

Anhedonia, emotional numbing, and symptom overreporting in male veterans with PTSD

Todd B. Kashdan ^{a,*}, Jon D. Elhai ^b, B. Christopher Frueh ^c

^a *Department of Psychology, MS 3F5, George Mason University, Fairfax, VA 22030, United States*

^b *Disaster Mental Health Institute, The University of South Dakota, United States*

^c *Medical University of South Carolina, Veterans Affairs Medical Center, Charleston, SC, United States*

Received 9 September 2006; received in revised form 10 January 2007

Available online 12 March 2007

Abstract

We used measures of positive affect and emotional expression to distinguish and better understand veterans with PTSD with symptom overreporting presentation styles. Based on prior research, symptom overreporting was defined as scores greater than eight on the F_p (Infrequency-Psychopathology) scale of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2). Data were drawn from an archival dataset of 227 combat veteran outpatients. Results were consistent with theory and research on the distinction between negative and positive affect. Major findings indicated that (a) veterans endorsing greater anhedonia had a greater likelihood of being classified as a symptom overreporter (controlling for PTSD symptoms), and (b) compared to non-symptom overreporting veterans, overreporters showed greater congruency in their presentation of diminished positive affect and their expression across self- and clinician-ratings. Our data suggest that diminished positive emotions and their behavioral expression are uniquely associated with veterans' psychological experiences, providing insight into the nature of symptom overreporters.

© 2007 Elsevier Ltd. All rights reserved.

Keywords: Post-traumatic stress disorder; Anhedonia; Emotional numbing; Positive emotions

* Corresponding author. Tel.: +1 703 993 9486; fax: +1 703 993 1359.

E-mail address: tkashdan@gmu.edu (T.B. Kashdan).

1. Introduction

Despite an innovative framework proposed by Litz (1992), it is only recently that emotional numbing and anhedonia have received empirical attention in studies of post-traumatic stress disorder (PTSD). In contrast to PTSD symptoms that focus on negative affect (e.g., re-experiencing, avoidance, and hyperarousal clusters; depressed mood), emotional numbing and anhedonia focus on (diminished) positive affect. Anhedonia reflects a relative absence of enjoyment and reduced motivation to engage in pleasurable life activities (American Psychiatric Association, 1994). Emotional numbing is a constellation of PTSD symptoms including markedly diminished interest in usual activities that produce pleasure, feelings of detachment from others, and restricted emotional expression (APA, 1994). However, more recent experimental studies suggest that emotional numbing primarily reflects diminished positive affect and a reduced tendency to express emotion behaviorally (Litz, Orsillo, Kaloupek, & Weathers, 2000; Orsillo, Batten, Plumb, Luterek, & Roessner, 2004). Emotional numbing and anhedonia may be important dimensions of psychopathology as data suggest that the experience and expression of positive and negative affect are relatively independent with different correlates and functions (Fredrickson, 1998). Unlike negative emotions, which narrow people's responses to specific behaviors like fight or flight, positive emotions appear to broaden people's momentary thought-action repertoires (e.g., more efficient, creative, and fluid thinking) and build durable resources such as social bonds and greater resilience to difficult life circumstances. Further examination of diminished positive affect and emotional expression may provide insight into the underlying nature of PTSD. We examined whether diminished positive emotions and their behavioral expression provide unique information in understanding the self-presentation style and psychological functioning of veterans with PTSD above and beyond negative emotions, thoughts, and behaviors.

Veterans exposed to combat-related trauma vary in how they present their psychological and social functioning to others. Whether characterological or not, individual differences in presentation styles are an important mechanism in understanding the phenomenology, assessment, and treatment of veterans returning from combat. There are ongoing controversies about a subset of combat veterans who may misrepresent their symptoms intentionally or unintentionally due to reasons ranging from poor insight to secondary gains (e.g., seeking disability-related financial compensation) that can interfere with the accurate assessment of PTSD and other dimensions of psychological functioning (McNally, 2003; Rosen, 2004). In this study, we examined whether diminished positive affect and emotional expression provide unique insight into the concept of symptom overreporting, a presentation style commonly found in veterans with PTSD. We examined whether ratings of diminished positive affect and emotional expression are able to reliably differentiate individuals with and without symptom overreporting styles across self-report and interview methodologies. A better understanding of the full range of positive and negative functioning of people scoring high on widely used measures of symptom overreporting, exaggeration, and/or malingering can begin to address the psychiatric profiles of veterans with PTSD who vary in response style. To date, there is minimal knowledge on the phenomenology of symptom overreporting in PTSD.

