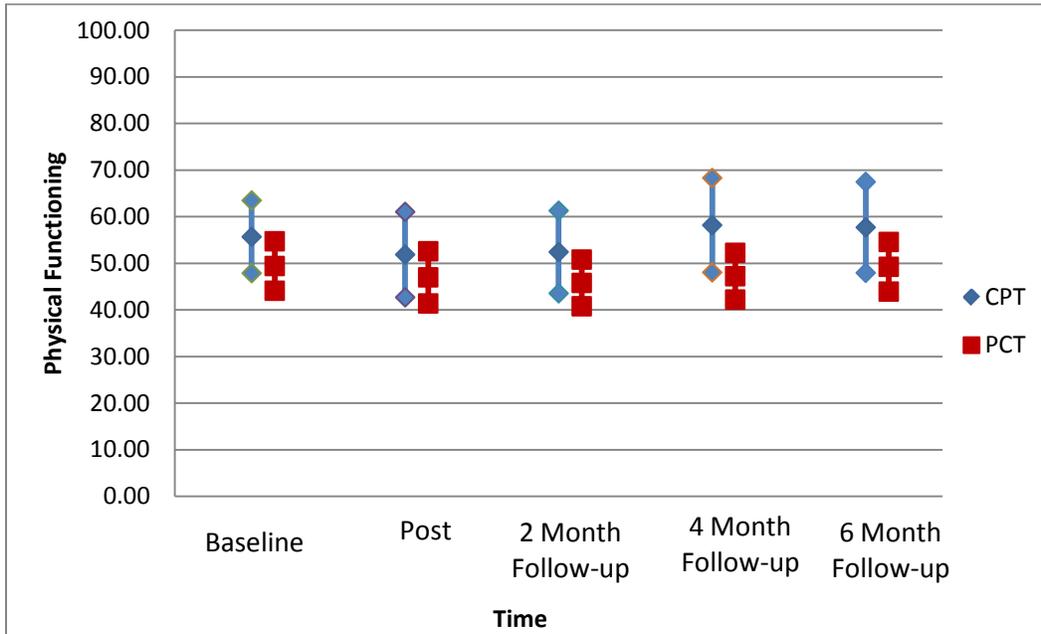


Figure 1. Means of SF-36: Physical Functioning with one standard error above and below the mean

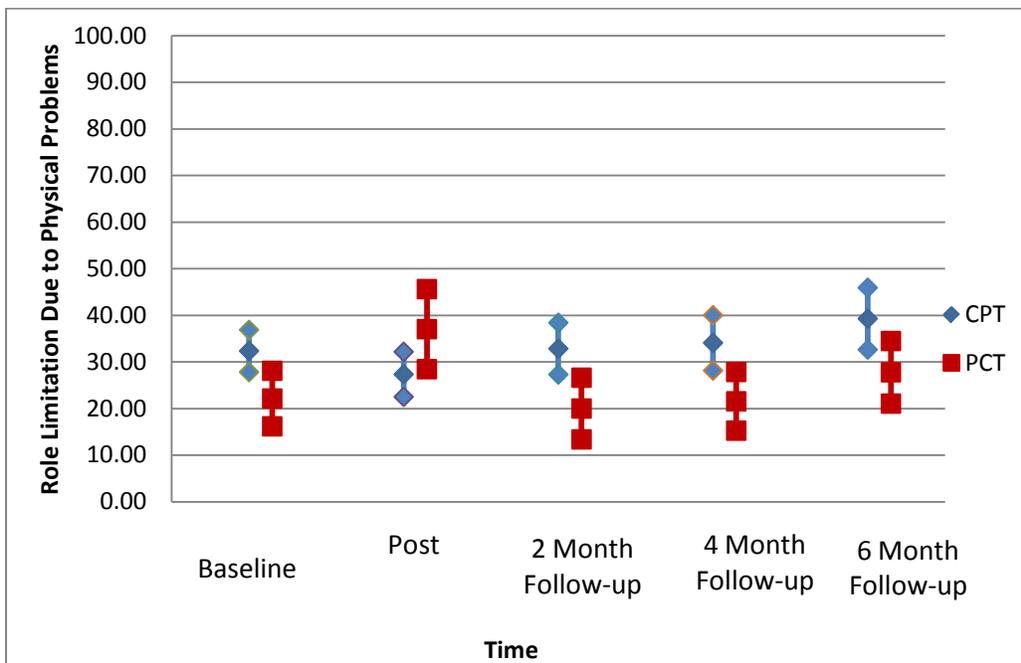


Figure 2. Means of SF-36: Role Limitation Due to Physical Problems with one standard error above and below the mean

