Dimensional Structure of *DSM-5* Posttraumatic Stress Disorder Symptoms: Results From the National Health and Resilience in Veterans Study

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ABSTRACT

Objective: To evaluate the prevalence of *DSM-5* posttraumatic stress disorder (PTSD) and factor structure of PTSD symptomatology in a nationally representative sample of US veterans and examine how PTSD symptom clusters are related to depression, anxiety, suicidal ideation, hostility, physical and mental health–related functioning, and quality of life.

Method: Data were analyzed from the National Health and Resilience in Veterans Study, a nationally representative survey of 1,484 US veterans conducted from September through October 2013. Confirmatory factor analyses were conducted to evaluate the factor structure of PTSD symptoms, and structural equation models were constructed to examine the association between PTSD symptom clusters and external correlates.

Results: 12.0% of veterans screened positive for lifetime PTSD and 5.2% for past-month PTSD. A 5-factor dysphoric arousal model and a newly proposed 6-factor model both fit the data significantly better than the 4-factor model of *DSM-5*. The 6-factor model fit the data best in the full sample, as well as in subsamples of female veterans and veterans with lifetime PTSD. The emotional numbing symptom cluster was more strongly related to depression ($P < .001$) and worse mental health–related functioning ($P < .001$) than other symptom clusters, while the externalizing behavior symptom cluster was more strongly related to hostility ($P < .001$).

Conclusions: A total of 5.2% of US veterans screened positive for past-month *DSM-5* PTSD. A 6-factor model of *DSM-5* PTSD symptoms, which builds on extant models and includes a sixth externalizing behavior factor, provides the best dimensional representation of *DSM-5* PTSD symptom clusters and demonstrates validity in assessing health outcomes of interest in this population.

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The lifetime prevalence of posttraumatic stress disorder (PTSD) ranges from 6.4% to 7.8% among US adults,[1,2] and PTSD is one of the most prevalent disorders among military veterans.[3,4] The *Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition (*DSM-5*),[5] introduced several changes to the conceptualization and diagnosis of PTSD. First, a PTSD diagnosis no longer requires a response to a traumatic event that involves "intense fear, helplessness, or horror," and the event can be experienced indirectly through others. Second, the 3-factor model of PTSD in the *DSM-IV-TR*, which consists of reexperiencing, avoidance/numbing, and hyperarousal symptoms, has been modified to a 4-factor model in which the avoidance/numbing cluster has been divided into 2 separate clusters—"avoidance" and "negative alterations in cognitions and mood." Third, 3 new symptoms were added: "persistent distorted blame of self or others for causing the traumatic event or for resulting consequences," "persistent negative trauma-related emotions," and "self-destructive or reckless behavior." Fourth, the wording of some *DSM-IV-TR* symptoms was revised to clarify symptom expression; for example, "irritability or outbursts of anger" has been revised to "irritable or aggressive behavior."

Before the *DSM-5* was published, a burgeoning body of confirmatory factor analysis (CFA) studies challenged the 3-factor model of PTSD symptoms in the *DSM-IV* and *DSM-IV-TR*, revealing that 2 alternative 4-factor models, namely the numbing[6] and dysphoria[7] models, provided a better structural representation of PTSD symptomatology. There were, however, mixed findings about which 4-factor model best represented the underlying dimensionality of PTSD.[8,9] Further, some studies found the factor structure varied by gender and PTSD diagnosis.[10,11]

The most recent development in the CFA literature on PTSD is the identification of a 5-factor "dysphoric arousal" model,[12,13] which comprises reexperiencing, avoidance, emotional numbing, dysphoric arousal, and anxious arousal symptom clusters. Numerous CFA studies have found that this model provides a better fit than the two 4-factor numbing and dysphoria models, as well as the 3-factor *DSM-IV-TR* model, across international samples of the adult general population, medical patients, veterans, disaster responders, and survivors of domestic violence, natural disasters, and riots.[14–20] The symptom clusters that compose this model have also been differentially linked to health and neurobiological variables.[21–26] For example, emotional numbing symptoms have been found to be more strongly related to depressive symptoms, while dysphoric arousal symptoms have been found to be more strongly related to poor physical health–related quality of life.[22,26] Emerging neurobiological data have revealed that anxious arousal symptoms are differentially positively associated with norepinephrine transporter availability in the locus ceruleus[23] and that emotional numbing symptoms are differentially negatively associated

with plasma cortisol levels.[25] Collectively, these studies suggest that a more refined 5-factor phenotypic model of PTSD symptoms may have utility in understanding health and functional outcomes, as well as the etiology of PTSD, in trauma survivors.

