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BRIEF REPORT

Concordance in PTSD Symptom Change Between DSM-5 Versions of the Clinician-Administered PTSD Scale (CAPS-5) and PTSD Checklist (PCL-5)

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The *Diagnostic and Statistical Manual of Mental Disorders, fifth edition* (*DSM-5*) versions of the Clinician-Administered PTSD Scale (CAPS-5) and PTSD Checklist (PCL-5) are widely used PTSD measures. Researchers and clinicians routinely use both measures in tandem to quantify symptom change, despite substantive instrumentation differences beyond administration modality, and absent a theoretical rationale or differential hypotheses for the two measures. The degree to which these measures provide comparable estimates of symptom change is unknown. This study examined concordance in change between CAPS-5 and PCL-5 scores over time. Participants were male veterans ($N = 198$) randomly assigned to one of two group PTSD treatments. We administered both the CAPS-5 and PCL-5 at baseline, midtreatment, immediately posttreatment, and 3-, 6-, and 12-month posttreatment. Results indicated that CAPS-5 and PCL-5 scores changed over time in a similar manner, as evidenced by generally parallel repeated-measures effect sizes, highly correlated slopes of change ($r = .878$), and similar associations with improvements in measures of depression and psychosocial functioning. However, the two measures did not produce identical estimates of symptom change. Estimates of symptom improvement were somewhat less concordant at posttreatment follow-up assessments; by the 12-month posttreatment assessment, changes in CAPS-5 scores from baseline indicated somewhat greater symptom improvement than changes in PCL-5 scores (CAPS-5 ESsg = −0.67, PCL-5 ESsg = −0.53). Collectively, results indicate that CAPS-5 and PCL-5 scores produce similar but not identical estimates of PTSD symptom change. Thus, although PCL-5 scores closely approximate symptom change estimated by CAPS-5 scores, the two measures are not interchangeable.

Public Significance Statement

We found that the *Diagnostic and Statistical Manual of Mental Disorders, fifth edition* (*DSM-5*) versions of the Clinician-Administered PTSD Scale (CAPS-5) and PTSD Checklist (PCL-5)—a widely used PTSD interview and questionnaire, respectively—produce similar but not identical estimates of PTSD symptom change. Thus, although PCL-5 scores closely approximate symptom change estimated by CAPS-5 scores, the two measures are not interchangeable.

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For access to data and study materials, please contact the first author.

Daniel J. Lee played a lead role in conceptualization, formal analysis, methodology, software, visualization, writing of original draft, and writing of review and editing. Frank W. Weathers played a supporting role in conceptualization, writing of original draft, and writing of review and editing. Johanna Thompson-Hollands played a supporting role in writing of original draft and writing of review and editing. Denise M. Sloan played a lead role in funding acquisition, investigation, and project administration and a supporting role in writing of original draft and writing of review and editing. Brian P. Marx played a supporting role in conceptualization, writing of original draft, and writing of review and editing.

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The *Diagnostic and Statistical Manual of Mental Disorders, fifth edition* (*DSM-5*; American Psychiatric Association [APA], 2013) versions of the Clinician-Administered posttraumatic stress disorder (PTSD) Scale (CAPS-5; Weathers, Blake, et al., 2013) and the PTSD Checklist (PCL-5; Weathers, Litz, et al., 2013) are two of the most widely used PTSD measures. Clinical trials often include both the CAPS-5 (a structured interview) and PCL-5 (a questionnaire; e.g., Peterson et al., 2018; Schnurr et al., 2015). This can be valuable in the context of a multimodal approach—long advocated for in PTSD assessment (e.g., Malloy et al., 1983)—whereby converging data from different measurement modalities are integrated to strengthen conclusions. However, PTSD trials that use both the CAPS-5 and PCL-5 score and interpret them separately, without specifying a theoretical rationale for using both modalities, providing differential hypotheses for the two measures, or resolving the ambiguity when treatment outcome differs by assessment method (e.g., Resick et al., 2015). Currently, the extent to which interview and questionnaire measures provide comparable estimates of PTSD symptom change has not been firmly established, and thus it is unclear if less time-intensive and resource-intensive questionnaires are a reasonable substitute for interviews.