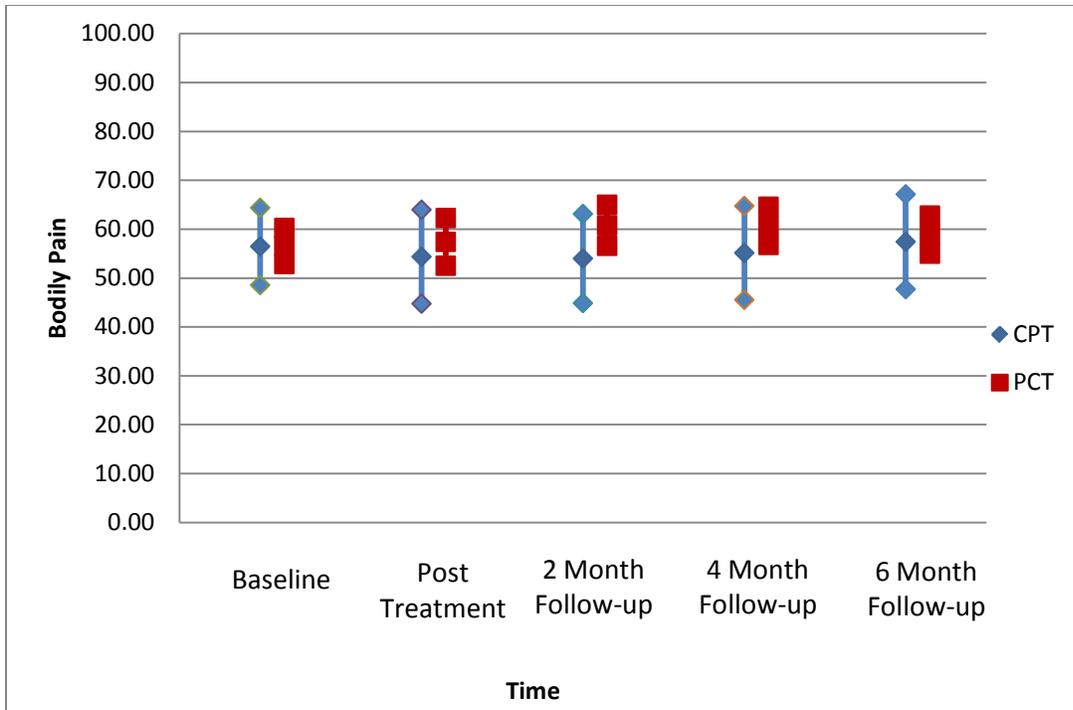


Figure 3. Means of SF-36: Bodily Pain with one standard error above and below the mean

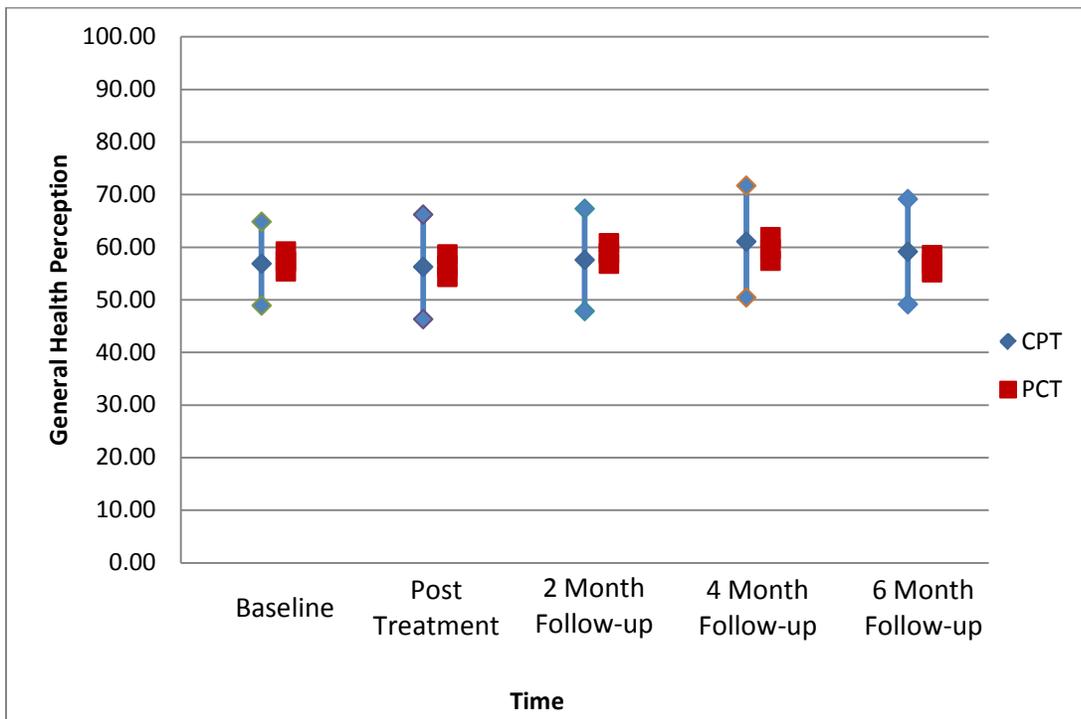


Figure 4. Means of SF-36: General Health with one standard error above and below the mean