Because the *DSM-5* introduced new changes to how PTSD is assessed, empirical examination of the factor structure of PTSD symptoms in the *DSM-5* is needed. Initial studies of college students found that the 4 factors of *DSM-5* fit the data well[27] and provided a better fit than the 4-factor dysphoria model.[28] To date, however, no known study has compared the *DSM-5* dimensional model with the 5-factor dysphoric arousal model or alternative models in a population-based sample of trauma survivors.

An additional consideration for the factor structure of *DSM-5* PTSD symptoms is that there is theoretical rationale for a possible 6-factor model that builds on the 5-factor dysphoric arousal model and includes a sixth factor (ie, an "externalizing behavior" factor) that comprises the new PTSD symptoms in *DSM-5*, which include "irritable or aggressive behavior" (E1 symptom) and "self-destructive or reckless behavior" (E2 symptom). These new symptoms were added to encompass "behavioral reactivity" and because "individuals with PTSD often exhibit externalizing symptoms such as aggression, reckless behavior, and suicidality."[29(p553)] Unlike other *DSM-5* PTSD symptoms that consist of thoughts, feelings, and passive experiences, E1 and E2 symptoms assess self-initiating aggressive *behaviors*. While these behaviors may, in part, reflect difficulties in managing hyperarousal symptoms, many individuals with hyperarousal symptoms do not engage in aggressive behaviors.[30,31] Instead, these types of behaviors often represent deficits in emotion regulation and impulse control[32–34] and may thus be distinct from other symptoms that compose *DSM-5* Criterion E. Table 1 shows the factor structure of PTSD symptoms in the *DSM-IV-TR* and *DSM-5* across the aforementioned factor models, including the proposed 6-factor model.

We had 3 aims in the current study. First, using data from a contemporary, nationally representative sample of veterans, we evaluated the prevalence and factor structure of *DSM-5* PTSD symptoms, including the 4-factor *DSM-5* model, the 5-factor dysphoric arousal model, and a newly proposed 6-factor model. Second, we tested and replicated the best-fitting model among only female veterans and only veterans with lifetime PTSD. Third, we examined how symptom clusters of the best-fitting model related to external variables of depression, anxiety, suicidal ideation, hostility, physical and mental health–related functioning, and quality of life. These variables were selected to evaluate the concurrent validity of the best-fitting factor structure in relation to commonly comorbid symptoms (eg, depression) and to evaluate how component aspects of the best-fitting model related to key outcomes of interest in veterans (eg, functioning and quality of life).[22,26]

This study is the first, to our knowledge, to evaluate the prevalence of *DSM-5* PTSD and the factor structure of *DSM-5* PTSD symptoms in a population-based sample. Veterans are an ideal group to evaluate these aims given their relatively high rate of exposure to potentially traumatic events, their high proportional representation in the general US population, public concern for their health and well-being, and ongoing national efforts to assess and treat PTSD and related sequelae.

Clinical Points

- 12.0% of veterans screen positive for lifetime PTSD and 5.2% for past-month PTSD using *DSM-5* criteria.
- A 6-factor model of PTSD symptoms provided a better fit to the data than the 4-factor *DSM-5* model, and the 5-factor dysphoric arousal model.
- The 6-factor model consisted of separate clusters of reexperiencing, avoidance, emotional numbing, externalizing behaviors, anxious arousal, and dysphoric arousal symptoms.
- In the 6-factor model, emotional numbing symptoms were more strongly related to mental health-related functioning than other symptoms, and externalizing behavior symptoms were more strongly related to hostility.

