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Exploring the Gold-Standard: Evidence for a Two-Factor Model of the Clinician Administered PTSD Scale for the *DSM–5*

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Objective: The latent factor structure of posttraumatic stress disorder (PTSD) remains a source of considerable variability. The current study compared several a priori factor structures, as well as a novel 2-factor structure of posttraumatic psychological distress as measured by the Clinician Administered PTSD scale for the *DSM–5* (CAPS-5). In addition, variability in diagnostic rates according to the divergent *DSM–5* and *ICD-11* criteria were explored. ***Method:*** The setting for this study was a Level 1 trauma center in a U.S. metropolitan city. Data were pooled from 2 studies ($N = 309$) and participants were administered the CAPS-5 at 1 ($n = 139$) or 6 months postinjury ($n = 170$). Confirmatory factor analysis (CFA) was used to compare several factor models, and prevalence rates based on *DSM–5* and *ICD-11* criteria were compared via *z* tests and kappa. ***Results:*** CFAs of 5 factor structures indicated good fit for all models. A novel 2-factor model based on competing models of PTSD symptoms and modification indices was then tested. The 2-factor model of the CAPS-5 performed as well or better on most indices compared to a 7-factor hybrid. Comparisons of PTSD prevalence rates found no significant differences, but agreement was variable. ***Conclusions:*** These findings indicate that the CAPS-5 can be seen as measuring 2 distinct phenomena: posttraumatic stress disorder and general posttraumatic dysphoria. This is an important contribution to the current debate on which latent factors constitute PTSD and may reduce discordance.

Keywords: PTSD diagnosis, CAPS-5, *DSM–5*, *ICD-11*, confirmatory factor analysis

Cross-nationally, 70% of people will experience a potentially traumatic event. Within the United States, this estimate increases to 82.7% (Benjet et al., 2016). Some of the most commonly reported traumatic experiences are injuries that result from life-threatening accidents and assaults. Many of these individuals are evaluated in emergency departments, with a significant minority admitted to the hospital for their injuries. On average, approximately 20% of individuals admitted to the trauma service of a Level 1 trauma center will go on to develop posttraumatic stress disorder (PTSD; deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010). In addition to the psychosocial difficulties associated with physical injury, those with co-occurring PTSD are at risk for significantly lower quality of life (Brasel, deRoon-Cassini, & Bradley, 2010), increased risk for suicide (Gradus et al., 2010), and poorer overall physical health outcomes (Pacella, Hruska, & Delahanty, 2013).

Given these findings, it is concerning that the precise underlying factor structure of posttraumatic psychological distress remains a source of considerable variability. Recently, significant debate has arisen (Friedman, Kilpatrick, Schnurr, & Weathers, 2016; Guina, 2016; Hansen, Hyland, Armour, Shevlin, & Elklit, 2015; Hoge, Riviere, Wilk, Herrell, & Weathers, 2014; Hoge et al., 2016; O'Donnell et al., 2014) following the changes to the criteria in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (*DSM–5*; American Psychiatric Association [APA], 2013). Specifically, some researchers posit that there are core symptoms of PTSD that include only re-experiencing, avoidance, and hyperarousal (Brewin, Lanius, Novac, Schnyder, & Galea, 2009) symptoms, in opposition to the more broadly defined current iteration in the *DSM–5* (Friedman, 2013). A narrower conceptualization is currently supported by the *International Classification of Diseases*, 11th rev. (*ICD-11*) work group (Maercker et al., 2013). It follows that a valid, reliable diagnostic assessment is critical for posttraumatic evaluation and treatment, as well as for bolstering scientific understanding of the neurological and biological underpinnings of symptomatology.

