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An Examination of Trauma-Related Psychotherapy Outcomes at an Outpatient Military Behavioral Health Clinic

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An Examination of Trauma-Related Psychotherapy

Outcomes at an Outpatient Military Behavioral Health Clinic

A Thesis Presented to

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Master of Science

By

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Abstract

Objective: The purpose of the present study is to expand existing literature on specific patient demographics and treatment protocols for trauma-related psychotherapies that moderate treatment outcomes in real-world clinical settings with military personnel.

Method: The present study used medical records to analyze treatment outcomes of patients seen at an army medical hospital in the Southeastern United States. The data was gathered over a 6-month timeframe, and participants were predominantly active duty Army personnel being treated for PTSD or other trauma-related disorders. Demographic variables were examined as predictors or moderators and hypotheses were put forward regarding the relationship of the characteristics with treatment outcomes. Measures included the PTSD Checklist for DSM-5 (PCL-5) and the Behavior and Symptom Identification Scale-24 (BASIS-24). Providers used both evidence-based as well as non-evidence-based treatments (i.e., EBT, non-EBT), and moderation analyses were performed to examine the association between these treatments and therapy outcomes.

Results: PCL-5 results showed the relationship between pre- and post-treatment scores were not moderated by patient demographics or treatments provided. BASIS-24 results showed that of the demographics and treatment protocols analyzed, only gender moderated the relationship between pre- to post-treatment scores. Age was a significant predictor of the number of sessions patients attended. Reliable change calculations showed 85% of patient PCL-5 scores and 93% of patient BASIS-24 scores reflected unsuccessful treatment outcomes.

Conclusion: In general, patients were not provided with EBTs and they did not benefit from the treatment they did receive. Future studies focused on the issue of ineffective treatments would be useful to providers, clinic and hospitals administrators, and most importantly- our patients.

Keywords*:* Active Duty Military, Posttraumatic Stress Disorder, Treatment Outcomes

Veterans of the US Armed Forces currently represent 7.8% of the United States population, or about 19.2 million individuals (US Census Bureau, 2014). According to a national survey by Westat (2010) 33.9% of veterans served in combat zones. A study of veteran resiliency by M. M. Thomas, Harpaz-Rotem, Tsai, Southwick, and Pietrzak (2017) found that combat involvement dramatically increases the service members chance of experiencing Posttraumatic Stress Disorder (PTSD) after spending time in overseas conflicts. Epidemiological studies have found lifetime prevalence rates of PTSD in US veterans between 8-20% (Currier, Holland, & Drescher, 2014; Dursa, Reinhard, Barth, & Schneiderman, 2014; Wisco et al., 2014; Wisco et al., 2016). Using the conservative lifetime prevalence estimate of 8%, 900,000 veterans in the US are living with or have experienced PTSD, and this approximation emphasizes the immense public health burden that PTSD represents in this population (Wisco et al., 2016). These elevated numbers stress the importance of effective treatments for PTSD that are readily available to the veteran population (M. M. Thomas et al., 2017).

The current edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) states that a trauma may be caused by actual or threatened serious injury, actual or threatened sexual violence, or threats of death (American Psychiatric Association, 2013). The DSM-5 criteria indicate that the traumatic exposure may happen to an individual directly or indirectly (i.e., the individual who is experiencing the posttraumatic stress may have witnessed the death of another person). PTSD is conceptualized as a trauma and stressor-related disorder characterized by four key symptom categories: active avoidance of situational reminders of the traumatic event, re-experiencing the traumatic event, hyperarousal, and negative changes to feeling or beliefs about oneself and/or the world (Friedman, 2017). A review of literature conducted by Van Minnen, Zoellner, Harned, and Mills (2015) indicated that symptoms of PTSD moderate the

correlation between trauma and overall functionality, causing disturbances in everything from interpersonal relationships to physical health. Further research by Vogt and colleagues (2016) found that a veteran's transition from military service to civilian life is disrupted by the presence of PTSD and/or subclinical trauma-related distress. According to a fact sheet published by the US Department of Veterans Affairs (USDVA, 2016), in 2015, 560,000 veterans were seen by mental health professionals for treatment in VA settings. In an effort to provide veterans with effective treatments, the VA has devoted considerable resources to integrate Evidence-Based Treatments (EBTs) into routine mental health care (Baciu, Geller, Tollerud, & Martinez, 2007; Sayer et al., 2017; Watts, Shiner, Carpenter-Song, Ronconi, & Coldwell, 2014).

Treatment of PTSD

In a review of the history of PTSD in US veterans, Friedman (2017) indicates that the diagnostic criteria for PTSD, as well as its treatments, have continued to evolve as have descriptions of the effects of this disorder on individuals experiencing PTSD over the last several decades. Due to the high number of veterans diagnosed with PTSD (Wisco et al., 2016) effective, evidence-based treatments are in high demand (M. M. Thomas et al., 2017). In a review of the evidence and dissemination of therapies in the treatment of PTSD, McLean and Foa (2011) identify Cognitive Behavioral Therapy (CBT) as a front-line treatment due to its consistent, effective and efficient treatment outcomes in the largest number of studies across a variety of populations and cultures. CBT can be conceptualized as "a family of treatment approaches" which include cognitive restructuring, anxiety management, and exposure techniques (McLean & Foa, 2011, p. 1156). In this family of treatment approaches, several specific CBTs for the treatment of PTSD have been studies in randomized clinical trials and this research supports these CBTs as effective in reducing symptom expression and severity (i.e.,

Prolonged Exposure (PE), Cognitive Processing Therapy (CPT), Stress Inoculation Therapy, Cognitive Therapy, and Eye Movement Desensitization and Reprocessing; McLean & Foa, 2011). The studies reviewed by McLean and Foa (2011) indicated PE led to significantly greater reductions in PTSD symptomology from pre- to post-treatment then treatments such as relaxation, supportive counseling, treatment as usual, or wait-list control groups. Research by Eftekhari et al. (2013) and Roberts et al. (2010) indicates that exposure therapies have been shown to be adaptable to diverse populations, including veterans, who have faced various forms of trauma (e.g., sexual assault, non-sexual assault, and combat trauma) and are experiencing PTSD as a result of that trauma. Exposure therapies, such as CPT and PE, include different forms of exposure experiences (i.e., imaginal, *in vivo*) that have the patient reexperience the trauma account or traumatic reminders (DiMauro, 2014; Jayawickreme et al., 2014).

Treatment outcome research shows that specific sub-groups within the population may show a higher prevalence of diagnoses of PTSD or a higher number of symptoms, fortunately, EBTs are adaptable to diverse patient populations without compromising positive treatment outcomes (Eftekhari et al., 2013; Roberts, Gilman, Breslau, Breslau, & Koenen, 2010; Van Minnen et al., 2015). For example, using data collected from a large-scale survey of 34,653 participants living in the US, Roberts et al. (2010) found that there are marked differences in lifetime prevalence rates of PTSD between European Americans (EA) and other racial and ethnic minorities, with African Americans (AA) experiencing greater rates than EAs. In a review of the advancements, efficacy, and effectiveness of therapies in the CBT family (i.e., CPT and PE), Dixon, Ahles, and Marques (2016) found that these treatments garnered reductions in symptomology for diverse clientele, but advocate for increased acceptance of adaptability within the use of EBTs in order to better serve under-represented populations. One example is in the

adaptation of treatment delivery option, more specifically, internet-based interventions for individuals living in rural areas (Dixon et al., 2016). Additionally, a meta-analysis by Tolin and Foa (2006) indicated that there are significant differences in the development and ensuing symptomology of male and female patients experiencing PTSD. Research indicates that gender differences have also been found in treatment outcomes, where female patients showed greater improvement upon treatment completion than their male counterparts (Eftekhari et al., 2013; Goodson, Helstrom, Marino, & Smith, 2017). Lastly, research conducted by Magruder et al. (2004) and M. M. Thomas et al. (2017) suggests that for veterans experiencing PTSD, symptom severity may decrease with age, while a study by Goodson and colleagues (2017) found that age is negatively correlated with rates of attrition during treatment for PTSD. Additional research is needed to explore how patient characteristics may moderate treatment outcomes given that these characteristics have been shown to be related to PTSD development, symptomology, and treatment outcomes.

Evidence-Based Treatments. Treatments such as PE and CPT have manualized protocols that guide providers in delivering evidence-based treatments to their patients. For providers utilizing PE, the protocol is to meet with patients for 10 to 15, 90-minute sessions conducted once or twice weekly (Foa, Hembree, & Rothbaum, 2007). The protocol for patients engaging in CPT is 12, 50-60 minutes sessions once or twice per week, however, some patient may need more than 12 sessions of therapy to benefit from the treatment, and other patients may have greater treatment gains with more therapy sessions (Galovski Blain, Mott, Elwood, & Houle, 2012; Resick et al., 2008; Resnick, Monson, & Chard, 2016). Both PE and CPT guidelines indicate that when sessions occur less than once per week the treatment may be less effective, therefore, frequently missed appointments will hinder treatment progress (Foa et al.,

2007; Resick et al., 2017). Gutner, Suvak, Sloan, and Resick (2016) found evidence indicating that the timing of therapy sessions can play an important role in treatment outcomes. In this study, patients in the three groups (i.e., PE, CPT, and wait-list control) received the same number of therapist contact hours over a 6-week period. Patients in the two active treatment groups who received their treatment hours over a shorter period of time showed greater improvement in symptom reduction, both in short (post-treatment) and long-term (5-year follow-up) outcomes when compared with pre-treatment measures. The authors note that the frequency with which patients attend treatment sessions may be a reflection of numerous variables such as patient responsiveness, readiness for change, or even access to reliable transportation.