METHOD

Sample

The National Health and Resilience in Veterans Study (NHRVS)[35] is a nationally representative survey of 1,484 US veterans that was conducted from September through October 2013. Participants completed a 60-minute anonymous web-based survey. The NHRVS sample was drawn from a research panel of more than 80,000 households maintained by GfK Knowledge Networks, Inc, a survey research firm in Palo Alto, California, that owns and uses KnowledgePanel, a probability-based, online non-volunteer access survey panel of a nationally representative sample of US adults that covers approximately 98% of US households. A total of 1,602 adults responded yes to an initial screening question that confirmed veteran status, and 1,484 participated in the NHRVS, resulting in a response rate of 92.6%. Panel members are recruited through national random samples, originally by telephone and now almost entirely by postal mail. Households are provided with access to the Internet and computer hardware if needed. KnowledgePanel recruitment uses dual sampling frames that include both listed and unlisted telephone numbers, telephone and non-telephone households, and cell-phone–only households, as well as households with and without Internet access. To permit generalizability of study results to the entire population of US veterans, post-stratification weights were applied on the basis of demographic distributions (ie, age, gender, race/ethnicity, education, census region, and metropolitan area) from the most contemporaneous Current Population Survey.[36] All participants provided informed consent, and the study was approved by the human subjects committee of the VA Connecticut Healthcare System. The VA National Center for PTSD funded the NHRVS and has ownership of the data.

Table 1. Symptom Mappings of Various Structural Models of Posttraumatic Stress Disorder[a]

Symptom	3-Factor *DSM-IV*	4-Factor Dysphoria	4-Factor Numbing	5-Factor Dysphoric Arousal	4-Factor *DSM-5*[b]	5-Factor Dysphoric Arousal	New 6-Factor
Intrusive thoughts	R	R	R	R	R	R	R
Nightmares	R	R	R	R	R	R	R
Flashbacks	R	R	R	R	R	R	R
Emotional cue reactivity	R	R	R	R	R	R	R
Physiological cue reactivity	R	R	R	R	R	R	R
Avoidance of thoughts	A	A	A	A	A	A	A
Avoidance of reminders	A	A	A	A	A	A	A
Trauma-related amnesia	A	D	N	N	N	N	N
Negative beliefs	*	*	*	*	N	N	N
Blame of self or others	*	*	*	*	N	N	N
Negative trauma-related emotions	*	*	*	*	N	N	N
Loss of interest	A	D	N	N	N	N	N
Detachment	A	D	N	N	N	N	N
Restricted affect	A	D	N	N	N	N	N
Sense of foreshortened future	A	D	N	N	+	+	+
Irritability/anger[c]	H	D	H	DA	H	DA	EB
Self-destructive/reckless behavior	*	*	*	*	H	DA	EB
Hypervigilance	H	H	H	AA	H	AA	AA
Exaggerated startle response	H	H	H	AA	H	AA	AA
Difficulty concentrating	H	D	H	DA	H	DA	DA
Sleep disturbance	H	D	H	DA	H	DA	DA

[a]The structural models including and to the left of the first 5-Factor Dysphoric Arousal model are based on *DSM-IV* symptoms, and all models to the right of that are based on *DSM-5* symptoms.
[b]In the *DSM-5*, emotional numbing has been named "negative alterations in cognitions and mood" and hyperarousal, "alterations in arousal and reactivity."
[c]In the *DSM-IV*, this symptom is "irritability or outbursts of anger." In the *DSM-5*, it is "irritable or aggressive behavior."
Abbreviations: A = avoidance, AA = anxious arousal, D = dysphoria, DA = dysphoric arousal, EB = externalizing behaviors, H = hyperarousal, N = emotional numbing, R = reexperiencing.
Symbols: * = symptom not included in *DSM-IV-TR*, + = symptom not included in *DSM-5*.

Assessments

The Posttraumatic Stress Disorder Checklist version 5 (PCL-5)[37] is the most recent version of the PCL, created to correspond to the diagnostic criteria of the *DSM-5*. The PCL-5 is a 20-item self-report assessment of PTSD symptoms developed by the National Center for PTSD. In contrast to the 17-item *DSM-IV-TR* version of the PCL, the PCL-5 contains revised items and 3 additional items that assess for new symptoms in the *DSM-5* (see Table 1). Respondents are asked to report the extent to which they are bothered by a variety of PTSD symptoms in the past month from 0 (not at all) to 4 (extremely), and items are summed for a total score. Respondents who endorsed being bothered at least "moderately" on the required number of symptoms within each of the 4 *DSM-5* symptom clusters (Criteria B–E) were identified as screening positive for PTSD.

