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# Psychometric Properties of the PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (PCL-5) in Veterans

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This study examined the psychometric properties of the posttraumatic stress disorder (PTSD) Checklist for *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (PCL-5; Weathers, Litz, et al., 2013b) in 2 independent samples of veterans receiving care at a Veterans Affairs Medical Center ($N$ = 468). A subsample of these participants ($n$ = 140) was used to define a valid diagnostic cutoff score for the instrument using the Clinician-Administered PTSD Scale for *DSM–5* (CAPS-5; Weathers, Blake, et al., 2013) as the reference standard. The PCL-5 test scores demonstrated good internal consistency ($\alpha$ = .96), test–retest reliability ($r$ = .84), and convergent and discriminant validity. Consistent with previous studies (Armour et al., 2015; Liu et al., 2014), confirmatory factor analysis revealed that the data were best explained by a 6-factor anhedonia model and a 7-factor hybrid model. Signal detection analyses using the CAPS-5 revealed that PCL-5 scores of 31 to 33 were optimally efficient for diagnosing PTSD ($\kappa$(.5) = .58). Overall, the findings suggest that the PCL-5 is a psychometrically sound instrument that can be used effectively with veterans. Further, by determining a valid cutoff score using the CAPS-5, the PCL-5 can now be used to identify veterans with probable PTSD. However, findings also suggest the need for research to evaluate cluster structure of *DSM–5*.

*Keywords:* posttraumatic stress disorder, *DSM–5*, psychometrics, veterans

The posttraumatic stress disorder (PTSD) Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993) is one of the most widely used self-report measures of PTSD. In numerous studies, PCL scores have consistently displayed excellent psychometric properties across a wide range of settings and samples (for reviews see Keen, Kutter, Niles, & Krinsley, 2008; McDonald & Calhoun, 2010). Total PCL scores correlate highly with total scores of other self-report measures of PTSD as well as with total scores from the Clinician-Administered PTSD Scale (CAPS), the gold standard structured PTSD diagnostic interview (Keen et al., 2008; Weathers et al., 1993). PCL scores also have demonstrated excellent internal consistency, test–retest reliability, and diagnostic utility (e.g., Keen et al., 2008; McDonald & Calhoun, 2010; Weathers et al., 1993).

The PCL was recently updated to reflect revisions of the PTSD diagnostic criteria in the fifth edition of the *Diagnostic and Sta-*

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*tistical Manual of Mental Disorders-Fifth Edition* (*DSM–5*; American Psychiatric Association, 2013). The new version, the PCL-5 (Weathers, Litz, et al., 2013b), includes 20 items that correspond to the 20 PTSD symptoms in *DSM–5*. Of these 20 items, nine are unchanged from the *DSM–IV* version of the PCL, five are only slightly revised, three are significantly revised, and three are new items that assess newly added PTSD symptoms. Respondents still indicate the extent to which they have been bothered by symptoms over the past month, but the rating scale, which previously ranged from 1 to 5, was changed to 0 to 4. Thus, PCL-5 total score ranges from 0 to 80, with higher scores indicating greater PTSD symptom severity.

Because the PCL-5 was completed in 2013, several studies have reported on its psychometric characteristics in veteran (Armour et al., 2015; Brief et al., 2013; Keane et al., 2014; Tsai et al., 2015), active duty (Hoge, Riviere, Wilk, Herrell, & Weathers, 2014), and community (Armour et al., 2015; Biehn et al., 2013; Liu et al., 2014) samples. PCL-5 scores appear to have excellent temporal stability (Keane et al., 2014), and yield PTSD prevalence estimates similar to that of the previous version (Hoge et al., 2014). Further, factor analytic studies find models with six factors (Liu et al., 2014; Tsai et al., 2015) and seven factors (Armour et al., 2015) demonstrate superior fit indices than the *DSM–5* four-factor model.

However, none of these prior studies validated the PCL-5 against the *DSM–5* version of the CAPS (CAPS-5; Weathers, Blake, et al., 2013) and, therefore, no PCL-5 cutoff score to screen for PTSD has been established for veterans or any other trauma exposed individuals. Establishing that the PCL-5 is a psychometrically sound instrument with a valid cutoff score is essential because the PCL has traditionally been one of the most widely used self-report measures of PTSD (Elhai, Gray, Kashdan, & Franklin, 2005). Consistent with this, the PCL-5 was identified by the PhenX PTSD committee as one of the PTSD instruments that should be used in all standardized assessments (Hamilton et al., 2011). It is particularly important to establish a valid PCL-5 cutoff for veterans because the PCL-5 is used extensively in Veterans Affairs (VA) Medical Centers (Spoont et al., 2013).

In this study, we evaluated the psychometric properties of PCL-5 scores in two independent samples of veterans who were receiving care at a VA Medical Center. First, we evaluated the internal consistency, test–retest reliability, and convergent and discriminant validity of PCL-5 scores. We expected PCL-5 scores to demonstrate high levels of internal consistency and temporal stability. In terms of convergent and discriminant validity, we expected associations between PCL-5 scores and scores on measures of other conditions to be consistent with Miller, Fogler, Wolf, Kaloupek, and Keane's (2008) three-factor model (anxious-misery, fear, and externalizing) of psychiatric comorbidity. Specifically, we expected PCL-5 scores to show the strongest association with scores from measures of diagnoses on the anxious-misery factor (e.g., depression, generalized anxiety disorder), strong positive associations with scores on measures assessing diagnoses on the fear factor (e.g., panic disorder), and weaker associations with scores on measures assessing conditions on the externalizing factor (e.g., psychopathy and alcohol abuse). Further, because PTSD is associated with functional impairment (Holowka & Marx, 2012), we expected PCL-5 scores to demonstrate robust positive correlations with scores on measures of impaired functioning.

Second, we conducted a series of confirmatory factor analysis (CFA) models to determine the latent structure that best fit PTSD symptoms as measured by the PCL-5. We expected that, similar to other investigations, the models of six and seven factors would demonstrate the best fit. Last, we conducted signal detection analyses (Kraemer, 1992) to examine the diagnostic utility of PCL-5 scores for predicting PTSD diagnostic status on the CAPS-5. Because there is no research to date regarding the optimal PCL-5 cutoff for a PTSD diagnosis based on the CAPS-5 or other diagnostic interview, we had no a priori hypotheses as to what this cut score might be.

To minimize the influence of various sources of bias that can affect diagnostic utility studies, we followed as closely as possible the second version of the Quality Assessment of Diagnostic Accuracy Studies guidelines (QUADAS-2; Whiting et al., 2012). The QUADAS-2 describes four domains in which diagnostic accuracy studies can introduce bias, as well as three domains in which studies can reduce applicability and provides signaling questions that can be asked to determine whether bias has been introduced or applicability has been reduced. Designing studies with the QUADAS-2 in mind allows researchers to anticipate areas where bias is commonly introduced, as well as anticipating areas in which applicability may be reduced, and take steps to prevent these problems a priori. Further, presenting results using QUADAS-2 guidelines encourages transparency that allows findings to be interpreted within the context in which they were collected. In the current study, the QUADAS-2 guidelines were used to ensure that our signal detection analyses were as free of bias as possible (see Table 1).

