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The Relationship between Posttraumatic Stress Disorder Checklist (PCL) Symptom Endorsement and Self-Reported Symptoms of Anxiety and Depression

Scott D Barnett[1]*, Susanne Gibbons[2] and Edward J Hickling[3]

[1]James A. Haley Veterans Hospital, HSR&D/RR&D Research Center of Excellence, Tampa, 8900 Grand Oaks Circle, Tampa, FL 33637, USA
[2]Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD, 20814
[3]Bay Pines Veterans Administration Healthcare System 10,000 Bay Pines Blvd. Bay Pines, FL 33744

Abstract

Post Traumatic Stress Disorder (PTSD) has been a controversial diagnosis with arguments that the disorder could be better classified as a dissociative disorder, grief reaction, or a stress reaction rather than an anxiety disorder. This study identified individuals who self reported feeling anxious, and also met criterion for PTSD using data from active-duty military personnel who completed the 2008 Health Related Behaviors Questionnaire. Participants included those who 1) self-reported feelings of anxiety, 2) completed screens of PTSD, generalized anxiety and depression. Only a little more than 50% of those who met criterion for probable PTSD based on the posttraumatic stress disorder checklist - civilian (PCL-C) stated they were feeling anxious or were in treatment for anxiety. The overlap of symptoms of PTSD with screens for symptoms of generalized anxiety disorder and depression was remarkably non-existent. PCL-C scores suggest 5.3% of those with probable PTSD also reported feeling anxious and 4.3% of individuals with probable PTSD reported seeking help for anxiety. The most frequent symptoms found in those individuals who reported feeling anxious were more often endorsing symptoms of avoidance, while those who did not self report feelings of anxiety showed significantly lowered scores on symptoms of hyperarousal and reexperiencing, and higher scores on symptoms of numbing. Implications for future classification schema and possible impact on the role of symptom structure in how and why symptom clusters occur in such variation are discussed, and how this might impact treatment and diagnostic considerations.

Keywords: Stress disorders; Post-traumatic, Military personnel, PCL-C; PTSD

Since its codification in the DSM-III, the diagnosis of posttraumatic stress disorder (PTSD) has had considerable controversy regarding its classification and taxonomy [1,2]. PTSD is currently classified as an anxiety disorder, although this placement in the diagnostic category has held considerable debate, as articulated in the DSM-III-R [3], where it is pointed out that the prominent symptom of PTSD is not anxiety but the re-experiencing of a trauma. The argument for the placement of PTSD as an anxiety disorder was historically supported by the presence of behavioral, cognitive and physiological responses that were considered to evidence the occurrence of anxiety. For example, similar to panic disorder, PTSD shares the presence of intrusive thoughts about the stressful event, and evidences efforts to avoid the disturbing stimuli as well as hyper vigilance and heightened arousal, symptoms believed related to the presence of anxiety [4].

While there are symptoms in the PTSD criterion that could be considered symptom of anxiety, they could also be argued to be symptoms that are part of another disorder. Many other diagnostic categories have in fact been found to have a great deal of overlap with the symptoms needed for a diagnosis of PTSD, including those of depression and other anxiety disorders such as generalized anxiety disorder [5]. It's been pointed out that several symptoms of PTSD, including the reexperiencing symptoms of distress at exposure to internal or external cues that symbolize or resemble an aspect of the trauma, physiological reactivity, while similar to those needed for phobic states or panic attacks, are without the needed wording that adds the presence of anxiety. Thus, while several symptoms bear similarity with those in other anxiety disorders, it is not certain that the experience reported is in fact an anxious one, and instead might be more representative of symptoms found with either other disorders, or are uniquely attributable to PTSD [6].

Historically, PTSD has been argued to fit with a number of conceptualizations besides an anxiety disorder, including 1) dissociative disorder, 2) grief reaction, 3) affective disorder, 4) stress reactions, and most recently an 4) experimental category [7]. The latter category addresses the controversy about how to best categorize the disorder as the new DSM-V is underdevelopment with some proponents arguing a new diagnostic grouping of stressors and traumas [8,9] with other supporting the placement of the disorder in an experimental grouping to demonstrate the lack of reliability, and agreed upon conceptualization of what comprises the disorder and the discrepancies within the voluminous literature collected to date [7,10]. This contentious nature is further illustrated in the sheer volume of findings that have raised concerns over the factor structure of the disorder [11,12], the overlap with numerous other diagnostic groupings and the frequent co morbid existence of other DSM-IV disorders [13].