The CAPS-5 and PCL-5 have many characteristics in common, most notably that they assess the same core 20 *DSM-5* PTSD symptoms during the same time period (past month) on the same total scale (0–80). However, they differ in several key respects besides administration modality. First, the response process and rating options vary substantially by measure. On the PCL-5, respondents report the degree to which they have been bothered by each symptom, described in a single-item stem, during the past month on a 5-point scale ranging from 0 = *not at all* to 4 = *extremely*. In contrast, on the CAPS-5, interviewers ask a series of prompts to assess symptom occurrence in the past month, symptom intensity (i.e., the magnitude of a typical symptom episode, rated as *Minimal*, *Clearly Present*, *Pronounced*, or *Extreme*), symptom frequency, and for nonspecific symptoms (e.g., sleep disturbance), whether the symptom is trauma related. Interviewers then integrate this information and follow predetermined scoring rules to identify a symptom severity score ranging from 0 = *absent* to 4 = *extreme/incapacitating*. Thus, PCL-5 scores reflect perceived distress related to each symptom, whereas CAPS-5 scores reflect symptom intensity—the meaning of which varies across symptoms (e.g., degree of distress for nightmares, degree of avoidance for avoidance items, degree of conviction for distorted beliefs)—as well as symptom frequency and trauma relatedness.

Second, the CAPS-5 involves clinical judgment, which researchers and clinicians assume improves assessment validity. Qualified interviewers evaluate and rate responses using their conceptual understanding of the PTSD diagnostic criteria and the intensity rating scale anchors. They can clarify ambiguous responses, redirect respondents to key aspects of a symptom, and utilize exclusion criteria, such as ruling out being knocked unconscious for psychogenic amnesia or blaming a perpetrator for distorted blame.

Finally, the CAPS-5 is far more detailed and takes much longer to complete. Although PCL-5 items are similar to the initial prompt on CAPS-5 items, the CAPS-5 goes well beyond an initial prompt, with multiple additional anchored prompts to ensure respondent comprehension and gather sufficient details about symptom presentation to inform ratings (e.g., duration of sleep onset, number and duration of midsleep awakenings, and total number of hours slept per night for the sleep disturbance item). This difference in respondent burden has important implications for choice of measure in routine clinical care.

CAPS-5 and PCL-5 scores have been shown to be highly correlated when administered in cross-sectional designs (e.g., Geier et al., 2019; Weathers et al., 2018). However, less is known about how comparably they quantify changes in PTSD symptom severity over time. Monson et al. (2008) examined patterns of change in the *DSM-IV* (APA, 1994) versions of the CAPS and PCL. They found moderate-to-strong agreement between interview and questionnaire measure estimates of PTSD symptom change during a large clinical trial among veterans.

Although PTSD interviews are typically preferred in clinical trials because they presumably provide more valid data, it is not feasible to use such measures in some clinical and research contexts. For example, due in large part to time and resource constraints, the Veterans Health Administration (VHA) uses the PCL-5 rather than the CAPS-5 in its measurement-based care initiative (e.g., Oslin et al., 2019). Clinicians working in general mental health and primary care settings typically have neither the time nor requisite training to administer a PTSD interview and therefore must rely on questionnaires to track treatment progress (e.g., Oslin et al., 2019). Epidemiological and large longitudinal cohort studies of PTSD patients who may be receiving mental healthcare services (e.g., Lee et al., 2020) similarly must rely on questionnaires to establish the presence of PTSD symptoms and track their course over time. However, no studies have established the degree to which the PCL-5 may serve as a proxy for the CAPS-5 in tracking PTSD symptom course.

Accordingly, using previously collected data from a randomized controlled trial, we examined the degree to which the CAPS-5 and PCL-5 were concordant in quantifying PTSD symptom severity change over time. Based on cross-sectional findings (e.g., Weathers et al., 2018) and results from *DSM-IV* versions of these measures (Monson et al., 2008), we hypothesized that CAPS-5 and PCL-5 scores would be highly concordant over time. Additionally, we hypothesized that change in the two measures would exhibit similar associations with change in related treatment outcomes including depression and psychosocial functioning.