## Method

### Participants

**Sample 1.** Sample 1 consisted of veterans recruited through two VA Healthcare Systems for a study validating the Inventory of Psychosocial Functioning (IPF; Marx et al., 2009), a newly created measure of PTSD-related functional impairment. This study was open to all veterans who were aged 18 or older and could read written materials in English. Of the 380 participants who were contacted to participate, 43 refused. Data from nine additional participants who did not complete the PCL-5 were deleted, leaving a total sample of 328. See Table 2 for characteristics of the sample.

**Sample 2.** Sample 2 consisted of veterans recruited through a VA Healthcare System for a study validating the CAPS-5 (Weathers, Blake et al., 2013) and the PCL-5. This study was open to all veterans who were aged 18 or older, could read written materials in English, and who endorsed at least one traumatic event and at least one symptom of PTSD. Of the 253 veterans who were called to ask if they were interested in participating in the study, 57 refused participation. An additional 54 veterans initially agreed to participate in the study but later cancelled or did not attend their study session. Data from an additional two participants were dropped from current analyses because these participants did not complete the PCL-5, leaving a total sample of 140. See Table 2 for characteristics of the sample.

Table 1
*QUADAS-2 Domains, Signaling Questions, and Evaluation of the Current Study*

| Domains | Signaling questions | Current study performance |
|---|---|---|
| Risk of bias domains | | |
| Patient selection | Was a consecutive or random sample of patients enrolled? | Yes–consecutive sampling |
| | Was a case-control design avoided? | Yes |
| | Did the study avoid inappropriate exclusions? | Yes |
| Index test | Were the index test results interpreted without knowledge of the reference standard? | Yes |
| | If a threshold was used, was it prespecified? | Yes–we examined quality indices |
| Reference standard | Is the reference standard likely to correctly classify the target condition? | Yes–CAPS-5 is the gold standard |
| | Were the reference standard results interpreted without knowledge of the results of the index test? | Yes |
| Flow and timing | Was there an appropriate interval between the index test and the reference standard? | Yes–collected the same day |
| | Did all patients receive the same reference standard? | Yes |
| | Were all patients included in the analyses? | No–but those excluded did not differ from those included |
| Applicability domains | | |
| Patient selection | Are there concerns that the included patients and setting do not match the review question? | Possibly–our sample may differ somewhat from the VA user population |
| Index test | Are there concerns that the index test, its conduct, or its interpretation differ from the reviewer question? | No |
| Reference standard | Are there concerns that the target condition as defined by the reference standard does not match the question? | No |

*Note.* A study that avoids all bias and is perfectly generalizable will answer "yes" to all bias domain signaling questions and "no" to all acceptability domain signaling questions. QUADAS-2 = second version of the Quality Assessment of Diagnostic Accuracy Studies; CAPS-5 = Clinician-Administered PTSD Scale for *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*; VA = Veterans Affairs. Table was created based on guidelines presented in Whiting et al. (2012).

## Measures

The IPF (Marx et al., 2009) is an 80-item, self-report assessment measure of psychosocial functioning. The measure allows for the assessment of both overall psychosocial functioning as well as domain specific functioning in seven domains: romantic relationships, family, work, friendships, parenting, education, and self-care. For the first six domains, participants are first asked whether the domain applies to them. If it does not, they are asked to go on to the next domain. All participants then complete the self-care domain items. For all domains, participants respond to each item on a 0 (*never*) to 6 (*always*) Likert-type scale. The overall impairment score is calculated by summing the impairment scores reported for each domain and then dividing by the number of domains to which the participant responded. IPF scores have demonstrated excellent psychometric properties (Holowka & Marx, 2012). Given that the IPF is designed so that respondents may opt out of subscales that do not apply to them, participants seldom respond to all seven domains. For this reason, we report the Cronbach's αs for subscale scores. Cronbach's αs for IPF subscale scores in the full sample (Sample 1 and Sample 2 combined) ranged from .74 (self-care) to .91 (work). In the current study, the IPF was used to investigate the convergent validity of PCL-5 scores.

The World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0; Üstün, Kostanjsek, Chatterji, & Rehm, 2010) is a 36-item self-report measure of impairment due to health-related problems experienced in the past month. It provides a profile across six domains, as well as providing a general disability score. The WHODAS 2.0 is used across countries and population groups and its scores have high test–retest reliability and are positively correlated with scores from a range of other measures of quality of life. In the current study, we calculated overall scores of global functional disability. For the full sample, Cronbach's α for the overall score of global functional disability was .97. In the current study, the WHODAS 2.0 was used to examine the convergent validity of PCL-5 scores.

We administered the PTSD Checklist-Civilian Version (PCL-C; Weathers et al., 1993) to assess *Diagnostic and Statistical Manual for Mental Disorder-Fourth Edition-Text Revised* (*DSM–IV–TR*) PTSD symptoms. PCL-C scores have demonstrated good sensitivity and specificity and they are positively correlated with scores from standard measures of PTSD (e.g., Gore et al., 2013). Cronbach's α for PCL-C scores was .95 for the combined samples. In this study, the PCL-C was used to examine convergent validity and to serve as a comparison to the PCL-5 in terms of psychometric properties.

The PCL-5 (Weathers, Litz, et al., 2013b) is a 20-item self-report measure designed to assess the *DSM–5* symptoms of PTSD. For each symptom, respondents provide a severity rating ranging from 0 to 4 that indicates the degree of distress associated with each symptom (0 = *not at all* to 4 = *extremely*). There are three versions of the PCL-5, which vary only with respect to the assessment of PTSD Criterion A. One version does not assess Criterion A at all, one includes a relatively brief Criterion A section, and the remaining one includes the Life Events Checklist for *DSM–5* (LEC-5; Weathers, Litz, et al., 2013a) and a more detailed Criterion A section. In this study, we used the second version of the PCL-5 (i.e., PCL-5 with Criterion A; see Appendix). Consistent with QUADAS-2 guidelines (Whiting et al., 2012), for participants who completed both the PCL-5 and the reference standard (the

