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Research Article

A Comparison of ICD-11, DSM-IV, DSM-5 Classifications of PTSD and Comorbid Conditions: An Examination of Two Veteran/Military Samples

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Abstract

DSM-IV, DSM-5 and the proposed ICD-11 hold significantly divergent views of PTSD. The first study examined 147 military personnel on criteria for the proposed PTSD classification for ICD-11, DSM-IV and DSM-5; (Probable PTSD: ICD-11, n = 62, DSM-IV, n = 72; DSM-5, n = 73). Comorbid conditions of depression, anger, somatization and anxiety were also measured. The second study replicated and extended the investigation examining 60 CAPS confirmed cases of PTSD as per DSM-IV criterion, and convergent measures of comorbid conditions (Probable PTSD: ICD-11, n = 46, DSM-IV, n = 52; DSM-5, n = 54). Significant differences across past, current and proposed classifications for PTSD were found as well as distinct comorbid presentations. Implications for research include legal and clinical applications. The need for an agreed upon nosology was discussed.

Keywords: *Posttraumatic Stress Disorder; ICD-11; DSM-5; PTSD*

There have been considerable historical as well as current controversies regarding the description of posttraumatic stress disorder and other psychological reactions following traumas [1]. Past diagnoses included terms such as battle fatigue, railway spine and shellshock, just to name a few. These terms further held significant differences from current classification symptoms and schemas [2-5].

The classification of Posttraumatic Stress Disorder (PTSD) has been fraught with issues of what is sufficient for a trauma, what symptoms make up a diagnosis, with considerable changes in these decisions across time [6-13]. The Diagnostic and Statistical Manual of Mental Disorders-5 (DSM) and the newly proposed International Classification of Diseases-11 (ICD-11) have provided widely divergent views of what symptoms should constitute a diagnosis of PTSD [5,12,14].

PTSD and the DSM

Historically, post trauma reactions have been classified in a number of ways, including the 1942 revision of the Standard Classified nomenclature of Disease and the Armed Forces Nomenclature [15]. In 1952, the American Psychiatric Association (APA) published DSM-I [6]. The DSM classifications included a "gross stress reaction", with the reaction to stress (defined as an exceptional physical or mental state), following events such as natural catastrophes or battle. The stress response was viewed as occurring to people otherwise normal, and included two categories, combat and civilian catastrophes. In general, people were expected to get better. The categorization changed in the DSM-II [7] with both neuroses, along with 'Gross Stress Reaction', being dropped from the nomenclature. There was no official diagnosis for a stress reaction being specified from 1968 until 1980; although a diagnosis of adjustment disorder of adult life was provided with examples being combat, civilian and "Ganser's syndrome".

In 1980, PTSD was officially codified and included in the DSM-III [8]. A diagnosis of PTSD included 12 symptoms, 4 of which were needed for a diagnosis. The codification for PTSD has continued to change from DSM-III-R [9], DSM-IV [10] and DSM-IV-TR [11],

expanding the number of symptoms to 17 with 6 being needed for a diagnosis, along with changes in criterion. Considerable concerns have been raised about the DSM-IV and PTSD including ongoing efforts at clarifying what should or should not be viewed as a sufficient trauma to begin consideration of the disorder, whether it is a distinct diagnosis, comorbidity and overlap of symptoms with other disorders, lack of specific markers or physiological reactivity unique to PTSD, with some challenging the very core assumptions of the disorder [14,16]. The issues of what to call presentations of symptoms less than sufficient to meet criterion for a diagnosis of PTSD (e.g. subsyndromal PTSD) have been raised, and it has been argued that the diagnosis of PTSD has redefined and overextended the reach of long-recognized reactions of fear, anxiety and emotional reactions to shocks and traumas, with social and political factors fueling ideas as well as those grounded in medical or psychological findings leading the field farther away from not towards a better comprehension of psychological responses to trauma [17].

In 2013, DSM-5 was published, amid notable controversy about significant changes to the number, inclusion and nuance of the symptoms included increasing the number of symptoms, to 20, in 4 reconfigured clusters [12]. The change is not by some believed to enhance diagnostic accuracy, clinical utility or communication., with some actually recommending a return to the use of DSM-IV criteria [18].

The controversy has been so great that the National Institute of Health (NIH) has specified that DSM-5 disorders are so lacking in reliability, validity, specificity and scientific support, that they will not be utilized as part of the areas to be investigated, and have instead developed their own, largely biologically based criteria (RDoC) [19]. Briefly, the DSM-5, despite claims to the contrary that there had been little change, have what many view as dramatic changes within the criteria for making a diagnosis [13].

As one can see from this brief overview, the changing symptoms in classification schemas for PTSD have resulted in a significant heterogeneity of symptom profiles that have historically deemed to meet criteria for a diagnosis of PTSD. Rosen, Lilienfeld, Frueh., *et al.* [16] have commented that unlike any other diagnostic schema for a behavioral disorder in DSM-IV-TR, PTSD has a potential 1,750 possible minimal number of combinations that would result in a diagnosis of PTSD. The next closest disorder was depression with just 112 possible combinations. Galatzer-Levy and Bryant [20] reported that DSM-IV criteria for PTSD had a possible 79,794 possible combinations, while with DSM-5, the expansion of possible combinations that would meet criteria for PTSD minimally was 3,150 and all possible combinations of symptoms being an astounding 636,120.

In an empirical examination of a large set of military personnel drawn from the DoD Survey of Health Related Behaviors among Active Duty Military personnel, 2005 and 2008, using ratings of symptoms ranked as moderate or greater on the Post Traumatic Checklist (PCL), it was found that there were in fact 1,837 unique combinations of symptoms in a sample of 3,810 participants, with 1,533 symptom combinations occurring just once [21]. Young, Lareau and Pierre [22], elaborated the Galatzer-Levy and Bryant [20] theoretical article to add in co-morbid conditions including chronic pain, depression, neurocognitive disorders (e.g. traumatic brain injury), alcohol use and trauma related exacerbation of premorbid personality disorders and calculated that over one quintillion combinations are possible. They recommended that PTSD should be prioritized with co-morbid conditions listed as secondary, as a way to make diagnosis more useful to both clinicians and legal systems.

