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# The Importance of Group Cohesion in Inpatient Treatment of Combat-Related PTSD

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## ABSTRACT

*Post-traumatic stress disorder (PTSD) is the most widespread mental illness resulting from exposure to combat, necessitating an increase in the provision of group therapy. This pilot study examined the efficacy of, and treatment outcome predictors associated with, group inpatient treatment of combat-related PTSD. Participants included 38 active duty military personnel deployed during Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), diagnosed with PTSD, and consecutive admissions to an inpatient PTSD treatment facility. A paired samples t-test revealed significant change in symptom severity and global functioning between pre- and post-treatment. Multiple regression analyses supported the predictive utility of baseline symptomatology and group cohesion (> 50% of the variance in treatment outcome), highlighting the importance of group cohesion in the efficacy of group treatment for combat-related PTSD.*

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According to the United States Department of Veterans Affairs (VA) and the United States Department of Defense (DoD; U.S. Department of Veterans Affairs [VA/DoD], 2004), post-traumatic stress disorder (PTSD) is the most common and widespread mental illness resulting from exposure to combat. PTSD impacts multiple domains of psychological and interpersonal functioning. According to Kessler (2000), people with PTSD are 1.5 times more likely to be unemployed than people without PTSD, and their chances of marital discord are increased by 60%. According to Gavlovski and Lyons (2003), the risk of suicide associated with PTSD exceeds that of any other anxiety disorder. Most of the research into PTSD, especially combat-related PTSD, suggests that it is a chronic and debilitating disorder that is difficult to treat. A large-scale follow-up of combat veterans two years after receiving treatment for PTSD found that two-thirds of the population surveyed had small to no improvement in symptoms (Creamer, Elliott, Forbes, Biddle, & Hawthorne, 2006). Continued research is necessary to improve treatment outcomes and better understand combat-related PTSD.

According to Riddle and colleagues (2007), PTSD is currently the second most common clinical diagnosis in the military, affecting 2.4% of the current millennium cohort. The U.S. Department of Veterans Affairs National Center for PTSD (2010) estimates between 6 and 11% of veterans from the conflicts in Afghanistan and 12% to 20% of veterans from the conflicts in Iraq have PTSD. Forbes and colleagues (2008) proposed, “optimizing treatment effectiveness through understanding factors that influence treatment outcome, and tailoring interventions to presentation type, is critical” in working with combat-related PTSD (p. 142).

The VA currently provides two forms of evidence-based treatments for PTSD, cognitive processing therapy (CPT; Resick, Monson, & Chard, 2008) and prolonged exposure therapy (PE; Hamblen, 2010). According to Freedberg (2008), the two techniques have significant overlap, with CPT attempting to change the thought perceptions related to the traumatic experience and PE attempting to change the emotions related to the traumatic experience. Both have been shown to be effective in individual settings. With the exception of a few studies validating the origi-

nal feasibility and efficacy of CPT in group treatment settings, both models remain relatively untested in the context of group treatment, especially in the context of inpatient, group treatment of combat-related PTSD.

The VA-approved therapeutic interventions of CPT and PE are found to be effective in an individual therapy setting. However, the growing needs of the combat veteran community and the continuing conflicts in the Middle East will necessitate the use of group treatment for PTSD (Kingsley, 2007) due to the volume of service members needing treatment. There appears to be minimal discussion in the literature about the facilitation of inpatient group treatment of combat veterans and active duty military and respective treatment outcomes. Group treatment is absent from the *VA/DoD Clinical Practice Guideline for the Management of Post-Traumatic Stress* (VA/DoD, 2004). Given the increasing need for group treatment of combat veterans, the study of interventions and treatment outcomes in group settings is necessary for enhancing group treatment of combat-related PTSD. Group modules do exist for CPT; however, they require some editing of the construct in order to be administered in a group setting. One of the principal elements of the 12-step process of CPT is the trauma statement, in which a combat veteran is asked to describe in detail his or her experience that led to PTSD. According to nationally certified VA trainer, Amy Williams, Ph.D., it is recommended that this aspect of CPT be omitted from group settings to reduce the effect of vicarious trauma—that is, providing additional stress or triggering veterans who may have not had the same experience. As a result, use of CPT in a group setting tends to focus more on the impact of trauma (the ecological results of the traumatic experiences, such as not being able to trust others, relationship conflict, etc.), rather than the specific traumatic experiences, which are given more focus in individual treatment.