Review of Factor Structure in the *DSM*

First introduced in the *DSM–III* (APA, 1980), the diagnosis of PTSD was based on 12 symptoms, clustered into three factors: (a) re-experiencing of the trauma, (b) numbing or reduced involvement with the external world, and (c) autonomic, dysphoric, or

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cognitive symptoms. The next iteration, the *DSM–III*-R, increased the number of symptoms to 17 and reorganized the three factors to accommodate for changes in the theory of the latent structure: (a) re-experiencing of the trauma, (b) avoidance of trauma-related stimuli or numbing, and (c) increased arousal.

Changes to diagnostic criteria in the *DSM–IV*/*IV-TR* (APA, 1994, 2000) involved the relocation of only the physiological reactivity symptom to the re-experiencing cluster. Although this relative consistency hinted at the possibility of agreement among experts, the reality was that factor analyses conducted following the introduction of *DSM–IV* criteria produced variable structures. This was due in part to differences in sample, assessment, and analytical processes (Palmieri, Weathers, Difede, & King, 2007), with many investigators failing to find support for a three-factor model of PTSD, and thus spurring additional exploration. Initially, the four-factor Emotional Numbing (King, Leskin, King, & Weathers, 1998) and Dysphoria (Simms, Watson, & Doebbelling, 2002) models gained significant support across a number of trauma populations and assessment methods (Elhai et al., 2011; Yufik & Simms, 2010). With these models came two important, novel inferences: (a) individuals display variable patterns of symptom combinations that may be accurately represented as subtypes of PTSD (King et al., 1998); and (b) the possibility of a new dysphoria factor that includes nonspecific symptoms of several mood and anxiety disorders (e.g., sleep disturbance, irritability, difficulties with concentration, loss of interest, restricted affect, and detachment; Simms et al., 2002).

Indeed, the dysphoria factor demonstrated significant correlational relationships to symptoms of depression and generalized anxiety, indicating that this factor captures symptomatology related to more general psychological distress. An expanded five-factor model, the dysphoric arousal model (Elhai et al., 2011), took into account each of these four-factor models and concluded that dysphoric arousal symptoms represent a unique construct that is specific to neither anxiety nor depression. Although this five-factor model is well-supported (Pietrzak, Tsai, Harpaz-Rotem, Whealin, & Southwick, 2012), much of this support was not established until after the development of the *DSM–5*, therefore limiting its influence on the criteria within.

In response to the ongoing shifts in theory, the *DSM–5* PTSD committee added three symptoms to the diagnostic criteria, structured the diagnosis across four symptom clusters, and made significant revisions to the wording of items. Empirical investigations of this internal structure have paralleled the inconsistencies that arose from attempts to confirm the *DSM–IV* factor structure. For example, analyses have suggested six-factor models of PTSD symptoms, including the anhedonia model (Liu et al., 2014) and the externalizing behavior model (Tsai et al., 2015). These models align in their argument for distinct re-experiencing, avoidance, and arousal constructs. Findings associated with the anhedonia model go on to provide support for the proposition, originally suggested by Elhai and colleagues (Elhai et al., 2011), that anhedonia, negative affect, and dysphoric arousal are also unique constructs of PTSD. This contrasts with the externalizing behavior model, which supports the constructs of anhedonia and negative affect as a single factor and differentiates a unique externalizing behaviors factor from half of the items classified as dysphoric arousal in the anhedonia model.

Recently, research examining the dimensionality of PTSD has suggested that a seven-factor hybrid model most accurately represents the underlying factor structure of the *DSM–5* criteria (Armour et al., 2015). Authors of the hybrid model assert that it integrates two major theoretical and empirical conclusions proposed by the separate six-factor models. First, the seven-factor model is argued to account for hyperarousal symptoms being comprised of distinct anxious and dysphoric arousal factors (Elhai et al., 2011). Second, this model makes distinctions between externalizing and internalizing behaviors, as well as between increased negative and decreased positive affect (Armour et al., 2015). This ongoing expansion suggests that PTSD may be a moving target, as it continues to be conceptualized with an ever-increasing number of factors. The aforementioned *ICD-11* conceptualization has taken a much more parsimonious approach, suggesting that just six items are necessary for the diagnosis of PTSD. These items are separated into three clusters with two items each. The clusters are (a) re-experiencing, (b) avoidance, and (c) a persistent sense of current threat that is manifested by exaggerated startle and hypervigilance (Table 1; Karatzias et al., 2016). This model has been shown to have very strong fit across samples with varying trauma histories and has performed well when compared to the *DSM–5* model (Hansen et al., 2015).