ICD-11

The WHO is currently investigating a briefer version of the classification of PTSD [14]. The argument for the change was to, 1) address the stressor problem, 2) the excessive complexity making it difficult to diagnosis what constitutes PTSD, 3) the symptom overlap and comorbidity with other conditions such as depression and anxiety disorders, and 4) concerns about the broader societal consequences of pathologizing psychological reactions to normal distress. In an attempt to maximize clinical utility, simplifying the symptoms necessary to reach a diagnosis of PTSD was investigated along with a distinction between PTSD and Complex PTSD (exposure to prolonged or repeated trauma). Concerns of what were empirically derived "core elements" rather than "typical features" of PTSD that would thereby represent PTSD specifically rather than general distress or dysphoria were considered. These elements included 6 symptoms; reexperiencing the traumatic event in the present by either flashbacks or nightmares, accompanied by fear or horror, and intrusive waking memories in which reexperiencing in the present can vary from a transient sensation to a complete disconnection from the environment. The second core element is avoidance of those intrusions, as evidenced by marked internal avoidance of thoughts and memories or external avoidance of activities or situations that remind one of the incident. The third element is that of "excessive threat", as evidenced by hypervigilance or by exaggerated startle. PTSD is then defined in terms of the presence of at least one of these symptoms from each core elements, in addition to impairment in their functioning.

Studies investigating the new proposed criteria have given preliminary support to the changes. In a study of 560 Kosovar civilian war survivors, and a sample of 142 British war veterans [23] no change was found in the prevalence rate of PTSD under the proposed criteria for the ICD-11; while in a study of 3,746 participants across seven different trauma populations [24], use of the ICD-11 model of PTSD was found to be valid, possess good concurrent validity and was more stringent in terms of diagnostic fit when compared to DSM-5 criteria. The results supported that under a simplified coding system that PTSD can be identified and clearly distinguished from depression.

This study investigated data from two distinct veteran and military populations for posttraumatic reactions comparing diagnostic criteria from the DSM-IV, DSM-5 and from the proposed ICD-11. This study investigated two major questions: What is the agreement of diagnosis of PTSD across DSM-IV, DSM-5 and the proposed ICD-11 classification schemas in a veteran population? And, what other associated symptoms/problems are frequently found when a diagnosis of PTSD is or is not present?

Methods

Study 1

This study examined the responses of 156 military personnel on criteria for PTSD classification using ICD-11, criteria for DSM-IV and criteria for DSM-5. The study also included measures of common conditions that can also occur following traumatic experiences including increased anger, depression, dissociation, somatization, and anxiety. It was hypothesized that there would be significant differences within the three classification schema for PTSD, and that the comorbid conditions would also present in varied percentages dependent upon the classification schema utilized.

Participants

Data was collected from an online study of post-deployment experiences. The study was open to individuals between the ages of 18 and 59 with a history of military service and combat exposure in the Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). The only other requirement for entry into the study was use of a computer in order to access the study website. Approximately half of the participants were in veteran status, with the remainder split between active duty service or service in the National Guard or Reservists. Participants were predominantly Caucasian, Army combat veterans, the majority of whom had been deployed more than 1.5 years. Of the 180 participants who responded, only 156 are included here as they fully completed all of the psychological tests and surveys.

Recruitment involved a range of print and online resources that cater to military and veteran populations (e.g. Veterans of Foreign Wars newsletters, paid ads in Military Times newspaper, posts on social media platforms, and direct emails via listservs for military and veteran issues) before being directed to the study website containing detailed information about the study. A broad range of recruitment contexts were used in order to reach a representative sample of combat veterans (i.e. not just veterans with behavioral health concerns). Military subject matter experts were consulted regarding content of ads to ensure that marketing and study website information did not explicitly or implicitly assume positive or negative associations between combat deployment and behavioral health concerns. After obtaining informed consent, participants completed a demographic survey and online surveys and psychological measures.

Measures

Posttraumatic stress disorder

PTSD symptom severity was assessed using the 17-item Post-Traumatic Stress Disorder Checklist (PCL) [25]. The PCL is self-report rating scale for assessing DSM-IV PTSD symptoms. Examinees were instructed to indicate how much they have been bothered by each symptom in the past month using a 5-point (1 - 5) scale. Test-retest reliability has been shown to be excellent (0.96), internal consistency (alpha coefficient) is high (0.97 for all 17 symptoms) with item-scale total correlations ranging from 0.62 - 0.87. Diagnostic utility of the PCL scores to predict PTSD showed that an optimal cutoff score of 50 or higher yielded a diagnostic sensitivity of 0.82, a specificity of 0.83, and a kappa of 0.64. For the conservative definition of PTSD to be met, subjects' total score had to be at least a 44 on a scale of 17 to 85. It exhibits excellent internal consistency (alpha 0.94), temporal stability (1-week retest correlation 0.88) and converges strongly with CAPS diagnoses (overall diagnostic efficiency 0.83) [26,27]. An alternative scoring algorithm is to follow the DSM-IV criteria. It has been suggested that a combination of these two approaches (i.e. the requisite number of symptoms are endorsed within each cluster and the total score is above the specified cut point for a specific population) may be best.