Depression and anxiety symptoms were assessed with the Patient Health Questionnaire-4 (PHQ-4).[38] The PHQ-4 is a commonly used 4-item self-report screening instrument for depression and anxiety. Respondents are asked to report how often in the past 2 weeks they have been bothered by 2 core symptoms of depression and 2 core symptoms of generalized anxiety disorder on a scale from 0 (not at all) to 3 (nearly every day).

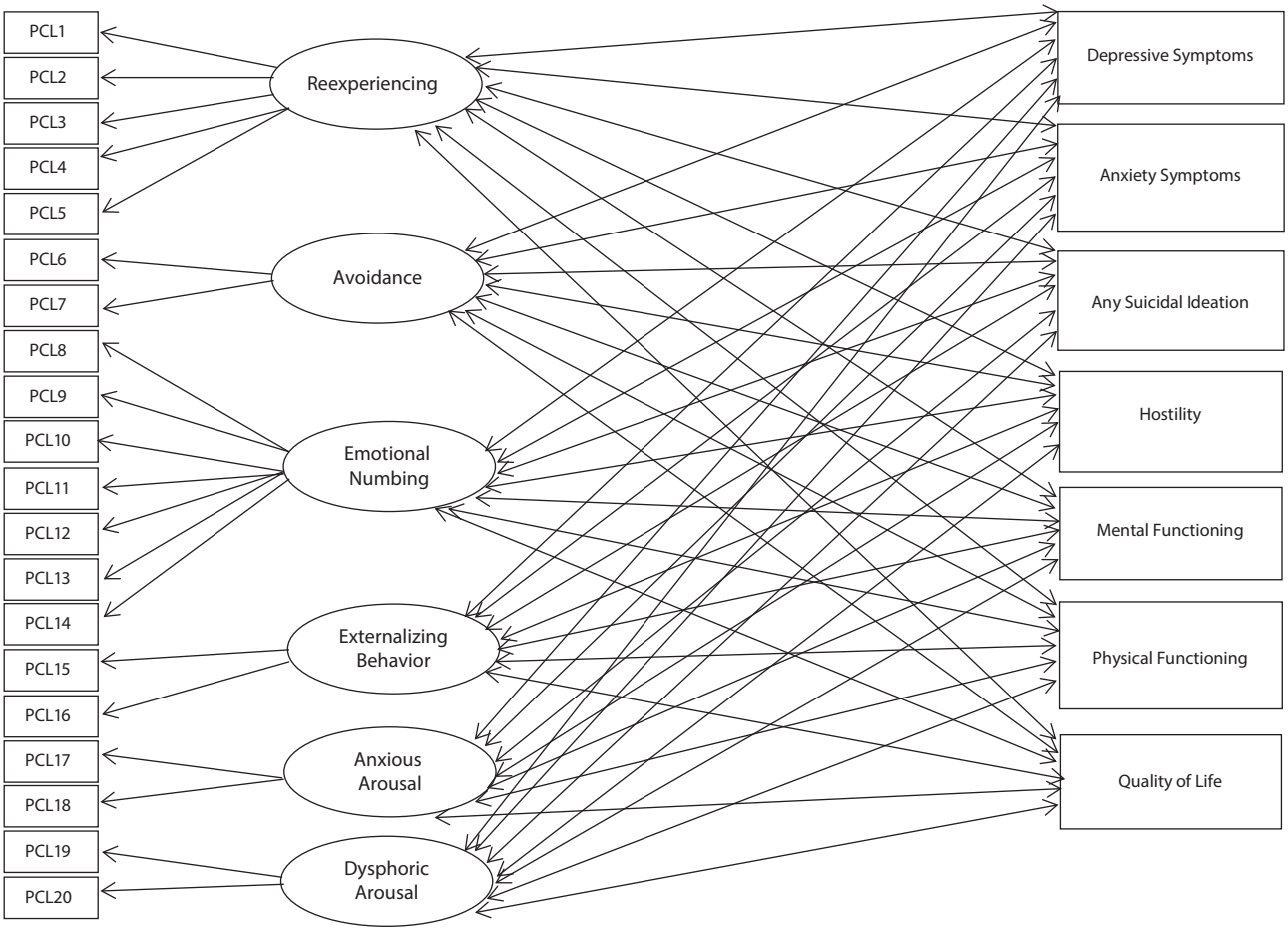
Suicidal ideation in the past 2 weeks was assessed using a question from the PHQ-9,[39] which was modified to assess both passive and active suicidal ideation.[40] Respondents were asked, "How often have you been bothered by thoughts you might be better off dead?" and "How often have you been bothered by thoughts of hurting yourself in some way?" Response options ranged from 0 (not at all) to 3 (nearly every day). Suicidal ideation was coded as a response ≥ 1 (several days) on either question.