As one might guess, rates for PTSD are notably different when considering one diagnostic system over the other. In a multisite investigation of traumatic injury survivors, O'Donnell and colleagues (2014) evaluated differences in diagnostic rates for PTSD using both *DSM–5* and *ICD-11*. Following *DSM–5* criteria, 6.7% of participants received a PTSD diagnosis whereas only 3.3% of participants met criteria according to *ICD-11*. Statistical comparison of these rates showed a significant difference in prevalence. In addition, findings were presented that demonstrated higher rates of comorbidity with depression when using *DSM–5* criteria. These empirical results fit with the theoretically more inclusive diagnostic approach of the *DSM–5*, and the divergence from this taken by the *ICD-11* toward a more restricted system. Notably, however, the authors underscore that only 42% of participants met criteria for PTSD under both *DSM–5* and *ICD-11* (O'Donnell et al., 2014). Thus, most participants identified as having PTSD according to one system did not have PTSD according to the other—a finding that was not accounted for by the relative inclusivity of *DSM–5* criteria. Consequently, we continue to experience critical issues related not only to the lack of consistency in models that offer the "best" fit, but also in the translational influence that these models have for health care accessibility, treatment compensation/coverage, and the efficacy of clinical interventions according to symptom presentation in one system versus another.

Present Study

To allow for a direct statistical comparison of competing models, the current study used confirmatory factor analyses (CFA) of several a priori factor structures of PTSD symptoms measured by the Clinician Administered PTSD Scale for *DSM–5* (CAPS-5; Weathers et al., 2013). Additional analyses included a modified, novel two-factor model that included all 20 symptoms presented in the *DSM–5*. The inclusion of this two-factor model was based on the discordance in the literature about what symptoms constitute PTSD and the *DSM–5* revisions that broadened criteria to include

Table 1
Item Mappings

DSM-5 symptom	*DSM-5*	Dysphoric arousal	Externalizing behavior	Anhedonia	Hybrid	*ICD-11*
1. Intrusive thoughts	R	R	R	R	R	
2. Distressing dreams/nightmares	R	R	R	R	R	R
3. Flashbacks	R	R	R	R	R	R
4. Cued psychological distress	R	R	R	R	R	
5. Cued physiological distress	R	R	R	R	R	
6. Avoidance of thoughts/memories	Av	Av	Av	Av	Av	Av
7. Avoidance of external reminders	Av	Av	Av	Av	Av	Av
8. Trauma-related amnesia	NACM	NACM	N	NACM	NA	
9. Negative beliefs	NACM	NACM	N	NACM	NA	
10. Distorted blame	NACM	NACM	N	NACM	NA	
11. Negative trauma-related emotions	NACM	NACM	N	NACM	NA	
12. Loss of interest	NACM	NACM	N	An	An	
13. Detachment from others	NACM	NACM	N	An	An	
14. Restricted positive affect	NACM	NACM	N	An	An	
15. Irritability, anger	A	DA	EB	DA	EB	
16. Self-destructive behavior	A	DA	EB	DA	EB	
17. Hypervigilance	A	AA	AA	AA	AA	S
18. Exaggerated startle response	A	AA	AA	AA	AA	S
19. Concentration difficulties	A	DA	DA	DA	DA	
20. Sleep disturbance	A	DA	DA	DA	DA	