The Associated Symptoms of PTSD Scale (ASP) [28] is an 8 item questionnaire that extends the items of the CAPS using the format found on the PCL. It is a self- generated questionnaire having face and content validity and was used to follow targeted items that were

included in the DSM-5 codification of PTSD. The scale was constructed as the timing of the study was one where DSM-5 had not yet been formalized and the PCL-5 for the DSM-5 had not yet been published. Further, items related to dissociation were important for purposes of identifying individuals who might have this reaction, as well as due to the portending that this might be a part of the DSM-5 classification coding. Items were constructed to follow the same format and structure of the PCL, using a 1-5 rating scale, with a score of 3 being used as moderate. The ASP exhibits excellent internal consistency (alpha 0.88), and temporal stability (1-month retest correlation, 0.86). The items for dissociation were scored using a score of 3 or greater for the two items, as indicating a moderate level of dissociation. A copy of the ASP may be found in appendix 1.

Depression

The Center for Epidemiological Studies Depression Scale (CES-D) is a widely used and well validated 20-item self-report instrument that measures major components of depressive symptomatology, including depressive mood, feelings of guilt and worthlessness, psychomotor retardation, loss of appetite, and sleep disturbance [29]. Respondents rate items using a 4-point response format (0 to 3) to indicate the frequency with which they have been experiencing symptoms in the past month. Anchors range from rarely or none of the time to most or all of the time. High internal consistency has been reported with Cronbach's alpha coefficients ranging from .85 to .90 across studies and concurrent validity was demonstrated using both clinical and self-report criteria. Participants with CESD scores ≥ 16 were categorized as depressed.

Anger

The Aggression Questionnaire (AQ) is a widely used measure assessing hostility and aggression [30]. This 29-item questionnaire includes various characteristics related to aggression. The respondent rates each item on a 5-point scale ranging from «Not at all like me» to «Completely like me». Reliability coefficients range from 0.77 to 0.85. Cut points for AQ Physical Aggressiveness and AQ Verbal Aggressiveness were 24 and 15, respectively. Participants with AQ scores ≥ 16 for men and AQ scores ≥ 17 for women were considered to demonstrate excessive anger symptoms.

Somatization

The State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA) [31] is a 21-item measure of cognitive and somatic anxiety symptoms with excellent ability to discriminate between anxiety and depression. Internal consistencies for the various subscales range from .83 to .95, and the STICSA has excellent convergent and discriminate validity [32]. Cut points for STICSA-SOM and STICSA-COG were > 20 and 25 respectively.

Study 2

A replication and extension of the investigation was conducted by examining the assessment data of individual veterans who, by use of the Clinician Administered PTSD Scale (CAPS) [33], were determined to be confirmed cases of PTSD as per DSM-IV criterion. The study used convergent measures to assess similar areas of comorbid disorders and symptoms.

Participants

Participants were recruited from a VAHC outpatient program by clinician referral or self-referral in response to flyers and posters. Veterans were then directed to contact the study coordinator by email or by calling a designated telephone number. A telephone or in-person screening for inclusion occurred to make sure minimal requirements are met (veteran status, likely diagnosis of PTSD) and a subsequent appointment scheduled for completed screening and informed consent.

Inclusion criteria included: Veteran status, were enrolled for VHA care, age 18 to 70 and a diagnosis of PTSD as assessed by mental health evaluation and confirmed by the Clinician Administered PTSD scale (CAPS) showing active symptoms within the past month. Exclusion criteria included: active psychosis, active alcohol and/or substance use disorder, and active suicidal or homicidal ideation. In total 60 participants were recruited and fully completed the following surveys.

Measures

In addition to the PCL and ASP used for the provisional diagnosis of PTSD and dissociation, the following measures were utilized.

Depression

The Beck Depression Inventory-II (BDI-II) [34] is a widely used and well validated 21-item self-report instrument that measures major components of depressive symptomatology, including depressive mood, feelings of guilt and worthlessness, psychomotor retardation, loss of appetite, and sleep disturbance. Respondents rate items using a 4-point response format (0 to 3) to indicate the frequency with which they have been experiencing symptoms in the past 2 weeks. This measure has demonstrated a good level of internal consistency and convergent validity in community and patient samples. Participants with a BDI score > 12 were considered to displaying depressive symptomatology.

Anger

The State-Trait Anger Expression Inventory-2 (STAXI-2) [35] is a 57-item measure, which assesses components of anger and anger expression. The test requires each item to be rated on a 4-point scale that assesses both the intensity and frequency of the anger expressed, experienced and controlled. Internal consistency reliability has a value of α ranging from .73 to .95 for the total scale scores and from .73 to .93 for the sub-scales. Concurrent validity has been established with strong relationships reported between the STAXI and other measures of personality and anger scales.

Somatization

The Brief Symptom Inventory (BSI) [36] is an instrument that evaluates a broad range of psychological problems and symptoms of psychopathology. The instrument is also useful in measuring patient progress or treatment outcomes. The BSI measures 9 primary symptom dimensions (Symptom Scales; SOM - Somatization, O-C - Obsessive-Compulsive, I-S - Interpersonal Sensitivity, DEP - Depression, HOS - Hostility, PHOB - Phobic, ANX- Anxiety, PAR - Paranoid Ideation, and PSY - Psychoticism), as well as providing global measures (i.e. Global Severity Index (GSI) - designed to measure overall psychological distress. Positive Symptom Distress Index (PSDI) -designed to measure the intensity of symptoms. Positive Symptom Total (PST) - Reports number of self-reported symptoms. The measure is designed to provide an overview of symptoms and their intensity at a specific point in time.

Posttraumatic stress disorder classifications

For both studies, three separate PTSD classification schemas were utilized: DSM-IV, DSM-5 and ICD-11. Classification into likely PTSD was determined in the following fashion using a score of 3 on the PCL (moderate).