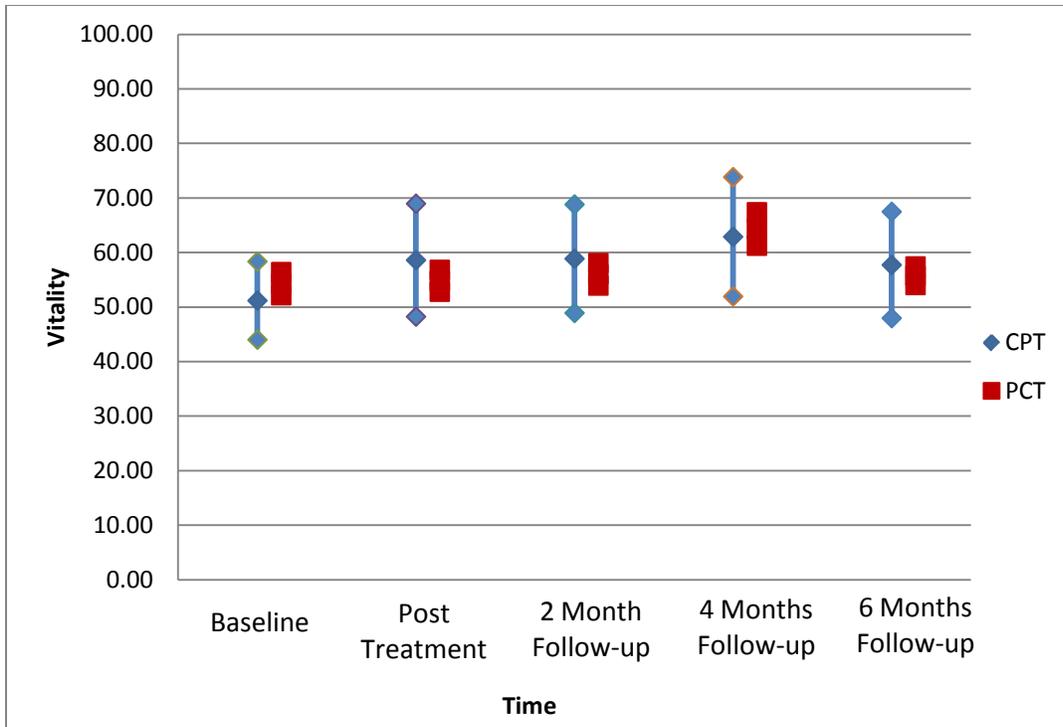


Figure 5. Means of SF-36: Vitality with one standard error above and below the mean

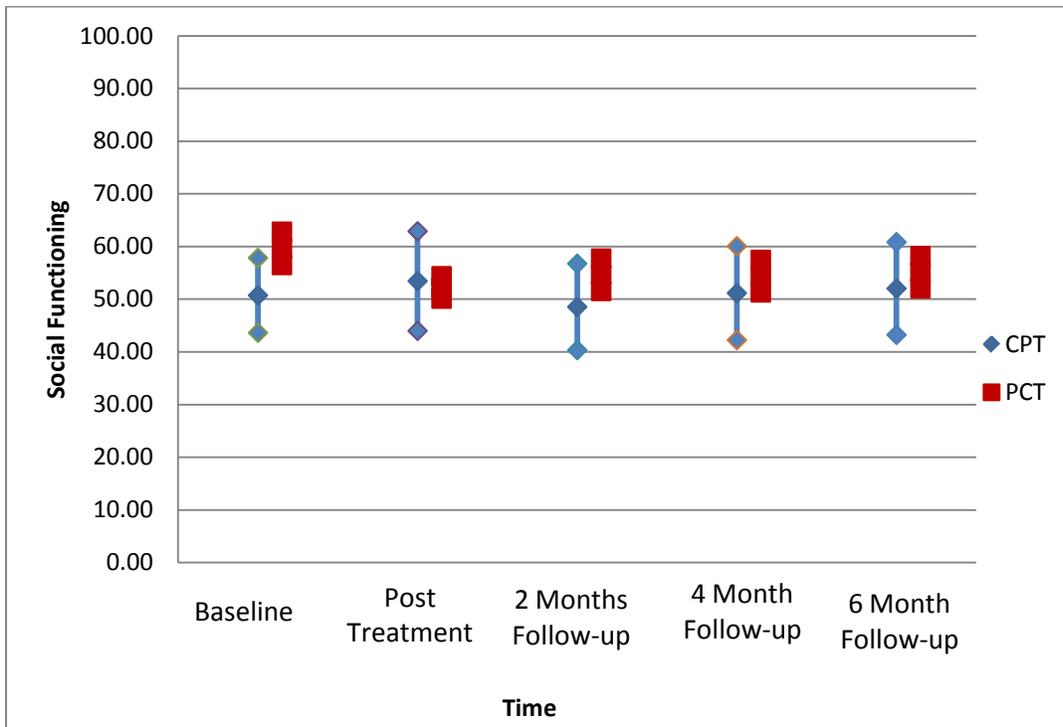


Figure 6. Means of SF-36: Social Functioning with one standard error above and below the mean