Note. A = alterations in arousal/reactivity; AA = anxious arousal; An = anhedonia; Av = avoidance; DA = dysphoric arousal; EB = externalizing behaviors; N = numbing; NA = negative affect; NACM = negative alterations in cognition and mood; R = re-experiencing (*DSM-5* intrusions); S = sense of threat; *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed.; *ICD-11* = *International Classification of Diseases*, 11th rev.

aspects of posttraumatic psychological distress common to other disorders (Friedman, 2013). The seven-factor Hybrid model (see Table 1) was used as a guide for the initial distribution of CAPS-5 items into two factors. Specifically, items allocated to the Hybrid model factors that may be considered components of other disorders (i.e., negative affect, anhedonia, and externalizing behavior factors), and thus not unique to PTSD symptomatology, were loaded onto a single factor. The remaining Hybrid model factors (re-experiencing, avoidance, anxious arousal, and dysphoric arousal) were used to create an analog factor representing symptoms of PTSD. The final two-factor model was derived using both theory and statistical output from the CFAs (see Results for further explanation).

It is not suggested that this two-factor model is a model of PTSD; rather this model is based on the premise that the CAPS-5 is measuring more than PTSD, which is causing the increase in underlying factors. A post hoc CFA was also run on the proposed *ICD-11* criteria alone; however, because they are not derived from the exact same underlying parameters, no direct comparison can be made to the other models utilizing the 20 *DSM–5* items. Following CFA, a comparison of the *DSM–5* and proposed *ICD-11* criteria was conducted to explore potential variability in diagnostic rates within this sample.

Method

Participants and Procedures

Data were pooled from two separate studies approved by the institutional review board where data collection took place. Three hundred and nine participants were included in the analyses. Both samples were comprised of adult injured trauma survivors admitted to the trauma service of a Level 1 trauma center in the United States. Inclusion criteria were identical for the two samples. Exclusion criteria were as follows: (a) younger than 18 years of age, (b) head injury that resulted in a serious alteration of consciousness (Glasgow Coma Scale score <13 on emergency department arrival) or moderate to severe traumatic brain injury (TBI), (c) self-inflicted injuries, (d) injuries that resulted in an inability to communicate, and (e) non-English speaking. Potential participants were identified using the trauma census, a real-time list of admissions due to a mechanism of injury. The CAPS-5 was administered at either 1 month ($n = 139$) or 6 months ($n = 170$) after injury. Demographic and self-report information is presented in Table 2. The two pooled samples ($n_1 = 173$; $n_2 = 136$) did not differ significantly from each other on participant demographics (i.e., age, gender, race) or trauma-related measures (i.e., mechanism of injury, CAPS-5 total/subscale severity scores).

Measure

The CAPS-5 (Weathers et al., 2013) was administered by masters- and doctoral-level research assistants trained via a standardized protocol and supervised by doctoral level professionals throughout the studies. This instrument uses a clinician-administered structured diagnostic interview that allows for a dimensional (severity) and dichotomous diagnosis. Previous research indicates excellent psychometric properties of the CAPS for *DSM–IV*. In a large veteran study ($N = 838$), severity scores for the three symptom clusters yielded intraclass correlations ranging from 0.88 to 0.91, with alphas between 0.82–0.88. Considering the measure as a whole, the intraclass correlation across all 17 symptom severity scores was 0.95 and $\alpha = .94$ (Weathers, Ruscio, & Keane, 1999). In addition, interrater reliability for PTSD diagnosis

Table 2
Demographic and Clinical Interview Data (N = 309)

Demographic	*M*	*SD*	%	*n*
CAPS-5 total severity score	14.50	15.34		
Age[a]	42.03	16.78		
Gender: Male			71.5%	221
Race				
Caucasian			47.2%	146
African American			41.4%	128
Latino			9.1%	28
Native American/Alaska Native			1.3%	4
Other			1.0%	3
Mechanism of injury				
MVC			30.4%	94
GSW			17.5%	54
Fall			15.5%	48
MCC			12.0%	37
Stabbing			9.4%	29
PSV			5.2%	16
Industrial accident			3.9%	12
Recreational			3.6%	11
Other			1.6%	5
Blunt Assault			1.0%	3