  Patient Characteristics. Individuals experiencing PTSD are very likely to meet criteria for one or more comorbid mental disorders (i.e., anxiety, bipolar, depressive, or substance use disorders; American Psychiatric Association, 2013). In a prospective cohort study that included 10,671 military service members, Crum-Cianflone, Powell, LeardMann, Russell, and Boyko (2016) found that 73% of service members whose screening indicated probable PTSD also developed at least one co-occurring mental or behavioral health condition during the course of the study. Additionally, 32% of service members experiencing PTSD developed two comorbid conditions, and 14% showed three or more comorbidities. The National Center for PTSD (2018) supports the use of EBTs in treating patients with comorbidities, advising mental health care providers to incorporate the collection of patient data throughout the treatment as a way to monitor symptoms. Van Minnen and colleagues (2015) conducted a review of studies that assessed the impact of treatment for PTSD on comorbid conditions and found that patients still benefited from the treatment and the comorbid condition often decreased in severity during PTSD treatment. In addition, PE treatment did not exacerbate any comorbid conditions or other

symptomology patients were experiencing. Based on available data, there is evidence to suggest participating in PE for the treatment of PTSD can produce positive secondary outcomes, including improvement in general anxiety, depression, and overall functioning of the patient (Van Minnen et al., 2015). While research indicates that the majority of patients experiencing PTSD will also be experiencing comorbid conditions (Crum-Cianflone et al., 2016; Wisco et al., 2016), providers should feel confident in offering treatments that have strong evidence bases of improved patient outcomes such as PE and CPT (National Center for PTSD, 2018).

Therapist Treatment Preferences. A fact sheet developed by the USDVA (2016) indicates that in 2011 over 500,000 veterans were treated by the VA for PTSD, and of those, over 100,000 were veterans of the Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn (OIF; OEF; OND) conflicts. This fact sheet further states that in 2015, the number of veterans treated for PTSD had increased to over 568,000, and of those, over 178,000 participated in the OIF/OEF/OND conflicts. Research by Goodson et al. (2017) as well as Sayer et al. (2017) indicates that because so many veterans need treatment and research indicates that veterans treated by providers trained to use EBTs have larger treatment gains, more providers should be trained to administer EBTs. Consequently, large amounts of time, effort, and money have been allocated to train providers on the implementation of trauma-based therapies for the treatment of PTSD (Goodson et al., 2017; Sayer et al., 2017). As an example of the push toward making EBTs more widely available for veterans diagnosed with PTSD, the USDVA fact sheet indicates that in 2011, the PTSD Consultation Program was established by the National Center for PTSD to support VA providers in their efforts to make effective treatment available to more veterans experiencing PTSD. The program was expanded in 2014 to provide support to providers in community settings who treat veterans with PTSD. This support is being realized in part by

increasing the opportunities that providers have for further training as new training sites are

approved and trainers are hired. Sayer and colleagues (2017) indicate that as of 2015, over 6,300

mental health professionals working for the VA have received training on CPT and/or PE. While

the VA datasheet indicates many efforts made by the VA to increase the availability of EBTs to

veterans nationwide, a study by Sayer et al. (2017) which included VA facilities across the

country found that trauma-focused EBTs (i.e., PE and CPT) are not regularly being used to treat

veterans diagnosed with PTSD within VA treatment cinters. Sayer and colleagues (2017)

emphasize the importance of understanding why these evidence-based, trauma-focused

treatments are not being more widely implemented by VA providers is necessary so that changes

in policy might be made that could improve the quality in treatment programs across the country.

Researchers and providers alike are participating in debate about the best treatments for

PTSD and if certain treatments should become universal standards of care (Henriques, 2018).

These discussions are in response to new PTSD treatment guidelines issued in February of 2017

by the American Psychological Association (APA) that recommends providers treat PTSD with

EBTs (i.e., CBT, CPT, PE, Cognitive Therapy, Brief Eclectic Psychotherapy, Narrative

Exposure Therapy, and Eye Movement Desensitization and Reprocessing) in place of treatments

that have insufficient empirical research showing consistent, statistically significant positive

treatment outcomes (i.e., Seeking Safety, Relaxation; Courtois et al., 2017). The APA

recommendations have received varied responses from providers across the country, and sparked

petitions for and against ousting the new guidelines (Henriques, 2018). The APA's

recommendations support the VAs efforts to increase provider efficacy in the use of EBTs as

well as increase the availability of EBTs to veterans (USDVA, 2016). The present study is being

conducted to document the treatments being utilized in an army medical hospital in the Southern

US with military personnel with trauma-related disorders. Both EBT and non-EBT treatments were documented in session notes and these groupings were used to assess potential differences in how the treatment might affect the relationship between pre- and post-treatment scores.

Characteristics of Patients

Race and Ethnicity

Research conducted by Roberts and colleagues (2010) suggested that there are marked racial and ethnic differences in lifetime prevalence rates of PTSD as well as differences in the treatment-seeking behaviors of racial and ethnic minorities when compared to EA patients. After exposure to potentially traumatic events, AA patients had slightly higher prevalence rates of PTSD (8.7%) when compared to EA patients (7.4%), while Asian patients had the lowest rate (4.0%). Of those who developed posttraumatic stress symptoms, Hispanic, Asian, and AA patients were all significantly less likely to obtain treatment when compared to EA patients. Research regarding barriers to treatment for racial and ethnic minorities may include feelings of mistrust toward medical providers, cultural misunderstandings, perceptions of racial bias, or difficulties related to lower socioeconomic status (i.e., lack of transportation & financial constraints; Alim, Charney, & Mellman, 2006; Dixon et al., 2016; Roberts et al., 2010)

A study conducted by Blair and colleagues (2013) found that patients are aware of even the most subtle kinds of implicit racial or ethnic bias communicated by their primary care providers. In this study, 2,908 Hispanic and AA patients who received regular care were surveyed regarding the communication, trust, interpersonal treatment, contextual knowledge of their current primary care provider, while their providers were assessed for their implicit and explicit racial/ethnic attitudes. The authors found that provider implicit bias was consistently correlated with the AA patient's perception of their provider's care for them, specifically, AA

patients consistently evaluated providers who had higher implicit racial and ethnic bias as being less patient-centered. Hispanic patients consistently rated the quality of the clinical relationship lower than other racial groups, and these lower ratings were unrelated to provider bias scores.

Westat (2010) conducted a national survey of veterans and currently serving military members and found between 40 and 50% of Hispanic, American Indian/Alaskan Natives, and Asian veterans report having served in combat zones. In addition, this survey found that many veterans (42.1- 48.4%) who are racial minorities have experienced a potentially traumatic event (i.e., exposure to others who were wounded, dead, or dying). A study by Rosenheck and colleagues (1995) reviewed data collected from almost 5,000 veterans who were treated in the VA PTSD Clinical Teams program. This was part of a large-scale program evaluation of this program that spanned the United States and included a total of 53 different clinics located across the country. These researchers found that when compared to EA patients, AA patients were less likely to participate in treatment and less likely to complete treatment. They also found that, compared to EA patients, AA patients received less psychotropic medication, and that therapists engaged in less war trauma discussion and used less insight-oriented psychotherapy. Interestingly, provider improvement rating scales indicated that AA patients did not show lower rates of improvement than EA patients, even though they received less treatment. Another aspect of the role of race in the treatment of PTSD that this study examined was the veteran-clinician racial pairing, and its relationship with the treatment provided. Rosenheck et al. found that although both AA providers and EA providers reported AA patients to be less engaged in treatment and less regular in attending sessions, it was only when an AA patient was paired with an EA provider that the veterans had fewer treatment sessions and significantly higher early termination rates. Thus, Rosenheck and colleagues (1995) suggest that matching patient and

providers based on racial or ethnic characteristics may improve the perceptions or ratings of

therapeutic alliance. However, only 16.4% of clinicians may be categorized as racial or ethnic

minorities (APA Center for Workforce Studies, 2015). Decreasing provider implicit and explicit

bias may be the most effective way to improve the health care experience of racial and ethnic

minority patients (Blair et al., 2013). Despite these and other barriers to the treatment of PTSD in

racial and ethnic minorities, exposure treatments have been shown to produce significant

symptom reduction when providers are sensitive and accommodating in tailoring the treatment to

the needs of individual patients (Dixon et al., 2016).

Age

Some researchers have examined the role that age may play in PTSD and its treatment

(Magruder et al., 2004; K. H. Thomas, McDaniel, Haring, Albright, & Fletcher, 2017), and

treatment outcomes may vary depending on age (Hearne, 2013). In a survey of 1,480 veterans,

M. M. Thomas and colleagues (2017) separated patients into four age groups (i.e., 18-29, 30-44,

45-59, and 60+), and used the PTSD Checklist for DSM-5 (PCL-5) to assess probable PTSD in

veterans across the US. The research indicated that younger veterans were much more likely to

report higher current and lifetime prevalence of PTSD than older veterans. Older veterans

reported moderate to low symptoms of PTSD but additionally reported an increased amount of

somatic health issues and diagnoses (e.g., heart attacks and heart disease). Magruder et al. (2004)

also found significant differences in symptom severity when patients were separated by age

categories (<50, 50-65, 65<). Working-aged patients (i.e., patients under the age of 65) had

significantly higher PCL scores when compared to patients over the age of 65. Magruder and

colleagues and M. M. Thomas et al. hypothesized that because PTSD symptom severity is higher

in working-age patients than in older patients, working-age patients may see greater treatment gains than their older counterparts.

Hearne (2013) examined treatment initiation and engagement at a large VA health care center, utilizing the medical records of 600 veterans who served in OEF/OIF overseas conflicts. Veterans were more likely to initiate and accomplish treatment goals if they were experiencing more severe PTSD symptoms, and if they were older than 30. Additionally, research on PE effectiveness by Goodson and colleagues (2017) found that the age of the veteran in treatment was negatively associated with rates of dropout, so the older the veteran, the more likely they were to see the treatment through. This corroborates previous findings that veterans who complete treatment are on average older than veterans who discontinued treatment early (Hearne, 2013).

Several studies have found that age is related to symptom expression and severity (Magruder et al., 2004; K. H. Thomas et al., 2017), as well as treatment outcomes for veteran's experiencing PTSD (Hearne, 2013). Because their research indicated that PTSD symptomatology was negatively correlated to age, Magruder et al. suggest that the VA plan healthcare campaigns that specifically target younger veterans experiencing PTSD symptoms, in the hope of engaging them in treatment. Hearne (2013) discussed theories associated with older age as a predictor of treatment retention. The first theory suggested that younger veterans may have a greater number of competing priorities, and second theory hypothesizes that younger veterans may not be as aware of direct effects their mental health diagnoses has on their everyday living (i.e., avoidance behaviors, emotional numbing, interpersonal conflicts). M. M. Thomas and colleagues (2017) suggest a cohort effect, in that psychiatric conditions decline as physical illnesses increase because of age. They also propose that because of these age-related differences, age-sensitive

screening and monitoring be utilized more consistently and effectively so that treatment efforts reflect the needs of these different age groups.