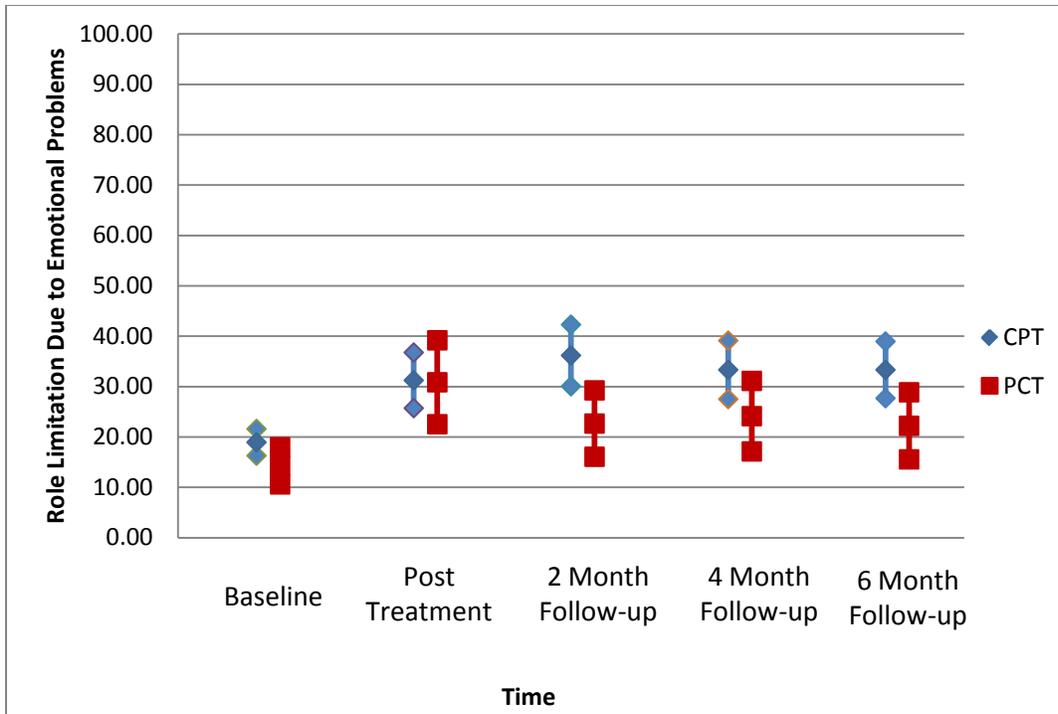


Figure 7. Means of SF-36: Role Limitation Due to Emotional Problems with one standard error above and below the mean

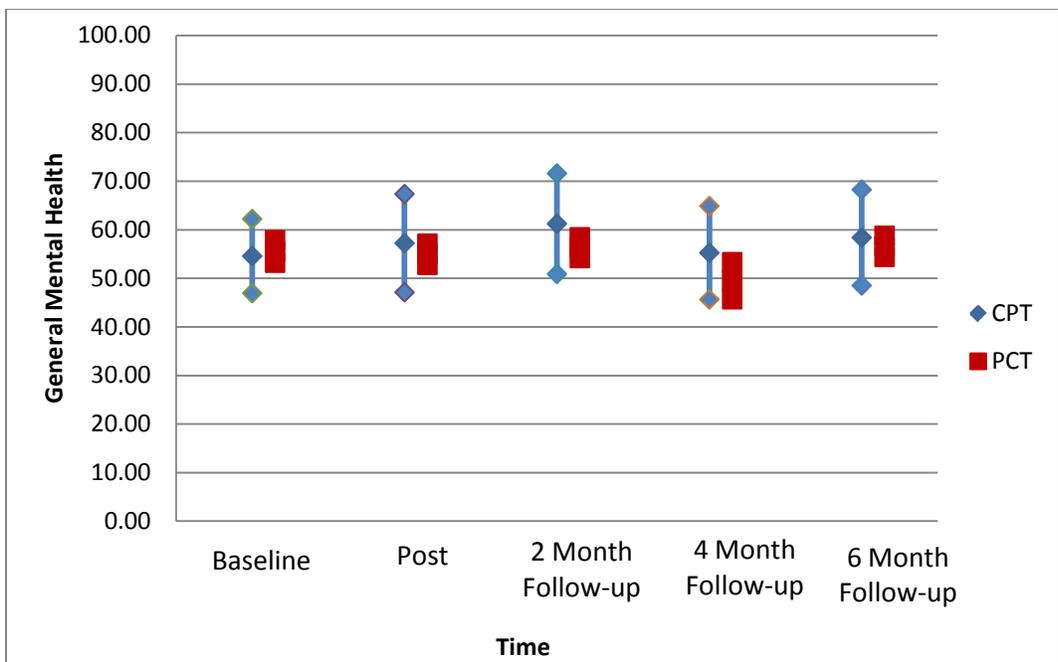


Figure 8. Means of SF-36: General Mental Health with one standard error above and below the mean

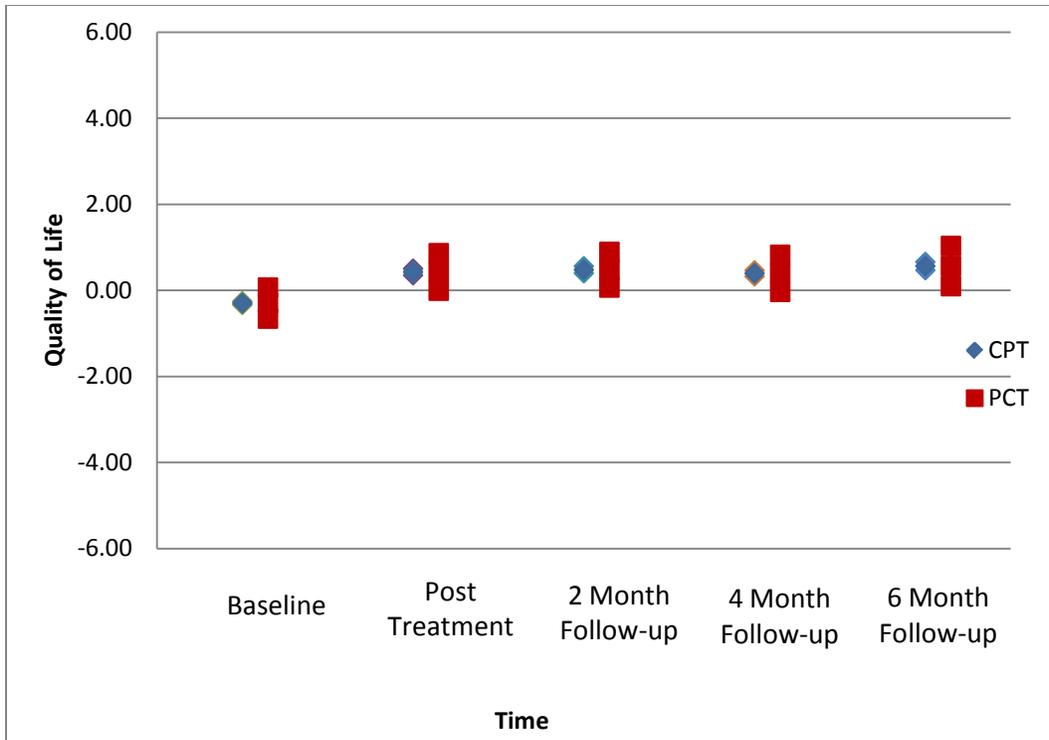


Figure 9. Means of Quality of Life with one standard error above and below the mean