The hostility subscale of the Brief Symptom Inventory (BSI)[41] was used to assess thoughts, feelings, and actions related to hostility (eg, "feeling urges to break or smash things"). Respondents are asked to rate the extent to which they have been bothered in the past week on 6 items from 0 (not at all) to 4 (extremely), and items are summed for a total score.

The 8-item Short Form Health Survey (SF-8)[42] is a validated, abbreviated version of the SF-12,[43] one of the most widely used measures of physical and mental health–related functioning. Item responses are used to generate standardized physical component and mental component summary scores. Component summary scores range from 0 to 100, with a score of 50 representing the average level of functioning in the general population with each 10-point interval representing one standard deviation. Higher scores reflect better functioning.

Quality of life was assessed with the Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-SF),[44] a 12-item measure that asks respondents about their satisfaction in the past week with various aspects of their lives (eg, work, family). Respondents are asked to rate their satisfaction from 1 (very poor) to 5 (very good), and scores are summed for a total score.

Figure 1. Structural Equation Model of the 6-Factor Posttraumatic Stress Disorder Model and External Correlates[a]



[a]PCL1–20 represent the 20 items of the Posttraumatic Stress Disorder Checklist version 5.

Data Analysis

We focused on evaluating the current 4-factor *DSM-5* model, a 5-factor dysphoric arousal model, and a newly proposed 6-factor model.

First, we conducted CFAs that compared these 3 models using robust maximum likelihood estimation with the Satorra-Bentler (S-B) χ^2 scaling correction, which estimates standard errors under conditions of multivariate non-normality.[45] PCL-5 items were specified to load on only one factor, all factors were allowed to correlate, all error covariances were fixed to zero, and all tests were 2-tailed. In addition to S-B χ^2, model fit was evaluated using the comparative fit index (CFI), Tucker Lewis Index (TLI), Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) values.

Model fit was determined using empirically defined benchmarks, as follows: CFI and TLI ≥ .90 as indicative of adequate model fit and ≥ .95 indicative of excellent fit; RMSEA ≤ .08 for adequate model fit and ≤ .06 for excellent fit; and SRMR ≤ .08 for good fit.[46] We calculated χ^2 difference tests for nested models with a correction factor to compare the relative fit of the different PTSD models.[47] This analytic procedure was followed when fitting models to the total sample, female veterans, and the veterans with lifetime PTSD.

Second, we conducted structural equation models to evaluate the external validity of the best-fitting structural model of PTSD symptoms in relation to external correlates for the total sample (see Figure 1). We further compared Pearson correlations between PTSD symptom clusters and external correlates using the Steiger *Z*-test for correlated correlations.[48]

RESULTS

Of the total sample (N = 1,484), 143 (unweighted = 9.6%; weighted = 12.0%) screened positive for lifetime PTSD and 64 (unweighted = 4.3%; weighted = 5.2%) for past-month PTSD.

Table 2 shows the results of CFAs of the current 4-factor *DSM-5* model and alternative 5- and 6-factor models in the full sample. All 3 of these factor models provided adequate fit according to empirically defined benchmarks (CFI and TLI ≥ .90; RMSEA ≤ .06; SRMR ≤ .08). The 5-factor dysphoric arousal model provided a better fit than the 4-factor model,

Table 2. Fit Indices of Confirmatory Factor Analyses of the 20-Item Posttraumatic Stress Disorder Checklist for *DSM-5*