Gender

Just as there have been differences found in PTSD symptoms based on patient age (Magruder et al., 2004), a patient's gender may provide insight into the different experiences of men and women with PTSD (Tolin & Foa, 2006). The role of gender in the development, expression, and treatment of PTSD is being examined by researchers given that multiple studies have indicated differences between male and female participants (Eftekhari et al., 2013; Goodson et al., 2017; Tolin & Foa, 2006). In a meta-analysis conducted by Tolin and Foa (2006) that included 290 studies, female participants were less likely to have histories of potentially traumatic events than male participants, but when they did experience these events, they were nearly twice as likely to develop PTSD as male participants who had also experienced potentially traumatic events. Female participants were more likely to have experienced interpersonal traumas (e.g., childhood sexual abuse, or sexual assault), and these types of traumas are more likely to lead to the development of PTSD when compared to other types of traumatic events (e.g., accidents, combat, fires, or natural disasters). Yet, even when researchers controlled for the type of trauma, female participants were more likely to develop PTSD from potentially traumatic experiences. Female participants with PTSD also reported a greater number of symptoms as well as greater symptom severity than their male counterparts with PTSD. Symptom expression varied according to gender, for example, male participants tended to externalize symptoms (i.e., express violent behavior, anger, or excessive alcohol consumption), while female participants showed more internalizing symptom behaviors (i.e., depression, anxiety, or somatic complaints; Tolin & Foa, 2006).

Eftekhari et al. (2013) and Goodson et al. (2017) show significant gender differences in treatment outcomes, more specifically, female participants who go through PE have larger treatment gains than their male counterparts. Further, Wade and colleagues (2016) conducted a meta-analysis that examined the association of gender and PTSD treatment outcomes. The meta-analysis indicated that although trauma-focused interventions were effective treatments for both male and female participants, gender modified intervention effects on provider-rated PTSD symptom reduction where female participants showed larger effect sizes than their male counterparts.

It appears that there are several important gender differences in the development and treatment of PTSD. While male participants are more likely to experience potentially traumatic events, female participants are more likely to experience certain types of traumas, to develop PTSD, and to have more severe symptoms (Tolin & Foa, 2006). Research examining treatment outcomes across gender indicates that female participants tend to have larger gains at the end of treatment (Eftekhari et al., 2013; Goodson et al., 2017). Goodson et al. (2017) and Tolin and Foa (2006) speculate that the differences in treatment outcomes may revolve around socially acceptable or supported gender norms or expectations concerning expression of emotions. For example, male veterans may habitually respond to reminders of their trauma with anger which may limit the processing of more vulnerable emotions related to their trauma (i.e., helplessness, guilt, sadness, fear, etc.; Goodson et al., 2017).

Present Study

In the current study, I examined treatment outcomes from patients who were treated for trauma and/or stress-related mental health issues at an army medical hospital in an outpatient setting. Providers were masters or doctoral level mental health care professionals, who all had

previous training in EBTs for the treatment of trauma-based psychopathology. Participants

included male and female veterans and currently serving members of the US Army.

Characteristics of treatment modalities, as well as individual characteristics of participants and

providers (i.e., ethnicity, gender, and age), were examined in an effort to gain a better

understanding of factors associated with treatment outcomes in applied military settings.

Preliminary analyses conducted by a different researcher indicated that patients'

symptomology in the present sample did not reduce with treatment. Because the question of *if* or

whether the variables had a relationship was already answered, the focus of the present study was

on *how* the various treatment, patient, and therapist characteristics interact and effect one another

(Hayes, 2013). For hypotheses 1 and 2, I utilized the PROCESS macro, which is a statistical tool

designed by Hayes (2013) to more completely analyze my data. The PROCESS macro uses an

ordinary least squares regression and a nonparametric bootstrapping technique, that generates a

confidence interval that is bias-corrected. While Hayes (2013) provides a way in which to test for

moderation, Model 1 was used for these hypotheses. This model is a simple moderation where

only one moderating variable is used to test its effect on the relationship between the

independent variable and the dependent variable. For a visual representation of Model 1, see

Figure 1.

Hypotheses

Hypothesis 1: A main objective of the current study was to determine relationships

between patient demographics, treatment provided, and the treatment outcomes that the patients

were experiencing. Specific to this objective, it was hypothesized that patient characteristics (i.e.,

age, race, and gender) and treatment provided (i.e., EBT vs non-EBT) would moderate the

relationship between self-reported PTSD symptoms as measured by the PCL-5 at pre- and post-

treatment. This was tested using Model 1 of the PROCESS procedure for SPSS designed by

Hayes (2013).

Hypothesis 1a: It was predicted that patient gender would moderate the relationship

between pre- and post-treatment PCL-5 scores in that female patients would have a greater

positive response to treatment.

Hypothesis 1b: It was predicted that age would moderate the relationship between pre-

and post-treatment PCL-5 scores in that older patients would have a greater response to

treatment.

Hypothesis 1c: It was predicted that patient race (i.e., EA, AA) would moderate the

relationship between pre- and post-treatment PCL-5 scores, such that EU patients would have a

greater response to treatment than AA patients. Patients who did not identify as either of these

ethnicities were not included in this analysis.

Hypothesis 1d: Lastly, it was predicted that the type of treatment provided to patients

(i.e., EBT or non-EBT) would moderate the relationship between pre- and post-treatment PCL-5

scores in that patients receiving EBTs would have a more positive response to treatment.

Hypothesis 2: It was hypothesized that there would be a relationship between patient

mental and general health status over the course of treatment and the age, race, and gender of the

patient, as well as the treatment provided (i.e., EBT vs non-EBT). It was hypothesized that

patient characteristics (i.e., age, race, and gender) and treatment provided (i.e., EBT or non-EBT)

would moderate the relationship between pre- and post-treatment BASIS-24 scores. These

hypotheses were tested using Model 1 of the PROCESS procedure for SPSS designed by Hayes

(2013).

Hypothesis 2a: It was predicted that patient gender would moderate the relationship between pre- and post-treatment BASIS-24 scores, in that female patients would have a greater positive response to treatment.

Hypothesis 2b: It was predicted that age would moderate the relationship between pre- and post-treatment BASIS-24 scores in that older patients would have a greater response to treatment.

Hypothesis 2c: It was also hypothesized that patient race (i.e., European American or African American) would moderate the relationship between pre- and post-treatment BASIS-24 scores, such that EU patients would have a greater response to treatment than AA patients. Patients who did not identify as either of these ethnicities were not included in this analysis.

Hypothesis 2d: It was predicted that the type of treatment provided to patients (i.e., EBT or non-EBT) would moderate the relationship between pre- and post-treatment BASIS-24 scores, in that patients receiving EBTs would have a greater response to treatment.

Hypothesis 3: It was hypothesized that the number of sessions that patients participated in would be predicted by patient age and race. Specifically, older patients and European Americans would attend more therapy sessions than younger patients and African American patients. It was also hypothesized that the interaction between the age and race would predict the number of sessions that patients participated in thus it was predicted that older European Americans would have attended the greatest number of therapy sessions. These predictions were assessed using a hierarchical regression.

Hypothesis 4: It was hypothesized that there would be a relationship between pre-treatment PCL-5 scores, patient gender, and patient age. It was predicted that patients who were female and of younger age would have higher pre-treatment PCL-5 scores than older, male

patients. It was also hypothesized that the interaction between being younger and being female would predict higher pre-treatment PCL-5 scores. These predictions were examined using a multiple linear regression.

Methods

Inclusion Criteria

To be included in this study, participants had to meet several criteria. First, the patient's therapist had to have documented in their medical record that they reported experiencing a potentially traumatic event and that they had a plan or goal to treat trauma related symptoms. In addition, patients had to have one of the following diagnoses documented in their medical record: PTSD unspecified (n= 9), PTSD chronic (n= 53), or Anxiety Disorder unspecified (n= 18), or they had a provisional diagnosis of a personal history of operational and combat stress reactions (n= 1), reaction to severe stress unspecified (n= 4), or other reaction to severe stress (n= 3).

Participants

Participants were 88 members of the US Army, including active duty and reserve soldiers who were stationed at an army base in the Southeastern US at the time of treatment. These individuals were selected because their trauma history or stress reactions were severe enough to warrant therapeutic attention as described above. This sample was 79.5% male and had an average age of 36.7 (SD = 7.71) at the time the baseline PCL-5 and BASIS-24 were administered. Participant rank in the military were predominantly enlisted soldiers (92.1%) but included several warrant officers (2.3%) and officers (5.6%). The types of traumas documented in their treatment charts were as follows: combat trauma (56.8%), sexual trauma (11.4%), motor vehicle accidents (1.1%), trauma through audio or visual mediums (2.3%), multiple traumas

(17.0%), or other types of trauma (5.7%). The participants' ethnicity were as follows: African-American (54.5%), White (31.8%), Hispanic (4.5%), Western Hemisphere Indian (2.3%), Asian or Pacific Islander (1.1%), and Other (5.7%) (See Table 1).

Treatment Providers

Participants were treated by Licensed Professional Counselors (LPC), Social Workers (MSW), Psychologists, and Psychologist Trainees who had training in providing EBTs for PTSD; in all there were nine licensed providers and seven trainees who were interns or post-doctorate fellows. Provider experience ranged from less than one year to over twenty years of practice providing psychotherapy; with provider experience defined as the amount of time the provider had been seeing patients in a clinical setting.

Measures

Demographics. Information regarding demographics of the participants (e.g., age, race, gender, education level, rank, medications, time in service) were recorded by individual providers or self-reported by participants in the participant's medical files. This information was collected from the participant's electronic medical records by a Clinical Psychology Resident or a Psychology Trainee (the Author).