Apparent symptom exaggeration is a self-presentation style that can potentially undermine empirical research and clinical work. Without attending to this facet of individual differences, people reporting similar levels of elevated psychopathology with different underlying motives are

often erroneously defined as a homogeneous group. Symptom exaggeration or overreporting has been measured by extreme elevations on Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) validity scales measuring infrequent and atypical pathological response styles. Various studies have shown that a subset of combat veterans report extreme levels of psychopathology across self-report instruments and clinical interviews, and extreme elevations on MMPI-2 validity scales reflecting “fake-bad” response styles (Frueh, Hamner, Cahill, Gold, & Hamlin, 2000; Gurriel & Fremouw, 2003). There are several plausible reasons for being classified as a symptom overreporter including genuine suffering from extreme levels of distress, exaggerated distress as a “cry for help”, and exaggerated distress as a means of obtaining financial gain. There is a large body of research demonstrating that MMPI-2 validity scales are fairly adequate in detecting malingering (Rogers, Sewell, Martin, & Vitacco, 2003) and malingered PTSD (Frueh et al., 2000). Yet, there are no definitive tests of the veracity of client reporting.

This is the first study to examine whether a pattern of diminished positive affect and emotional expression distinguishes the symptom presentation style of combat veterans. This is important because positive affect is relatively independent from negative affect (e.g., Carver, Sutton, & Scheier, 2000) and diminished positive affect and their expression has stronger associations with adverse social outcomes (Cook, Riggs, Thompson, Coyne, & Sheikh, 2004; Ruscio, Weathers, King, & King, 2002). In this study, positive affect and their behavioral expression were operationalized by measures of anhedonia and emotional numbing (for supportive data, see Amdur, Larsen, & Liberzon, 2000; Litz et al., 2000; Spahic-Mihajlovic, Crayton, & Neafsey, 2005). We had two primary aims. First, does diminished positive affect and emotional expression distinguish symptom overreporters from non-overreporters over and above the variance attributable to other PTSD symptoms (re-experiencing, avoidance, and hyperarousal)? Diminished positive affect was expected to provide non-redundant information on people’s inability to function and succeed in everyday life. The VA defines disability and provides financial compensation for it based on social and occupational impairment. If genuinely disabled veterans overrepresented their symptoms or if veterans were motivated to feign the severity of their impairment for secondary gains, there would be value in presenting dysfunction for the entire spectrum of human functioning: elevated negative affect (avoidance system) as well as diminished positive affect (approach system). This psychiatric profile would be most representative of total disability as defined by the VA disability system for combat veterans with PTSD. Thus, we expected anhedonia to increase the likelihood veterans would be classified as symptom overreporters. Second, does the consistency of reported positive emotions differ between symptom overreporters and non-overreporters, across instruments? Specifically, we were interested in the convergence between self-reported anhedonia and clinical interview assessments of emotional numbing. This consistency test was used as an indirect assessment of veridical reporting. If symptom overreporters demonstrated weaker correlations between methodologies to assess positive emotions and their expression, this might be indicative of problematic, inconsistent response styles. If their motive is to present themselves as impaired across important life domains, we might expect stronger correlations between different methodologies to assess positive emotions and their expression. Overall, our goal was to better understand the self-presentation styles of combat veterans with PTSD by attending to avoidance and approach systems of human functioning.

2. Method

2.1. Participants

Archival data were collected from the charts of 310 consecutive male combat veterans. Veterans were presenting to a PTSD outpatient program at a Veterans Affairs Medical Center during the fiscal years 1995–99. Due to missing data on the BDI and MMPI-2 ($n = 64$) and several veterans who did not meet diagnostic criteria for PTSD ($n = 19$), our examination focused on 227 veterans. Group comparisons between our final and excluded sample failed to find differences on demographic or symptom variables ($d_s < .15$).