The purpose of this study was (1) to examine the efficacy of CPT as a method of treating combat-related PTSD in a group, inpatient setting, and (2) to evaluate whether patient-specific predictor variables that have been known to impact individual treatment continue to impact treatment in a group setting, and if group cohesion serves as an additional predictor variable in the group inpatient treatment of combat-related PTSD. This pilot

study offers a preliminary examination of these goals in a single, uncontrolled sample of active duty military participants receiving treatment in an inpatient setting.

To date, several studies have examined variables influencing treatment outcome in PTSD, such as baseline PTSD symptomatology (Karatzias et al., 2007), anger (Forbes et al., 2008), and personality factors (Forbes et al., 2002), among others. The effects of each of these factors have been measured in the context of individual therapy. However, few studies have examined the complex interplay of these factors and their effect on outcomes of group, inpatient treatment of combat-related PTSD.

In their study, Karatzias and colleagues (2007) found that baseline PTSD symptomatology as assessed by the PTSD Symptom Checklist (PCL) was a significant treatment outcome predictor regardless of whether symptoms were assessed by a clinician (CAPS) or self-reported by patients using the Impact of Events Scale (IES) and the PCL. King and colleagues (2006) found that assessing the severity of combat itself (specific traumatic experiences that occurred during combat), which is the primary focus of instruments like the PCL and CAPS, is not encompassing enough for addressing combat-related PTSD. Research by the National Center for PTSD has found that stronger associations exist between post-combat experiences (e.g., body retrieval, providing medical attention to wounded comrades) and symptom severity in PTSD than with the actual severity of combat itself (King et al., 2006). However, the latter is the focus of most symptom measures. Therefore, it is important to measure the comprehensive experiences of deployment in addition to direct combat trauma in the assessment of baseline symptomatology in PTSD.

Personality factors associated with PTSD outcomes tend to concentrate more in the avoidance and arousal symptom clusters of PTSD. In their study of the impact of personality factors and mechanisms of anger on the outcome of PTSD treatment, Forbes and colleagues (2002) and Forbes and colleagues (2008) found that personality factors associated with social alienation and anger at intake were predictive of change in PCL scores. The effects of anger are often comorbid with factors like alcohol use and amount of concern the veteran has about his or her experience of anger and its consequences, suggesting that anger may be an in-

dex factor for the amount of control a combat veteran feels over the environment and experience of symptoms. As a result, veterans diagnosed with PTSD with personality factors associated with aggression and anger may fear losing control, and subsequently isolate themselves, in an effort to manage their symptoms. Personality factors associated specifically with social isolation, such as social detachment and social phobia, as measured by the Personality Assessment Inventory (PAI; Morey, 1991) also correlate with changes in symptom severity.

According to research by Crowe and Grenyer (2008), subjective experiences of recovery reported by patients in group treatment settings appear to be associated more with the social functions of group therapy (e.g., being around others with similar experiences, enhancing empathy, camaraderie), rather than individual therapist or modalities of treatment. Group treatment provides an opportunity to reduce the emotional isolation experienced by combat veterans by fostering a sense of cohesion between common cohort members, as evidenced by the report of veterans surveyed by Freedberg (2008). This suggests that in addition to the aforementioned patient-specific factors, group cohesion may prove to be a valuable aspect of assessment and important therapeutic goal

## **METHODS**

### **Participants**

Participants consisted of a census of consecutive admissions to an inpatient program for the treatment of PTSD in combat veterans. Participants included 37 male and 1 female active duty military personnel who were veterans of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). PTSD diagnoses were confirmed by medical records, self-report symptom score at admission, and psychiatric verification of diagnosis. Criteria for inclusion in the study were the presence of combat exposure during the OEF and/or OIF conflicts combined with a PTSD diagnosis. All participants completed a minimum 28-day treatment protocol, including two to four hours of daily group therapy using a CPT model (Resick et al., 2008), a 12-step program for co-

occurring substance abuse/dependence (as appropriate), and additional milieu treatment. Therapists were licensed in the state and certified in training for CPT from a nationally accredited VA trainer. Demographic information obtained included age, military branch, number of deployments, duration of deployments, marital status, number of children, custody arrangement, ethnicity, and presence of chemical dependency.