PCL-5. The PTSD Checklist for DSM-5 (PCL-5) is a 20 item self-report measure, in which the respondent is asked to rate each item on a 5-point Likert-scale (Wortmann et al., 2016). The PCL-5 has high internal consistency (α=.75-.95), with high convergent validity (α=.94) and discriminant validity (α=.92; Wortmann et al., 2016). Bovin et al. (2016) found the PCL-5 to have high sensitivity (α=.88) and adequate specificity (α=.69). It can be utilized as a provisional diagnostic tool and a screening instrument, as well as to assess symptom

severity, and distinguish changes in symptoms over time (see Appendix A for a copy of the PCL-5).

BASIS-24. The Behavior and Symptom Identification Scale (BASIS-24), is a 24-item instrument designed to measure fluctuations in emotional lability, interpersonal relations, drug and alcohol use, psychotic symptoms, and self-harm during treatment (Eisen, Gerena, Ranganathan, Esch, & Idiculla, 2006). The BASIS-24 is an updated version of the BASIS-32, designed to improve applicability across diverse patient populations as well as increase validity and reliability (Cameron et al., 2007; Eisen et al., 2006). Eisen et al. (2006) conducted a study to assess the sensitivity to change and the psychometric properties of the BASIS-24 among the three largest ethnic groups in the United States (i.e., African Americans, Caucasians, and Latinos). The internal consistency reliability of the BASIS-24 was above .70 for Caucasian and African Americans but was slightly lower rate for Latino participants (α=.66; Eisen et al., 2006). The BASIS-24 showed statistically significant differences for outpatient effect sizes in measures collected at intake and at a follow-up 1-month after treatment had concluded in the study by Eisen et al. (2006), indicating that the measure is sensitive to change. In this study, the BASIS-24 overall summary scores of participants were compared to other self-report measures that assess similar mental and physical functioning, satisfaction with life, as well as comorbidity, and these scores were found to correlate appropriately (i.e., Short Form Survey-12, Global Assessment of Functioning, and Comorbidity Index; Eisen et al., 2006; see Appendix B for a copy of the BASIS-24).

Procedure

A Psychology Trainee/Research Assistant (the Author), underwent a background check, completed training on utilizing the electronic military healthcare network, and completed online

military training courses (i.e., anti-terrorism training, identifying and safeguarding personally identifiable information, thumb drive awareness, etc.). The Psychology Trainee/Research Assistant and a Clinical Psychology Resident worked in the outpatient mental health care at an army medical hospital collecting data from patient files on individuals who had been seen by mental health providers from April 1, 2016 through October 31, 2016. The patient files included administrative and clinical data for the outpatient care received at the hospital.

The majority of participants were scheduled to attend weekly sessions with their provider at an army medical hospital in the Southeastern US. Most of the participants completed the PCL-5 and the BASIS-24 prior to beginning of treatment, at the 5th session of treatment, as well as at the last session of treatment if patients were seen for more than five sessions. Primary treatment types used by the providers were identified as PE (9), CPT (7), other exposure (5), other CBT (60), relaxation (3), or other (4). The type of treatment provided was determined through session notes. PE utilization was determined by provider documentation of an *in-vivo* hierarchy, the use of imaginal exposure, and other clearly identifiable PE strategies documented in the plan or session notes. CPT utilization was determined by provider documentation of stuck-points, impact statements, and other clearly identifiable CPT strategies documented in the session notes. "Other exposure" indicates that there was documented use of primarily exposure techniques, without use of any other aspects of these treatments such as stuck points, identification of thought distortions, psychoeducation, and other clearly identifiable EBT strategies documented in the plan or session notes. Patients that were categorized as having other CBT treatments when providers documented clear CBT techniques and approaches such as psychoeducation, identifying and challenging maladaptive cognitions, thought records, and behavioral activation. Relaxation therapy consisted of techniques to decrease physiological arousal (i.e., progressive muscle

relaxation, controlled breathing techniques). The therapy was coded as "other therapy" when only supportive therapeutic techniques were documented in session notes. Patients received between 4 and 43 sessions with their mental health provider, with an average of 12.27 (SD = 8.85) sessions per patient. Causes for termination of treatment included treatment success (5.7%), shifts in military assignments (i.e., Permanent Change of Station [PCS], Expiration of Term of Service [ETS], Temporary Duty Assignment [TDY] 33%), confirmed attrition (1.1%), provider unavailability (8%), or unknown (20.5%). Treatment success was determined when the treatment record indicated that the treatment goal(s) had been met. Twenty-eight participants (31.8%) were still receiving psychotherapy when the study data collection was terminated.

Results

Moderation analyses were completed using the PROCESS, Model 1 for SPSS designed by Hayes (2013) for Hypothesis 1 and Hypothesis 2. Linear regression analyses were utilized for Hypotheses 3 and 4. The sample sizes differed for the various analyses based on the number of patients who completed the outcome measures (i.e., BASIS-24, PCL-5) at baseline and at the end of treatment. The sample sizes were also affected by which patients were included in the particular analysis, for example, hypotheses 1c, 2c, and 3 included only patients who identified as African American or European American. Means and standard deviations of pre- and post-treatment PCL-5 and BASIS-24 scores and session number across the categorical predictor variables are provided in Table 2.

PCL-5. Hypothesis one predicted that there would be a relationship between pre- and post-treatment PTSD symptoms and a patient's age, race, gender, and type of treatment provided (i.e., EBT or non-EBT). PROCESS macro Model 1 was used to examine the hypothesis that patients' demographic characteristics and the type of treatment administered would moderate the

relationship between pre- and post-treatment PCL-5 scores. These relationships were examined

individually using Model 1 of the PROCESS macro (see Figure 1), which tests the predictor's

association with the outcome variable when moderated by a single variable or moderator (Hayes,

2017).

Hypothesis 1a: It was predicted that the gender of patients would moderate the

relationship between pre- and post-treatment PCL-5 scores in that female patients would have

greater positive responses to treatment than male patients. The regression model used to assess

for gender differences included pre-treatment scores, gender, and a pre-treatment X gender

interaction variable as predictors of post-treatment scores. The overall model was significant, R^2

= .34, MSE = 245.89, $F(3,42) = 7.24$, p <.001, however none of the direct or indirect

relationships were significant. There was a marginal association between pre-treatment and post-

treatment scores, b = .79, $t(42) = 1.78$, p = .08. Gender was not significantly associated with

post-treatment PCL-5 scores, b = 5.10, $t(42) = .29$, p = .78. Further, gender did not moderate the

relationship between pre-treatment and post-treatment PCL-5 scores: b = -.12, $t(42) = -.34$, p =

.74 (see Table 3).). The hypothesis that patient gender would moderate the relationship between

pre- and post-treatment PCL-5 scores was not supported.

Hypothesis 1b: It was predicted that age would moderate the relationship between pre-

and post-treatment PCL-5 scores in that older patients would have a greater response to

treatment. The model assessing the possible moderating effect of age on the relationship between

pre- and post-treatment PCL-5 scores was significant, R^2 = .36, MSE = 237.40, $F(3,42) = 7.99$, p

<.001. The pre-treatment scores predicted post-treatment scores, b = 1.53, $t(42) = 2.04$, p = .05.

Age was not associated with post-treatment PCL-5 scores, b = 1.38, $t(42) = 1.28$, p = .21. The

interaction term, pre-treatment scores X age, did not predict post-treatment PCL-5 scores, thus,

age did not moderate the relationship between pre- and post-treatment PL-5 scores, $b = -.02$,

$t(42) = -1.20$, $p = .24$ (see Table 4). The hypothesis that patient age would moderate the

relationship between pre- and post-treatment PCL-5 scores was not supported.

Hypothesis 1c: It was predicted that patient race (i.e., EA, AA) would moderate the

relationship between pre- and post-treatment PCL-5 scores, such that EU patients would have a

greater response to treatment then AA patients. The model assessing the possible moderating

effect of race on the relationship between pre- and post-treatment PCL-5 scores was significant,

$R^2 = .31$, MSE $= 281.55$, $F(3,34) = 4.97$, $p = .006$. The pre-treatment scores did not significantly

predict post-treatment scores, $b = .07$, $t(34) = 1.22$, $p = .23$. Race was not associated with post-

treatment PCL-5 scores, $b = 2.85$, $t(34) = .18$, $p = .86$. The interaction term, pre-treatment PCL-5

scores X race, did not predict post-treatment PCL-5 scores, so, the hypothesis that patient race

would moderate the relationship between pre- and post-treatment PCL-5 scores was not

supported, $b = -.05$, $t(34) = -.14$, $p = .89$ (see Table 5).

Hypothesis 1d: It was predicted that the type of treatment patients received would

moderate pre- and post-treatment scores in that patients receiving EBTs would have a more

positive response to treatment than patients receiving non-EBTs. The model assessing the

possible moderating effect of the type of treatment provided (EBT or non-EBT) to patients on

the relationship between pre- and post-treatment PCL-5 scores was significant, $R^2 = .34$, MSE $=$

245.89, $F(3,42) = 7.24$, $p < .001$. The pre-treatment scores did not predict post-treatment scores,

$b = 1.01$, $t(42) = .61$, $p = .10$. The type of treatment was not associated with post-treatment PCL-

5 scores, $b = 13.45$, $t(42) = .77$, $p = .45$. The interaction term, pre-treatment PCL-5 scores X type

of treatment, did not predict post-treatment PCL-5 scores, therefore, the hypothesis that the type

of treatment would moderate the relationship between pre- and post-treatment PCL-5 scores was not supported, $b = -.20$, $t(42) = -.61$, $p = .55$ (see Table 6).

BASIS-24. Hypothesis two predicted that there would be a relationship between patients' pre- and post-treatment BASIC-24 scores and patients' age, race, gender, as well as the type of treatment they were provided. PROCESS Model 1 was used to examine the hypothesis that patients' demographic characteristics and the type of treatment administer would moderate the relationship between pre- and post-treatment BASIS-24 scores. These associations were tested using the interaction term of PROCESS Model 1.