Participants' ages ranged from 28 to 78 years, with a mean of 49.58 ($SD = 6.86$). The majority (57.3%) was Caucasian or African American (40.5%), and married (66.8%) or previously married (21.1%). Completed years of education ranged from 5 to 18 ($M = 12.42$, $SD = 2.29$). Annual income ranged from \$0 to \$89,508 ($M = \$20,214$, $SD = \$17,916$), and 57.2% reported being unemployed while 38.3% were employed full-time. The majority served in the Army (67.4%) or Marines (17%). Most served in the Vietnam War (83.6%); with others serving in the Persian Gulf War (7.5%), Korean War (4.0%), World War II (1.8%), and post-Vietnam combat (3.1%).

2.2. Procedure and instruments

Participants were diagnosed according to *DSM-IV* criteria (American Psychiatric Association, 1994). Diagnoses were derived from a PTSD clinical team, consisting of a psychiatrist, clinical psychologist, clinical psychology intern, and clinical social worker. All PTSD diagnoses were reached by team consensus after a thorough evaluation, including a chart review, psychosocial history interview, military history interview, and structured PTSD clinical interview. Team members were trained in CAPS administration and scoring and routinely met to discuss coding issues. The measures used to collect clinical information are described.

The Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990). The CAPS is a structured clinical interview designed to rate the frequency and intensity of the 17 *DSM-IV* PTSD symptoms. Data suggest strong interrater reliability (.92–.99), high internal consistency (.73–.85), and strong convergent validity (e.g., Weathers & Litz, 1994). We used the original CAPS scoring rule for diagnosis (i.e., a PTSD symptom was considered present if frequency was rated as one or higher and intensity was rated as two or higher for the same CAPS item; Blake et al., 1990). The CAPS total severity score (frequency + intensity, summed for criteria B, C, and D) was used in analyses to examine differences in symptom overreporters and non-overreporters. Veterans were given a PTSD diagnosis, referred to as PTSD (+), if they met *DSM-IV* criteria A, B, C, and D, and symptom duration was greater than 1 month.

The Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher et al., 2001). The 567-item MMPI-2 is one of the most frequently used clinical self-report instruments and considered a standard in the assessment of valid responding (Greene, 2000). Based on cut-off criteria in prior research with combat veterans (Gold & Frueh, 1999), symptom overreporting was defined as scores greater than eight on the F_p (Infrequency-Psychopathology) scale. F_p is less sensitive to psychopathology, and more sensitive to overreporting than previous MMPI-2 validity scales (e.g., F ,

F–K; Tolin et al., 2004). Recent studies have found this “fake bad” or “symptom overreporting” scale to exhibit one of the largest effect sizes in discriminating PTSD simulators from genuine PTSD patients (Arbisi & Ben-Porath, 1995; Elhai, Gold, Sellers, & Dorfman, 2001; Rogers et al., 2003). Analyses related to other F family scales are discussed in a Footnote referenced in Section 3.

Beck depression inventory (BDI). The 21-item BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) assesses depressive symptoms. It has excellent psychometric properties in clinical and non-clinical populations. An anhedonia scale was composed of three relevant items: “I don’t get satisfaction out of anything anymore”, “I have lost all of my interest in other people and don’t care about them at all”, and “I have lost interest in sex completely” ($\alpha = .71$). The other 18 items were aggregated into a global, undifferentiated depressive symptom scale ($\alpha = .87$). Prior data have shown support for the relative independence of these anhedonia and global, undifferentiated depressive symptom factors (Joiner, Brown, & Metalsky, 2003; Kashdan, Elhai, & Frueh, 2006). As for validity, higher scores on the BDI-anhedonia scale differentiate clients with depression and schizophrenia (Joiner et al., 2003), and are associated with less sensitivity to objectively rewarding stimuli, less frequent positive affect, and greater scores on existing measures of anhedonia (e.g., Leventhal, Chasson, Tapia, Miller, & Petit, 2006; Pizzagalli, Jahn, & O’Shea, 2005). The total BDI score, and 3-item anhedonia (sum of items 4, 12, and 21) and 18-item global depressive symptom scales, were used. The correlation between subscales was .73.