Model	S-B χ^2	*df*	CFI	TLI	RMSEA (90% CI)	AIC	BIC	SRMR
Total Sample (N = 1,484)								
4-Factor *DSM-5*	612.58	164	.92	.92	.043 (.039–.047)	50,271.02	50,620.98	.04
5-Factor dysphoric arousal	583.45	160	.93	.92	.042 (.039–.046)	50,196.20	50,567.38	.04
New 6-factor[a]	549.65	155	.94	.92	.041 (.038–.045)	50,086.27	50,483.96	.04
Only women (n = 158)								
4-Factor *DSM-5*	362.65	164	.74	.70	.12 (.11–.14)	3,495.08	3,651.47	.08
5-Factor dysphoric arousal	349.08	160	.75	.70	.12 (.11–.14)	3,482.16	3,648.02	.08
New 6-factor	333.64	155	.76	.71	.12 (.11–.14)	3,471.79	3,649.49	.08
Only lifetime PTSD (n = 143)								
4-Factor *DSM-5*	309.66	164	.89	.87	.08 (.07–.09)	8,332.59	8,528.14	.06
5-Factor dysphoric arousal	296.39	160	.90	.88	.08 (.06–.09)	8,325.07	8,532.46	.06
New 6-factor	269.10	155	.91	.89	.07 (.06–.09)	8,299.72	8,521.93	.06

[a]Internal consistency (ie, Cronbach α) for the 6 factors were as follows: reexperiencing (5 items), α = 0.90; avoidance (2 items), α = 0.81; numbing (7 items), α = 0.90; externalizing behavior (2 items), α = 0.68; dysphoric arousal (2 items), α = 0.71; and anxious arousal (2 items), α = 0.72.
Abbreviations: AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, CFI = comparative fit index, CI = confidence interval, *df* = degrees of freedom, RMSEA = root mean square error of approximation, S-B = Satorra-Bentler, SRMR = standardized root mean square residual, TLI = Tucker Lewis Index.

Table 3. Standardized Coefficients From Structural Equation Models of the 6-Factor Model of Posttraumatic Stress Disorder Symptoms and External Correlates[a,b]

PTSD Symptom	PHQ-4 Depression Score	PHQ-4 Anxiety Score	Any Suicidal Ideation	BSI Hostility	SF-8 Mental Functioning	SF-8 Physical Functioning	Quality of Life Score[c]
Reexperiencing	.54 (.05)	.61 (.05)	.44 (.05)	.53 (.06)	–.58 (.04)	–.28 (.04)	–.43 (.05)
Avoidance	.50 (.05)	.52 (.04)	.36 (.05)	.51 (.05)	–.51 (.04)	–.32 (.04)	–.42 (.04)
Emotional numbing	**.69 (.04)**	**.68 (.04)**	**.52 (.04)**	.53 (.06)	**–.70 (.03)**	–.33 (.04)	**–.60 (.03)**
Externalizing behaviors	.53 (.06)	.52 (.06)	.47 (.05)	**.71 (.06)**	–.52 (.06)	–.26 (.04)	–.43 (.06)
Dysphoric arousal	.58 (.05)	.65 (.04)	.44 (.06)	.58 (.05)	–.59 (.04)	**–.36 (.04)**	–.49 (.04)
Anxious arousal	**.67 (.04)**	**.71 (.04)**	.47 (.05)	.46 (.06)	**–.69 (.04)**	**–.37 (.04)**	**–.60 (.03)**

[a]All correlations between the 6 factors and external variables of interest were $P < .001$. The largest-magnitude correlations are indicated in bold.
[b]All values shown as β (SE).
[c]Quality of life was assessed with the Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form.
Abbreviations: BSI = Brief Symptom Inventory, PHQ-4 = 4-item Patient Health Questionnaire, SE = standard error, SF-8 = 8-item Short Form Health Survey.

and the newly proposed 6-factor model provided a better fit than both models, as evidenced by higher CFI values, lower RMSEA values, lower AIC and BIC values, and lower S-B χ^2 values. Moreover, χ^2 difference tests indicated that the 5-factor dysphoric arousal model fit the data significantly better than the 4-factor *DSM-5* model ($\Delta\chi^2_4 = 31.28$, $P < .001$) and that the 6-factor model fit the data significantly better than the 5-factor model ($\Delta\chi^2_5 = 30.10$, $P < .001$) and the 4-factor *DSM-5* model ($\Delta\chi^2_9 = 59.83$, $P < .001$).