Hypothesis 2a: This regression model included pre-treatment scores, gender, and a pre-treatment X gender interaction variable as predictors of post-treatment scores to assess possible gender differences in the relationship between pre- and post-treatment BASIS-24 scores and the hypothesis that female patients would have greater positive responses to treatment then male patients. The overall model was significant, $R^2 = .47$, MSE $= .24$, $F(3,65) = 19.49$, $p < .001$. The pre-treatment scores predicted post-treatment scores, $b = 1.39$, $t(65) = 4.49$, $p < .001$. Gender predicted post-treatment BASIS-24 scores, $b = .92$, $t(65) = 2.15$, $p = .03$. The interaction term, pre-treatment scores X gender, predicted post-treatment BASIS-24 scores, $b = -.52$, $t(65) = -2.21$, $p = .03$, in that there was a statistically significant relationship for male patients between pre- and post-treatment, $b = .87$, $t(65) = 7.44$, $p < .001$, but the relationship between pre- and post-treatment for female patients did not reach significance, $b = .35$, $t(65) = 1.75$, $p = .09$ (see Table 7 & Figure 2). The hypothesis that gender would moderate the relationship between pre- and post-treatment BASIS-24 scores such that female patients would have a greater positive response to treatment was not supported.

The hypothesis that gender would moderate the relationship between pre- and post-treatment

BASIS-24 scores such that female patients would have a greater positive response to treatment

was not supported.

Hypothesis 2b: The model assessing whether age moderated the relationship between

pre- and post-treatment BASIS-24 scores to test the hypothesis that older individuals would

benefit more from treatment, was significant, $R^2 = .44$, MSE = .26, F(3,65) = 17.13, p < .001.

There was a marginal association between pre-treatment and post-treatment scores, $b = 1.03$,

$t(65) = 1.80$, $p = .08$. Age was not associated with post-treatment BASIS-24 scores, $b = .02$, $t(65)$

$= .71$, $p = .48$. Futher, the interaction term, pre-treatment scores X age, did not predict post-

treatment BASIS-24 scores, thus, age did not moderate the relationship between pre- and post-

treatment BASIS-24 scores, $b = -.01$, $t(65) = -.47$, $p = .64$ (see Table 8).

Hypothesis 2c: It was hypothesized that patient race (i.e., European American or African

American) would moderate the relationship between pre- and post-treatment BASIS-24 scores,

such that EU patients would have a greater response to treatment than AA patients. The model

assessing the possible moderating effect of race on the relationship between pre- and post-

treatment BASIS-24 scores was significant, $R^2 = .47$, MSE = .27, F(3,56) = 16.79, p <.001. The

pre-treatment scores predicted post-treatment scores, $b = .82$, $t(56) = 2.13$, $p = .04$. Patient race

(i.e., African American, European American) was not associated with post-treatment BASIS-24

scores, $b = .03$, $t(56) = .09$, $p = .93$. The pre-treatment X race interaction term did not predict

post-treatment PCL-5 scores, thus, race did not moderate the relationship between pre- and post-

treatment BASIS-24 scores, $b = -.00$, $t(56) = -.01$, $p = .99$ (see Table 9).

Hypothesis 2d: It was predicted that the type of treatment provided to patients (i.e., EBT

or non-EBT) would moderate the relationship between pre- and post-treatment BASIS-24 scores,

in that patients receiving EBTs would have a greater response to treatment then patients receiving non-EBTs. The model assessing the possible moderating effect of the type of treatment provided to patients on the relationship between pre- and post-treatment BASIS-24 scores was significant, R^2 =.44, MSE = .26, F(3,65) = 16.85, p <.001. . The pre-treatment scores predicted post-treatment scores, b = .99, t(65) = 2.46, p = .02. The type of treatment was not associated with post-treatment BASIS-24 scores, b = .29, t(65) = .65, p = .52. The interaction term, pre-treatment scores X type of treatment did not predict post-treatment BASIS-24 scores, thus, the hypothesis that the type of treatment would moderate the relationship between pre- and post-treatment BASIS-24 scores was not supported, b = -.15, t(65) = -.64, p = .52 (see Table 10).

The Number of Sessions Attended. Hypothesis three predicted that there would be a relationship between patient age, patient race (i.e., AA or EA), and the number of sessions they attended, such that older patients and EA patients would attend a greater number of sessions than younger patients and AA patients. A hierarchical multiple regression was performed to determine if the patient's age, race, and the interaction between age and race would predict the number of session patients attended. Patient age was entered into step one, patient race was entered into step two, and the age X race interaction term was put in step three. Patient age was entered first due to more consistent findings in the literature regarding its positive association with treatment outcomes for patients with PTSD. Results indicated that age was significantly associated with the number of sessions attended (F (1,74) = 11.15, p < .01), with an R^2 of .13, meaning that 13% of the variability in session attendance is accounted for by a patient's age. Neither race nor the age X race interaction term were found to predict the number of sessions patients attended (see Table 11).

Pre-treatment Symptom Severity. Hypothesis four predicted that female patients and younger patients would have higher pre-treatment PCL-5 scores than male patients and older patients. A linear regression was performed to predict the pre-treatment PCL-5 scores using the patient's gender and age as well as an age X gender interaction term. Results indicated the overall model was not significant (F (3,62) = .71, p = .55), accounting for 3.3% of the variation in the pre-treatment PCL-5 scores with adjusted R^2 = 1.4%. There was no significant association between pre-treatment PCL-5 scores and age (p = .70), gender (p = .39), or age X gender interaction term (p = .44; see Table 12).

Reliable Change. In order to determine the percentage of patients who reliably improved from pre- to post-treatment, Jacobson's and Traux's (1991) method was utilized. RCI scores alone are not enough to indicate clinical significance, therefore the RCI scores need to be compared to clinical cutoff scores as well as the mean score of a "well-functioning normal population" (Jacobson & Traux, 1991, p. 14). The researcher was unable to find PCL-5 or BASIS-24 means of a normal population, therefore the PCL-5 RCI was calculated as 12.52 using the Cronbach's alpha (r_{xx}) and standard deviation (s_1) from a psychometric study of the measure using active duty service members who were seeking treatment for PTSD (Wortmann et al., 2016). The BASIS-24 RCI was calculated as .664 using the test-retest reliability (r_{xx}) and the standard deviation (s_1) found in Eisen, Normand, Belanger, Spiro, and Esch (2004) and Eisen et al. (2006), respectively.

Three categories were used to define therapy outcome: (1) deteriorated, signifying the patient's PCL-5 or BASIS-24 score reliably progressed in a negative direction from pre- to post-treatment (i.e., RCI $\geq$ 1.96); (2) no change, signifying the patient's PCL-5 or BASIS-24 score did not change to a reliable degree from pre- to post-treatment (i.e., RCI -1.95 – 1.95); (3) improved,

signifying the patient's PCL-5 or BASIS-24 score reliably improved from pre- to post-treatment

(i.e., RCI $\leq$ -1.96). Of the 46 patients in the present study who completed the PCL-5 at pre- and

post-treatment: 4 (9%) deteriorated, 35 (76%) did not experience reliable change, and 7 (15%)

reliably improved. Thus, 84% of patients undergoing treatment showed unsuccessful outcomes

in their PTSD symptoms as measured by the PCL-5. Of the 69 patients who completed the

BASIS-24 at pre- and post-treatment: 9 (13%) deteriorated, 55 (80%) did not experience reliable

change, and 5 (7%) reliably improved. Thus, 93% of patients in this study showed unsuccessful

outcomes in their overall mental and general health as measured by the BASIS-24 (i.e.,

depression/functioning, interpersonal relationships, psychotic symptoms, alcohol and drug use,

emotional liability, and self-harm).

Discussion

Reports from epidemiological studies indicate that US veterans have lifetime prevalence

rates of PTSD between 8% and 20% (Currier et al., 2016; Dursa et al., 2014; Wisco et al., 2014;

Wisco et al., 2016). Due to the number of veterans seeking mental health treatment for trauma-

related diagnoses (Wisco et al., 2016), there is a great need for available, effective treatment

options (M. M. Thomas et al., 2017). EBTs have shown positive treatment outcomes across

diverse patient populations (Eftekhari et al., 2013; Roberts, et al., 2010; Van Minnen et al.,

2015). A meta-analysis by Harik, Grubbs, and Schnurr (2016) reviewed 28 randomized

controlled studies of several EBTs for the treatment of PTSD (i.e., PE, CPT, and Eye Movement

Desensitization and Reprocessing) which included 1,503 patients. Using binomial regression,

these researchers estimated that 53% of patients treated using trauma-focused EBTs would see

symptoms diminish enough to no longer qualify for a PTSD diagnosis. The purpose of this study

was to increase our knowledge of how patient demographics and the type of treatment utilized

(EBT vs. non-EBT) are related to treatment outcomes at an Army medical center. Pre- and post-treatment measures were examined, along with the number of sessions patients attended.

PTSD Symptoms

Preliminary tests showed no significant change in mean scores from pre- to post-treatment PCL-5 measures, therefore, in an effort to identify factors that are related to positive outcomes, hypothesis one predicted that the relationship between pre- and post-treatment PCL-5 scores would be moderated by patient demographics (i.e., gender, age, race) and whether or not the patient received an EBT or not. Contrary to prediction, none of these patient demographics were found to moderate this relationship. While these results were unexpected, they were not unprecedented. A meta-analysis by Erford and colleagues (2016) examined treatment outcomes for patients with PTSD who had received counseling. This meta-analysis included 152 studies and 11,655 participants, and they found that no patient characteristic, treatment implementation strategy, or theoretical approach resulted in better outcomes. Similar to the present study, there was no difference in the effectiveness of non-trauma-focused and trauma-focused counselling methods. However, results of the meta-analysis showed small to large effect sizes in positive treatment outcomes for these patients, indicating that counseling had a positive effect for patients which is contrary to the findings of the present study.

One possible explanation for the null result in the present study is found in the patient termination records. Just over 31% of patients were still attending treatment sessions at the end of data collection, and over 62% had stopped attending sessions for various reasons (i.e., provider unavailable, dropout, change of military station or deployment). Only about 5% of the patients in this study completed treatment. This low rate of treatment completion may partially explain the high percentage (84%) of unsuccessful treatment outcomes. Attrition is not unique to

the present study, and researchers have attempted to identify predictors of attrition or treatment completion in order to address and potentially reduce rates of attrition.