Table 2
*Descriptive Characteristics of Sample 1 and Sample 2*

| Characteristic | Sample 1 ($n$ = 328) | Sample 2 ($n$ = 140) | Total Sample ($n$ = 468) |
|---|---|---|---|
| Age (*M*, *SD*) | 51.64 (11.26) | 53.39 (11.88) | 52.14 (11.46) |
| Gender (% female) | 12.5 | 11 | 12 |
| Race (%) | | | |
| White | 58 | 65 | 60 |
| Black | 24 | 29 | 25 |
| Hispanic/Latino | 8 | 6 | 7 |
| Asian | 7 | 0 | 2 |
| Pacific Islander | 8 | 0 | 2 |
| Native American | 7 | 1 | 2 |
| Married (%) | 18 | 21 | 19 |
| Years of education (*M*, *SD*) | 13.45 (2.45) | 13.81 (2.28) | 13.56 (2.41) |
| Combat exposure (%) | 31 | 37 | 35 |
| Military conflict (%) | | | |
| Vietnam | 21.9 | 31.1 | 25.1 |
| Iraq/Afghanistan | 15.7 | 21.2 | 17.7 |
| First Gulf War | 11.1 | 8.3 | 10.5 |
| Korea | 3.7 | 5.3 | 4.3 |
| Bosnia | 1.5 | 2.3 | 1.8 |
| World War II | .6 | 0 | .4 |
| Other | 17 | 16.7 | 16.9 |
| Did not deploy | 28.4 | 22.7 | 27.4 |
| Military trauma on PCL-5 (%) | 31.3 | 47.9 | 36.9 |
| PHQ Diagnoses (%) | | | |
| Major depressive syndrome | 34.1 | 36.6 | 34.9 |
| Panic syndrome | 45.3 | 56.0 | 49.5 |
| GAD | 26.6 | 29.1 | 27.6 |
| Somatoform disorder | 25.1 | 23.5 | 24.6 |
| Alcohol abuse | 43.8 | 34.6 | 41.1 |

*Note.* PCL-5 = PTSD Checklist Version 5; PHQ = Patient Health Questionnaire; GAD = Generalized Anxiety Disorder.

CAPS-5), the PCL-5 results were interpreted without knowledge of participants' CAPS-5 results.

The Psychopathic Personality Inventory-Short Version (PPI-SV; Lilienfeld & Andrews, 1996) is a 56-item inventory designed to assess the major personality traits of psychopathy in noncriminal populations. The PPI-SV is based directly on 187-item PPI; PPI scores have shown good reliability and usefulness as a self-report measure assessing psychopathic personality (Lilienfeld & Andrews, 1996). Both the PPI and the PPI-SV consist of eight subscales: (a) Machiavellian Egocentricity assesses ruthlessness and a willingness to manipulate others, (b) Social Potency assesses charm and interpersonal dominance, (c) Coldheartedness assesses callousness and an absence of guilt, (d) Carefree Nonplanfulness assesses a failure to plan behavior and inhibit maladaptive impulses, (e) Fearlessness assesses a propensity for risk taking behavior, (f) Blame Externalization assesses externalizing misbehavior, (g) Impulsive Nonconformity assesses a lack of concern about social traditions, and (h) Stress Immunity assesses the absence of emotional reactions to potentially anxiety-provoking events. For the full sample, Cronbach's $\alpha$ for PPI-SV scores was .81. In the current study, the total score of the PPI-SV was used to investigate the discriminant validity of the PCL-5.

The Patient Health Questionnaire (PHQ; Spitzer, Kroenke, & Williams, 1999) is a self-report version of the PRIME-MD. The PHQ is a 58-item questionnaire, which assesses eight somatic diagnoses divided into threshold and subthreshold disorders. PHQ scores have demonstrated good psychometric properties (Spitzer et al., 1999). In this study, we examined five of the diagnoses assessed by the PHQ: panic, generalized anxiety, depression, somatoform disorder, and alcohol abuse. Scores on the panic, generalized anxiety, depression, and somatoform disorder scales were used to examine convergent validity and scores on the alcohol abuse scale were used to examine discriminant validity. For the full sample, Cronbach's $\alpha$ for these five scale scores was .85, .85, .91, .82, and .84, respectively.

We used the CAPS-5 (Weathers, Blake, et al., 2013) as the gold standard assessment of *DSM–5* PTSD symptoms. The CAPS-5 was designed to ensure correspondence with *DSM–5*, maximize backward compatibility with the *DSM–IV* version of the CAPS (the CAPS-IV), and streamline administration and scoring. The CAPS-5 was only administered to Sample 2. The CAPS-5 was administered by doctoral-level clinicians who received initial training from the researcher who developed the instrument and who participated in regular calibration meetings thereafter. Using the *DSM–5* algorithm (with CAPS-5 severity scores of 2 or greater for each item to be considered a symptom) indicated that 56.4% of Sample 2 met criteria for PTSD. Interrater reliability, which was calculated on 10% of the sample, was excellent ($\kappa$ = 1.00). As already discussed, interviewers who administered and scored the CAPS-5 were blind to participants' results on the PCL-5. Further, as suggested by the QUADAS-2 guidelines (Whiting et al., 2012), the CAPS-5 and PCL-5 were administered at the same visit to ensure that both instruments referenced the same time period.

## Procedure

**Sample 1.** Participants in Sample 1 were recruited through posted announcements and advertisements at VA medical centers and community-based outpatient clinics within the two targeted VA Healthcare Systems. Institutional review board (IRB) approval at both VA Healthcare Systems was secured. Eligible participants were consented by study staff and then provided information about their demographics and completed a battery of self-report questionnaires. Questionnaires were administered in the order they are presented in the Measures section. After their participation in the study, participants were compensated monetarily. Although data from participants in this sample were not included in the signal detection analyses and, therefore, not subject to the QUADAS-2 guidelines (Whiting et al., 2012), we nonetheless did our best to follow the recommendations in participant selection to reduce bias. As such, participants were recruited on a consecutive basis, without a case-control design, and no inappropriate exclusions (e.g., patients difficult to diagnose) were made.

**Sample 2.** Participants in Sample 2 were recruited at a VA Healthcare System. All participants were listed in a large database of veterans who had previously consented to be contacted regarding research participation, either after a clinical evaluation for mental health services or through recruitment efforts by prior researchers. IRB approval was secured. Eligible participants were consented by study staff. After being consented, participants provided information about their demographics and completed a battery of self-report questionnaires. Questionnaires were presented in the same order as they were for Sample 1. After completing the questionnaires, participants were assessed with a clinical interview. Questionnaires were always administered before the interview to avoid contamination. After participation, participants were compensated monetarily. Data from these participants were used in signal detection analyses; therefore, we made every effort to conduct participant selection in a manner consistent with QUADAS-2 recommendations (Whiting et al., 2012; see Table 1).

## Data Analysis

All analyses were conducted using Mplus 7.0 (Muthén & Muthén, 1998–2012). Missing data in all analyses was assumed to be missing at random and accommodated using direct maximum likelihood estimation procedures, which provide accurate parameter estimates and *SE*s in the presence of missing data (Enders, 2010). We began by examining descriptive statistics and the distributional properties of the individual PCL-5 items, PCL-5 symptom cluster totals, and the PCL-5 total score. Demographic effects (age and gender) were examined for the PCL-5 symptom cluster scores and the PCL-5 total score by calculating effect sizes with 95% confidence intervals (CIs). Next, we calculated test–retest reliability for PCL-5 scores.