- **DSM-IV:** Total score ≥ 1 endorsed symptom for PCL items 1 through 5 AND total score ≥ 3 for the sum of PCL items 6 through 12 AND total score ≥ 2 for the sum of PCL items 13 through 17.
- **DSM-5:** Endorsement of either PCL items 1 through 5 AND endorsement of either PCL items PCL 6 or 7 AND endorsement of either PCL items 8 through 11 and ASP items 6, 7 or 9 AND endorsement of PCL items 13 through 17 and ASP item 8. Item endorsement was considered an item score ≥ 3.
- **ICD11:** Endorsement of either PCL items 2 or 3 AND endorsement of either PCL items PCL 6 or 7 AND endorsement of either PCL items 16 or 17. Item endorsement was considered an item score ≥ 3.

Statistical analyses

Data are presented as mean and standard deviation or frequency and percent, where appropriate. Measures were scored according to accepted guidelines. Both studies used the available scores from the psychological tests to arrive at diagnoses consistent with the symptoms required for the DSM-IV, DSM-5 and the proposed ICD-11 symptoms. The initial analyses looked for agreement among the two studies participants on how many would meet criterion for a diagnosis of PTSD. The available psychological tests allowed for examination of additional disorders/symptoms commonly found after traumatic experiences drawn from both the literature and clinical experience. These included somatization, anger, dissociation, anxiety and combinations of these post traumatic reactions, including the core symptoms to be common to post traumatic reactions. Measure scores for the three proposed PTSD classification schema were compared separately for each study using Kruskal-Wallis non-parametric or chi-square tests, where appropriate. The prevalence, sensitivity, specificity, positive likelihood ratio, and negative likelihood ratio for both DSM-IV and DSM-5 each versus ICD-11 were calculated. All analyses were conducted using SAS (ver. 9.4, Cary, NC) with p-values ≤ 0.05, two-tailed, considered statistically significant.

Results

A breakdown of demographic variables for both Study 1 and 2 can be found in table 1. Participants in both studies were primarily male (Study 1: 89.8%; Study 2: 88.3%), age (Study 1: 68.0%; Study 2: 49.0 ± 13.8), current marital status of married (Study 1: 68.0%; Study 2: 40.0%), and at least some college (Study 1: 39.5%; Study 2: 46.7%). Participants for both studies were primarily Army (Study 1: 80.0%; Study 2: 70.0%), Enlisted (Study 1: 98.3%; Study 2: 85.0%) and a deployment to a combat theatre (Study 1: 98.6%; Study 2: 78.3%).

	Study 1 N = 156		**Study 2 N = 60**	
	N	**%**	**N**	**%**
Male	132	89.8	53	88.3
Marital Status				
Married	100	68.0	24	40.0
Divorced	18	12.2	13	21.7
Never married	22	15.0	7	11.7
Separated	3	2.0	6	10.0
Other	13	8.9	10	16.7
Ethnicity				
Caucasian	121	82.3	47	78.3
African American	12	8.2	8	13.3
Hispanic	13	8.8	5	8.3
Asian	4	2.7	0	0.0
Other	6	0.0	0	0.0
Education				
Grade 7 - 12 (w/out graduating)	0	0.0	2	3.3
High school or equivalent	27	14.3	8	13.3
Some college	58	39.5	28	46.7
2 year college degree	0	0.0	7	11.7
4 year college degree	45	30.6	6	10.0
Some college/graduate	--	--	6	10.0
Graduate degree	26	17.7	3	5.0
Employment				
Full time	113	76.9	12	20.0
Part time	5	3.4	2	3.3
Unemployed	18	12.2	46	76.6
On disability	13	88	0	0.0
Student	6	4.1	0	0.0
Other	1	0.1	0	0.0
Branch				
Missing	0	0.0	3	5.0
Air Force	15	10.2	1	1.7
Army	118	80.0	42	70.0
Coast Guard	1	0.1	0	0.0
Marines	12	8.2	5	8.3
Navy	10	6.8	8	13.3
Nat Guard/Reserve	0	0.0	1	1.7
Enlisted	125	85.0	59	98.3
Serve in Combat Theater	145	98.6	47	78.3
Military Status				
Active duty	42	28.6	0	0.0
Reserve/guard	34	23.2	0	0.0
Veteran	80	54.4	60	100.0

Table 1: *Demographic characteristics.*

Classification of participants for both Study 1 and Study 2 into PTSD categories can be found in table 2. When the PTSD classification criteria is applied for each of the three PTSD diagnostic criteria, participants in the initial study of online veterans and military personnel found probable PTSD as follows: ICD-11, n = 62 [42.16%], DSM-IV, n = 72 [48.98%]; DSM-5, n = 73 [49.67%], see table 2). Among participants in Study 2, PTSD classification was ICD-11, n = 46 [76.67%], DSM-IV, n = 52 [86.67%]; DSM-5, n = 54 [90.00%], (Table 2). No statistically significant differences for any measure between PTSD classification schemes were observed.