Note. GSW = gunshot wound; MVC = motor vehicle crash; MCC = motor cycle crash; PSV = pedestrian struck by vehicle.
[a] Range = 18–89.

has been found to be very strong while using the CAPS with veteran populations (Blake et al., 1995), with test–retest reliability in the moderate-to-high range (Mueser et al., 2001). Although, at this time, no such data are published for the CAPS-5, the current sample demonstrated good reliability. Alphas for the four symptom clusters severity scores ranged from 0.76 to 0.84, and the total measure severity score yielded $\alpha = .94$.

Statistical Analyses

Data analyses were carried out in two main steps. The first step involved examining the internal structure of the CAPS-5 via CFA using M*plus* Version 7.4 (Muthén & Muthén, 2015). Previously examined models (see Table 1) were explored, followed by the examination of a significantly reduced model (see Figure 1). Symptom severity scores for the 20 items were entered as input variables for each model evaluation; there were no missing data for the CAPS-5 for any participant. Weighted least squares (WLS) estimation was used as the data were ordinal, with a robust mean- and variance-adjusted test statistic (i.e., WLSMV in M*plus*; Muthén & Muthén, 2015). Goodness-of-fit indices were interpreted following the guidelines set forth by Hu and Bentler (1999): root mean square error of approximation (RMSEA) $\leq .06$, and comparative fit index (CFI) and Tucker-Lewis index (TLI) $\geq .95$. For comparison of nested models, corrected chi-squared difference ($\Delta\chi^2$) tests were carried out via M*plus* (Muthén & Muthén, 2015). Maximum likelihood estimation was used to derive the Akaike information criterion (AIC; Akaike, 1974) and Bayesian information criterion (BIC; Schwarz, 1978). The AIC and BIC can be used to compare the relative fit of multiple nested or nonnested models fit to the same data. Although chi-squared difference ($\Delta\chi^2$) testing cannot be carried out on nonnested models, nonnested models fit to the same data can be compared via incremental fit indices (e.g., CFI and TLI) because the independence model is nested within all