Studies concerned with high attrition rates of veterans receiving treatment for PTSD and comorbid substance abuse have tried to identify predictors of patient dropout, but findings across the literature are inconsistent. Szafranski and colleagues (2017) reported attrition at 43.1%; they were able to determine that the largest percentage of dropouts in their study happened between sessions 9 and 10 of their 12-session cognitive-behavioral treatment. Of the variables assessed (i.e., depression symptoms, substance use, PTSD symptoms) only high PTSD symptomatology at pre-treatment was associated with attrition in their sample. Zandberg and colleagues (2016) divided moderators and predictors into seven domains (i.e., demographics, socioeconomic factors, trauma features, comorbid disorders, alcohol features, PTSD features, and improvement during treatment). Out of the variables assessed, only rate of symptom change and trauma type significantly predicted patient dropout, which was 32.1% in their study (Zandberg et al., 2016). While these studies identified different predictors of dropout, they both recommended that providers closely monitor symptom change during treatment and open dialogs with patients specifically regarding their personal symptom changes and continuing commitment to treatment.

Mental and General Health

Hypothesis two included several models that were tested to determine if the relationship between BASIS-24 pre- and post-treatment scores were moderated by demographic variables (i.e., gender, age, race) or type of treatment (i.e., EBT or non-EBT) the patients received. This hypothesis was not supported in that the author hypothesized that female patients would benefit more from treatment than male patients, thus gender would moderate the relationship between pre- and post-treatment BASIS scores. Results showed there was a statistically significant

relationship for male patients between pre- and post-treatment scores ($p < .001$), while the female patients showed a trend toward significance ($p = .09$), in the same direction as the male patients. Other demographic variables examined (i.e., race and age) did not moderate the relationship between pre- and post-treatment BASIS-24 scores. The type of treatment that patients received did not moderate the relationship between pre- and post-treatment BASIS-24 scores. Only BASIS-24 total scores were available to the author; thus, it is possible that findings would be different if the six domains of the BASIS-24 were examined. These domains (i.e., depression/functioning, interpersonal relationships, psychotic symptoms, alcohol and drug use, emotional liability, and self-harm) indicate to the clinician a patient's subjective experience as it details their level or frequency of difficulty in each domain. Using the BASIS-24 to its fullest capacity (i.e., examining each domain) instead of only utilizing the overall score, may provide researchers with a more ability to determine if patients are benefiting from treatment or not.

Treatment Type

The type of treatments utilized by providers were coded into one of two categories (i.e., EBT and non-EBT) and both hypotheses one and two examined this variable as a potential moderating factor related to treatment outcome. Results indicated that treatment type did not moderate the relationship between pre- and post-treatment outcomes. These findings suggest that while some therapists' notes indicated they used aspects of EBT's for PTSD that the implementation was not consistent with the treatment protocols in some way. However, there is no way to know if or how the treatments provided (EBT and non-EBT) differed substantially from each other as they were coded based on treatment notes only. The providers who treated patients in this study were all EBT-trained, however, based on their treatment notes, many providers elected to use non-EBTs, according to their notes, thus 76% of patients received non-

EBTs for their trauma-related disorder. In an effort to understand why providers do not use EBTs with more regularity, Sayer and colleagues (2017) interviewed staff from outpatient VA sites and found that the best way to get providers to provide EBTs may be through the reorganization of a clinic's "mission". Their findings indicated that clinics with the most treatment fidelity were those that were highly specialized in the treatment of trauma-related disorders. Clinics that are not highly specialized may not have the resources to support EBTs that tend to be complex and resource-intensive. Staff at established clinics may not believe EBTs to be more effective compared to their usual therapeutic techniques. For example, one clinic emphasized treating people not symptoms and affirmed that patients might continue to be seen "until they do not need us anymore" (Sayer et al., 2017). To improve implementation and sustainability, Sayer and colleagues suggest designing a team mission and culture that will encourage and sustain empirically supported innovations. In this way, providers can adapt themselves and their clinics to become more supportive of effective treatments such as EBTs.

In a study conducted by Zepeda Méndez, Nijdam, Ter Heide, Van der Aa, and Olff (2018), 12 patients participated in a five-day inpatient EMDR treatment for PTSD. These researchers used the PCL-5 to track PTSD symptom changes and the RCI was calculated using pre-treatment (day 1) and follow-up (day 21) PCL-5 scores. Nine of the 12 participants (75%) showed reliably improved PCL-5 scores, while the remaining 25% of participants were unchanged, meaning their scores had not changed to a reliable degree at the end of treatment. No participants reliably deteriorated (Zepeda Méndez et al., 2018). In a study by Monson and colleagues (2006) assessing the effectiveness of CPT on veteran patient receiving treatment for military-related PTSD, patients showed significant reductions in symptomology. Using self-rated and clinician-rated measures (i.e., PCL and Clinically Administered PTSD Scale) these

researchers calculated the reliable change scores of patients. Results indicated 50% of patients showed reliable improvement and 50% of patients showed no reliable change at the end of treatment. None of the patients showed reliable deterioration. Patients had to have been diagnosed with military-related PTSD in order to participate in the study. Results indicated that 40% of patients no longer met criteria for PTSD at the conclusion of treatment (Monson et al., 2006). Patient PCL-5 scores in the present study did not reflect the patterns seen above: 9% of patients reliably deteriorated and 76% experienced no change over the course of treatment, while only 15% reliably improved. These results were also reflected in BASIS-24 scores, which are indicative of mental and general health and wellbeing. Results showed 13% of patient scores reliably deteriorated, 80% did not change, and 7% reliably improved. As seen above, effective treatments are available for clinical use, however, these EBTs were not utilized in a way that generated significant positive outcomes for patients in this study. These results indicate a clear problem with the dissemination of effective treatments being provided for military members seeking treatment for PTSD.

Improving the efficiency of trauma-related treatment options while maintaining high efficacy is another way researchers are looking for solutions to the concern that providers are not implementing EBTs they have been trained to offer (Sloan, Lee, Litwack, Sawyer, & Marx, 2013). Sloan and Marx (2018) describe Written Exposure Therapy (WET) as a repackaged imaginal exposure treatment designed to be more manageable and efficient and more acceptable to patients to reduce rates of attrition. In a pilot study for WET, Sloan and colleagues (2013) observed low attrition, clinically significant decreases in PTSD symptoms, and high treatment satisfaction from veterans in the sample. This is one example of researchers adapting EBTs so that they become more widely utilized by clinicians and are more acceptable to patients.

Session Attendance

Hypothesis three was designed to determine if the present sample was consistent with the literature in regards to an issue that can impact outcomes that the patient has some control over, that is, the number of sessions they attend. Patient age and race as well as an age X race interaction term were used as predictor variables in a hierarchical regression to determine if they predicted the number of sessions a patient attended. This hypothesis was partially supported. Contrary to the prediction, patients' race (i.e., European American or African American) was not a predictor of the number of sessions patients attended. However, patient age was a significant predictor of the number of sessions a patient attended ($p < .01$). Research by Hearne (2013) examining initiation and engagement of veterans participating in treatment for PTSD found that patients older than 30 were more likely to complete treatment goals. The results of the present study suggests that age is positively associated with better adherence to treatment guidelines, at least in terms of attending treatment sessions. These differences are no doubt due to a number of factors, some of which include younger patients having multiple competing priorities and participating in a greater number of avoidance behaviors (i.e., substance abuse to achieve emotional numbing; Hearne, 2013). It is important to note that there was a large range in the number of therapy sessions that individual patients attended (i.e., 4 to 43, M = 12.27, SD = 8.85), and many patients continued treatment after data collection for this study was completed.

Symptom Severity

Hypothesis four was intended to explore two demographics (i.e., gender and age) as they related to pre-treatment PTSD symptom severity. Tolin and Foa (2006) found that female patients tend to report more severe PTSD symptoms than their male counterparts. While female patients in the present study reported greater symptom severity (M= 47.8) than male patients

(M= 44.7), the difference did not reach statistical significance. Similarly, age showed a slightly negative correlation, however this correlation did not reach significance, ($r = -.14$, $p =.14$). Magruder and colleagues (2004) as well as K. H. Thomas and colleagues (2017) found that patient age was negatively correlated with baseline symptom severity, thus, younger patients had more opportunity to make larger treatment gains due to higher symptom severity scores. While the results of this hypothesis were not supported, the findings were similar to the predicted pattern. One possible cause the findings did not reaching significance might be the small number of women in the sample (i.e., 54 men, 12 women).

Limitations and Future Directions

The current research should be interpreted with an understanding of several limitations. One significant limitation was that this data was not collected by the author; however, efforts were made by the author to assure the data were accurate. The individual who collected the data from patient charts did so to provide a review of the effectiveness of the treatment provided by the Army medical center psychology unit for patients seeking trauma-related services. The author was able to contact the individual who collected the data via email in order to better understand the data set. Because this data was collected in a clinical setting, patient charts, including provider notes, were the main source of information. Many provider notes were unclear, or copied from session to session, which limited the ability to gather applicable information regarding the utilization of EBT or non-EBT treatments (e.g., documentation of cognitive restructuring or exposure techniques). Thus, results related to the type of treatment patients received (EBT or non-EBT) may have been affected by this incomplete documentation. For example, while session notes indicated utilization of cognitive restructuring or an exposure technique, the actual application of these techniques was insufficient to induce change (e.g.,

patient did not complete homework given or the amount of time spent on exposure was not long

enough). A study by Sayer and colleagues (2017) assessed organizational factors in clinics that

might affect implementation and use of EBTs. Their results indicated that some providers value

the ability to choose which treatment approach they feel is best suited for their clients, and that

they do not want clinician autonomy to be restricted or undermined. In the present study,

providers were allowed to choose the treatment approach they felt would best help each

individual client. Unfortunately, results indicated the majority of patients did not improve. This

study can be used to develop future research, specifically examining the lack of effectiveness of

trauma treatment in military settings.