### **Measures**

A variety of self-report measures were used to assess effectiveness of treatment, baseline symptomatology, symptom improvement, and additional treatment predictor variables. These measures, listed below, assessed severity of combat exposure, global personality factors, PTSD symptoms, social/interpersonal well-being, and aspects of group cohesion:

#### **Treatment Effectiveness**

Treatment effectiveness was operationally defined as a clinically significant reduction in the severity of PTSD, as measured by the PTSD Checklist – Military Version (PCL-M; Weathers, Keane, & Davidson, 2001), and/or a statistically significant improvement in quality of life as measured by the Outcome Rating Scale (ORS; Duncan et al., 2003).

*PCL-M.* The PCL-M is a 17-item self-report measure of the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (*DSM-IV-TR*; American Psychiatric Association, 2000), symptoms of PTSD for military personnel. The PCL has a high internal consistency ( $\alpha = .91-.96$ ), and strong convergent validity ( $r = 0.79$ ) with the CAPS (Keen, Kutter, Niles, & Krinsley, 2008). Clinical applications of the PCL-M have used cutoff scores ranging from 50–60 as the baseline to establish clinical significance in a PTSD diagnosis (Keen et al., 2008). The clinical cutoff for this study was set as an average of the range, at 55.

*ORS.* The ORS is a 4-item visual analogue self-report outcome measure designed for tracking client progress in four interpersonal domains. Normative data for global functioning in a clinical population using the ORS suggest an overall mean of 19.6 ( $SD = 8.7$ ) for the four subscales (Duncan et al., 2003), with a

corresponding average of 4.9 (out of a 10-point Likert-type scale). The overall alpha for internal consistency on ORS administration is high ( $\alpha = .97$ ). Some studies have indicated that the test-retest reliability for the ORS is moderately high ( $r = .80$  and  $.81$ , respectively for one- to three-week retests; Bringham, Watson, Miller, & Duncan, 2006). The correlation between the Outcome Questionnaire 45.2 (OQ-45.2; Lambert et al., 1996) and the ORS is  $.59$ , indicating a moderate, but acceptable level of concurrent validity (Bringham et al., 2006). The ORS demonstrated construct validity by showing significantly different scores between treatment and non-treatment populations (Miller, Duncan, Brown, Sparks, & Claud, 2003). In addition to demonstrating differences between clinical and non-clinical samples, construct validity was also shown by the differences in pre-treatment and post-treatment patient scores (Miller et al., 2003). Based on a sample of 35,000 patients and a clinical cut-off score of 25, Duncan and colleagues (2003) calculated a reliable change index (RCI), which and showed that a difference of 5 points between pre- and post-scores demonstrated a clinically significant change.

### **Predictor Variables**

Baseline symptomatology was assessed using the PCL-M, ORS, and Deployment Risk and Resilience Inventory (DRRI; U.S. Department of Veterans Affairs National Center for PTSD [VA/National Center], 2011) in an effort to identify comprehensive deployment variables that impact baseline symptom severity.

*DRRI.* The DRRI is a 203-item deployment experience self-report measure comprised of yes/no and 5-point Likert-style questions designed by the National Centers for PTSD, as part of the VA, for research and descriptive purposes about personal history and deployment experiences. It contains 13 scales, ranging from A: Pre-Deployment Life Events through encompassing combat and comprehensive deployment experiences to M: Post-Deployment Life Events. Early psychometric assessment of the DRRI is encouraging, suggesting that it has promise for reliably assessing risk and resilience factors that contribute to veterans' pre- and post-deployment well-being (King et al., 2006). The developmental foundations of the measure, specifically its factor

analysis, allow for each of the measures in the DRRI to be used as a stand-alone instrument. No clinical cut-off scores exist for classifying clients into diagnostic groups, and clinical norms have not been yet established (VA/National Center, 2011).

*PAI.* Personality variables specific to aggression, anger, and social isolation were measured using the Personality Assessment Inventory (PAI; Morey, 1991), a 344-item self-report inventory that assesses various domains of personality and psychopathology among adults. It was designed for use in professional and research settings. The PAI has a moderately high test-retest reliability on the clinical scales ( $r = .79-.92$ ; Morey, 1991).