Related is the concern that anxiety is a multifaceted disorder, with physiological, cognitive, emotional qualities. Those features also have shared overlap with PTSD. Jones and Barlow initially argued that PTSD is most closely linked to anxiety disorders because of the

presence of alarm reactions and a process of anxious apprehension which included intrusive recollections of trauma and nightmares [14]. However, most disorders categorized in the DSM-IV contain a specified articulated concern of anxiety. Whether it is anxiety about avoidance of place or situations to avoid (agoraphobia), anxiety provoked by a specific object or situation (specific phobia), thoughts that increase anxiety (obsessions) or behaviors that decrease anxiety (compulsions), or persistent worry or anxiety. Posttraumatic stress disorder and acute stress disorder instead look at symptoms of arousal, which may or may not overlap with a sense of anxiety [15]. The anxiety is presumed given that description. While many have argued about the well known co morbidity and lack of coherence in the affective and anxiety diagnoses [16], little direct data of patient endorsement of anxiety state has been described, relying instead on supposition and inferences. This investigation posed a simple question, which as best as we can determine has not been asked directly, which was: for those individuals endorsing sufficient symptoms that may meet criterion for possible PTSD, what proportion simultaneously report feeling anxious and report being in treatment for anxiety?

Method

Sample

This research utilized a retrospective analysis of data from active duty military health care personnel who anonymously completed the 2005 and 2008 Department of Defense (DoD) Survey of Health Related Behaviors Among Active Duty Military Personnel (henceforth HRB survey) (Department of Defense 2005; 2008). The HRB survey, conducted every 2-4 years, included a representative sample of all military personnel who were on active duty at the time of data collection. Recruits, academy cadets, and personnel Absent Without Leave (AWOL), incarcerated, or undergoing a Permanent Change of Station (PCS) were excluded. In brief, the 2005 and 2008 surveys attempts to reflect all military personnel on active duty at time of survey using a two-stage, 10% random sample of all active duty US military personnel

worldwide to over 500 military installations worldwide to selected service members. The combined 2005-2008 sample consisted of 40,836 useable questionnaires (9,566 Army; 11,264 Navy; 8,473 Marine Corps; and 11,533 Air Force) and reflected an overall response of 51%.

Measure

The PTSD Checklist-civilian version (PCL-C) was used to assess PTSD [17]. The 2005 and 2008 HRB surveys used the civilian rather than military version (PCL-M) to capture PTSD symptoms that may be the result of either military or nonmilitary traumatic exposures (i.e. that occurred before enlistment) (Department of Defense 2005; 2008). The PCL-C is a 17-item measure of the DSM-IV symptoms of PTSD [18]. Of the total survey participants (n=40,836), subjects were included in the analysis if they met both PCL-C total score ≥ 44 (n=3,810) and Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) [16] criterion endorsement for PTSD (n=6,566). The PTSD Checklist has received considerable attention in the literature regarding its ability to accurately estimate true PTSD prevalence [19]. In an effort to satisfy reasonable estimation of the occurrence of PTSD, both the cutting score and symptoms matching for criterion were utilized. It is important to understand that at best this still leaves an estimate of "probable PTSD" rather than a diagnostic inclusion based upon a gold standard such as the Clinician Administered PTSD Scale (CAPS) [20]. Varied cutting scores were examined, as well as the presence of a "sub-syndromal" presentation of PTSD where criterion B was met and either Criterion c or D but not both.

Generalized anxiety disorder (GAD) symptoms were assessed using a set of 6-items adapted from the Patient Health Questionnaire [21]. If respondents reported three or more symptoms on more than half of the days in the past 30 days, they met screening criteria [22]. The reliability coefficient for the GAD measure was 0.889 [20].