Results were similar when these CFAs were repeated on female veterans and veterans with lifetime PTSD. Among female veterans, χ^2 difference tests indicated that the 5-factor dysphoric arousal model was superior to the 4-factor *DSM-5* model ($\Delta\chi^2_4 = 17.06$, $P < .01$) and that the 6-factor model provided a better fit than the 5-factor model ($\Delta\chi^2_5 = 19.79$, $P < .01$) and the 4-factor *DSM-5* model ($\Delta\chi^2_9 = 36.92$, $P < .001$). Among veterans with lifetime PTSD, χ^2 difference tests showed that the 5-factor dysphoric arousal model was superior to the 4-factor *DSM-5* model ($\Delta\chi^2_4 = 13.27$, $P < .05$) and that the 6-factor model provided a better fit than the 5-factor model ($\Delta\chi^2_5 = 23.49$, $P < .001$) and the 4-factor *DSM-5* model ($\Delta\chi^2_9 = 37.45$, $P < .001$).

Structural equation models were conducted to evaluate associations between the 6-factor model and PHQ-4 depression and anxiety scores, suicidal ideation, BSI hostility scores, and SF-8 mental and physical scores in the total sample. The χ^2 tests for each of the models were significant ($P < .001$). As shown in Table 3, the 6 PTSD symptom clusters were differentially associated with these external variables. Specifically, emotional numbing and anxious arousal symptom clusters were most strongly related to PHQ-4 depression, anxiety, SF-8 mental functioning, and quality of life scores. The emotional numbing symptom cluster was also most strongly related to suicidal ideation. Dysphoric and anxious arousal symptom clusters were most strongly related to SF-8 physical functioning scores, and the externalizing behavior symptom cluster was most strongly related to BSI hostility scores.

Comparison of correlations between the 6-factor model and external correlates using the Steiger *Z*-test further confirmed these findings. The emotional numbing symptom cluster was significantly more strongly correlated with PHQ-4 Depression scores ($Z = 4.19$, $P < .001$), suicidal ideation ($Z = 3.16$, $P < .001$), SF-8 mental functioning

($Z = 6.33$, $P < .001$), and quality of life scores ($Z = 3.22$, $P = .001$) than other symptom clusters. The externalizing behavior symptom cluster was significantly more strongly correlated with BSI hostility scores ($Z = 6.50$, $P < .001$) than other symptom clusters.

DISCUSSION

This study is the first of which we are aware to examine the prevalence of *DSM-5* PTSD and the dimensional structure of *DSM-5* PTSD symptoms in a nationally representative sample. Using *DSM-5* criteria, we found that 5.2% of US veterans screened positive for past-month PTSD and 12.0% for lifetime PTSD. These prevalences are comparable to those reported using *DSM-IV* PTSD criteria in the initial cohort of NHRVS participants (6.0% past-month PTSD and 10.8% lifetime PTSD based on our analysis of Wave 1 data for this study), but higher than the 3.5% past-year and 6.6% to 7.8% lifetime prevalences observed in general adult samples using *DSM-IV* criteria.[1,2,49] Results of our CFAs provide support for some of the changes in the structural model of PTSD criteria in the *DSM-5*, including the separation of avoidance and emotional numbing symptoms into distinct clusters. Structural equation modeling results further revealed that, consistent with prior studies,[22,26] emotional numbing symptoms were more strongly related to mental health–related functioning, quality of life, and suicidal ideation than were avoidance symptoms.

We also examined alternative, more refined structural models of PTSD in comparison to the current *DSM-5* 4-factor model. The 5-factor dysphoric arousal model, which has received considerable support in a burgeoning CFA literature,[14–20,26] provided a better fit to *DSM-5* PTSD symptom-level data. This finding suggests that distinct dysphoric and anxious arousal symptom clusters provide a significantly better representation of *DSM-5* hyperarousal symptoms than a homogeneous symptom cluster that collapses these symptoms into a single dimension reflecting "alterations in arousal and reactivity." Further, anxious and dysphoric arousal symptom clusters were differentially associated with external variables of interest. Most notably, anxious arousal was more strongly associated with depressive symptoms and lower mental health–related functioning than was dysphoric arousal. This finding may have clinical implications, as it suggests that treatments focused on alleviating anxious arousal symptoms (eg, hypervigilance, exaggerated startle response) may have a greater effect on mitigating depressive symptoms and improving mental health–related functioning than treatments targeting other PTSD symptom clusters, although further research is needed.