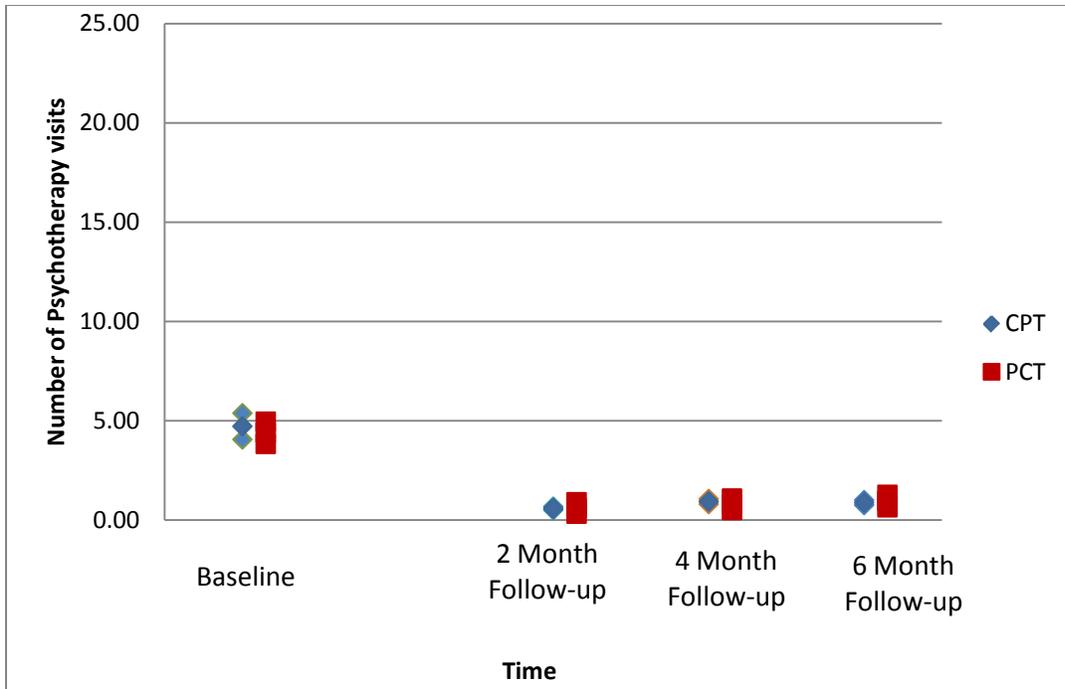


Figure 10. Means of Health Care Utilization: Number of psychotherapy visits with one standard error above and below the mean

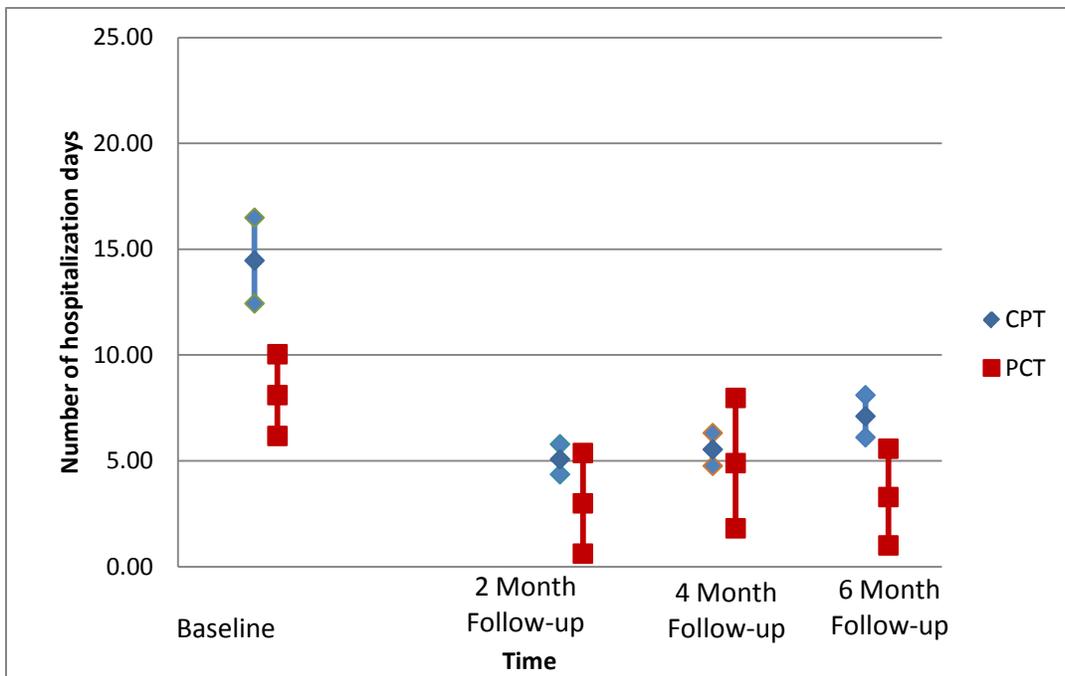


Figure 11. Means of Health Care Utilization: Number of hospitalization days with one standard error above and below the mean