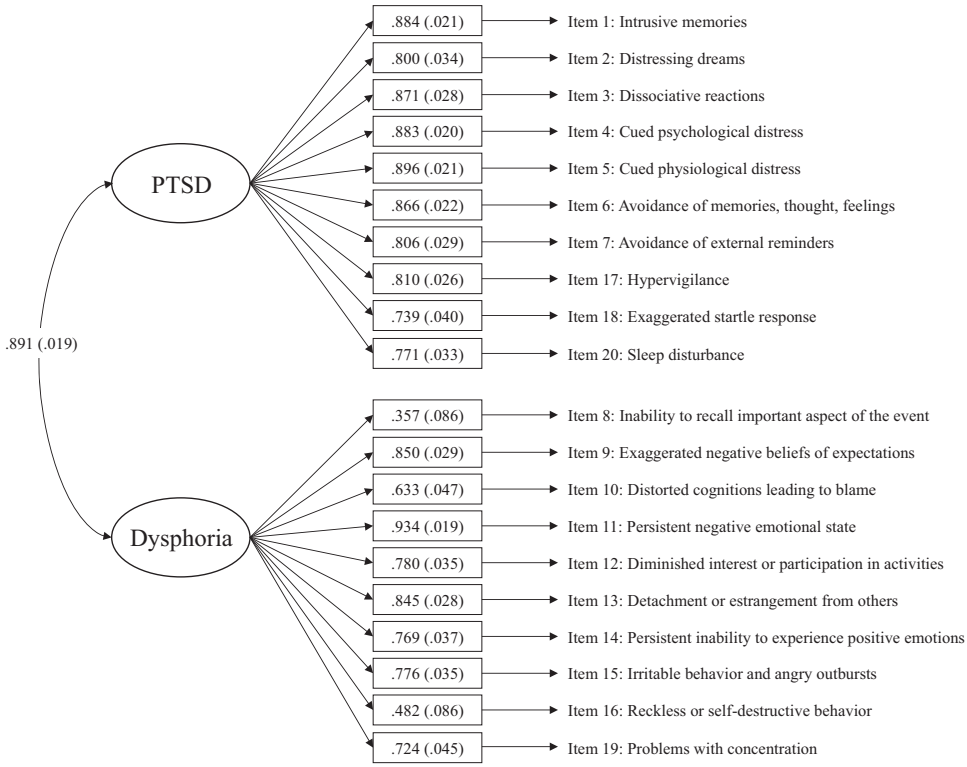

Figure 1. Path diagram of item mapping and factor loadings for the novel, two-factor model.

of the factor models, which are all nested within the same saturated model (Bentler & Bonett, 1980; Widaman & Thompson, 2003).

The second step involved comparing various diagnostic rates using IBM SPSS Version 24, *z* test of sample proportions, and the calculation of the kappa statistic to assess convergent validity. This step was undertaken to assess consistency across diagnostic criteria and included a comparison of *DSM–5* and *ICD-11* prevalence rates as measured by the CAPS-5. *DSM–5* diagnosis and prevalence statistics were obtained with the original CAPS-5 scoring system. To derive an *ICD-11* diagnosis and prevalence, the CAPS-5 scoring system was used in which a severity score above 2 (moderate/threshold) on the corresponding item indicated the presence or absence of a symptom. Those who were found to have ≥1 symptom present in each of the three *ICD-11* clusters (see Table 1) were considered positive.

Results

Step 1: CFA of a Priori Models and Reduced Model

Five separate CFAs were run using factor structures supported in previous studies (see Table 1) that examined measures designed to assess *DSM–5* PTSD (Armour, Műllerová, & Elhai, 2016; Armour et al., 2015). In chi-square difference testing, the seven-factor model was a significantly better fit when compared to the four other nested models used for comparison—*DSM–5*, $\Delta\chi^2(15) = 69.820$, $p < .001$; dysphoric arousal, $\Delta\chi^2(11) = 37.916$, $p < .001$; externalizing behaviors, $\Delta\chi^2(6) = 16.792$, $p = .010$; anhedonia, $\Delta\chi^2(6) = 24.145$, $p < .001$. All models demonstrated good fit, and additional fit statistics are presented in Table 3.

The two-factor model was then run using the seven-factor hybrid model as a guide (see Table 1). Items that loaded on negative affect, anhedonia, and externalizing behavior factors were loaded on a new factor separate from the PTSD items measuring reexperiencing, avoidance, anxious arousal, and dysphoric arousal. Mplus output indicated a single modification index (M.I. = 20.701) for item 19. Given its nonspecific relationship to general psychological distress (including depression; Paelecke-Habermann, Pohl, & Leplow, 2005), this item was removed from the PTSD factor and placed on the new factor, which given the qualities of the redistributed items was termed general posttraumatic dysphoria (see Figure 1).

The novel two-factor model (RMSEA = .034 (.020, .042), CFI = .993, TLI = .992, AIC = 15,331.706, BIC = 15,559.440) of the CAPS-5 was compared to the seven-factor Hybrid (RMSEA = .036 (.023, .047), CFI = .993, TLI = .991, AIC = 15.327.884, BIC = 15,360.285). Comparisons of the two-factor model to the seven-factor hybrid indicated that the two-factor result performed as well or better on all indices except for the AIC, which tends to favor more complex models (Dziak, Coffman, Lanza, & Li, 2012). Although the BIC is an approximation (−2*logarithm) of the Bayes factor, the difference of 70.845 suggests very strong evidence that the two-factor model is a better fit (Kass & Raftery, 1995). This suggests that *DSM–*5 PTSD criteria, as assessed by the CAPS-5, may be measuring a general posttraumatic dysphoria factor in addition to a PTSD factor. In fact, although no direct statistical comparisons can be made, fit for the six-item, three-factor proposed *ICD-11* criteria (see Table 1) was very strong in this sample (RMSEA = .016 [.000, .077], CFI = 1.00, TLI = .999).