We also examined convergent and discriminant validity by calculating the correlations between the PCL-5 total score and scores from the measures previously described. After this, we conducted a series of CFA models to determine the latent structure that best fit PTSD symptoms as measured by the PCL-5. Model fit in the CFA analyses was evaluated using standard fit indices: the root mean-square error of approximation (RMSEA; Steiger, 1990) and its 90% CI, the Tucker–Lewis index (TLI; Tucker & Lewis, 1973), the comparative fit index (CFI; Bentler, 1990), and the standardized root-mean-square residual (SRMR; Joreskog & Sorbom, 1996). Based on Hu and Bentler's (1998, 1999) recommendations, CFI and TLI $\geq$ .95, RMSEA $\leq$ .06, and SRMR $\leq$ .08 were interpreted to indicate an excellent fit. The Bayesian information criterion (BIC; Schwarz, 1978) and Akaike information criterion (AIC, Akaike, 1987) were used to compare models, with lower values preferred.

Last, signal detection analyses (Kraemer, 1992) were conducted to examine the diagnostic utility of PCL-5 scores for predicting PTSD diagnostic status on the CAPS-5. We created a dichotomous (present or absent) CAPS-5 diagnostic variable by considering each CAPS-5 symptom item rated as 2 = Moderate/threshold or higher as a symptom endorsed, and then following the *DSM–5* diagnostic rule for symptom criteria (i.e., at least 1 B, 1 C, 2 D, and 2 E symptoms endorsed), duration (Criterion F), and distress or impairment (Criterion G). Two PCL-5 variables were evaluated against the CAPS-5 diagnosis. The first was a dichotomous diagnostic variable, created by considering each PCL-5 item rated as 2 = Moderately or higher as a symptom endorsed, and then following the *DSM–5* diagnostic rule for symptom criteria. The second was the total PCL-5 severity score, created by summing all 20 items. To provide a context for interpreting the diagnostic utility of the PCL-5, five other variables were evaluated as predictors of CAPS-5 diagnosis: total PCL-C severity score and the PHQ depression, panic, generalized anxiety disorder, and somatoform scale scores.

To increase statistical power, we combined Sample 1 and Sample 2 for all analyses ($n$ = 468) except test–retest and signal detection analyses. For the test–retest analysis, a subset of participants from Sample 1 returned to the testing site 4 weeks after their initial visit to complete the entire survey packet a second time. One hundred participants were asked to return; of those, one person did not complete the PCL-5 during the second visit.

For the signal detection analysis, we examined a subset of participants from Sample 2 ($n$ = 104). Thirty-six participants from the original sample were not included in these analyses because the index event they identified on the CAPS-5 was different from the index event they identified on the PCL-5. The decision was made to exclude these participants from signal detection analyses because we were concerned that if they were included, differences identified between the CAPS-5 and the PCL-5 might be attributable to unique responses to the index event being referenced, rather than to variance between the measures themselves.

QUADAS-2 guidelines suggest that for the results of signal detection analyses to be generalizable, included participants should match the target population on diagnostic severity, demographic features, and presence of differential diagnosis or comorbid conditions (see Table 1). To determine whether our sample was generalizable, we examined the characteristics of our sample in comparison to those of the VA user population. The included participants ($n$ = 104) varied somewhat from average VA users (National Center for Veteran Analyses and Statistics, 2014) on demographic characteristics. For example, whereas only 6.5% of VA users are women, 11.8% of our sample was women. Further, women in our sample tended to be somewhat older and less racially diverse than female VA users. Whereas female VA users are a median age of 45.0 years old and 64.6% identify as White, women in our sample had a median age of 52.5 years and 72.7% identified as White. In contrast, men in our sample tended to be

somewhat younger and more racially diverse than male VA users. Whereas male VA users are a median age of 64 years old and 80.8% identify as White, male users in our sample were a median age of 55.0 years old and 71.1% identified as White.

Comparing the comorbidity of our sample to the population of VA users was a more challenging endeavor, because whereas we relied on interview and self-report measures, reports of mental health conditions across VA users are generally based on International Classification of Diseases (ICD-9-CM) diagnosis codes (e.g., Frayne et al., 2014), which can be given based on interview data, self-report data, or clinical judgment. Therefore, it is difficult if not impossible to know how our rates compare with the population of VA users. However, indicators suggest that a higher percentage of our sample met criteria for PTSD and other comorbid conditions than would the general population of VA users (see Table 2). This is expected considering that the participants in our study were drawn from a database comprised of veterans who had previously participated in a clinical evaluation for mental health services.

To reduce the risk of bias, QUADAS-2 guidelines also state that all participants should be used in analyses (see Table 1). As described above, 36 participants whose traumas were not matched on the CAPS-5 and the PCL-5 were excluded from signal detection analyses. Excluded participants did not differ from included participants on gender ($\chi^2(1, N = 138) = 0.32$; $p = .57$), age ($t(129) = 0.37$; $p = .71$), or race ($F(1, 135) = 0.73$; $p = .40$). Further, the two groups did not differ on either CAPS-5 PTSD diagnosis ($\chi^2(1, N = 140) = 0.82$; $p = .37$) or CAPS-5 PTSD symptom severity ($t(138) = 0.05$; $p = .96$). Specifically, whereas 58.7% of the subsample met diagnostic criteria for PTSD, 50.0% of the remaining 36 participants met criteria for PTSD. Similarly, whereas the mean CAPS-5 PTSD severity score for the subsample was 27.81 ($SD = 13.89$), the mean severity score for the remaining participants was 27.94 ($SD = 14.75$).

## Results

The mean total PCL-5 score was 36.97 ($SD = 21.16$, range = 0 to 80). Descriptive analyses for responses to individual PCL-5 items are presented in Table 3. Results indicated that there were gender differences, with women having significantly greater PCL-5 total scores, cluster B scores, cluster C scores, and cluster D scores than men (see Table 4). There were also significant age effects, such that older adults had significantly lower PCL-5 total scores, cluster B scores, cluster D, and cluster E scores (see Table 4). Cronbach's $\alpha$ for the 20 PCL-5 items was .96, indicating excellent internal consistency.