Mississippi combat PTSD scale (M-PTSD; Keane, Caddell, & Taylor, 1988). The 35-item M-PTSD is a self-report measure used to assess combat-related PTSD symptoms. The M-PTSD has excellent psychometric properties including superior sensitivity and specificity in predicting PTSD diagnoses derived from structured interviews (Keane et al., 1988). The total M-PTSD score was used.

3. Results

3.1. Preliminary analyses

We excluded the 7.7% of the sample that failed to meet *DSM-IV* criteria for PTSD. There were no differences between veterans with and without PTSD on continuous measures and symptom counts of PTSD symptoms, the F–K and F_p from the MMPI-2, or BDI ($d_s < .15$).

3.2. Symptom overreporting and relations with psychopathology

First, we attempted to replicate prior findings suggesting that symptom overreporting tendencies are related to greater psychopathology. Using an established veteran population cut-off, we defined symptom overreporters as veterans with F_p scores > 8 (Gold & Frueh, 1999). We conducted group comparisons of symptom overreporters ($n = 30$; $F_p > 8$) and non-overreporters ($n = 197$; $F_p \leq 8$).

As shown in Table 1, symptom overreporters reported significantly more intense and frequent PTSD symptoms and greater BDI-anhedonia scores than non-overreporters ($d_s > .30$). Overall,

Table 1

Group comparisons between symptom overreporters and non-overreporters

Characteristics	Group		<i>t</i> -test	Cohen's <i>d</i>
	Symptom overreporters (mean ± SD)	Non-overreporters (mean ± SD)		
Severity – Re-experiencing	27.07 ± 5.85	23.32 ± 6.24	3.09**	.41
Severity – Emotional numbing	18.38 ± 4.77	15.91 ± 4.96	2.55*	.34
Severity – Avoidance	20.72 ± 5.29	16.86 ± 5.98	3.34**	.45
Severity – Hyperarousal	27.30 ± 6.37	23.94 ± 6.24	2.74**	.37
M-PTSD – Total score	132.27 ± 24.93	117.51 ± 20.98	3.50**	.47
BDI – Anhedonia scale	5.48 ± 2.39	4.11 ± 1.90	3.54***	.47

Notes: *N* = 30 for symptom overreporters and 197 for non-overreporters.

Severity = Intensity + frequency of symptoms endorsed on the CAPS.

* *p* < .05.

** *p* < .01.

*** *p* < .001.

symptom overreporting veterans endorsed greater scores on all PTSD symptom clusters and anhedonia compared to non-overreporting veterans.¹

3.3. Classifying veterans with PTSD as symptom overreporters

Second, we used sequential logistic regression analysis to assess whether anhedonia contributed incremental variance in classifying veterans as symptom overreporters (binary outcome). Prior theory and data support the separation of Cluster C symptoms into distinct avoidance and emotion numbing factors (Asmundson, Stapleton, & Taylor, 2004). In the first step, we included measures of each PTSD symptom cluster (re-experiencing, emotion numbing, avoidance, and hyperarousal) as independent variables. In the second step, we included the BDI-anhedonia scale.

The omnibus test indicated that PTSD symptoms made a statistically significant contribution to classifying veterans as symptom overreporters, $\chi^2(4, 227) = 15.57, p = .004$. However, none of the symptom clusters were significantly related to overreporting status (*ps* > .10). In step 2, anhedonia accounted for a significant amount of incremental variance, $\chi^2(1, 227) = 4.31, p = .04$, with a final model that correctly classified 86.2% of veterans in our sample. Greater anhedonia predicted an increased likelihood that veterans were classified as symptom overreporters, Odds ratio = 1.27.

¹ Concerns might be raised about the unequal group sample sizes. Of note, similar findings for all analyses were found when using a median split on the *F_p* to classify veterans into symptom overreporters and non-overreporters. Other concerns might be raised as to whether findings are unique to the *F_p* index. Compared to all other MMPI-2 validity indices, Gough's Dissimulation Index (F–K; Gough, 1950) has shown the largest effect sizes in distinguishing PTSD simulators from real patients (Rogers et al., 2003). Similar findings for all analyses were found after operationalizing symptom overreporting with the F–K index. Results were similar to findings using the *F_p* index. These data suggest that our findings are stable and consistent across multiple indicators of symptom overreporting. These data are available upon request.