Step 2: Comparison of Prevalence Rates Across *DSM–5* and *ICD-11*

PTSD prevalence rates were not statistically significantly different in comparisons of the *DSM–5* and *ICD-11* in the full sample (28.5% vs. 23.6%, $z = 1.4$, $p = .17$; $\kappa = .724$), and agreement was 89.3% overall. PTSD prevalence rates were also not significantly different within subanalyses and were as follows: assaultive traumas ($n = 86$, *DSM–5* = 47.7%, *ICD-11* = 41.9%, $z = .80$, $p = .44$; $\kappa = .789$); nonassaultive traumas ($n = 223$; *DSM–5* = 21.1%, *ICD-11* = 16.6%, $z = 1.2$, $p = .22$; $\kappa = .649$); men ($n = 221$; *DSM–5* = 25.3%, *ICD-11* = 21.3%, $z = 1.0$, $p = .32$; $\kappa = .760$); women ($n = 88$; *DSM–5* = 36.4%, *ICD-11* = 29.5%, $z = 1.0$, $p = .33$; $\kappa = .642$); Caucasians ($n = 146$; *DSM–5* = 10.3%, *ICD-11* = 8.9%, $z = .40$, $p = .68$; $\kappa = .526$); racial minorities ($n = 163$; *DSM–5* = 44.8%, *ICD-11* = 36.8%, $z = 1.5$, $p = .14$; $\kappa = .735$). Notably, the rate of PTSD was higher for the *DSM–5* than the *ICD-11* across all groups.

Discussion

The findings from these factor analyses indicate that the CAPS-5 appears to measure two distinct phenomena: posttraumatic stress and general posttraumatic dysphoria. When compared to the various models presented herein, the fit of the two-factor model was roughly equivalent or superior across many of the fit indices. This provides support for the *ICD-11* work group supposition that PTSD consists of a core group of symptoms unique to PTSD. However, these findings are potentially due to the nature of

Table 3
Fit Statistics for Confirmatory Factor Analyses of the CAPS-5 (N = 309)

Variable	*df*	χ^2	RMSEA (90% CI)	CFI	TLI	AIC	BIC
DSM-5—4-factor	164	266.741	.045 (.035, .055)	.988	.987	15,380.237	15,626.638
Dysphoric arousal—5-factor	160	238.032	.040 (.029, .050)	.991	.990	15,355.473	15,616.806
Externalizing behavior—6-factor	155	222.009	.037 (.026, .048)	.992	.991	15,346.983	15,626.983
Anhedonia—6-factor	155	225.799	.038 (.027, .049)	.992	.990	15,340.779	15,620.780
Hybrid—7-factor	149	208.277	.036 (.023, .047)	.993	.991	15,327.884	15,630.285
2-factor	169	230.315	.034 (.020, .042)	.993	.992	15,331.706	15,559.440

Note. *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed.; RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker Lewis index; AIC = Akaike information criterion; BIC = Bayesian information criterion.

single-incident traumatic injury and subsequent psychiatric sequelae. In fact, evidence for a two-factor model was found in another study of injured trauma survivors who were administered the CAPS at 6 years postinjury. Unlike the current study, however, these authors combined the re-experiencing (i.e., intrusion) and avoidance factors into one factor, and the NACM and the arousal factors into another, which demonstrated roughly equivalent fit across many of the fit indices presented in their results (Forbes et al., 2015). Since this time, additional studies have been published which indicate that this two-factor structure may not be a good fit for other populations (Hyland, Brewin, & Maercker, 2017).