An index of "need for further depression evaluation" (DEPFlag) based on the Burnam screening criteria Version A [23], was used to detect depression and dysthymia. A positive score indicated that

Item	Self Reported Anxiety n = 3,941	Self Reported Sought Treatment for Anxiety n = 2,096	Both Self Reported Anxiety and Sought Treatment n = 881
Age	M = 28.0 SD = 7.7	M = 28.4 SD = 7.7	M = 27.8 SD = 7.7
Married	1,981 (50.3)	1,046 (49.9)	436 (49.5)
Race			
White	2,755 (69.9)	1,500 (71.6)	638 (72.4)
AA	523 (13.3)	264 (12.6)	109 (12.4)
Asian	188 (4.8)	72 (3.4)	30 (3.4)
Other	475 (12.1)	260 (12.4)	104 (11.8)
Education			
< High School	18 (0.5)	7 (0.3)	86 (9.8)
High School/GED	1,524 (38.7)	598 (28.5)	279 (31.7)
Some College	1,400 (35.5)	873 (41.7)	346 (39.3)
College degree	358 (9.1)	208 (9.9)	77 (8.7)
Graduate Study	347 (8.8)	114 (5.4)	53 (6.0)
Graduate Degree	187 (4.7)	103 (4.9)	40 (4.5)
Service			
Army	1,105 (28.0)	622 (29.7)	277 (31.4)
Navy	1,073 (27.2)	569 (27.2)	236 (26.8)
Marines	891 (22.6)	415 (19.8)	188 (21.3)
Air Force	872 (22.1)	490 (23.4)	180 (20.4)
OEF/OIF Deployment	1,736 (44.1)	977 46.6)	433 (49.2)

Note. AA, African American; GED, general equivalency degree; OEF/OIF, Operation Enduring Freedom/Operation Iraqi Freedom. Values presented, unless otherwise noted, are percentages per survey.

Table 1: Participant Characteristics.

Item	Self Reported Anxiety n = 3,941	Self Reported Sought Treatment for Anxiety n = 2,096		Both Self Reported Anxiety and Sought Treatment n = 881	
PCL, M, SD	44.1 (20.4)	45.1 (19.8)	ns	54.4 (19.8)	s
PCL-C ≥ 50	1,558 (39.5)	865 (41.3)	ns	541 (61.4)	***
PCL-C ≥ 44	1,873 (47.5)	1,043 (49.8)	ns	610 (69.2)	***
PCL-C ≥ 28 0	2,872 (72.9)	1,605 (76.6)	**	783 (88.9)	***
PCL-C Subsyndromal	2,237 (56.8)	1,235 (58.9)	ns	670 (76.1)	***
GAD	2,071 (52.6)	1,039 (49.6)	*	626 (71.1)	***
DEPFlag	2,268 (57.6)	1,318 (62.9)	***	685 (77.8)	***

Note. PCL-C, PTSD Checklist, Civilian; GAD, Generalized Anxiety Disorder; DEPFLAG, depression screener, felt sad/blue for at ≥ 2weeks in past 12 months and ≥ 1 days during past week. Column n's are those participants endorsing that item. Percentages were calculated as those participant endorsing both row and column items. Statistical comparisons (t-test, χ^2) were between *self reported anxiety* and *self reported treatment for anxiety*. McNemar's test was used to compare items and subjects endorsing *Both Self Reported Anxiety and Sought Treatment*. *** $p<0.0001$; ** $p<0.001$; * $p<0.05$.

Table 2: Psychological Indices from for Psychological Indices by Gender for Participants Endorsing Items.