3.4. Consistency of veteran's presentation of diminished positive experiences: The moderating role of symptom overreporting

We found that even after conservatively accounting for each cluster of PTSD symptoms, anhedonia provided incremental information in predicting the overreporting status of veterans. To extend this line of inquiry, we asked whether symptom overreporters were more consistent in their presentation of anhedonia and emotional numbing (i.e., positive emotions and their expression) compared to non-overreporters. We tested this with a series of bivariate and partial correlations between self-reported BDI-anhedonia and BDI-undifferentiated depressive symptoms with clinician (CAPS) ratings of emotional numbing. We expected relations to be moderated by symptom overreporting. The magnitude of group differences was examined by tests of independent correlations (Howell, 1997). These tests have notoriously low statistical power and thus, we interpreted trends at $p < .10$ (Cohen, 1988; Howell, 1997).

To evaluate our moderation model, the sample was split into symptom overreporting and non-overreporting veterans based on $F_p > 8$ criteria. Results are reported in Table 2. Anhedonia and emotional numbing were more positively related for symptom overreporters ($r = .52$) compared to non-overreporters ($r = .36$). These data suggest *greater* consistency on the part of symptom overreporters; however, differences between correlations were not statistically significant. In contrast, undifferentiated depressive symptoms and emotional numbing were more positively related for non-overreporters ($r = .49$) compared to overreporters ($r = .17$), $z = 1.77$, $p = .07$. These data suggest *greater* specificity on the part of symptom overreporters.

Yet, stronger evaluations of self-presentation consistency and specificity could be obtained by controlling for the shared variance between anhedonia and undifferentiated depressive symptoms. Thus, we conducted partial correlations (controlling for the shared variance between each BDI factor) to examine relations with emotional numbing and whether these relations differed by overreporting status. Evidence for greater consistency would stem from stronger unique relations between anhedonia and emotional numbing and evidence for less specificity would stem from stronger, positive relations between undifferentiated symptoms and emotional numbing. As evidence for greater consistency, anhedonia and emotional numbing were more positively related

Table 2
Depressive symptoms and emotional numbing in symptom overreporters

BDI subscales	Emotional numbing	
	<i>r</i>	<i>pr</i>
<i>Symptom overreporters</i>		
Anhedonia	.52**	.60***
Undifferentiated depressive symptoms	.17	–.39*
<i>Non-overreporters</i>		
Anhedonia	.36***	.04
Undifferentiated depressive symptoms	.49***	.37***

* $p < .05$.

** $p < .01$.

*** $p < .001$.

for symptom overreporting veterans ($prs = .60$ for overreporters and $.04$ for non-overreporters); $z = 3.18$, $p < .001$. As for specificity, undifferentiated depressive symptoms were more positively related to emotional numbing for non-overreporting veterans, $r = .37$, whereas a *negative* relation was found for symptom overreporters, $r = -.39$; $z = 3.90$, $p < .001$. These findings suggest divergent psychiatric profiles for symptom overreporting and non-overreporting veterans.

4. Discussion

Using a sample of male veterans with military-related PTSD, our data provide support for the relative independence of symptoms reflecting avoidance and approach functioning. Major findings indicated that (a) veterans endorsing greater anhedonia had an increased likelihood of being classified as symptom overreporters (independent of other PTSD symptoms), and (b) compared to non-overreporting veterans, symptom overreporting veterans were more focused and consistent in their presentation of diminished positive affect and their behavioral expression across self- and clinician-ratings. These findings suggest that the heterogeneity of combat veterans can be partially uncovered by attending to individual differences in self-presentation styles, positive emotions, and positive emotion expressivity.

Symptom overreporting tendencies increase the complexity of trying to understand the true functioning level of combat veterans. Based on theoretical models reflecting the independence of avoidance and approach functioning (e.g., Carver et al., 2000), a unique feature of our study was the focus on symptoms reflecting negative and positive affect. Controlling for shared variance between PTSD and depressive symptoms, anhedonia was the only symptom to adequately differentiate symptom overreporters from non-overreporting veterans. Symptom overreporting has shown strong positive associations with psychiatric disability related compensation in the VA system (e.g., Gold & Frueh, 1999). Because diminished positive emotions has stronger associations with social functioning than symptoms reflecting aversion (e.g., Cook et al., 2004), and the VA defines disability and provides disability benefits based on social and occupational impairment, it could be argued that disability seeking veterans benefit from emphasizing anhedonia. Finding anhedonia to be greater in symptom overreporters than non-overreporters fits this explanation. However, we conducted more complex analyses to provide further insight into the nature of symptom overreporters' responses.