*CALPAS-G.* Group cohesion was measured using the California Psychotherapy Alliance Scale – Group Version (CALPAS-G; Gaston & Marmar, 1994). The CALPAS-G is a 12-item scale measuring group cohesion in treatment through four subscales. The Patient Working Capacity Scale (PWC) assesses the patient's willingness to engage in group therapy as a result of the group's dynamics. Patients rate their working capacity for each question on a Likert-style scale ranging from "0 – not at all" to "6 – very much so." Gaston and Marmar (1993) define the PWC scale as "the group members' ability or preparedness to self disclosure and self-reflect on salient therapy themes; to explore their contribution to problems; to experience strong emotions in a modulated fashion; to actively use therapist's comments; to deepen exploration of salient themes; and to purposefully work towards solving problems" (p. 5). The Patient Commitment Scale (PC) assesses the patient's commitment to attending group and following through with group practice, the Working Strategy Consensus (WSC) scale assesses the patient's sense of alignment with other group members and their common goals, and the Member Understanding and Involvement Scale (MUI) assesses the patient's sense that other group members understand his or her specific experiences (Gaston & Marmar, 1994). The CALPAS-G has been shown to effectively assess group cohesion in previous studies (Crowe & Grenyer, 2008).

## **Procedure**

Each participant was administered a battery of self-report measures upon admission to establish a baseline patient profile. This battery consisted of the DRRI, PAI, PCL-M, and ORS. During their inpatient stay, patients participated in a minimum of two hours of PTSD group therapy per day, as well as additional individual therapy sessions with a unit therapist, milieu treatment, and group therapy addressing substance abuse if comorbid diagnosis was present. Upon termination of treatment, a PCL-M, ORS, and the CALPAS-G were administered. All measures were self-report, paper administered, and completed by the patients.

## **Data Analysis**

The data were analyzed using SPSS Version 18.0. A paired samples *t*-test was performed comparing the means of baseline symptomatology (PCL-M pre and ORS pre scores) with the means of symptomatology at terminus of treatment (PCL-M post and ORS post scores) to assess treatment efficacy. Pearson's correlation coefficients were used to test correlations between variables (demographics, PCL-M, ORS, PAI, and CALPAS-G). Multiple linear regression analyses were used to test the impact of predictor variables on treatment outcome (reduction in symptom severity on PCL-M, increase in interpersonal dimensions on ORS). Given that this was an exploratory pilot study and the  $n < 100$ , we did not run a large correlation matrix; rather, we ran bivariate analyses based on our theoretical considerations (identified in previous research cited in the introduction). The significance level for this study was set at  $p < .05$ .

## **RESULTS**

### **Participant Demographics**

A total of 38 participants were included in this study (37 male, 1 female). One participant dropped out due to leaving treatment for a family emergency and was omitted from analysis. Paramet-

**Table 1. Mean, Standard Deviation, and Minimum and Maximum Values of Demographics**

<b>Demographic Variable</b>	<b><i>M</i></b>	<b><i>(SD)</i></b>	<b>Min</b>	<b>Max</b>
Age	31	(6.81)	21	43
Number of Deployments	2.13	(1.34)	1	7
Number of Months Deployed	19.53	(10.02)	4	44
Number of Previous Marriages	.55	(.72)	0	2
Number of Children	1.39	(1.33)	0	5

ric participant demographics are detailed in Table 1. The majority of participants were married (55.3%), followed by divorced (28.9%), single (7.9%), and separated (7.9%). Participants were employed by three branches of the U.S. Military: Army (92.1%), Air Force (5.3%), and Marine Corps (2.6%), and they consisted of enlisted (92.1%), officer (5.2%), and chief warrant officer (2.6%) ranks. Among participants, 13.2% were African American, 63.2% were Caucasian, 10.5% were Latino(a), 2.6% were Native American/Alaska Native, 2.6% of Arabic origin, and 7.9% were Pacific Islanders. All participants had a diagnosis of PTSD. A total of 68.4% had an additional alcohol-related diagnosis, and 24.3% of participants (including those with alcohol-related diagnoses) also had an additional diagnosis of chemical dependency.