The researcher who collected the data did so over a specific 6-month time-frame. While

all pre-treatment scores were recorded in patient medical records, the post-treatment scores are

the last scores recorded at the end of data collection. At that time, 5% of patients had completed

treatment and over 62% had stopped attending therapy sessions reasons (i.e., dropout, provider

unavailable, change of military station or deployment). Just over 31% of patients were still

attending therapy at the end of data collection. This low percentage of patients who completed

treatment likely played a role in the finding that there was a lack of treatment effectiveness

however, 85 to 93% of patients did not make reliable progress thus it does not appear that this

would fully account for the lack of treatment success.

A literature review by Bergman, Przeworski, and Feeny (2017) reported that self-report

measures produced higher rates of PTSD than instruments rated by clinicians such as a structure

clinical interview (i.e., Clinician-Administered PTSD Scale for DSM-5). Both the PCL-5 and the

BASIS-24 are patient self-report measures, which eliminates possible clinician bias but

underlines the subjective nature of the original data. In order to establish the most accurate PTSD

assessment for patients, Bergman and colleagues (2017) recommend providers use self-report measures in conjuncture with provider-administered measures, thereby gaining information on subjective experiences of symptomology as well as functional impairment.

While the patients in this study were demographically varied, the number of patients in each demographic domain were not evenly distributed. Higher numbers of patients in categories with lower representation would have increased the statistical power of the analyses and decreased the possibility of Type II error. For example, hypothesis two (a) included 17 (25%) female patients and the analysis indicated that the relationship between pre- and post-treatment BASIS-24 scores was trending toward significance for female patients ($p = .09$).

Nearly 40% of patients in this study were involved in a Medical Evaluation Board (MEB) and/or a Physical Evaluation Board (PEB) during their treatment. MEB procedures includes an evaluation of the service member's medical history, current condition, and the degree of illness or injury. The MEB then makes a recommendation regarding the service member's fitness for military duty to the PEB. The PEB reviews all MEB documentation and makes a formal judgement which dictates if the service member will continue military duty and their eligibility for disability compensation. In the present data set, whether the patient was involved in MEB/PEB was indicated, however the patient's attitude about their MEB/PEB outcome was not known (i.e., patients may have wanted to separate from military service or may have been attempting to remain in service). These factors could have impacted patients' reports on the PCL-5 and BASIS-24 in that they could have over- or under-reported their symptoms, with or without intention, and/or functioning. According to a study by Wachen and colleagues (2016) regarding the treatment of PTSD in active duty military personal, there may be some special considerations that may assist providers in delivering PTSD treatments to active duty military

members. This study found that barriers such as stigma associated with mental health care might

be more pronounced in military settings than in veteran or civilian treatment settings. Because

the military culture emphasizes personal strength and courage, providers may see patients

minimize symptoms, in an effort to avoid perceived weakness. This may easily lead to inaccurate

diagnoses or assessment results. Future research may investigate differences in pre-treatment

patient expectations as well as treatment outcomes.

Lastly, while comorbidities and pharmaceuticals were recorded in this data set, those

variables were not examined in the present study. Future research may consider the possible

interactions of these variables on the outcomes of treatment in settings such as this. For example,

a study by Grubbs and colleagues (2015) investigated characteristics of veterans who initiated

treatment for PTSD and found that comorbid major depression negatively predicted patient

engagement.

Conclusions

Between 8 and 20% of US military veterans will experience PTSD at some point in their

lifetime (Currier et al., 2014; Dursa et al., 2014; Wisco et al., 2014; Wisco et al., 2016). Due to

these high estimations and the far-reaching, deleterious effects of PTSD (Van Minnen et al.,

2015), there is a pressing need for more effective and efficacious treatments (Lancaster, Teeters,

Gros, & Back, 2016). While there is strong evidence of the effectiveness of several treatment

(e.g., PE, CPT; Eftekhari et al., 2013; Roberts et al., 2010; Van Minnen et al., 2015), and efforts

have been made by the VA to educate and train providers in their use, these treatments are not

consistently being provided to patients (Sayer et al., 2017). The current study supports these

findings as over 75% of patients received non-EBT treatments even though 100% of providers

had received training on the utilization of EBTs. Preliminary analyses found no significant

difference between pre- and post-treatment mean scores of the PCL-5 or the BASIS-24. Accordingly, this study sought to expound on the current research regarding variable interactions and patient outcomes by specifically looking at demographic variables (i.e., gender, age, race) and the types of treatments (i.e., EBT or non-EBT) provided to patients. Results indicated that gender had an interaction with pre- and post- treatment BASIS-24 scores. Specifically, the relationship between the pre- and post-treatment scores was statistically significant for male patients, and trended toward significance for female patients. Because the trending pattern of female patients is similar to the statistically significant pattern of male patients, it is likely the difference is due to lower numbers of female patients in this sample. Other demographic variables (i.e., age & race) showed no statistically significant interactions. While the type of treatment provided (i.e., EBT or non-EBT) did not moderate treatment outcomes, the majority of patients were not being provided with EBTs. Results also indicated that age was a positive predictor of the number of sessions attended by patients, while race was not a significant predictor of sessions attended. The patients in this study showed high rates of attrition. Reliable change calculations of PCL-5 scores showed 85% of patients had unsuccessful treatment outcomes, and from the BASIS-24 scores, 93% of patients had unsuccessful treatment outcomes. In general, patients were not provided with EBTs and they did not benefit from the treatment they did receive. Future studies focused on the issue of ineffective treatments would be useful not only to current providers, but also to clinic administrators, military and civilian hospitals, as well as mental healthcare as an industry. Developing the existing literature examining the use of ineffective treatments could help mental health professionals police their own work and thereby correct common mistakes that limit positive patient outcomes.

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Appendix A

PCL-5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

PCL-5 (14 August 2013)   National Center for PTSD   Page 1 of 1

Appendix B

BASIS-24® (Behavior And Symptom Identification Scale)
ADULT VERSION

Instructions to Staff: Please fill in the following information completely.

Client ID: __ __ __ __ __ __ __ __

HCO ID: __ __ __ __

Admission / Intake Date: __ __ / __ __ / __ __

Time Point:
- ₁☐ Admission/Intake
- ₂☐ Mid-treatment
- ₃☐ Discharge termination
- ₄☐ Post-treatment follow-up

Level of Care:
- ₁☐ Inpatient
- ₂☐ Outpatient
- ₃☐ Partial/day hospital
- ₄☐ Residential

Program Type or Unit: __ __

Instructions to Respondents:

This survey asks about how you are feeling and doing in different areas of life. Please check the box to the left of your answer that best describes yourself during the *PAST WEEK.* Please answer every question. If you are unsure about how to answer, please give the best answer you can.

EXAMPLE:

During the PAST WEEK, how much difficulty did you have...	No difficulty	A little difficulty	Moderate difficulty	Quite a bit of difficulty	Extreme difficulty
Ex Sleeping?	☐	☐	☑	☐	☐

During the PAST WEEK, how much difficulty did you have...	No difficulty	A little difficulty	Moderate difficulty	Quite a bit of difficulty	Extreme difficulty
1 Managing your day-to-day life?	☐	☐	☐	☐	☐
2 Coping with problems in your life?	☐	☐	☐	☐	☐
3 Concentrating?	☐	☐	☐	☐	☐

During the PAST WEEK, how much of the time did you...	None of the time	A Little of the time	Half of the time	Most of the time	All of the time
4 Get along with people in your family?	☐	☐	☐	☐	☐
5 Get along with people outside your family?	☐	☐	☐	☐	☐
6 Get along well in social situations?	☐	☐	☐	☐	☐
7 Feel close to another person?	☐	☐	☐	☐	☐
8 Feel like you had someone to turn to if you needed help?	☐	☐	☐	☐	☐
9 Feel confident in yourself?	☐	☐	☐	☐	☐

During the PAST WEEK, how much of the time did you...	None of the time	A Little of the time	Half of the time	Most of the time	All of the time
10 Feel sad or depressed?	☐	☐	☐	☐	☐
11 Think about ending your life?	☐	☐	☐	☐	☐
12 Feel nervous?	☐	☐	☐	☐	☐

During the PAST WEEK, how often did you...	Never	Rarely	Sometimes	Often	Always
13 Have thoughts racing through your head?	☐	☐	☐	☐	☐
14 Think you had special powers?	☐	☐	☐	☐	☐
15 Hear voices or see things?	☐	☐	☐	☐	☐
16 Think people were watching you?	☐	☐	☐	☐	☐
17 Think people were against you?	☐	☐	☐	☐	☐

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TURN PAGE

During the *PAST WEEK*, how often did you...	Never	Rarely	Sometimes	Often	Always
18 Have mood swings?	☐	☐	☐	☐	☐
19 Feel short-tempered?	☐	☐	☐	☐	☐
20 Think about hurting yourself?	☐	☐	☐	☐	☐

During the *PAST WEEK*, how often...	Never	Rarely	Sometimes	Often	Always
21 Did you have an urge to drink alcohol or take street drugs?	☐	☐	☐	☐	☐
22 Did anyone talk to you about your drinking or drug use?	☐	☐	☐	☐	☐
23 Did you try to hide your drinking or drug use?	☐	☐	☐	☐	☐
24 Did you have problems from your drinking or drug use?	☐	☐	☐	☐	☐

Table 1
Demographic characteristics of patients and treatments received (N = 88)

Characteristic	N	%
Gender		
Male	70	79.5
Female	18	20.5
Race		
European American	28	31.8
African American	48	54.5
Asian or Pacific Islander	1	1.1
Hispanic	4	4.5
Western Hemisphere Indian	2	2.3
Other	5	5.7
Trauma Type		
Combat	50	56.8
Sexual Assault	10	11.4
Motor Vehicle Accident	1	1.1
Audio/Visual Mediums	2	2.3
Unknown	5	5.7
Multiple	15	17.0
Other	5	5.7
Type of Treatment Received		
EBT	21	23.9
Non-EBT	67	76.1

Table 2

Mean scores with standard deviations of PCL-5 and BASIS-24 by patient characteristics and type of treatment received.