We also evaluated a novel 6-factor model that included a sixth, "externalizing behavior" factor.[29] This 6-factor model provided a significantly better structural representation of PTSD symptoms than the current *DSM-5* 4-factor model and the 5-factor dysphoric arousal model. The superiority of this model was observed in the full sample as well as in subsamples of female veterans and veterans with probable PTSD. Given that both of these items explicitly assess behaviors[29] as opposed to thoughts, feelings, and passive experiences, they may reflect a common latent factor that is distinct from other symptoms subsumed under *DSM-5* Criterion E. Our results also demonstrated the external validity of this novel externalizing behavior symptom cluster, which was most strongly associated with hostility symptoms compared to the other 5 symptom clusters. Together, these findings suggest the 6-factor model of PTSD symptoms may have clinical relevance and may contribute to a more refined classification of the symptoms that characterize this disorder. For example, a more refined phenotypic model of PTSD may have utility in understanding the etiology of PTSD (eg, by focusing study of prospective interrelationships among symptom clusters following trauma), treatment matching (eg, by encouraging incorporation of anger management in psychotherapies for trauma survivors with elevated externalizing behaviors), and monitoring treatment outcomes (eg, by allowing evaluation of effects of mechanism-based treatments that target specific aspects of the PTSD phenotype).[23,24]

Several study limitations should be noted. First, we used a self-report measure to assess PTSD, so it is unclear whether results would be similar if a clinician-administered instrument such as the Clinician-Administered PTSD Scale (CAPS)[50] were administered. Several brief mental health screening measures were used as well (eg, PHQ-4), so further studies that employ more comprehensive measures will be useful in evaluating the generalizability of these results. Second, due to the cross-sectional design of the study, the directionality of associations between PTSD symptom clusters and external correlates cannot be ascertained. Third, the proposed 6-factor model contains 3 factors comprising only 2 items each, so it is unclear how reliably these items assess their respective latent factors. Fourth, while these results provide some support for the external validity of the 6-factor model, further research is needed to determine mechanisms of action, such as why emotional numbing and anxious arousal symptoms are more related to mental functioning than other symptom clusters and whether there are gender differences in these associations.

Despite these limitations, results of this study suggest that the dimensional structure of *DSM-5* PTSD symptoms may be best represented by 6 factors instead of 4 factors proposed in the *DSM-5* and that these factors showed differential associations with concurrent measures of psychopathology and functioning. Additional research is needed to evaluate the dimensional structure and external validity of *DSM-5* PTSD symptoms in other samples, examine how the best-fitting dimensional model of *DSM-5* PTSD symptoms relates to PTSD-relevant biomarkers, and assess how phenotypic models of PTSD may be used to inform assessment and treatment approaches for this disorder.

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for Posttraumatic Stress Disorder, Clinical Neurosciences Division, VA Connecticut Healthcare System, West Haven (Drs Harpaz-Rotem, Southwick, Krystal, and Pietrzak), Connecticut; and Psychology Research Institute, University of Ulster, Coleraine, Northern Ireland (Dr Armour).
Potential conflicts of interest: **Dr Krystal** has served as a consultant for AbbVie, Inc; AMGEN; Astellas Pharma Global Development, Inc; AstraZeneca Pharmaceuticals; Biomedisyn Corporation; Bristol-Myers Squibb; Eli Lilly and Co; Euthymics Bioscience, Inc and Neurovance, Inc; Janssen Research & Development; Lundbeck Research USA; Novartis Pharma AG; Otsuka Pharmaceutical Development & Commercialization, Inc; Sage Therapeutics, Inc; Shire Pharmaceuticals; Sunovion Pharmaceuticals, Inc; Takeda Industries; and Teva Pharmaceutical Industries, Ltd. **Dr Krystal** has also served on the scientific advisory boards of CHDI Foundation, Inc; Lohocla Research Corporation; Mnemosyne Pharmaceuticals, Inc; Naurex, Inc; and Pfizer Pharmaceuticals, owns stock in Biohaven Medical Sciences, and receives income as the Editor of *Biological Psychiatry*. **Drs Tsai**, **Harpaz-Rotem**, **Armour**, **Southwick**, and **Pietrzak** report no potential conflicts of interest relevant to the subject of this article.
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