In addition to reporting greater anhedonia, symptom overreporters were distinguished from non-overreporters by greater consistency in their reporting of positive emotions and their expression. In contrast to symptom overreporters, non-overreporters presented a more diffuse level of distress as evidenced by a weaker relation between the overlapping constructs of anhedonia and emotional numbing. One interpretation of these findings is that symptom overreporters are more discriminating in their clinical presentation, reporting stable levels of positive emotions and emotional expression in self-reports and clinical interviews. This consistency suggests that symptom overreporters expend considerable efforts in attempting to exaggerate acute symptoms or are providing a generally accurate report of positive emotions and their expression. These findings diverge from prior work demonstrating greater reporting inconsistencies by symptom overreporters. However, prior work focused on inconsistency within an instrument whereas the present study assessed consistency across instruments.

How do these consistency findings fit with the possible motivations for apparent symptom exaggeration? If the majority of symptom overreporters were malingering, we might expect them to be less discriminating between aversive and appetitive processes, focusing more on demonstrating elevated psychopathology. A stable presentation of positive emotions and their expression argues against malingering. Symptom overreporting veterans did not consistently report elevations. Instead, they were consistent across raters irrespective of levels of positive emotions and their expression. Our results provide support for alternative explanations. The stable presentation of symptom overreporters may reflect truthful responding on psychological functioning. Although the independence of positive and negative processes at the psychological and neurological level is not obvious, symptom overreporters differentiated positive emotions from PTSD symptoms reflecting negative affect. Yet, a more parsimonious explanation is that consistency in reporting could be due to differential knowledge about the nature of PTSD, how disability is defined and awarded by the VA system, and the type of symptom presentation that increases the likelihood of receiving treatment services and disability compensation. It may be valuable for clinicians to obtain information on clients' knowledge of PTSD, the disability system, where and how this information was obtained, and whether they have ongoing litigation at the beginning of the assessment process. This information gathering is not resource-intensive and may aid in the identification of veterans who have been educated on symptom presentation and have secondary motives. Despite the intuitive appeal of these interpretations, this is the first study examining the consistency of reporting across methodologies and symptoms reflecting positive emotions. The existence of clear financial incentives further complicates the assessment of honest versus exaggerated symptom presentations. Are symptom overreporters seeking disability-related compensation for their mental health less consistent than non-disability seeking veterans? What types of symptom profiles increase the likelihood of compensation seeking or being classified as a malingerer? Further examination of response consistency coupled with laboratory, cross-informant, and ecological assessments can add further insight into the nature of veterans' symptom reporting.

Despite the use of a large sample and several conservative statistical analyses, this study has several limitations. First, all of the limitations of a cross-sectional study are relevant. Second, we assessed anhedonia by creating a subscale from an existing measure. Although this scale demonstrates good psychometric properties (e.g., Joiner et al., 2003; Pizzagalli et al., 2005), future research should use measures that were initially designed to assess anhedonia and hedonic capacity (see Leventhal et al., 2006). Third, assessing the relative absence of positive emotions, positive emotional expression, and exploratory behavior is not identical to measures assessing their presence. It would have been preferable to use measures of "positive psychological" processes. However, prior data show that measures of anhedonia and emotional numbing reflect deficits in positive experiences (e.g., Pizzagalli et al., 2005) and show similar correlation patterns to those found for (low) positive affect (e.g., Coupland et al., 2004). Fourth, the cut-off score for our symptom overreporting index reduces the rate of false positives at the expense of increasing false negatives. Furthermore, when evaluating phenomenological experiences such as emotions and cognitions, it is difficult to imagine a metric that could definitively evaluate the veracity of distress. Fifth, emotional numbing remains the most controversial, ill-defined symptom cluster of PTSD, and recent research has led to new conceptualizations of the types of impairments it reflects (e.g., Litz et al., 2000). As greater scientific efforts focus on positive psychological experiences, our understanding of emotional numbing and anhedonia can be expected to improve.