Item	Self Reported Anxiety n = 3,941	Self Reported Sought Treatment for Anxiety n = 2,096		Both Self Reported Anxiety and Sought Treatment n = 881	
Repetitive Thoughts	1,971 (50.0)	1,097 (52.3)	ns	593 (67.3)	***
Dreams	1,640 (41.6)	904 (43.1)	ns	503 (57.1)	***
Flashbacks	1,525 (38.7)	802 (38.3)	ns	474 (53.8)	***
Upset at Reminders	1,962 (49.8)	1,092 (52.1)	ns	597 (67.8)	***
Physiologic Reactions	1,721 (43.7)	993 (47.4)	**	569 (64.6)	***
Avoid Thoughts	1,968 (49.9)	1,096 (52.3)	ns	600 (68.1)	***
Avoid Activities	1,721 (43.7)	973 (46.4)	*	542 (61.5)	***
Differential Recall	1,387 (35.2)	762 (36.4)	ns	444 (50.4)	***
Loss of Interest	1,738 (44.1)	974 (46.5)	ns	558 (63.3)	***
Feels Distant	1,945 (49.4)	1,056 (50.4)	ns	596 (67.7)	***
Numbing	1,756 (44.6)	982 (46.9)	*	555 (63.0)	***
Short Future	1,625 (41.2)	860 (41.0)	ns	508 (57.7)	***
Sleep Disturbance	2,272 (57.7)	1,268 (60.5)	*	655 (74.4)	***
Irritable & Angry	2,122 (53.8)	1,161 (55.4)	ns	621 (70.4)	***
Decreased Concentration	2,238 (56.8)	1,222 (58.3)	ns	654 (74.2)	***
Hypervigilance	1,826 (46.3)	1,000 (47.7)	ns	544 (61.8)	***
Startle	1,783 (45.2)	962 (45.9)	ns	565 (64.1)	***

Note. PCL-C, PTSD Checklist, Civilian; GAD, Generalized Anxiety Disorder. Percentages were calculated as those participant endorsing both row and column items. Column n's are those participants endorsing that item. Percentages were calculated as those participant endorsing both row and column items. Statistical comparisons (χ^2) were between *self reported anxiety and self reported treatment for anxiety*. McNemar's test was used to test PCL-C items and subjects endorsing *Both Self Reported Anxiety and Sought Treatment*. *** $p< 0.0001$; ** $p< 0.001$; * $p<0.05$

Table 3: Agreement between Anxiety Questions and PCL-C Items.

GAD Item	Self Reported Anxiety n = 3,941	Self Reported Sought Treatment for Anxiety n = 2,096		Both Self Reported Anxiety and Sought Treatment n = 881	
Feeling nervous, on edge, or worrying about different things	2,294 (58.2)	1,057 (50.4)	***	640 (72.6)	***
Getting tired easily	1,845 (46.8)	930 (44.4)	ns	542 (61.5)	***
Muscle tension, aches or soreness	1,789 (45.4)	891 (42.5)	*	510 (57.9)	***
Trouble falling/staying asleep	1,914 (48.6)	986 (47.0)	ns	564 (64.0)	***
Trouble concentrating on things	1,493 (37.9)	744 (35.5)	ns	460 (52.2)	***
Becoming easily annoyed/irritable	1,950 (49.5)	979 (46.7)	*	555 (63.0)	***
Feeling restless, hard to sit still	439 (11.1)	236 (11.3)	ns	483 (54.8)	***

Note. GAD, Generalized Anxiety Disorder. Column n's are those participants endorsing that item. Percentages were calculated as those participant endorsing both row and column items. Column 1 is the first item of the GAD = *Feeling nervous, on edge, or worrying about different things*. Statistical comparisons (χ^2) were between *self reported anxiety* and *self reported treatment for anxiety*. McNemar's test was used to test GAD items and subjects endorsing *Both Self Reported Anxiety and Sought Treatment*. *** $p< 0.0001$; ** $p< 0.001$; * $p<0.05$.

Table 4: Agreement between Anxiety Questions and Generalized Anxiety Disorder (GAD).

respondents (a) felt sad, blue, or depressed for 2 weeks or more in the past 12 months or reported 2 or more years in their lifetime of feeling depressed and felt depressed "much of the time" in the past 12 months; and (b) felt depressed on 1 or more days in the past week [24].

Participants were identified by use of embedded questions within the HRB which asked if, "they felt they were anxious", and "if they had sought treatment for anxiety". Participants for this study consisted of the combined 2005-2008 samples resulting in 6,037 participants. For

measures of anxiety, 3,941 participants endorsed self reported anxiety and 2,096 participants self-reported having sought treatment for anxiety at time of survey. These groups were not mutually exclusive. When combined 2,294 participants endorsed self reported both anxiety and having sought treatment for anxiety.