### Test–Retest Reliability

Test–retest analyses were conducted on a subsample from Sample 1 ($n = 99$). Participants in the subsample completed their second PCL-5, on average, 31.02 days ($SD = 4.17$ days, range: 22–48 days) after completing their first PCL-5. The test–retest correlation for the PCL-5 total score was $r = .84$. Because not all of the participants in the subsample completed their second PCL-5 within the recommended 1-month time frame (McDonald, Brown, Benesek, & Calhoun, 2015), we also examined test–retest reliability for the participants who did complete their second PCL-5 within this allotted period ($n = 51$) and those who did not separately. Participants who did complete their second PCL-5 within

Table 3
*Item-Level Descriptive Statistics for the PCL-5*

| PCL-5 item | Item description | *M* | *SD* | Variance | Skew | Kurtosis | Range |
|---|---|---|---|---|---|---|---|
| 1 (B1) | Memories | 2.08 | 1.29 | 1.67 | −.11 | −1.08 | 0–4 |
| 2 (B2) | Dreams | 1.69 | 1.40 | 1.96 | .22 | −1.30 | 0–4 |
| 3 (B3) | Flashbacks | 1.48 | 1.37 | 1.89 | .50 | −.98 | 0–4 |
| 4 (B4) | Cued distress | 2.18 | 1.38 | 1.90 | −.17 | −1.23 | 0–4 |
| 5 (B5) | Cued physical reactions | 1.85 | 1.37 | 1.88 | .05 | −1.22 | 0–4 |
| 6 (C1) | Avoiding internal reminders | 2.03 | 1.34 | 1.81 | −.14 | −1.20 | 0–4 |
| 7 (C2) | Avoiding external reminders | 2.03 | 1.42 | 2.01 | −.08 | −1.31 | 0–4 |
| 8 (D1) | Dissociative amnesia | 1.30 | 1.43 | 2.03 | .67 | −.96 | 0–4 |
| 9 (D2) | Negative beliefs | 1.66 | 1.51 | 2.29 | .28 | −1.41 | 0–4 |
| 10 (D3) | Blame | 1.81 | 1.52 | 2.31 | .12 | −1.46 | 0–4 |
| 11 (D4) | Negative feelings | 2.10 | 1.49 | 2.22 | −.16 | −1.40 | 0–4 |
| 12 (D5) | Loss of interest | 1.87 | 1.39 | 1.94 | .08 | −1.29 | 0–4 |
| 13 (D6) | Detachment or estrangement | 2.02 | 1.43 | 2.06 | −.05 | −1.36 | 0–4 |
| 14 (D7) | Numbing | 1.79 | 1.45 | 2.10 | .12 | −1.37 | 0–4 |
| 15 (E1) | Irritability or aggressive behavior | 1.63 | 1.38 | 1.91 | .32 | −1.16 | 0–4 |
| 16 (E2) | Reckless behavior | 1.14 | 1.31 | 1.71 | .79 | −.68 | 0–4 |
| 17 (E3) | Hypervigilance | 2.10 | 1.47 | 2.16 | −.14 | −1.39 | 0–4 |
| 18 (E4) | Startle | 1.84 | 1.45 | 2.10 | .07 | −1.40 | 0–4 |
| 19 (E5) | Concentration | 1.96 | 1.41 | 1.99 | −.02 | −1.29 | 0–4 |
| 20 (E6) | Sleep | 2.42 | 1.49 | 2.22 | −.44 | −1.26 | 0–4 |
| Cluster B | | 9.28 | 5.87 | 34.47 | .05 | −1.02 | 0–20 |
| Cluster C | | 4.06 | 2.60 | 6.76 | −.13 | −1.16 | 0–8 |
| Cluster D | | 12.54 | 8.15 | 66.46 | .07 | −1.11 | 0–28 |
| Cluster E | | 11.09 | 6.75 | 45.53 | −.04 | −1.09 | 0–24 |
| Total score | | 36.97 | 21.16 | 447.96 | −.05 | −1.02 | 0–80 |

*Note.* $N = 468$. PCL-5 = PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*.

Table 4
*Group Differences on PCL-5 Scores*

| | Cluster B | Cluster C | Cluster D | Cluster E | Total score |
|---|---|---|---|---|---|
| Gender | | | | | |
| Men (*M*, *SD*) | 8.94 (5.86) | 3.95 (2.61) | 12.10 (8.04) | 10.87 (6.72) | 35.72 (21.06) |
| Women (*M*, *SD*) | 11.27 (5.52) | 4.75 (2.51) | 14.45 (8.90) | 12.04 (6.99) | 42.25 (21.54) |
| Cohen's *d* | .40 | .32 | .30 | .19 | .33 |
| 95% CI | [.12, .68]* | [.03, .60]* | [.01, .58]* | [−.09, .48] | [.04, .61]* |
| Age | | | | | |
| *r*[a] | −.10 | −.07 | −.13 | −.18 | −.15 |
| 95% CI | [−.01, −.19]* | [.02, −.17] | [−.05, −.22]* | [−.09, −.27]* | [−.05, −.24]* |

*Note.* CI = confidence interval; PCL-5 = PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition.*
[a] Positive correlations indicate as age increases, symptoms increase; negative correlations indicate that as age increases, symptoms decrease.
* $p < .05$.

the 30 day window did so, on average, 28.02 days (*SD* = 1.12, range: 22–30 days) after completing their first PCL-5. The test–retest correlation for this group was $r = .86$. Participants who did not complete their second PCL-5 within 30 days of their first administration did so, on average, 34.28 days (*SD* = 3.82, range: 31–48 days) after their first PCL-5, and the test–retest correlation was $r = .82$.

## Convergent and Discriminant Validity

Associations between PCL-5 scores and scores on other measures are reported in Table 5. Consistent with hypotheses, PCL-5 scores demonstrated excellent convergent validity with PCL-C scores as well as with scores on the PHQ depression and generalized anxiety disorder scales. In addition, PCL-5 scores demonstrated robust positive correlations with scores on measures of panic, somatization, disability, and functional impairment. PCL-5 scores demonstrated weaker correlations with scores on measures of alcohol abuse and psychopathy. PCL-5 scores and PCL-C scores displayed almost identical correlations with scores on the measures included.

## Latent Structure of PCL-5 PTSD Symptoms

We next examined a series of eight CFA models to identify the latent structure that best fit PTSD symptoms as measured by the PCL-5. The eight models examined included a unitary PTSD factor model, the *DSM–5* implied model, the *DSM–IV* implied model, a dysphoria model based on *DSM–IV* findings by Simms, Watson, and Doebbelling (2002), a dysphoric arousal model based on *DSM–IV* findings by Elhai et al. (2011), a six-factor model that built on the dysphoria model by including an anhedonia factor (Liu et al., 2014), a second six-factor model that included an externalizing behavior factor (Tsai et al., 2015), and a seven-factor hybrid model that combined the work of Lui et al. and Tsai et al. (Armour et al., 2015). The item mapping for the 20 PCL-5 items for each of these eight models is presented in Table 6 and the model fit for each of these eight models is reported in Table 7. Although the *DSM–5* model was adequate to excellent in terms of fit, the six- (particularly anhedonia) and seven-factor hybrid models provided the best fit. The *DSM–IV* and unitary PTSD factor models demonstrated the worst fit.