### **Descriptive Statistics**

Demographic variables did not correlate significantly with treatment outcome as measured by the PCL post and ORS post scores in this study. Descriptive statistics for self-report measures are detailed in Table 2. In this study, the overall alpha for internal consistency on the PCL-M for the baseline score ( $\alpha = 0.91$ ) and final score ( $\alpha = 0.96$ ) were excellent ( $\alpha > 0.90$ ; Kline, 1999). The overall alpha for internal consistency on the ORS in this study ranged from good ( $\alpha > 0.80$ ; Kline, 1999) to excellent for the baseline score ( $\alpha = 0.89$ ) and final score ( $\alpha = 0.96$ ). The overall alpha for internal consistency on the CALPAS was good ( $\alpha = 0.83$ ). Consistent with previous research, these results show very strong reliability on all pre and post measures used in this study.

**Table 2. Mean, Standard Deviation, and Minimum and Maximum Values for Study Variables**

Scale	<i>M</i>	( <i>SD</i> )	Min	Max
<b>Pre and Post Symptomatology</b>				
PCL Pre	60.71	(13.703)	2.40	4.21
PCL Post	49.39	(18.72)	1.92	3.61
ORS Pre	13.56	(8.66)	3.05	3.68
ORS Post	24.98	(9.59)	5.68	6.68
<b>Baseline Symptomatology</b>				
DRRI A Scale (Pre Deployment Life Events)	5.05	(4.12)	0	14
DRRI I Scale (Combat Experiences)	11.16	(3.55)	2	15
DRRI J Scale (Post Battle Experiences)	11.79	(3.64)	0	15
DRRI L Scale (Post Deployment Support)	51.45	(10.38)	21	70
DRRI M Scale (Post Deployment Life Events)	4.86	(3.42)	0	1
<b>Personality Factors</b>				
PAI ICN (Validity Scale – Inconsistency)	56.17	(12.59)	34	82
PAI INF (Validity Scale – Infrequency)	54.39	(10.86)	40	79
PAI NIM (Negative Impression Management)	73.47	(20.36)	44	122
PAI PIM (Positive Impression Management)	41.21	(9.53)	25	57
PAI SCZ S (Social Detachment)	67.89	(14.69)	43	97
PAI AGG A (Aggressive Attitude)	63.83	(16.38)	34	84
PAI AGG V (Verbal Aggression)	62.00	(13.03)	34	82
PAI AGG P (Physical Aggression)	73.42	(18.32)	42	103
PAI Total AGG (Aggression)	68.89	(17.27)	37	95
PAI ANT A (Antisocial Behaviors)	64.47	(13.60)	41	93
PAI ANT E (Egocentricity)	57.08	(12.10)	39	82
PAI ANT S (Stimulus Seeking)	68.44	(17.30)	40	103
PAI Total ANT (Antisocial)	66.71	(14.99)	40	98
PAI ALC (Alcohol Problems)	68.13	(21.21)	41	104
PAI DRG (Drug Problems)	64.18	(20.04)	42	112
PAI RXR (Treatment Rejection)	36.08	(7.27)	25	55
<b>Group Cohesion</b>				
CALPAS PC (Patient Commitment)	14.16	(4.38)	0	18
CALPAS PWC (Patient Working Capacity)	12.54	(4.45)	4	18
CALPAS WSC (Working Strategy Consensus)	14.35	(3.22)	5	18
CALPAS MU (Member Understanding)	14.43	(2.89)	7	18

*Note.* All PAI scores are reported as *t* values. PTSD Checklist – Military Version (PCL-M), Outcome Rating Scale (ORS), Deployment Risk and Resilience Inventory (DRRI), Personality Assessment Inventory (PAI), California Psychotherapy Alliance Scale – Group Version (CALPAS-G).

## Treatment Outcome

A paired samples *t*-test showed a significant change between baseline symptomatology at onset of treatment and symptom severity at terminus of treatment. The average PCL-M pre-treatment score

**Table 3. Results of Pearson's Correlation Analyses**

Predictor Variable	PCL-M Post Correlation	ORS Post Correlation
<b>Baseline Symptomatology</b>		
PCL-M Pre Score	.60**	-.26
ORS Pre Score	-.42**	.56**
DRRI Pre Deployment Life Events (A)	-.08	-.03
DRRI Combat Experiences (I)	.21	-.20
DRRI Post Battle Experiences (J)	.22	-.08
DRRI Post Deployment Support (L)	-.24	.36**
DRRI Post Deployment Life Events (M)	.19	-.20
<b>Personality Factors (PAI)</b>		
Neg Impression Mgmt (NIM)	.43**	-.39*
Pos Impression Mgmt (PIM)	-.13	.13
Social Detachment (SCZ-S)	.56**	-.46**
Antisocial (ANT)	.05	-.14
Aggressive Attitude (AGG-A)	.38*	-.25
<b>Group Cohesion (CALPAS-G)</b>		
Patient Commitment (PC)	-.15	.22
Patient Working Capacity (PWC)	-.58**	.41*
Working Strategy Consensus (WSC)	-.064	.27
Member Understanding (MU)	-.09	.37*