Variable	Pre-Treatment PCL-5		Post-Treatment PCL-5		Pre-Treatment BASIS-24		Post-Treatment BASIS-24		Number of Sessions	
	M	SD	M	SD	M	SD	M	SD	M	SD
Male Patients	44.80	17.16	43.76	19.67	1.76	.59	1.86	.69	11.93	8.78
Female Patients	47.50	13.64	46.23	20.56	1.75	.60	1.84	.76	15.13	9.67
African Americans	45.19	16.67	45.58	20.76	1.70	.57	1.81	.73	13.54	9.71
European Americans	45.47	16.61	42.25	17.98	1.87	.62	1.92	.65	10.89	7.45
EBT	46.67	18.59	43.08	20.50	1.89	.66	1.90	.77	8.16	3.04
non-EBT	44.91	16.08	44.97	19.71	1.72	.57	1.84	.68	14.04	9.82

Table 3
Results from analysis examining the moderation effect of gender on pre- and post-treatment PCL-5 scores.

		Coeff.	SE	t	p
Constant	i_y	8.292	22.124	.375	.710
Pre-treatment (X)	b_1	.787	.442	1.782	.082
Gender (W)	b_2	5.103	17.832	.286	.776
Pre-treatment X Gender (XW)	b_3	-.119	.351	-.339	.736

$$R^2 = .341, MSE = 245.891$$
$$F(3,42) = 7.236, p < .001$$

Table 4
Results from analysis examining the moderation effect of age on pre- and post-treatment PCL-5 scores.

		Coeff.	SE	t	p
Constant	i_y	-37.598	41.220	-.912	.367
Pre-treatment (X)	b_1	1.530	.751	2.037	.048
Age (W)	b_2	1.382	1.082	1.277	.209
Pre-treatment X Age (XW)	b_3	-.024	.020	-1.191	.240

$R^2 = .364$, MSE $= 237.404$
$F(3,42) = 7.995$, $p < .001$

Table 5

Results from analysis examining the moderation effect of race on pre- and post-treatment PCL-5 scores.

		Coeff.	SE	t	p
Constant	i_y	10.774	27.876	.387	.702
Pre-treatment (X)	b_1	.697	.571	1.220	.231
Race (W)	b_2	2.846	16.218	.175	.862
Pre-treatment X Race (XW)	b_3	-.048	.334	-.144	.887

$$R^2 = .305, \text{MSE} = 281.550$$
$$F(3,34) = 4.970, p = .006$$

Table 6
Results from analysis examining the moderation effect of treatment type on pre- and post-treatment PCL-5 scores.

		Coeff.	SE	t	p
Constant	i_y	-10.262	32.463	-.316	.754
Pre-treatment (X)	b_1	1.013	.609	1.662	.104
Treatment Type (W)	b_2	13.452	17.514	.768	.447
Pre-treatment X Treatment Type (XW)	b_3	-.203	.333	-.609	.546

$$R^2 = .341, \text{MSE} = 245.891$$
$$F(3,42) = 7.236, p < .001$$

Table 7
Results from analysis examining the moderation effect of gender on pre- and post-treatment BASIS-24 scores.

		Coeff.	SE	t	p
Constant	i_y	-.640	.572	-1.119	.267
Pre-treatment (X)	b_1	1.388	.309	4.485	.000
Gender (W)	b_2	.927	.430	2.154	.035
Pre-treatment X Gender (XW)	b_3	-.517	.234	-2.211	.031

$$R^2 = .474, \text{MSE} = .243$$
$$F(3,65) = 7.520, p < .001$$

Table 8
Results from analysis examining the moderation effect of age on pre- and post-treatment BASIS-24 scores.

		Coeff.	SE	t	p
Constant	i_y	-.238	1.058	-.225	.823
Pre-treatment (X)	b_1	1.029	.572	1.798	.077
Age (W)	b_2	.019	.027	.705	.483
Pre-treatment X Age (XW)	b_3	-.007	.015	-.470	.640

$$R^2 = .442, MSE = .258$$
$$F(3,65) = 17.127, p < .001$$

Table 9
Results from analysis examining the moderation effect of race on pre- and post-treatment BASIS-24 scores.

		Coeff.	SE	t	p
Constant	i_y	.352	.740	.475	.636
Pre-treatment (X)	b_1	.817	.383	2.132	.037
Race (W)	b_2	.038	.436	.086	.931
Pre-treatment X Race (XW)	b_3	-.003	.234	-.012	.990

$$R^2 = .474, \text{MSE} = .269$$
$$F(3,56) = 16.794, p < .001$$

Table 10

Results from analysis examining the moderation effect of treatment type on pre- and post-treatment BASIS-24 scores.

		Coeff.	SE	t	p
Constant	i_y	.032	.780	.041	.967
Pre-treatment (X)	b_1	.995	.405	2.458	.017
Treatment Type (W)	b_2	.285	.437	.652	.516
Pre-treatment X Treatment Type (XW)	b_3	-.149	.230	-.648	.519

$R^2 = .437$, MSE = .260
$F(3,65) = 16.845, p < .001$

Table 11

Summary of hierarchical regression for patient variables predicting the number of sessions patients attended.

Step and Predictor Variable	B	SE B	β	R^2	ΔR^2
Step 1:				.13	.13
Age	.45	.13	.36		
Step 2:				.14	.007
Age	.43	.14	.35		
Race	1.61	2.04	.09		
Step 3:				.14	.001
Age	.31	.50	.26		
Race	-.84	10.48	-.05		
Age X Race	.07	.29	.18		

**$p < .01$.

Table 12

Summary of regression analysis of patient variables predicting pre-treatment PTSD symptom severity.

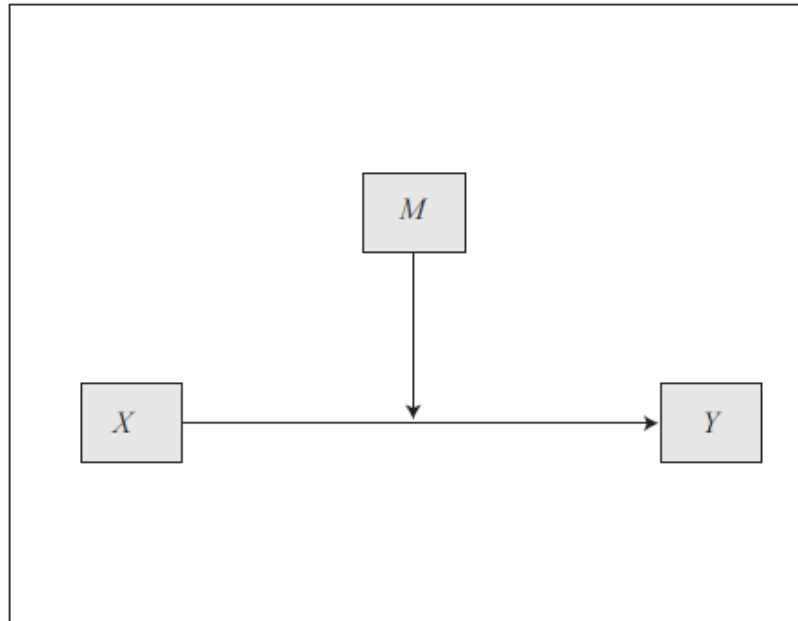| Variable	B	SE B	β-	t	p
Age	.35	.91	.15	.39	.70
Gender	23.44	26.84	.55	.87	.39
Age X Gender	-.55	.72	-.56	-.77	.44

Model 1

Conceptual Diagram

Figure 1. Conceptual diagram of Model 1, a simple moderation model for Process in SPSS. In hypothesis one, this model was used to assess potential differences in how patient variables (M) moderate the relationship between pre-treatment (X) and post-treatment PCL-5 scores.
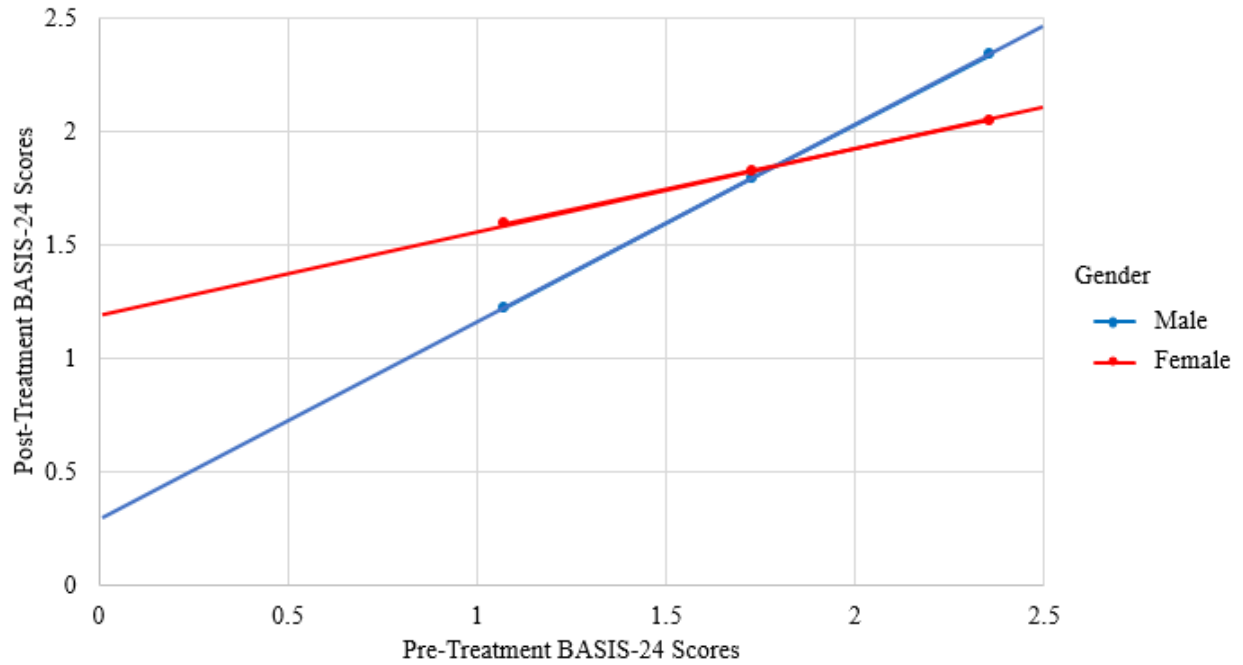
Figure 2. Patient gender moderating the relationship between BASIS-24 pre- and post-treatment scores, using PROCESS Model 1.