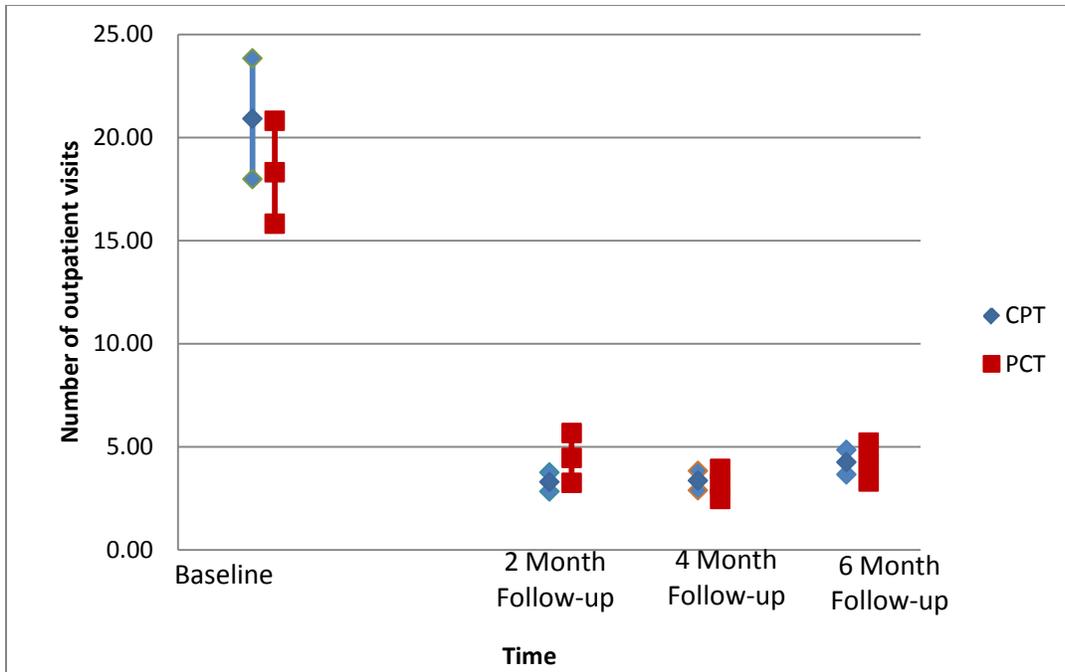


Figure 12. Means of Health Care Utilization: Number of outpatient visits with one standard error above and below the mean

**APPENDIX A****SF-36 QUESTIONNAIRE**

Subject Written Questionnaire

**XVI. SF36 SHORT FORM VERSION**

- 1) PID Patient's identification number
- 2) DATE Date of visit. Mm/dd/yy
- 3) TRTVIS Treatment Visit Number
  - 1 – Baseline
  - 2 – Post Treatment
  - 3 – 2 Month
  - 4 – 4 Month
  - 5 – 6 Month
  - 6 – Therapist
  
- 4) SF1 In general, would you say your health is?
  - 1 - Excellent
  - 2- Very good
  - 3 - Good
  - 3 - Fair
  - 5 – Poor
  
- 5) SF2 Compare to one year ago, how would you rate your health in general now?
  - 1 – Much better now than one year ago
  - 2 – Somewhat better now than one year ago
  - 3 – About the same as one year ago
  - 4 – Somewhat worse now than one year ago
  - 5 - Much worse now than 1 year ago
  
- 6) SF3a Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports
  - 1 – Yes, limited a lot
  - 2 – Yes, limited a little
  - 3 – No, Not limited at all
  
- 7) SF3b Moderate activities, such as moving table, pushing a vacuum cleaner, bowling, or playing golf
  - 1 – Yes, limited a lot
  - 2 – Yes, limited a little
  - 3 – No, Not limited at all
  
- 8) SF3c Lifting or carrying groceries?
  - 1 – Yes, limited a lot
  - 2 – Yes, limited a little
  - 3 – No, Not limited at all

9) SF3d Climbing two flights of stairs?

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

10) SF3e Climbing one flight of stairs?

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

11) SF3f Bending, Kneeling, or stooping

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

12) SF3g Walking more than a mile?

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

13) SF3h Walking two blocks?

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

14) SF3i Walking one block?

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

15) SF3j Bathing or dressing yourself

- 1 – Yes, limited a lot
- 2 – Yes, limited a little
- 3 – No, Not limited at all

16) SF4a Cut down the amount of time you spent on work or other activities?

- 1 – Yes
- 2 – No

17) SF4b Accomplished less than you would like

- 1 – Yes
- 2 – No

18) SF4c Were limited in the kind of work or other activities

- 1 – Yes

2 – No

19) SF4d Had difficulty performing the work or other activities (for example, it took extra effort)

1 – Yes

2 – No

20) SF5a Cut down the amount of time you spent on work or other activities?

1 – Yes

2 – No

21) SF5b Accomplished less than you would like?

1 – Yes

2 – No

22) SF5C Didn't do work or other activities as carefully as usual.?

1 – Yes

2 – No

23) SF6 During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

1 – Not at all

2 – Slightly

3 – Moderately

4 – Quite a bit

5 – Extremely

24) SF7 How much bodily pain have you had during the past 4 weeks?