## Signal Detection Analyses

Table 8 presents the results of the diagnostic utility analysis, which were examined within a subset of Sample 2 ($n = 104$). Following Kraemer's (1992) guidelines, for each variable evaluated, Table 8 includes (a) the optimally efficient cutoff score (except for the PCL-5 diagnostic variable); (b) measures of test performance, including sensitivity, specificity, efficiency, and pos-

Table 5
*PCL-5 Scores Convergent and Discriminant Validity Correlations*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. PCL-5 | 1.00 | | | | | | | | | |
| 2. PCL-C | .87 | 1.00 | | | | | | | | |
| 3. PHQ-somatoform | .53 | .53 | 1.00 | | | | | | | |
| 4. PHQ-depression | .74 | .74 | .60 | 1.00 | | | | | | |
| 5. PHQ-panic | .50 | .48 | .47 | .44 | 1.00 | | | | | |
| 6. PHQ-GAD | .67 | .67 | .58 | .74 | .57 | 1.00 | | | | |
| 7. PHQ-alcohol abuse | .14 | .11 | .10 | .15 | .16 | .09 | 1.00 | | | |
| 8. PPI | .08 | .04 | .00 | .05 | −.02 | .01 | .10 | 1.00 | | |
| 9. IPF | .59 | .58 | .41 | .65 | .40 | .50 | .15 | .04 | 1.00 | |
| 10. WHODAS 2.0 | .68 | .69 | .58 | .73 | .42 | .62 | .10 | −.02 | .67 | 1.00 |

*Note.* PCL-5 = PTSD Checklist for *DSM-5*; PCL-C = PTSD Checklist for *DSM-IV*, Civilian Version; PHQ = Patient Health Questionnaire; GAD = Generalized Anxiety Disorder; PPI = Psychopathic Personality Inventory; IPF = Inventory of Psychosocial Functioning; WHODAS 2.0 = World Health Organization Disability Assessment Schedule II.

Table 6
*Item Mapping for PCL-5 Confirmatory Factor Analytic Models*

| PCL-5 Item | Item description | Model | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 PTSD factor | *DSM-5* | Externalizing behaviors | Anhedonia | Hybrid | *DSM-IV* | *DSM-IV* dysphoria | *DSM-IV* dysphoric arousal |
| 1 (B1) | Memories | P | R | R | R | R | R | I | R |
| 2 (B2) | Dreams | P | R | R | R | R | R | I | R |
| 3 (B3) | Flashbacks | P | R | R | R | R | R | I | R |
| 4 (B4) | Cued distress | P | R | R | R | R | R | I | R |
| 5 (B5) | Cued physical reactions | P | R | R | R | R | R | I | R |
| 6 (C1) | Avoiding internal reminders | P | A | A | A | A | A/N | A | A |
| 7 (C2) | Avoiding external reminders | P | A | A | A | A | A/N | A | A |
| 8 (D1) | Dissociative amnesia | P | NA | NA | NA | N | A/N | D | N |
| 9 (D2) | Negative beliefs | P | NA | NA | NA | N | A/N | D | N |
| 10 (D3) | Blame | P | NA | NA | NA | N | A/N | D | N |
| 11 (D4) | Negative feelings | P | NA | NA | NA | N | A/N | D | N |
| 12 (D5) | Loss of interest | P | NA | NA | AN | AN | A/N | D | N |
| 13 (D6) | Detachment or estrangement | P | NA | NA | AN | AN | A/N | D | N |
| 14 (D7) | Numbing | P | NA | NA | AN | AN | A/N | D | N |
| 15 (E1) | Irritability or aggressive behavior | P | H | EB | DA | EB | H | D | DA |
| 16 (E2) | Reckless behavior | P | H | EB | DA | EB | H | D | DA |
| 17 (E3) | Hypervigilance | P | H | AA | AA | AA | H | H | AA |
| 18 (E4) | Startle | P | H | AA | AA | AA | H | H | AA |
| 19 (E5) | Concentration | P | H | DA | DA | DA | H | D | DA |
| 20 (E6) | Sleep | P | H | DA | DA | DA | H | D | DA |

*Note.* *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*; *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition*; PCL-5 = PTSD Checklist for *DSM-5*; P = PTSD; R = Re-experiencing cluster; A = Avoidance cluster; NA = Negative Alterations in Cognitions and Mood cluster; H = Hyperarousal cluster; A/N = Avoidance/Numbing cluster; I = Intrusion cluster; N = Emotional Numbing cluster; D = Dysphoria; DA = Dysphoric Arousall; AA = Anxious Arousal; AN = Anhedonia; N = Negative Affect.

itive and negative predictive values; and (c) measures of test quality, including κ coefficients representing the quality of specificity [κ(0)], efficiency [κ(.5)], and sensitivity [κ(1)]. Given the emphasis on differential diagnosis, the quality of efficiency [κ(.5) or Cohen's κ] was the key index of diagnostic utility.

PCL-5 total scores had the highest quality of efficiency; optimally efficient PCL-5 scores were 31 to 33, which had identical test performance and quality, including a κ(.5) of .58. PCL-5 diagnosis scores was next-best, with a κ(.5) of .53, followed by PCL-C total severity scores, with a score of 46 and κ(.5) of .50. The PHQ variables had substantially lower diagnostic utility. For PHQ-generalized anxiety disorder scores the optimally efficient score was 7, with a κ(.5) of .39; followed by PHQ-depression scores, with a score of 6 and a κ(.5) of .38; PHQ-panic scores, with a score of 7 and a κ(.5) of .27; and PHQ-somatoform scores, with a score of 9 and a κ(.5) of .24.

## Discussion

Our findings indicate that the PCL-5 is psychometrically sound and, with the establishment of a valid cutoff score, well-suited for assessing PTSD diagnostic status and symptom severity in veter-

Table 7
*PCL-5 Confirmatory Factor Analysis Model Results*

| Model | $\chi^2$ (*df*) | RMSEA | RMSEA CI | CFI | TLI | SRMR | AIC | BIC |
|---|---|---|---|---|---|---|---|---|
| *DSM-5* | 648.00 (164) | .079 | .073, .086 | .906 | .891 | .047 | 26376.72 | 26650.52 |
| Externalizing behaviors | 569.26 (155) | .076 | .069, .062 | .920 | .902 | .043 | 26284.36 | 26595.49 |
| Anhedonia | 371.38 (155) | .055 | .048, .062 | .958 | .949 | .035 | 26018.93 | 26330.06 |
| 7 factor hybrid | 346.80 (149) | .053 | .046, .061 | .962 | .951 | .033 | 25996.91 | 26332.94 |
| *DSM-IV* | 827.52 (167) | .092 | .086, .098 | .872 | .855 | .052 | 26620.33 | 26881.69 |
| *DSM-IV* dysphoria | 644.48 (164) | .079 | .073, .086 | .907 | .892 | .045 | 26366.87 | 26640.67 |
| *DSM-IV* dysphoric arousal | 591.38 (160) | .076 | .069, .082 | .917 | .901 | .044 | 26305.46 | 26595.85 |
| 1 PTSD factor | 1129.60 (170) | .110 | .104, .116 | .814 | .792 | .061 | 27033.42 | 27282.33 |

*Note.* $n = 468$ for all models. *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*; *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition*; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis Index; SRMR = standardized root mean square residual; AIC = Akaike information criteria; BIC = Bayesian information criteria.