The study and treatment of PTSD in combat veterans has controversies that are not present with other populations. A subset of veterans appear to exhibit response biases such as symptom overreporting due to the experience of diffuse emotional disturbances, an inability to accurately describe and discriminate particular symptoms, attempts to gain access to mental health services, and/or malingering as a means of obtaining disability-related compensation from the VA health system (Rosen, 2004). Although the assessment of malingering can be controversial and uncomfortable for researchers and clinicians, nothing is gained by ignoring the fact that some people engage in this behavior in forensic and compensation-seeking contexts. Symptom overreporting is commonly seen in veterans in clinical and research settings (Frueh et al., 2000). The current study was designed to further understand the phenomenology of particular self-presentation styles in combat veterans. Clinicians evaluate veterans' psychiatric distress and impairment, the veracity of this information, and in the VA system, claims for disability compensation. Clinicians are encouraged to adequately assess the full spectrum of psychological functioning, including positive emotions and approach behavior, as an adjunctive strategy to interpret veteran data and understand the heterogeneity of veterans with a history of combat-related trauma. Clinical scientists are encouraged to further examine individual differences in presentation styles and positive emotions and their expression in understanding the correlates, concomitants, and consequences of people reporting psychological disruptions to everyday functioning.

Acknowledgement

This work was partially supported by grants MH01660 and MH61983 from the National Institute of Mental Health to Dr. Frueh. This work was also supported by the Office of Research and Development, Medical Research Service, Department of Veterans Affairs. This research was also supported by National Institute of Mental Health grant MH-73937 to Dr. Kashdan.

References

- Amdur, R., Larsen, R., & Liberzon, I. (2000). Emotional processing in combat-related posttraumatic stress disorder: a comparison with traumatized and normal controls. *Journal of Anxiety Disorders*, 14, 219–238.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Arbisi, P. A., & Ben-Porath, Y. S. (1995). An MMPI-2 infrequent response scale for use with psychopathological populations: the infrequency psychopathology scale, F (p). *Psychological Assessment*, 7, 424–431.
- Asmundson, G. J. G., Stapleton, J. A., & Taylor, S. (2004). Are avoidance and numbing distinct PTSD symptom clusters? *Journal of Traumatic Stress*, 17, 467–475.
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561–571.
- Blake, D. D., Weathers, F. W., Nagy, L. N., Kaloupek, D. G., Klauminser, G., Charney, D. S., et al. (1990). A clinician rating scale for assessing current and lifetime PTSD: The CAPS-1. *Behavior Therapist*, 18, 187–188.
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A. M., & Kaemmer, B. (1989). *Minnesota multiphasic personality inventory-2 (MMPI-2): Manual for administration and scoring*. Minneapolis, MN: University of Minnesota Press.
- Butcher, J., Graham, J., Ben-Porath, Y. S., Tellegen, A., Dahlstrom, W., & Kaemmer, B. (2001). *Minnesota Multiphasic Personality Inventory-2 (MMPI-2): Manual for administration, scoring, and interpretation-Revised edition*. Minneapolis: University of Minnesota Press.