Although the *DSM–5* had higher diagnostic rates than the *ICD-11*, prevalence of PTSD was not significantly different between the two systems as presented in a previous study of traumatic injury survivors (O'Donnell et al., 2014). An additional analysis of whether individuals identified as having PTSD according to *DSM–5* were the same as those identified by the *ICD-11* suggested that the concordance between the two systems (89.3%) is much higher than previously reported (42%). This implies that the *DSM–5* and the *ICD-11* may be reasonably aligned with one another, despite the more inclusive nature of the *DSM–5* symptom list. However, based on the results of the factor analyses presented herein, and the variable rates in diagnosis and kappa within the subgroups, future research needs to examine whether this is the result of the *DSM–5* including additional items that capture PTSD symptoms, or a result of the inclusion of the dysphoric elements of posttraumatic psychological distress.

A narrower definition of PTSD may also provide further synchrony between the psychological, neurobiological, and behavioral phenomena associated with the disorder. For example, neuroimaging studies have found that phenomena such as depression, PTSD, and their comorbid occurrence may result in distinctly different patterns of neural activity (Kemp et al., 2007; Lanius et al., 2007; Whalley, Rugg, Smith, Dolan, & Brewin, 2009). From a dimensional perspective, future investigators may want to examine whether including specific subtypes of posttraumatic psychological distress enhances validity and reliability. For example, an individual may present with significantly more re-experiencing symptoms than avoidance or hyperarousal, but in conjunction with depression or general posttraumatic dysphoria. A unique diagnostic category for this presentation, such as posttraumatic stress following an acute injury: intrusive and depressive type, could reduce inconsistencies, misdiagnosis, as well as over- and/or underdiagnosis.

Within the context of the current study sample, dysphoria may be the result of major resource loss after trauma, such as physical illness and functional limitations in combination with the financial burdens of physical impairment. This is distinct from a dysphoria that is a secondary reaction to the increased psychosocial stress that accompanies PTSD symptoms. Although dysphoria in each of these forms may have similar symptom presentations, they imply different etiological and psychogenic processes. As such, different treatments and interventions may yield very different results. Searching for an all-encompassing set of criteria for PTSD might be a set-up for the field to be in perpetual disagreement. Instead, a more effective direction might be to focus theoretical and empirical energies on identifying variants of posttraumatic psychological distress unique to certain individuals.

This may further help clinicians in selecting appropriate treatments and potentially give more accurate prognoses for aspects of treatment. Research examining psychiatrists' attitudes on current classification systems indicated a preference for a simpler, more flexible diagnostic system that included fewer categories and a dimensional element in diagnosis (Reed, Correia, Esparza, Saxena, & Maj, 2011). The *ICD-11* conceptualization seems to address some of these issues, as well as addressing the need for variable types of posttraumatic psychological reactions by introducing a range of diagnoses from acute stress reaction, which is not classified as a disorder, to complex posttraumatic stress disorder, which seems to integrate aspects of possible character traits such as difficulties in emotion regulation (Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013; Maercker et al., 2013). Although the integration of personality or characterological disturbances will complicate factor analyses, the implementation of gradations or types is likely to clarify the operationalization of certain mental phenomena.

The limitations of this study include the smaller sample size, issues of temporality, and the generalizability of the findings. Ideally, this sample would be larger; however, there is debate regarding the sample size necessary when using WLSMV depending upon the magnitude of factor loadings and the number of factor indicators (Moshagen & Musch, 2014). Using data from two different time points may confound findings as well; although, current conceptualizations of PTSD do not assume or imply differences in the latent structure over time. Also, the generalizability of the findings may be limited to the traumatic injury population, or may be impacted by other unique characteristic of the CAPS-5, such as the administration style. Further research will need to address these limitations as well as assess replicability. An evaluation of comorbidities (e.g., depression) as they relate to the two-factor model might also shed light on what is actually being measured. Finally, future work may further enhance the applicability of such a measure by performing factor analyses on items designed specifically to measure the core symptoms of PTSD.

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