	PCL-ICD11				PCL DSM-IV				PCL DSM-5						
	No-PTSD		PTSD		No-PTSD		PTSD		No-PTSD		PTSD				
Parameter	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**p**		
Study 1 (n = 156)													A	B	C
N (%)	92 (58.97%)		64 (41.03%)		82 (52.56%)		74 (47.44%)		81 (51.92%)		75 (48.08%)		--	--	--
PCL	31.76	11.90	64.06	11.18	28.83	8.64	62.64	11.51	29.07	9.44	61.93	12.21	NS	NS	NS
CESD Total	14.14	10.45	29.17	10.95	11.33	8.41	29.85	9.74	12.81	9.83	28.32	11.00	NS	NS	NS
STICSA Cog	16.61	7.12	24.73	7.00	15.03	5.20	25.77	7.06	15.90	6.41	24.60	7.38	NS	NS	NS
STICSA Som	13.77	3.86	22.88	8.86	13.28	3.67	22.33	8.37	13.60	3.74	21.90	8.78	NS	NS	NS
ASP Total Score	7.95	3.71	14.37	5.27	7.48	3.49	13.97	5.14	7.58	3.52	13.78	5.28	NS	NS	NS
AQ Anger	17.57	7.26	22.77	5.01	17.15	7.30	22.63	5.07	16.90	7.13	22.77	5.19	NS	NS	NS
Study 2 (n = 60)															
N (%)	14 (23.33%)		46 (76.67%)		8 (13.33%)		52 (86.67%)		6 (10.00%)		54 (90.00%)		--	--	--
PCL	44.86	6.30	65.15	10.42	43.70	4.44	62.33	11.89	43.00	5.25	62.35	12.02	NS	NS	NS
BDI-2	20.07	9.67	32.46	11.34	17.25	11.16	31.46	11.18	14.67	5.35	31.22	11.51	NS	NS	NS
BSI - GSI	0.16	0.11	0.33	0.15	0.17	0.11	0.31	0.16	0.10	0.05	0.31	0.15	NS	NS	NS
BSI - PSI	28.83	13.28	41.76	9.74	30.64	11.12	39.80	11.78	23.70	9.33	40.12	11.25	NS	NS	NS
BSI - PSDI	1.64	0.46	2.36	0.73	1.68	0.46	2.26	0.75	1.37	0.32	2.27	0.72	NS	NS	NS
STAXI-2 AI	33.43	8.97	52.63	14.00	36.73	10.24	49.90	15.30	38.67	7.63	49.20	15.62	NS	NS	NS
ASP Total Score	9.36	3.89	15.37	4.66	10.00	2.14	14.58	5.21	8.83	2.14	14.54	5.07	NS	NS	NS

Table 2: *Participant Instrument Score Stratified by Posttraumatic Stress Disorder Classification Schema.*

Note. PCL-M: Posttraumatic Disorder Checklist-Military; PTSD: Posttraumatic Stress Disorder; ICD: International Classification of Disease; DSM: Diagnostic and Statistical Manual of Mental Disorders; BDI: Beck Depression Inventory; CESD: Center for Epidemiological Studies of Depression; STICSA: State-Trait Inventory for Cognitive and Somatic Anxiety; ASP: Associated Symptoms of PTSD; AQ: Aggression Questionnaire; Brief Symptom Inventory-Global Symptom Index, BSI - Global Severity Indices; BSI-PSI, BSI - Positive Symptom Total; BSI-PSDI, BSI - Positive Symptom Distress Index; STAXI-2, State Trait Anger Expression Inventory

A. PCL-ICD11 vs. PCL DSM-IV.

B. PCL-ICD11 vs. PCL DSM-5.

C. PCL-ICDIV vs. PCL DSM-IV.

Additionally, common clinical comorbid conditions of depression, anger, somatization and anxiety were also included (Table 2 and Table 3). Regardless of PTSD classification schema utilized, depression, anger, somatization and dissociation were all markedly heightened among participants with PTSD. However, among those participants classified with PTSD, change in scores varied by PTSD classification schema from Study 1 to Study 2. Among Study 1 participants, participants classified with PTSD by PCL-DSM-IV criteria demonstrated the greatest disparity in depression, anger, somatization and anxiety scores compared to non-PTSD participants for classification schema PCL-ICD11 or PCL-DSM-5. However, among Study 2, participants classified with PTSD by PCL-DSM-5 criteria demonstrated the greatest disparity in scores compared to non-PTSD participants for classification schema PCL-ICD-11 or PCL-DSM-IV. No statistically significant differences for any measure between PTSD classification schemes were observed.

It is of note, that while in Study 2, in order to be included, a CAPS was administered, and the participant was judged to have PTSD by consensus of two independent clinicians. Despite that rigor, use of the self-report measures failed to find more than 90% met criteria for PTSD using the PCL self-reporting. These were individuals in a nationally-recognized treatment center for PTSD, with full agreement by the treatment team of the presence of PTSD and then administered the CAPS by a trained researcher familiar with PTSD. While the items of the DSM-IV criteria, for which the PCL was based showed the best agreement, the differences from other schema was viewed as significant.

The differences between those with a probable diagnosis of PTSD, as based on the self-report criteria, and those without, also showed marked differences on the self-report of comorbid conditions (Table 3). However, as predicted, for individuals without a likely diagnosis of PTSD, there were several cases of individuals with significant scores in each of the targeted areas of comorbid conditions, commonly found following a trauma.

	PCL-ICD11		PCL DSM-IV		PCL DSM-5				
	No-PTSD	PTSD	No-PTSD	PTSD	No-PTSD	PTSD			
Parameter	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**p**		
Study 1 (n = 156)							--	--	--
N (%)	92 (58.97)	64 (41.03)	82 (52.56)	74 (47.44)	81 (51.92)	75 (48.08)	NS	NS	NS
STICSA Somatization (Y/N)	3 (6.38)	16 (61.54)	2 (4.65)	17 (56.67)	2 (4.65)	17 (56.67)	NS	NS	NS
Anger (Y/N)	23 (25.00)	23 (35.94)	19 (25.68)	27 (36.49)	19 (23.46)	27 (36.00)	NS	NS	NS
CESD Depression (Y/N)	31 (37.80)	52 (86.67)	20 (27.78)	63 (90.00)	23 (31.94)	60 (85.71)	NS	NS	NS
Dissociation (Y/N) (ASP items)	31 (33.69)	56 (87.50)	24 (29.27)	63 (83.78)	21 (25.93)	66 (88.00)	NS	NS	NS
Study 2 (n = 60)							--	--	--
N (%)	14 (23.33)	46 (76.67)	8 (13.33)	52 (86.67)	3 (10.00)	57 (90.00)	NS	NS	NS
Somatization (Y/N	0 (0.00)	7 (15.22)	0 (0.00)	7 (13.46)	0 (0.00)	7 (12.28)	NS	NS	NS
STAXI Anger (Y/N)	5 (35.71)	38 (82.61)	5 (62.50)	38 (73.08)	1 (33.33)	42 (73.68)	NS	NS	NS
BDI Depression (Y/N)	11 (78.57)	44 (95.65)	5 (62.50)	50 (96.15)	1 (33.33)	54 (94.74)	NS	NS	NS
Dissociation (Y/N) (ASP items)	8 (57.14)	45 (97.82)	6 (75.00)	47 (90.38)	0 (0.00)	53 (92.98)	NS	NS	NS