Table 8
*Diagnostic Utility of Several Self-Report Measures for Predicting a CAPS-5 PTSD Diagnosis*[a]

| Measure | Cutoff score | Level | Sensitivity | Specificity | PPV | NPV | Eff | κ(0) | κ(.5) | κ(1) |
|---|---|---|---|---|---|---|---|---|---|---|
| PCL-5 total severity | 31–33 | .65 | .88 | .69 | .81 | .78 | .80 | .53 | .58 | .64 |
| PCL-5 diagnostic variable | N/A | .61 | .81 | .71 | .82 | .71 | .78 | .53 | .53 | .53 |
| PCL-C total severity | 46 | .67 | .86 | .62 | .78 | .74 | .77 | .44 | .50 | .57 |
| PHQ-Depression | 6 | .77 | .90 | .45 | .72 | .75 | .73 | .28 | .38 | .59 |
| PHQ-Panic | 7 | .43 | .54 | .75 | .77 | .51 | .62 | .41 | .27 | .20 |
| PHQ-GAD | 7 | .61 | .76 | .62 | .76 | .62 | .71 | .39 | .39 | .39 |
| PHQ-Somatoform | 9 | .39 | .49 | .78 | .78 | .49 | .60 | .42 | .24 | .17 |

*Note*. PCL-5 = PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition*; PCL-C = PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition*, Civilian Version; PHQ = Patient Health Questionnaire; GAD = Generalized Anxiety Disorder; Level = level of test; PPV = positive predictive value; NPV = negative predictive value; Eff = efficiency; κ(0) = quality of specificity; κ(.5) = quality of efficiency; κ(1) = quality of sensitivity.
[a] CAPS-5 PTSD base rate = 61%.

ans. Consistent with our hypotheses, PCL-5 scores had excellent internal consistency and demonstrated a high level of stability across a 1-month period. PCL-5 scores also demonstrated conceptually meaningful patterns of convergent and discriminant correlations with measures of other constructs. As expected, PCL-5 scores were most strongly correlated with PHQ depression and generalized anxiety scale scores and demonstrated robust correlations with impairment scores, as well as with PHQ panic disorder and somatoform scale scores. The latter is unsurprising because somatization is often comorbid with PTSD (Leiknes, Finset, Moum, & Sandanger, 2007). PCL-5 scores demonstrated the weakest associations with alcohol abuse and psychopathy scale scores.

Similar to results from other studies (e.g., Armour et al., 2015; Liu et al., 2014), including the *DSM–5* PTSD field trial (Miller et al., 2013), we found that the four-factor *DSM–5* model fit the data adequately, but not optimally. Instead, we found that the PCL-5 data were best explained by the six- (particularly anhedonia) and seven-factor models. The emergence of an anhedonia factor might interfere with the PCL-5s ability to discriminate between PTSD and depression; future research should examine this possibility. Our findings add to the literature in that they corroborate those from other studies while using a more ecologically valid method of assessment; past studies have used an online administration methodology, which is not the typical manner in which the PCL-5 is administered, especially in clinical contexts.

Taken together, the body of PTSD CFA results to date suggests that the *DSM–5* PTSD clusters may require reconfiguration and/or that some of the currently included symptoms, such as psychogenic amnesia, which has repeatedly demonstrated lower factor loadings than the other PTSD symptoms (e.g., Armour et al., 2015; Keane et al., 2014; Palmieri, Weathers, Difede, & King, 2007), may need to be removed. Further strengthening this possibility is the fact that the *DSM–5* PTSD committee made the decision to create four *DSM–5* symptom clusters after reviewing CFA findings from the old *DSM–IV* PTSD diagnostic criteria, rather than using results based on the current *DSM–5* criteria. Friedman and other members of the *DSM–5* PTSD committee (Friedman, Resick, Bryant, & Brewin, 2011) stated that the *DSM–5* PTSD criteria should be tested and if these examinations reveal that the current criteria need revisions or refinements, then changes should be made. However, because all *DSM–5* PTSD CFA work has been conducted exclusively with the PCL-5 and past research has shown that the PTSD factor structure may vary as a function of response format and modality (Elhai, Palmieri, Biehn, Frueh, & Magruder, 2010; Palmieri et al., 2007), it is still premature to make any such changes. Future PTSD CFA research should incorporate data collected via different methods (e.g., self-report, structured interview) to account for the influence of method variance on CFA findings. If, after doing so, the accumulated body of research still fails to demonstrate that the *DSM–5* model possesses excellent fit, then revisions to the PTSD diagnostic criteria should be strongly considered.

Signal detection analyses revealed that PCL-5 scores of 31 to 33 had the highest quality of efficiency for predicting a CAPS-5 diagnosis based on *DSM–5* PTSD Criteria A-G. The associated κ(.5) of .58 is consistent with previous diagnostic utility research on *DSM–IV* versions of the PCL (McDonald & Calhoun, 2010). This is higher than the κ(.5) of .53 obtained for PCL-C scores in the present study, indicating a more specific association between PCL-5 and CAPS-5 scores, which was expected given that both are based on *DSM–5* criteria. In turn, both of these values of κ(.5) are substantially higher than those found for the scores on the PHQ scales evaluated, providing evidence of discriminant validity. Finally, these results suggest that PCL-5 scores in the 31–33 range roughly correspond to PCL-C scores in the 46–47 range. This is consistent with analyses that have calibrated the PCL-5 against the PCL-C (Hoge et al., 2014).

In an effort to minimize bias and increase applicability of the signal detection analyses, every effort was made to remain consistent with the QUADAS-2 (Whiting et al., 2012; see Table 1). These guidelines were followed to ensure that our results would not be unduly influenced by bias, and to provide transparency to investigative process. By following these guidelines, in addition to reducing bias and increasing applicability, we allow future reviews of diagnostic accuracy studies to easily assess the study quality.

We were successful in conforming to the QUADAS-2 in all but two ways. First, by not including all assessed participants in the signal detection analyses, we risked the introduction of bias. However, because these participants were mismatched on their trauma report, inclusion of these participants would have potentially introduced more bias. Further, analyses indicated that participants that were included and those that were excluded did not differ significantly on demographic variables or on PTSD diagnostic

status or severity. Second, our sample varied somewhat from the population of VA users, particularly in terms of mental health comorbidities, which may reduce generalizability. Despite these potential limitations, our overall conformity to the QUADAS-2 ensures that our study is as free of bias and as applicable as possible.