Data analysis

Continuous data are presented as mean and standard deviation. Categorical data are presented as frequency and percent. All statistical comparisons ($\chi 2$) were between items self reported anxiety and self reported treatment for anxiety or McNemars test of agreement for items (PCL-C, GAD, DEPFlag) and subjects endorsing Both Self Reported Anxiety and Sought Treatment. All analyses were conducted using SAS (Ver. 9.1, Cary, NC).

Results

Demographic information survey participants can be found in Table 1. Participants endorsing self-reported were on average M = 28.1, SD = 7.7 years of age, 50.0% were married, white (70.5%) and at least a high school, general equivalency, or trade school degree (35.1%). Participants were fairly equally distributed across service with Army (28.6%) and Navy (27.2%) contributing the most. Nearly one half of participants endorsing both self reported anxiety and sought treatment for such (49.5%, n = 436) were deployed to Operation Enduring Freedom or Operation Iraqi Freedom.

Table 2 presents the frequency of participants that endorse anxiety and examined their PCL scores, and GAD and Depression screening scores. Participants seeking treatment for anxiety were slightly more likely to endorse greater PCL scores, although the percentage of those with self reported anxiety dropped as PCL scores increased. Screens for GAD (58.9 versus 56.8%, p<0.028) and depression (62.9% versus 57.6%, p<0.0001) showed a greater percentage of participants with self reported anxiety when both screening items, (endorsement of anxiety and seeking treatment for anxiety) 81.8% GAD, 72.9% DEPFlag, than probable PTSD for PCL-C scores >44 and criterion matched were

used. When combined, participants self-reporting both anxiety and treatment for anxiety were 46% more likely to endorse PCL-C ≥ 44 (69.2% versus 47.5%), 35.2% more likely to endorse GAD (71.1% versus 52.6%) and 35.1% depression (77.8% versus 57.6%) than participants self-reporting anxiety.

Table 3 presents agreement between individual PCL-C items for those with self reported anxiety, those seeking of help for anxiety and those endorsing both items. No items were found to show greater than 74.4% agreement (sleep disturbance) for those participants with self reported anxiety and 60.5% for those participants having sought treatment for anxiety.

Table 4 presents agreement between individual GAD items and items of self reported anxiety and self reported seeking of help for anxiety. Surprisingly, even for those participants endorsing self reported anxiety and/ or sought treatment for anxiety, there is marked disparity between the groups, and no item showed better than 72.6% agreement. Overlap of self reported anxiety and those who met criterion for PTSD, based on a PCL score > 44 and matched criterion, scored positive on the GAD screen and those participants that scored positive on the DEPFlag screen are shown in Figure 1, juxtaposed with those who had reported seeking treatment for anxiety and their comparable scores on the PCL, GAD screen and DEPFlag.

Discussion

The most striking finding of this large sample of active duty military personnel, was the confirmation of how approximately one half of the individuals who met criterion for probable PTSD based upon stringent scoring and criterion matching on the PCL, reported feeling anxious. The finding clearly supports the contention that PTSD is misplaced within this diagnostic grouping, and it is better considered as something classified in a new fashion [6,25]. The use of a new diagnostic grouping such as that proposed by Friedman et al. [8], or even as one with a radical departure from DSM features such as that of Brown and Barlow [9] would seem preferable to having the disorder remain in such a nosological placement.