1 - Not at all

2- Very mild

3- Mild

4 - Moderate

5- Severe

6 - Very severe

25) SF8 During the past 4 weeks, how much did pain interfere with  
During your normal work

1 – Not at all

2 – Slightly

3 – Moderately

4 – Quite a bit

5 – Extremely

26) SF9a Did you feel full of pep?

1 – All of the time (100%)

2 – Most of the time (80%)

3 – A good bit of the time (60%)

- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

27) SF9b Have you been a very nervous person?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

28) SF9c Have you felt so down in the dumps that nothing could cheer you up?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

29) SF9d Have you felt calm and peaceful?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

30) SF9e Did you have a lot of energy?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

31) SF9f Have you felt downhearted and blue?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

32) SF9g Did you feel worn out?

- 1 – All of the time (100%)

- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

33) SF9h Have you been a happy person?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

34) SF9i Did you feel tired?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

35) SF9j Has your health limited your social activities (like visiting friends or close relatives)?

- 1 – All of the time (100%)
- 2 – Most of the time (80%)
- 3 – A good bit of the time (60%)
- 4 – Some of the time (40%)
- 5 – A little of the time (20%)
- 6 – None of the time (20%)

36) SF10a I seem to get sick a little easier than other people.

- 1 - Definitely true
- 2 - Mostly true
- 3 - Not sure
- 4 - Mostly false
- 5 - Definitely false

37) SF10b I am as healthy as anybody I know.

- 1 - Definitely true
- 2 - Mostly true
- 3 - Not sure
- 4 - Mostly false

5 - Definitely false

38) SF10c I expect my health to get worse.

- 1 - Definitely true
- 2 - Mostly true

- 3 - Not sure
- 4 - Mostly false
- 5 - Definitely false

39) SF10d My health is excellent.

- 1 - Definitely true
- 2 - Mostly true
- 3 - Not sure
- 4 - Mostly false
- 5 - Definitely false

**APPENDIX B**  
**HEALTHCARE UTILIZATION**

1) PID Patient Identification Number

2) DATE Date of Visit (mm/dd/yy)

3) TRTVIS Treatment Visit Number

1 – Baseline

2 – Post Treatment

3 – 2 Month

4 – 4 Month

6 – 6 Month

4) HCU1 Individual Psychotherapy (if no go to question 2)

0 – No

1 – Yes

5) HCU1A More than 2 months ago

0 – No

1 – Yes

6) HCU1B Past 2 months

0 – No

1 – Yes

7) HCU1TM If yes, estimate the total number of months during last 2 months

(at least 2 sessions per month)

8) HCU2 Group psychotherapy (if no go to question 3 )

0 – No

1 – Yes

9) HCU2A More than 2 months ago

0 – No

1 – Yes

10) HCU2B Past 2 months

0 – No

1 – Yes

11) HCU2TM If yes, estimate the total number of months during last 2 months

(at least 2 sessions per month)

12) HCU3 Family/Couples Psychotherapy (if no go to question 4 )

0 – No

1 – Yes

13) HCU3A More than 2 months ago

- 0 – No
- 1 – Yes

14) HCU3B Past 2 months

- 0 – No
- 1 – Yes

15) HCU3TM If yes, estimate the total number during last 2 months?

(at least 2 sessions per month)

16) HCU4 Self Help Groups? (if no go to question 5)

- 0 – No
- 1 – Yes

17) HCU4A More than 2 months ago

- 0 – No
- 1 – Yes

18) HCU4B Past 2 months

- 0 – No
- 1 – Yes

19) HCU4TM If yes, total number of months during last 2 months

(at least 2 sessions per month)

20) HCU5 Have you participated in day treatment?

(if no, go to question 6)

- 0 – No
- 1 – Yes

21) HCU5A More than 2 months ago

- 0 – No
- 1 – Yes

22) HCU5B Past 2 months

- 0 – No
- 1 – Yes

23) HCU5TD If yes, total number of days during last 2 months

24) HCU6 Have you been hospitalized for psychiatric reasons?

(if no go to question 7)

- 0 – No
- 1 – Yes

25) HCU6A More than 2 Months ago

0 – No

1 – Yes

26) HCU6B Past 2 months

0 – No

1 - Yes

27) HCU6TD If yes, total number of days during last 2 months

28) HCU7 Have you been in a half-way house or residential program  
(if no go to question 8)

0 – No

1 – Yes

29) HCU7A More than 2 months ago

0 – No

1 – Yes

30) HCU7B Past 2 months

0 – No

1 – Yes

31) HCU7TD If yes, total number of days during last 2 months?

32) HCU8 Have you ever been hospitalized for physical problems?

(if no, go to question 9)

0 – No

1 – Yes

33) HCU8A If yes, enter the number of times?

34) HCU8B Have you been hospitalized for physical problems in the past 2

Months? (if no, go to question 9)

0 – No

1 – Yes

35) HCU8T If yes, enter the number of times

36) HCU8TD If yes, enter the total number of days

37) HCU9A Number of visits in the past year

38) HCU9B Number of visits in the past 2 months

**APPENDIX C  
QUALITY OF LIFE**

(1) Pid Patient's Identification Number

(2) Date Date of Visit. Mm/Dd/Yy

(3) Trtvis Treatment Visit

1 – Baseline

2 – Post Treatment

3 – 2 Month

4 – 4 Month

5 – 6 Month

6 - Therapist

(4) Qol1 How Important Is Health To Your Happiness?