Although results from the present research are promising, several limitations should be considered. First, our sample included only veterans and was predominantly White and male, which may potentially limit generalizability to nonveterans, women, and ethnic or racial minority groups. Furthermore, differences between our sample and the VA user population may limit generalizability to other veteran samples. Cross-validation of our findings in a range of samples would be beneficial. Second, our signal detection analyses may have been underpowered. Specifically, to have .80 power to detect a κ of .60, assuming prevalence of PTSD is 10% with a null value of .40, we would need over 400 participants (Sim & Wright, 2005). However, although our sample size is smaller, it is consistent with other PTSD diagnostic utility studies that used a clinical interview as a reference standard (e.g., McDonald & Calhoun, 2010). Therefore, our sample size should not necessarily detract from our findings.

Despite these limitations, our results provide evidence that the PCL-5 has strong psychometric properties among veterans. In addition, by establishing a valid cutoff score for veterans, the PCL-5 can now be used to identify veterans with probable PTSD.

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(*Appendix follows*)

## Appendix

## PCL-5

**Instructions: This questionnaire asks about problems you may have had after a very stressful experience involving *actual or threatened death, serious injury, or sexual violence*. It could be something that happened to you directly, something you witnessed, or something you learned happened to a close family member or close friend. Some examples are a *serious accident; fire; disaster such as a hurricane, tornado, or earthquake; physical or sexual attack or abuse; war; homicide; or suicide.***

**First, please answer a few questions about your *worst event*, which for this questionnaire means the event that currently bothers you the most. This could be one of the examples above or some other very stressful experience. Also, it could be a single event (for example, a car crash) or multiple similar events (for example, multiple stressful events in a war-zone or repeated sexual abuse).**

***Briefly identify the worst event (if you feel comfortable doing so):*** _____

***How long ago did it happen?*** _____

***Did it involve actual or threatened death, serious injury, or sexual violence?***

_____Yes
_____No

***How did you experience it?***

_____ It happened to me directly
_____ I witnessed it
_____ I learned about it happening to a close family member or close friend
_____ I was repeatedly exposed to details about it as part of my job (for example, paramedic, police, military, or other first responder)
_____ Other, please describe _____

***If the event involved the death of a close family member or close friend, was it due to some kind of accident or violence, or was it due to natural causes?***

_____Accident or violence
_____Natural causes
_____Not applicable (the event did not involve the death of a close family member or close friend)

**Second, keeping this worst event in mind, read each of the problems on the next page and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month**.

| *In the past month, how much were you bothered by:* | *Not at all* | *A little bit* | *Moderately* | *Quite a bit* | *Extremely* |
|---|---|---|---|---|---|
| **1. Repeated, disturbing, and unwanted memories of the stressful experience?** | **0** | **1** | **2** | **3** | **4** |
| **2. Repeated, disturbing dreams of the stressful experience?** | **0** | **1** | **2** | **3** | **4** |
| **3. Suddenly feeling or acting as if the stressful experience were actually happening again *(as if you were actually back there reliving it)*?** | **0** | **1** | **2** | **3** | **4** |
| **4. Feeling very upset when something reminded you of the stressful experience?** | **0** | **1** | **2** | **3** | **4** |
| **5. Having strong physical reactions when something reminded you of the stressful experience *(for example, heart pounding, trouble breathing, sweating)*?** | **0** | **1** | **2** | **3** | **4** |
| **6. Avoiding memories, thoughts, or feelings related to the stressful experience?** | **0** | **1** | **2** | **3** | **4** |
| **7. Avoiding external reminders of the stressful experience *(for example, people, places, conversations, activities, objects, or situations)*?** | **0** | **1** | **2** | **3** | **4** |
| **8. Trouble remembering important parts of the stressful experience?** | **0** | **1** | **2** | **3** | **4** |
| **9. Having strong negative beliefs about yourself, other people, or the world *(for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)*?** | **0** | **1** | **2** | **3** | **4** |
| **10. Blaming yourself or someone else for the stressful experience or what happened after it?** | **0** | **1** | **2** | **3** | **4** |
| **11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?** | **0** | **1** | **2** | **3** | **4** |
| **12. Loss of interest in activities that you used to enjoy?** | **0** | **1** | **2** | **3** | **4** |
| **13. Feeling distant or cut off from other people?** | **0** | **1** | **2** | **3** | **4** |

(*Appendix continues*)

Appendix (*continued*)

| *In the past month, how much were you bothered by:* | *Not at all* | *A little bit* | *Moderately* | *Quite a bit* | *Extremely* |
|---|---|---|---|---|---|
| **14. Trouble experiencing positive feelings *(for example, being unable to feel happiness or have loving feelings for people close to you)*?** | **0** | **1** | **2** | **3** | **4** |
| **15. Irritable behavior, angry outbursts, or acting aggressively?** | **0** | **1** | **2** | **3** | **4** |
| **16. Taking too many risks or doing things that could cause you harm?** | **0** | **1** | **2** | **3** | **4** |
| **17. Being "superalert" or watchful or on guard?** | **0** | **1** | **2** | **3** | **4** |
| **18. Feeling jumpy or easily startled?** | **0** | **1** | **2** | **3** | **4** |
| **19. Having difficulty concentrating?** | **0** | **1** | **2** | **3** | **4** |
| **20. Trouble falling or staying asleep?** | **0** | **1** | **2** | **3** | **4** |

*Note.* PCL-5 (8/14/2013) Weathers, Litz, Keane, Palmieri, Marx, and Schnurr (2013b)–National Center for PTSD.

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## Correction to Bovin et al. (2016)

In the article "Psychometric Properties of the PTSD Checklist for *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (PCL-5) in Veterans" by Michelle J. Bovin, Brian P. Marx, Frank W. Weathers, Matthew W. Gallagher, Paola Rodriguez, Paula P. Schnurr, and Terence M. Keane (*Psychological Assessment*, 2016. Vol. 28, No. 11, pp. 1379–1391. http://dx.doi.org/10.1037/pas0000254), the departments and affiliations were incorrectly listed for authors Michelle J. Bovin, Brian P. Marx, Matthew W. Gallagher, Paola Rodriguez, Paula P. Schnurr, and Terence M. Keane. The first department and affiliation for authors Michelle J. Bovin, Brian P. Marx, Matthew W. Gallagher, Paola Rodriguez, and Terence M. Keane and should have read "National Center for PTSD at VA Boston Healthcare System, Boston, Massachusetts". The first department and affiliation for author Paula P. Schnurr should have read "National Center for PTSD, White River Junction, Vermont."

The online version of this article has been corrected.

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