Method

Participants and Procedure

The primary outcome findings of the clinical trial have been previously reported (Sloan et al., 2018). We recruited 198 male veterans from two VA medical centers in the northeastern region of the United States. Mean age was 55.82 (*SD* = 12.05). Regarding race, 147 (74.24%) identified as White, 33 (16.67%) identified African American/Black, 3 (1.52%) identified as American

Indian/Alaskan Native, and 14 (7.07%) identified as another category; One participant (0.51%) did not report race.

After baseline assessment, we randomized participants to group cognitive–behavioral therapy (GCBT; Beck et al., 2009; $n = 98$) and group present-centered therapy (GPCT; Schnurr et al., 2003; $n = 100$). Both interventions consisted of 14 treatment sessions that occurred over the course of 16 weeks. As reported in the primary outcome article (Sloan et al., 2018), both treatments caused significant, moderate-magnitude decreases in PTSD, depressive, and anxiety symptoms, as well as improvements in functional impairment; treatments did not significantly differ in their impact on symptoms or functioning.

We administered all measures at baseline, midtreatment, immediately posttreatment, and 3-, 6-, and 12-month posttreatment. All diagnostic interviews were administered by advanced clinical psychology doctoral students, postdoctoral fellows, and licensed psychologists who were blinded to treatment condition to which participants were randomized. All interviewers were trained to administer and score CAPS-5 by experts in PTSD assessment. All study procedures were approved by the VA Boston Healthcare System and Providence VA Medical Center institutional review boards. This trial was registered on www.clinicaltrials.gov (NCT01544088) prior to data collection; this specific examination of concordance in change between CAPS-5 and PCL-5 scores was not preregistered.

Measures

As described previously, the CAPS-5 is a structured interview for *DSM-5* PTSD diagnostic status and symptom severity (Weathers, Blake, et al., 2013). Interviewers assess for an index trauma, the intensity and frequency of each of the 20 criteria B–E symptoms during the past month, associated distress and impairment, and related dissociative features. CAPS-5 total scores have evidenced strong test–retest reliability and construct validity among veterans (Weathers et al., 2018). We evaluated interrater reliability for CAPS-5 total severity among a randomly selected 20% of CAPS-5 interviews, finding good reliability (ICC = .80). Internal consistency for CAPS-5 total scores was high at all time points (α range = .81–.90).

The PCL-5 is a 20-item questionnaire for *DSM-5* PTSD (Weathers, Litz, et al., 2013). Respondents rate the degree to which they are bothered by each of the 20 criteria B-E symptoms during the past month on a 5-point scale ranging from 0 = *not at all* to 4 = *extremely*. PCL-5 total scores have evidenced strong test–retest reliability, diagnostic utility, and construct validity among veterans (Bovin et al., 2016). Internal consistency for PCL-5 total scores was high at all time points (α range = .88–.94).

We measured depression symptoms using the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Ball, 1996). The BDI-II is a 21-item questionnaire measure of unipolar depressive symptoms. Respondents rate the degree to which they have been bothered by each symptom on a 4-point scale that varies by symptom. BDI-II scores have evidenced strong test–retest reliability, diagnostic utility, and construct validity, (Beck, Steer, & Ball, 1996; Dozois et al., 1998; Sprinkle et al., 2002). Internal consistency for BDI-II total scores was high at all time points (α range = .93–.95).

We measured psychosocial functioning using the 36-Item Short-Form Health Survey Social Functioning scale (SF36-SF; Ware & Sherbourne, 1992). SF36 scores have been shown to be reliable and valid (McHorney et al., 1993). Internal consistency for SF36-SF total scores was high at all time points (α range = .87–.90).

Data Analysis

We first examined change over time in CAPS-5 and PCL-5 scores by computing standardized repeated-measures effect sizes. Specifically, we used mean scores for each measure to calculate standardized mean gain scores (ESsg; Lipsey & Wilson, 2001). These values are similar to Cohen's *d* corrected for repeated-measures designs. We then used a parallel process growth curve model to estimate the association between change in each measure over time. Finally, we estimated parallel process growth curve models between each measure and change in BDI-II and SF36-SF scores to determine how similarly change in CAPS-5 and PCL-5 scores correspond to change in related domains. In all growth curve models, we estimated change over time using slope factors in which we fixed loading of each construct to zero at baseline and one at the 12-month follow-up assessment; we freely estimated loadings of each measure at the midtreatment, immediately posttreatment, and 3- and 6-month posttreatment assessments.