*Note.* \*Significant at the 0.05 level (2-tailed); \*\*significant at the 0.01 level (2-tailed). PTSD Checklist – Military Version (PCL-M), Outcome Rating Scale (ORS), Deployment Risk and Resilience Inventory (DRRI), Personality Assessment Inventory (PAI), California Psychotherapy Alliance Scale – Group Version (CALPAS-G).

(at baseline) was 60.71 ( $SD = 13.70$ ). The average PCL-M post score was 49.39 ( $SD = 18.72$ ). A comparison of means between PCL scores showed a significant reduction in reported symptom severity according to the criteria for PTSD diagnosis (paired  $t(37) = 4.6, p < .001$ ). Effect size was medium-large ( $d = .601$ ). The average ORS pre score (at baseline) was 13.56 ( $SD = 8.66$ ). The average ORS post score was 24.98 ( $SD = 9.59$ ). In addition to exceeding the reliability change index of 5 points, the mean comparison between ORS scores also resulted in a statistically significant improvement in global functioning across interpersonal domains (paired  $t(37) = -8.185, p < .001$ ). Effect size was medium ( $d = .560$ ).

## Correlation and Regression Statistics

Consistent with previous research, several predictor variables correlated with treatment outcomes. Effect sizes ranged from moderate ( $r > .30$ ) to large ( $r > .50$ ). These results are detailed in Table 3. Analyses did not reveal any measures of association between demographic and outcome variables. The strongest correlations were found between baseline symptomatology as measured by the PCL-M pre score and PCL-M post score ( $r(36) = .601$ ,  $p < .001$ ), global functioning, as measured by the ORS pre and ORS post ( $r(36) = .560$ ,  $p < .001$ ), the personality factor of social detachment (PAI SCZ-S) and PCL-M post score ( $r(34) = .560$ ,  $p < .000$ ), and the group cohesion measure of PWC and PCL-M post score ( $r(36) = -.580$ ,  $p < .001$ ).

Linear regression analyses to predict the PCL-M post score (at discharge) were performed in forward stepwise analysis. When both predictors were entered into the equation, a significant regression equation was found ( $F(2,34) = 19.372$ ,  $p < .000$ ) with an  $R^2$  of .533, with predictors accounting for 53.9% of the variance in PCL-M post scores (PCL-Pre ( $R^2 = .337$ ) and PWC ( $R^2 = .202$ ). Coefficients for the predictor variables included PCL-M pre score ( $\beta = .46$ ,  $t = 3.77$ ,  $p < .001$ ) and PWC ( $\beta = -.454$ ,  $t = -3.72$ ,  $p < .001$ ).

Linear regression analyses to predict the ORS post score (at discharge) were performed in forward stepwise analysis. When both predictors were entered into the equation, results were consistent with previous regression analysis and resulted in a significant regression equation showing that ORS pre score ( $F(1,33) \beta = 12.51$ ,  $p = .001$ ) and PWC ( $F(2,32) = 9.24$ ,  $p = .001$ ) predicted ORS post score, but that the other variables detailed in Table 3 did not. Predictors accounted for 36.6% of the variance ( $R^2 = .366$ ; ORS-Pre  $R^2 = .275$ ; PWC  $R^2 = .091$ ).

## Additional Analyses

The significant results showing the ability of the PWC subscale of the CALPAS-G to predict treatment outcome, in addition to baseline symptomatology, led to additional analysis to determine the strength of the association of these subscale items. The three items of the PWC scale all correlated significantly with treatment

**Table 4. Results of Pearson's Correlation Analyses for PWC Items**

<b>CALPAS PWC Item</b>	<b>PCL-M Post Correlation</b>
Question 2 (keeping thoughts to yourself)	.60*
Question 4 (Holding back feelings)	.38**
Question 11 (Unable to deepen understanding)	.40**

*Note.* \*Significant at the 0.05 level (2-tailed); \*\*significant at the 0.01 level (2-tailed).

outcome as measured by the PCL post score. These items were: (2) “When important things come to mind, how often did you find yourself keeping them to yourself rather than sharing them with the group”; (4) “How much did you hold back your feelings during the group therapy process”; and (11) “Did you have the impression that you were unable to deepen your understanding of what was bothering you?” Results of additional Pearson’s correlational analyses are detailed in Table 4.