Figure 1: Venn diagram using proc freq list for pcl-44 / DEPFlag/gad/ by 1.
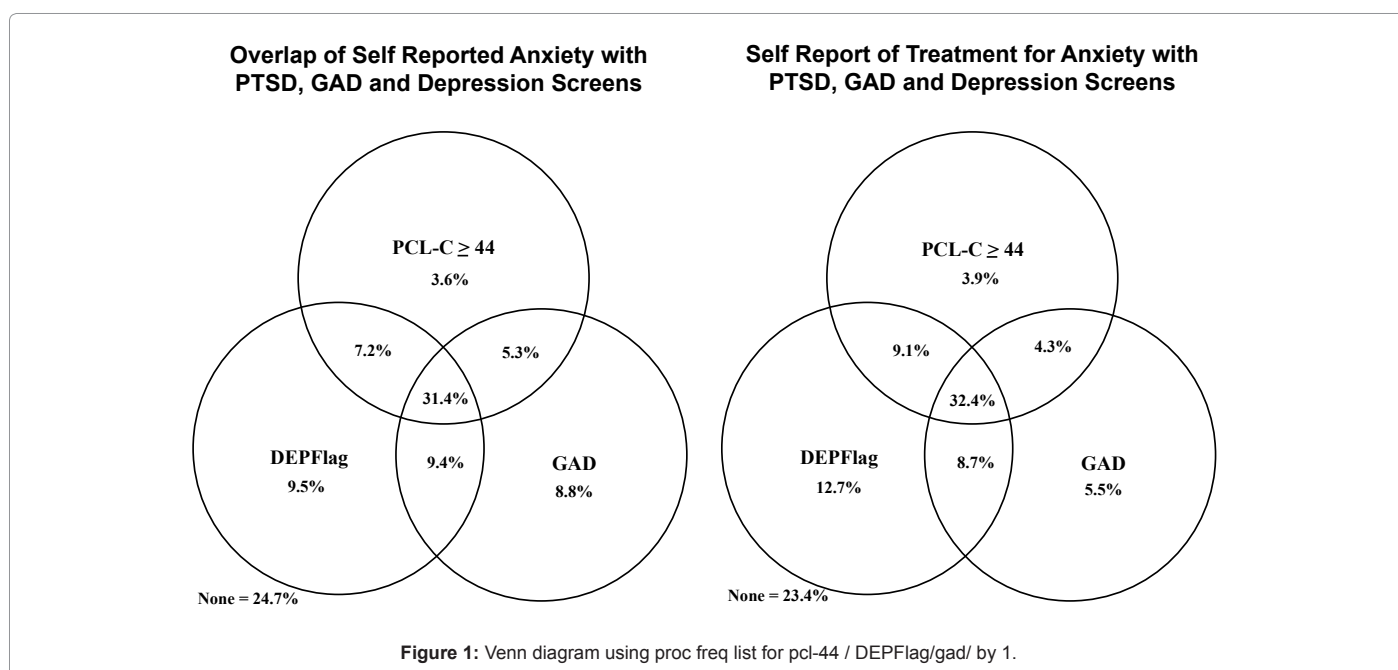
The expected overlap with other diagnostic groupings, while much less stringent given the reliance in this study on self reported screening instruments, contained within a survey, nevertheless support about the same percentages of overlap found in more comprehensive evaluations using a structured interview [11].

The data supports the presence of a number of post trauma reactions, including one where respondents describe feelings of anxiety. It is conjectured that this variety in symptom patterns may help explain some of the invariance found in different populations of trauma survivors who present with PTSD [26]. It is hypothesized that an improved ability to classify the reactions to stress will result in an improvement to render improved treatments and understanding of post trauma reaction.

This study was dependent upon the self-report of anxiety extracted from anonymous survey data. Time from the trauma, type of trauma, and other constraints in where and how the instruments were completed are beyond the scope of a study that relied upon a secondary data set. While we cannot be certain what was intended by item endorsement, the use of the self report, and all of its limitations, are believed to aid in understanding and are in fact commonly used in large scale studies. The data raises an empirical concern that rather than relying on inferences that within the items are expressions of anxiety, that instead the items may well not be indications of anxiety (e.g. fear response, hyperarousal references). The failure to include the experience in the item cannot be assumed to convey the same internal experience even if some face validity exists within the item content. The findings of this large scale examination of self report instruments would at the very least suggest we ask if the people who are described as having an anxiety disorder, subjectively feel the presence of anxiety.

Acknowledgment

References

1. American Psychiatric Association (1980) Diagnostic and statistical manual of Mental disorders (3rd ed.), Washington, DC; Author.

2. Resick PA, Miller MW (2009) Posttraumatic stress disorder: anxiety or traumatic stress disorder? J Trauma Stress 22: 384-390.

3. American Psychiatric Association (1987) Diagnostic and statistical manual of Mental Disorders (3rd ed. rev.), Washington, DC; Author.