Table 3: *Breakdown by PTSD Classification and Com-morbid condition.*

Note. PCL: Posttraumatic Stress Disorder Checklist; PTSD: Posttraumatic Stress Disorder; ICD: International Classification of Disease; DSM: Diagnostic and Statistical Manual of Mental Disorders; BDI: Beck Depression Inventory; CESD: Center for Epidemiological Studies of Depression; STICSA: State-Trait Inventory for Cognitive and Somatic Anxiety; ASP: Associated Symptoms of PTSD; AQ: Aggression Questionnaire; Brief Symptom Inventory-Global Symptom Index, BSI - Global Severity Indices; BSI-PSI, BSI - Positive Symptom Total; BSI-PSDI, BSI - Positive Symptom Distress Index; STAXI-2, State Trait Anger Expression Inventory

A. PCL-ICD11 vs. PCL DSM-IV.

B. PCL-ICD11 vs. PCL DSM-5.

C. PCL-ICDIV vs. PCL DSM-IV.

PTSD Classification diagnostics are presented in table 4. The proportion of patients classified as 'positive' were statistically significantly different between studies. Using ICD 11 classification as the gold standard, both DSM IV (sensitivity, 96.30%) and DSM 5 (sensitivity, 97.22%) correctly classified PTSD positive patients as positive. Further, specificity estimates for both the DSM IV and V correctly classified non-PTSD patients as 'negative' 79.80% and 77.78%, respectively. Stratified by study, both the DSM IV and V correctly classified PTSD as 'positive' 96.77% and 98.39% for Study 1 and 95.65% and 95.65% for Study 2. Accuracy estimates for both studies for each PTSD classification schema were at least 80.00%.

	Study 1	Study 2		Diagnostic Result				
Parameter	**N (%)**	**N (%)**	**p-value**	**Sensitivity (%)**	**Specificity (%)**	**+LR**	**-LR**	**Accuracy (%)**
PCL-ICD11								
+	64 (41.03)	46 (76.67)	--	--	--	--	--	--
-	92 (58.97)	14 (23.33)	0.0013	--	--	--	--	--
PCL DSM IV								
+	74 (47.44)	52 (86.67)	**--**	96.30 (90.79 - 98.98)	79.80 (70.54 - 87.20)	4.77 (3.22 - 7.06)	0.05 (0.02 - 0.12)	88.41 (83.24 - 94.43)
-	82 (52.56)	8 (13.33)	0.0001					
PCL DSM V								
+	75 (48.08)	57 (90.0)	**--**	97.22 (92.10 - 99.42)	77.78 (68.31 - 85.52)	4.38 (3.02 - 6.33)	0.04 (0.01 - 0.11)	87.92 (82.69 - 92.03)
-	81 (51.92)	3 (10.00)	0.0001	--	--	--	--	--
Study 1								
PCL DSM IV	--	--	--	96.77 (88.83 - 99.61)	85.88 (76.64 - 92.49)	6.85 (4.05 - 11.60)	0.04 (0.01 - 0.15)	90.48 (84.54 - 94.69)
PCL DSM V	--	--	--	98.39 (91.34 - 99.96)	85.88 (76.64 - 92.49)	6.97 (4.12 - 11.78)	0.02 (0.00 - 0.13)	91.16 (85.35 - 95.21)
Study 2								
PCL DSM IV	--	--	--	95.65 (85.16 - 99.47)	42.86 (17.66 - 71.14)	1.67 (1.06 - 2.65)	0.10 (0.02 - 0.45)	83.33 (71.48 - 91.71)
PCL DSM V	--	--	--	95.65 (85.16 - 99.47)	28.57 (8.39 - 58.10)	1.34 (0.96 - 1.88)	0.15 (0.03 - 0.75)	80.00 (67.67 - 89.22)

Table 4: *PTSD classification diagnostic results with ICD11 as Gold standard for diagnosis of PTSD.*

PTSD: Posttraumatic Stress Disorder; ICD: International Classification of Disease; DSM: Diagnostic and Statistical Manual of Mental Disorders; +LR: Positive Likelihood Ratio; -LR: Negative Likelihood Ratio.

Discussion

The findings from these two groups of data, coupled with the arguments about the changing classification schemes as fraught with concerns as PTSD has had historically, raise significant concerns about the continued utility of the diagnosis in the current DSM-5 schema. First, the historical data from ancient times throughout the DSM classifications, describe the shifting view of the disorder and the difficulty that any schema for classifying emotional post trauma reactions has held over time. To its end, the purpose of the diagnosis of PTSD in the DSM-III was to provide a forum and platform from which research could be conducted. This end has been met. Thousands of articles have been generated about this disorder.

The two studies conducted upon a military population, comparing DSM-IV, DSM-5 and the proposed ICD-11 criteria found significant differences for the number of individuals meeting criteria for PTSD. Even with CAPS confirmed diagnosis, self-report forms came up with differing presentations and categorization. What does this say about our use of self-report forms in so much of our research and how varied responses can be? Differences within this group ranged from a low of 76% to 90% for a confirmed population (as per CAPS and clinician diagnosis). The variability found in both studies raises concern about the impact the classification schemes have had in research and clinical application.