## **DISCUSSION**

The results of this pilot study suggest that inpatient group treatment for active duty military personnel significantly improved patients’ perceptions of their overall functioning and significantly reduced their experience of symptoms associated with PTSD. When PCL-M post score was used as a treatment outcome measuring reduction in PTSD-specific symptoms, PCL-Pre and PWC accounted for 53.9% of the variance in outcome and demonstrating moderate effect size. Baseline symptomatology, as measured by the PCL-M, baseline global functioning, as measured by the ORS, and the PWC subscale of the group cohesion measure were found to be significant predictors of positive treatment outcomes (reduction in symptom severity and improvement in global functioning). These clinically significant results support two of the principal hypotheses of this study: that (1) treatment of PTSD using CPT in a group inpatient treatment setting is effective, and (2) baseline symptomatology (including global functioning) and group cohesion could significantly predict treatment outcome for military personnel receiving treatment for combat-related PTSD in a group, inpatient setting. The relationship between symptom severity and treatment outcome is meaningful because it extends the previous research regarding the predictive utility of symp-

tom severity to the treatment venue of a group setting (Karatzias et al., 2007). The relationship between PWC and treatment outcome suggests that, consistent with Crowe and Grenyer's (2008) research, the patient's willingness to engage in the group process due to the nature of the group itself and to share and process personal information in a group setting are the functional aspects of treatment of combat-related PTSD in a group setting.

Given that group modalities are the wave of the future for the treatment of PTSD in combat veterans (Kingsley, 2007), it is important to know that a variable not relevant to individual treatment modalities—the capacity to work with others in the context of a group—is a significant and unique predictor of treatment outcome. This study suggests that group treatment for PTSD is effective and may control for other factors that have been shown to affect outcomes in individual treatment. This effect may be moderated by the patient's willingness to engage in the group process and share personal information in the setting; that is, the suggested effectiveness of group treatment appears to be significantly related to a patient's willingness to engage in the particular group treatment context. Group modalities of treatment should foster healthy settings in which patients can engage in group sharing and group process. Patients should be assessed for their working capacity at the onset of treatment, and hesitations they have about sharing in group should be addressed to encourage this aspect of group cohesion.

These findings need to be considered in light of limitations associated with this study. The sample for this study was small, with limited statistical power. Given the nature of the treatment setting, it is difficult to separate the effects of the various aspects of multidisciplinary treatment (e.g., milieu, 12-step, psychopharmacological interventions) that participants received in addition to their regular CPT groups. The study is from one inpatient treatment setting that utilized CPT, and results may not be generalized to other treatment facilities. Results are from a predominantly male population, and a control group was not utilized. Despite the aforementioned limitations, results from this study support the theory that patient willingness to engage in treatment and be vulnerable in group settings and the facilitation of this working capacity offered by the group are essential aspects

of the group treatment of PTSD. Findings suggest that focusing solely on individual aspects of participants, such as personality and demographics, is insufficient for group treatment of PTSD. Also, when baseline symptomatology is combined with a factor of group cohesion, more than 50% of the variance of treatment outcome is accounted for, suggesting that group treatment is an effective method for the treatment of PTSD.

Where this research supports an aspect of group cohesion as a treatment outcome predictor, it does not identify factors that enhance or inhibit the patient working capacity factor of group cohesion. Future research may benefit from assessing aspects of group treatment that increase the patient working capacity factor of group cohesion, therefore enhancing treatment efficacy. It would be beneficial to have patients identify their perceived barriers to “self disclose and self-reflect on salient therapy themes” (Gaston & Marmar, 1993, p. 5) in group treatment settings. Once factors that enhance and inhibit this particular outcome predictor are established, treatment programs may develop protocols and progressive group ethos to address these factors. Future research should also include the assessment of multiple populations, including more female participants, increased ethnic diversity, and in multiple group settings, such as outpatient and day treatment programs.

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