4. Brett EA (1996) The classification of posttraumatic stress disorder. In: B.A. van der Kolk, A.C. McFarlane, & L. Weisaeth (eds.), Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society. The Guilford Press, New York.

5. Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB (1995) Posttraumatic stress disorder in the National Comorbidity Survey. Archives of General Psychiatry 52: 1048-1060.

6. Rosen GM, Frueh C, Elhai JD, Grubaugh AL, Ford JD (2010) Posttraumatic stress disorder and general stress studies. In: G.M. Rosen & B.C. Frueh (Eds). Clinician's Guide to Posttraumatic Stress Disorder. John Wiley & sons; Hoboken, New Jersey.

7. McHugh PR, Treisman G (2007) PTSD: a problematic diagnostic category. J Anxiety Disord 21: 211-222.

8. Friedman MJ, Resick PA, Bryant RA, Strain J, Horowitz M, et al. (2011) Classification of trauma and stressor-related disorders in DSM-5. Depress Anxiety 28: 737-749.

9. Brown TA, Barlow DH (2009) A proposal for a dimensional classification system based on the shared features of the DSM-IV anxiety and mood disorders: implications for assessment and treatment. Psychological Assessment 21: 256-271.

10. Rosen GM, Lilienfeld SO (2008) Posttraumatic stress disorder: an empirical evaluation of core assumptions. Clin Psychol Rev 28: 837-868.

11. King LA, King DW, Orazem RJ, Palmieri PA (2006) Research on the latent structure of PTSD. The National Cetner for Post-Traumatic Stress Disorder, PTSD Research Quarterly 17: 1-7.

12. Elhai JD, Engdahl RM, Palmieri PA, Naifeh JA, Schweinle A, et al. (2009) Assessing posttraumatic stress disorder with or without reference to a single, worst traumatic event: examining differences in factor structure. Psychological Assessment 21: 629-634.

13. Rosen GM, Spitzer RL, McHugh PR (2008) Problems with the post-traumatic stress disorder diagnosis and its future in DSM V. Br J Psychiatry192: 3-4.

14. Jones JC, Barlow DH (1990)The etiology of posttraumatic stress disorder. Clinical Psychology Review10: 299-328.

15. American Psychiatric Association. (2000) Diagnostic and statistical manual of mental disorders (4th edn). Washington, DC.

16. Watson D (2005) Rethinking the mood and anxiety disorders: a quantitative hierarchical model for DSM-V. J AbnormPsychol 114: 522-536.

17. Weathers FW, Litz BT, Huska JA, Keane TM (1991)The PTSD Checklist-civilian version (PCLC). Boston, MA: National Center for PTSD.

18. Blanchard EB, Jones AlexanderJ, Buckley TC, Forneris CA (1996) Psychometric properties of the PTSD Checklist (PCL). Behav Res Ther 34: 669–673.

19. Terhakopian A, Sinaii N, Engel CC, Schnurr PP, Hoge CW (2008) Estimating population prevalence of posttraumatic stress disorder: an example using the PTSD checklist. J Trauma Stress 21: 290-300.

20. Weathers FW, Ruscio AM, Keane TM (1999) Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. Psychological Assessment11:124-133.

21. Spitzer RL, Kroenke K, Williams JB (1999) Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary care evaluation of mental disorders. Patient health questionnaire. JAMA: 282: 1737-1744.

22. Sheehan DV, Harnett-Sheehan K R (1996) The measurement of disability. International Clinical Psychopharmacology 11: 89-95.

23. Burnam MA, Wells KB, Leake B, Landsverk J (1988) Development of a brief screening instrument for detecting depressive disorders. Med Care 26: 775-789.

24. Research Triangle International (2006) 2005 Department of Defense Survey of Health Related Behaviors Among Military Personnel.

25. Coyne JC, Thompson R (2007) Posttraumatic stress syndromes: Useful or negative heuristics? J Anxiety Disord 21: 223-229.

26. Mansfield AJ, Williams J, Hournani LL, Babeu LA (2010) Measurement invariance of posttraumatic stress disorder symptoms among U.S. military personnel. J Trauma Stress 23: 91-99.