The sheer variety of possible reactions using the symptoms put forth in the DSM over time has illuminated the need for a more reliable and useful schema to describe the reactions of those who have had to confront the horrors of traumatic experiences [21]. The issues of post-traumatic comorbidity have pointed out that the PTSD condition may not be distinguishable from other psychiatric disorders, and

are“ not even the most likely, form of posttraumatic reactions” ([37], p.12) Some have expressed that disorders such as depression, are far too often neglected [38]. A critically important psychological reaction to a trauma can then be “lost”. Often when one has a diagnosis such as PTSD, which allows one to put almost everyone into the grouping, the problem then is that the present diagnostic schema in the DSM-5 can leave both researchers and clinicians with “muddy data” to guide them. The two studies have demonstrated the considerable co-morbid presentation of other symptom/disorders as well as the variability each schema holds for a diagnosis of PTSD. The consideration that the diagnosis of PTSD should be dropped and placed in appendix B of the DSM where additional research could be conducted has also stirred considerable debate [39]. The diagnostic efforts for PTSD have been criticized as a broad and error prone system. As some have pointed out, if a construct is diffuse or lacking validity, it becomes increasingly difficult to study the phenomenon [17].

It can be argued that given the broad disagreement in current and proposed diagnostic schema, none have offered an answer of how to best diagnose, treat and better understand post trauma reactions. The ICD-11 classification scheme now under study offers a radically different way to look at what are viewed as the “core elements” that differentiate a posttraumatic stress response from other conditions, as well as Complex PTSD when the trauma has been long standing. As Keeley, Reed, Roberts., *et al.* [40] point out, the clinical utility of a diagnostic classification is critical to its function. A number of other psychological reactions can occur either alone or accompanying PTSD following trauma. These include anger, dissociation, exacerbated physical symptoms as well as other psychological disorders, including anxiety accompanied by symptoms such as startle, poor concentration and possibly accompanying symptoms of a traumatic brain injury (TBI), depression or other conditions and not just PTSD [37]. Depression has been shown to be a highly common reaction to trauma. Further, the symptoms now presented in the DSM-5, almost word for word, take symptoms from Aaron Becks’ cognitive triad of symptoms (i.e. self, world and future negative appraisals) addressed in cognitive therapy for depression are now codified as symptoms of PTSD [41]. In DSM-5, the overlap of symptoms with other disorders is inextricably wound into the clusters of symptoms and criteria needed for a diagnosis of PTSD. It is arguable that one could have only mild core elements of PTSD as outlined by the ICD-11 criteria and many symptoms of another disorder, such as depression, impacting consideration of what treatment approaches should be offered to and has the best chance of success for that individual.

It can be argued that the heterogeneity of conditions that meet a diagnosis of PTSD may adversely impact the ability to diagnosis, understand, and apply effective treatments to the disorder. The co-morbid conditions found in both of the studies, in clinical practice would also be treated, as well as the PTSD disorder. The treatment could be done adjunctively, complementary, or as the research on PTSD treatment has described, as an outcome from the PTSD intervention alone. As recent studies have shown, poor treatment outcomes persist despite considerable work [13].

The outcome of PTSD treatments has been addressed recently in a review from Steenkamp, Litz, Hoge and Marmar [42]. The authors conclude that when one looks at the numerous controlled studies of PTSD, at best approximately a 40% success rate is realized. Rather than simply argue that the treatments are ineffective (or effective), it is also possible that with so many potential varieties in which “PTSD” may present itself, that there may be effective treatments for some, but not other symptoms patterns or more complex, comorbid varieties. The schema by which one understands and treats post traumatic conditions may be a central factor in understanding the mixed and poor treatment outcomes. For instance, in a controlled treatment effort of PTSD using a more flexible, empirically based approach, has shown a 76% success rate (in motor vehicle accidents) [43,44]. The commonalities of treatment and similar outcomes has been argued by many leaders with little conclusions reached to date [45].

There has been considerable argument that consensus approaches used by committees to agree upon a definition of PTSD have come to radically divergent positions when looking at ICD-11 and DSM-5 [46]. These authors argue that there should only be such differences if there have been shown to be substantial error or misclassifications as a consequence of the criteria. The literature allows arguments to support both positions. Further, as data have shown, there are no such criteria in the behavioral sciences that have so many variations of the same diagnostic label to occur (over 1800 conservatively if one looks at data [21].

The two studies found that depending upon the schema used, the symptoms identified for post-traumatic stress disorder shows good sensitivity and specificity statistically. However, when one looks at the percentage of individuals correctly identified to have PTSD, the difference in diagnostic schema varies widely. Study 2 found that even in a group identified by experienced clinicians, corroborated by

the CAPS, that no self-report measures correctly identified all of the subjects to have PTSD. This difficulty illustrates the concern that individuals with a diagnosis of PTSD, using any of the measures, might fail to receive treatments or other consequences of agreed upon identification of PTSD. The issue of what clinical significance, even more than statistical significance, is found in this study can be particularly critical [47]. In the second study sample of 60 individuals, to have nearly 25 percent not identified by our best diagnostic procedures is unacceptable, as is even the best correct identification of 90%, for this population. The use of symptom inventories that show such variability must be considered to measuring differing constructs, no matter what statistical findings suggest to the contrary.

The data from the two studies presented here, support that comorbid conditions not just co-occur, but can add to the understanding a diagnosis can render. The intent of any diagnosis is to understand what is present and ideally to offer appropriate treatments for that diagnosis. Phenotypes, including dissociation, are now listed within the DSM-5, to help articulate the presentation of symptoms found in the diagnosis of PTSD [48]. However, controversy is present about the overlap with dissociation with personality disorders. It is possible, that if the common elements of comorbid conditions accompanying PTSD are better articulated, and related to the event, that varied treatments, much like what often occurs in a clinical setting, can be labeled as such and studied to see if a variety of treatments might affect better outcome for trauma reactions, not just within a broad categorization of PTSD.