0 – Not Important

1- Important

2-Extremely Important

(5) Qol2 How Satisfied Are You With Your Health?

-3 – Very

-2 - Somewhat Dissatisfied

-1 - A Little

1 - A Little

2 - Somewhat Satisfied

3 - Very

(6) Qol3 How Important Is Self-Esteem To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(7) Qol4 How Satisfied Are You With Your Self-Esteem?

-3- Very

-2 - Somewhat Dissatisfied

-1- A Little

1- A Little

2 - Somewhat Satisfied

3 – Very

(8) Qol5 How Important Are Goals And Values To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(9) Qol6 How Satisfied Are You With Your Goals And Values?

-3- Very

-2- Somewhat Dissatisfied

-1-A Little

1- A Little

2 - Somewhat Dissatisfied

3 - Very

(10) Qol7 How Important Is Money To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(11) Qol8 How Satisfied Are You With The Money You Have?

-3-Very

-2-Somewhat Dissatisfied

-1-A Little

1-A Little

2-Somewhat Dissatisfied

3-Very

(12) Qol9 How Important Is Work To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(13) Qol10 How Satisfied Are You With Your Work? (If You Are Not Working, Say How Satisfied You Are About Not Working?)

-3-Very

-2-Somewhat Dissatisfied

-1-A Little

1-A Little

2-Somewhat Dissatisfied

3-Very

(14) Qol11 How Important Is Play To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(15) Qol12 How Satisfied Are You With The Play In Your Life?

-3-Very

-2-Somewhat Dissatisfied

-1-A Little

1-A Little

2-Somewhat Dissatisfied

3-Very

(16) Qol13 How Important Is Learning To Your Happiness?

0-Not Important

1-Important  
2-Extremely Important

(17) Qol14 How Satisfied Are You With Your Learning?

-3-Very  
-2-Somewhat Dissatisfied  
-1-A Little  
1-A Little  
2-Somewhat Dissatisfied  
3-Very

(18) Qol15 How Important Is Creativity To Your Happiness?

0-Not Important  
1-Important  
2-Extremely Important

(19) Qol16 How Satisfied Are You With Your Creativity?

-3-Very  
-2-Somewhat Dissatisfied  
-1-A Little  
1-A Little  
2-Somewhat Dissatisfied  
3-Very

(20) Qol17 How Important Is Helping To Your Happiness?

0-Not Important  
1-Important  
2-Extremely Important

(21) Qol18 How Satisfied Are You With The Helping You Do?

-3-Very  
-2-Somewhat Dissatisfied  
-1-A Little  
1-A Little  
2-Somewhat Dissatisfied  
3-Very

(22) Qol19 How Important If Love To Your Happiness?

0-Not Important  
1-Important  
2-Extremely Important

(23) Qol20 How Satisfied Are You With The Love In Your Life? (If You Are Not In A Love Relationship, Say How Satisfied You Feel About Not Having A Love Relationship.)

-3-Very  
-2-Somewhat Dissatisfied

- 1-A Little
- 1-A Little
- 2-Somewhat Dissatisfied
- 3-Very

(24) Qol21 How Important Are Friends To Your Happiness?

- 0-Not Important
- 1-Important
- 2-Extremely Important

(25) Qol22 How Satisfied Are You With Your Friends? (If You Have No Friends, Say How Satisfied You Are About Having No Friends.)

- 3-Very
- 2 - Somewhat Dissatisfied
- 1 - A Little
- 1 - A Little
- 2 - Somewhat Dissatisfied
- 3 - Very

(26) Qol23 How Important Are Children To Your Happiness? If You Have No Children, Say How Important Having A Child Is To Your Happiness.)

- 0-Not Important
- 1-Important
- 2-Extremely Important

(27) Qol24 How Satisfied Are You With Your Relationships With Your Children? (If You Have No Children, Say How Satisfied You Feel About Not Having Children.)

- 3-Very
- 2-Somewhat Dissatisfied
- 1-A Little
- 1-A Little
- 2-Somewhat Dissatisfied
- 3-Very

(28) Qol25 How Important Are Relatives To Your Happiness?

- 0-Not Important
- 1-Important
- 2-Extremely Important

(29) Qol26 How Satisfied Are You With Your Relationships With Relatives?

- 3-Very
- 2-Somewhat Dissatisfied
- 1-A Little
- 1-A Little
- 2-Somewhat Dissatisfied
- 3-Very

(30) Qol27 How Important Is Your Home To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(31) Qol28 How Satisfied Are You With Your Home?

-3-Very

-2-Somewhat Dissatisfied

-1-A Little

1-A Little

2-Somewhat Dissatisfied

3-Very

(32) Qol29 How Important Is Your Neighborhood To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(33) Qol30 How Satisfied Are You With Your Neighborhood?

-3-Very

-2-Somewhat Dissatisfied

-1-A Little

1-A Little

2-Somewhat Dissatisfied

3-Very

(34) Qol31 How Important Is Your Community To Your Happiness?

0-Not Important

1-Important

2-Extremely Important

(35) Qol32 How Satisfied Are You With Your Community?

-3-Very

-2-Somewhat Dissatisfied

-1-A Little

1-A Little

2-Somewhat

---

**BIOGRAPHICAL SKETCH**

Rahel Fekadu

Rahel.f83@gmail.com

---

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional educa-*

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
The University of Texas at Dallas	B.A.	2010	Psychology
The University of Texas Southwestern School of Health Professions		2013	Rehabilitation Counseling

---

**Positions and Employment**

2013-Present Clinical Data Specialist