- Carver, C. S., Sutton, S. K., & Scheier, M. F. (2000). Action, emotion, and personality: emerging conceptual integration. *Personality and Social Psychology Bulletin*, 26, 741–751.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cook, J. M., Riggs, D. S., Thompson, R., Coyne, J. C., & Sheikh, J. I. (2004). Posttraumatic stress disorder and current relationship functioning among World War II ex-prisoners of war. *Journal of Family Psychology*, 18, 36–45.
- Coupland, N. J., Sustrik, R. A., Ting, P., Li, D., Hartfeil, M., Singh, A. J., et al. (2004). Positive and negative affect differentially influence identification of facial emotions. *Depression and Anxiety*, 19, 31–34.
- Elhai, J. D., Gold, S. N., Sellers, A. H., & Dorfman, W. I. (2001). The detection of malingered posttraumatic stress disorder with MMPI-2 fake bad indices. *Assessment*, 8, 221–236.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, 2, 300–319.
- Frueh, B. C., Hamner, M. B., Cahill, S. P., Gold, P. B., & Hamlin, K. (2000). Apparent symptom overreporting among combat veterans evaluated for PTSD. *Clinical Psychology Review*, 20, 853–885.
- Gold, P. B., & Frueh, B. C. (1999). Compensation-seeking and extreme exaggeration of psychopathology among combat veterans evaluated for PTSD. *Journal of Nervous and Mental Disease*, 187, 680–684.
- Gough, H. G. (1950). The *F* minus *K* index for the Minnesota Multiphasic Personality Inventory. *Journal of Consulting and Clinical Psychology*, 14, 408–413.
- Greene, R. L. (2000). *The MMPI-2: An interpretive manual*. Boston: Allyn and Bacon.
- Guriel, J., & Fremouw, W. J. (2003). Assessing malingered PTSD: a critical review. *Clinical Psychology Review*, 23, 881–904.
- Howell, D. C. (1997). *Statistical methods for psychology* (4th ed.). Belmont, CA: Duxbury Press.
- Joiner, T. E., Brown, J. S., & Metalsky, G. I. (2003). A test of the tripartite model's prediction of anhedonia's specificity to depression: patients with major depression versus patients with schizophrenia. *Psychiatry Research*, 119, 243–250.
- Kashdan, T. B., Elhai, J. D., & Frueh, B. C. (2006). Anhedonia and emotional numbing in combat veterans with PTSD. *Behaviour Research and Therapy*, 44, 457–467.
- Keane, T. M., Caddell, J. M., & Taylor, K. L. (1988). Mississippi scale for combat-related posttraumatic stress disorder: Three studies in reliability and validity. *Journal of Consulting and Clinical Psychology*, 56, 85–90.
- Leventhal, A. M., Chasson, G. S., Tapia, E., Miller, E. K., & Petit, J. W. (2006). Measuring hedonic capacity in depression: a psychometric analysis of three anhedonia scales. *Journal of Clinical Psychology*, 62, 1545–1558.
- Litz, B. T. (1992). Emotional numbing in combat-related post-traumatic stress disorder: a critical review and reformulation. *Clinical Psychology Review*, 12, 417–432.
- Litz, B. T., Orsillo, S. M., Kaloupek, D., & Weathers, F. (2000). Emotional processing in posttraumatic stress disorder. *Journal of Abnormal Psychology*, 109, 26–39.
- McNally, R. J. (2003). Progress and controversy in the study of posttraumatic stress disorder. *Annual Review of Psychology*, 54, 229–252.
- Orsillo, S. M., Batten, S. V., Plumb, J. C., Luterek, J. A., & Roessner, B. M. (2004). An experimental study of emotional responding in women with posttraumatic stress disorder related to interpersonal violence. *Journal of Traumatic Stress*, 17, 241–248.
- Pizzagalli, D. A., Jahn, A. L., & O'Shea, J. P. (2005). Toward an objective characterization of an anhedonic phenotype: a signal-detection approach. *Biological Psychiatry*, 57, 319–327.
- Rogers, R., Sewell, K. W., Martin, M. A., & Vitacco, M. J. (2003). Detection of feigned mental disorders: a meta-analysis of the MMPI-2 and malingering. *Assessment*, 10, 160–177.
- Rosen, G. M. (2004). *Posttraumatic stress disorder: Issues and controversies*. Chichester, England: John Wiley & Sons.
- Ruscio, A. M., Weathers, F. W., King, L. A., & King, D. W. (2002). Male war-zone veterans' perceived relationships with their children: the importance of emotional numbing. *Journal of Traumatic Stress*, 15, 351–357.
- Spahic-Mihajlovic, A., Crayton, J. W., & Neafsey, E. J. (2005). Selective numbing and hyperarousal in male and female Bosnian refugees with PTSD. *Journal of Anxiety Disorders*, 19, 383–402.
- Tolin, D. F., Maltby, N., Weathers, F. W., Litz, B. T., Knight, J., & Keane, T. M. (2004). The use of the MMPI-2 infrequency-pathology scale in the assessment of posttraumatic stress disorder in veterans. *Journal of Psychopathology and Behavioral Assessment*, 26, 23–29.
- Weathers, F. W., & Litz, B. (1994). Psychometric properties of the Clinician-Administered PTSD Scale, CAPS-1. *PTSD Research Quarterly*, 5, 2–6.