The findings of this study lead to a schema in a natural, already understood fashion, using clinically identified problem areas and comorbid diagnostic categories (See figure 1). Use of this type of description of post trauma reactions, simplifies the idea of phenotypes outlined in the DSM-5 [12,49]. It potentially could draw on what we know about post trauma reactions and apply that knowledge, flexibly, and in a way that might be useful to clinicians and researchers alike [40]. The findings from this study offer a potential way to view some of the most common areas of post trauma reactions that are regularly attended to in psychological treatments.

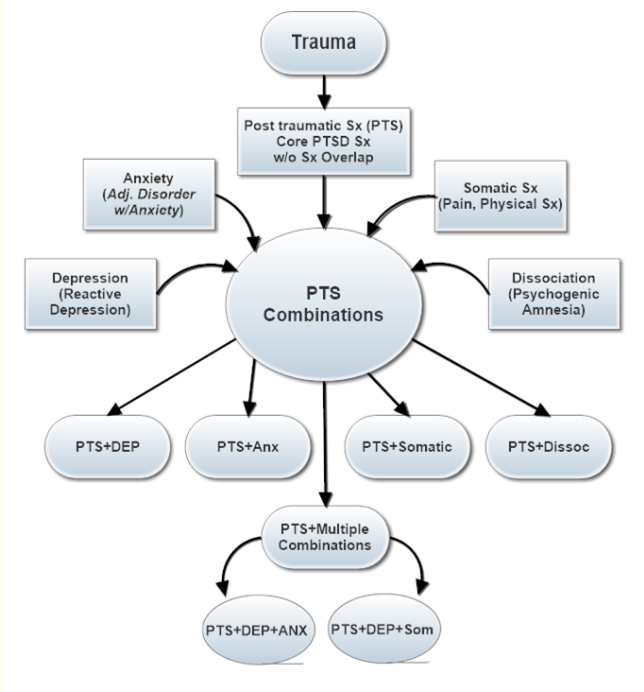

Figure 1: *Proposed symptom clusters post trauma.*

Note: PTS: Posttraumatic Stress; DEP: Depression; Anx: Anxiety; Dissoc: Disassociation; som: Somatization.

This study reaffirmed and articulated that other identified symptoms require diagnosis as well as the symptoms of PTSD. At present, this often involves adding other named disorders such as major depressive disorder within the DSM-5 schema [12]. The addition of clarifying a posttraumatic response helps the communication of what is occurring, and perhaps the path for appropriate treatments. These reactions or identified problem areas may or may not be true disorders (e.g. anger or focusing on somatic injuries related to the trauma), but instead may be subtypes of reactions that either combine with the core elements or stand alone as needed areas for intervention. Treatment for dissociation, anger, physical/somatic focus, and anxiety are common [50].

Panic disorder and anxiety could be viewed uniquely or in combination with an identified cluster of PTS symptoms. A diagnosis of one would not detract or lesson the importance and degree of impact on an individual's life. In both studies, a variability in "casesness" of PTSD was found across diagnostic schemes, between DSM-IV, DSM-5 and ICD-11 classification schemas. Additionally, some had scores on measures supporting other areas that may well be of focus to a diagnosis or treatment, with comorbid conditions adding considerable distinction in reactions between sub-groups or phenotypes of those holding PTSD consistent symptoms. Possibly sub-typing of post trauma reactions, drawing on the proposed ICD-11 would be one possible method for improved conceptualization of post trauma reactions. It could also lead to more directed interventions for the variants of post trauma reactions that would be articulated under a diagnosis of PTSD. At the very least, it is hoped these arguments might allow for a discussion how it is we think about post trauma reactions, drawing from data, and from the considerable work that has been done over time.

Potential limitations of this study include use of military personnel, non-prospective study design and assessment of symptoms relative to trauma. Use of military personnel may make generalization to other populations difficult. The non-prospective nature and lack of available data regarding time since trauma prevent controlling for duration of the PTSD. The paper is presented as a place for discussion, as the great differences in the DSM-5 and ICD-11 proposal offer not just evidence to the divergent notion of the symptoms needed for a diagnosis, but also lack the ability as demonstrated by the treatment literature, to render approaches that might more flexibly be applied to the patterns of post trauma reactions that present in a research, clinical or forensic setting.

Conclusion

An agreed upon classification schema for PTSD is believed to hold critical clinical and research implications. That agreement is lacking as shown by the vast differences in the diagnostic criteria currently promulgated. The proposed schema addresses and supports the work of the ICD-11, and the need for simplified criteria for PTSD that allows more targeted interventions as well as understandable research classification.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Appendix 1

ASP

Below is a list of problems and concerns that people sometimes have in response to traumatic experiences. Please read each item carefully and put an "X" in the box to indicate how often you have been bothered by that problem in the last month as a result of the trauma you identify on the next line:

No.	Response	Not at All	A little bit	Moderately	Quite a Bit	Extremely
1.	Feeling guilty about anything you did or didn't do during the trauma?					
2.	Feeling guilty about surviving the trauma when others did not?					
3.	Feeling out of touch with things going on around you, like you are in a daze?					
4.	Feeling that things going on around you seem unreal or very strange and unfamiliar?					
5.	Feeling as if you are outside of your body, watching yourself as if you are another person?					
6.	Negative beliefs about oneself, others or the world?					
7.	Blaming self or others about the cause or consequence of the traumatic event?					
8.	Engage in reckless or self-destructive behaviors?					
9.	Persistent negative emotions (such as fear, horror, anger, guilt or shame)?					
10.	If you have experienced persistent negative emotions in the last month, please check all that apply: Fear ____ Horror____ Anger____ Guilt____ Shame____					

The trauma you experienced was: _____.

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