We evaluated model fit using χ^2, comparative fit index (CFI), Tucker–Lewis index (TLI), and root-mean-square error of approximation (RMSEA) using established guidelines (Brown, 2006; Hu & Bentler, 1999; Kline, 2011). Of the 198 participants randomized, 140 (70.71%) completed an adequate dose of treatment defined as attending at least 10 of the 14 treatment sessions. As reported in the primary outcome article, veterans randomized to the GCBT condition and those recruited from one of the study sites were less likely to receive an adequate treatment dose. We completed follow-up assessments with all participants, regardless of whether or not they dropped out of treatment. Consistent with intent-to-treat principles, we included all randomized participants in analyses. Including all measures, the covariance coverage matrix ranged from 0.642 to 1.000. We handled missing data using full-information maximum-likelihood (FIML) estimation. We conducted all analyses using Mplus Version 7 (Muthén & Muthén, 1998–2017).

Results

In Table 1, we present FIML-estimated *M* and *SD* CAPS-5, PCL-5, BDI-II, and SF36-SF scores at each time point, as well as repeated-measures effect sizes. As reported in the primary outcome article (Sloan et al., 2018), significant linear effects of time in multilevel models indicated that CAPS-5, PCL-5, and BDI-II scores decreased and SF36-SF scores increased between baseline and the 12-month follow-up assessment. We report effect sizes for CAPS-5 and PCL-5 change in Table 1. Effect sizes indicated that the decreases in CAPS-5 and PCL-5 scores from baseline to the 12-month follow-up assessment were of medium magnitude. As shown in Figure 1, effect sizes indicated that changes in CAPS-5 and PCL-5 were generally parallel. Divergence in CAPS-5 and PCL-5 estimated symptom change appeared to increase slightly with greater time since baseline and with greater symptom change. The greatest difference between measures in estimated symptom improvement was at 6-month posttreatment: The effect size for change in CAPS-5 scores indicated a medium-magnitude symptom decrease (ESsg = −.60), whereas the effect size for change in PCL-5 scores indicated a small-magnitude symptom decrease (ESsg = −.40). By

Table 1
Means, SDs, and Standardized Mean Gain Scores for CAPS-5 and PCL-5 Scores by Assessment Point

	CAPS-5		PCL-5		BDI-II		SF36-SF	
Assessment point	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Baseline	39.60	9.63	48.36	12.68	23.88	11.73	41.25	26.40
Midtreatment	38.23	11.47	47.71	13.76	24.96	12.30	41.48	26.53
Posttreatment	34.27	12.45	43.43	14.81	22.38	12.68	46.95	27.92
3-month posttreatment	32.44	13.86	41.51	15.82	22.11	12.64	48.28	27.62
6-month posttreatment	32.34	13.57	42.75	16.21	22.55	12.13	48.09	27.48
12-month posttreatment	31.26	14.00	40.36	17.27	21.28	12.85	50.07	27.53
Change period	*ESsg*	*SEsg*	*ESsg*	*SEsg*				
Baseline—midtreatment	− 0.12	0.06	− 0.05	0.06				
Baseline—posttreatment	− 0.45	0.06	− 0.36	0.06				
Baseline—3-month posttreatment	− 0.57	0.06	− 0.48	0.06				
Baseline—6-month posttreatment	− 0.60	0.06	− 0.40	0.07				
Baseline—12-month posttreatment	− 0.67	0.06	− 0.53	0.07				

Note. BDI-II = Beck Depression Inventory, 2nd edition; CAPS-5 = Clinician-Administered PTSD Scale for *DSM-5*; ESsg = standardized mean gain score; PCL-5 = PTSD Checklist for *DSM-5*; SEsg = standard error of the standardized mean gain score; SF36-SF = 36-Item Short-Form Health Survey, Social Functioning scale.

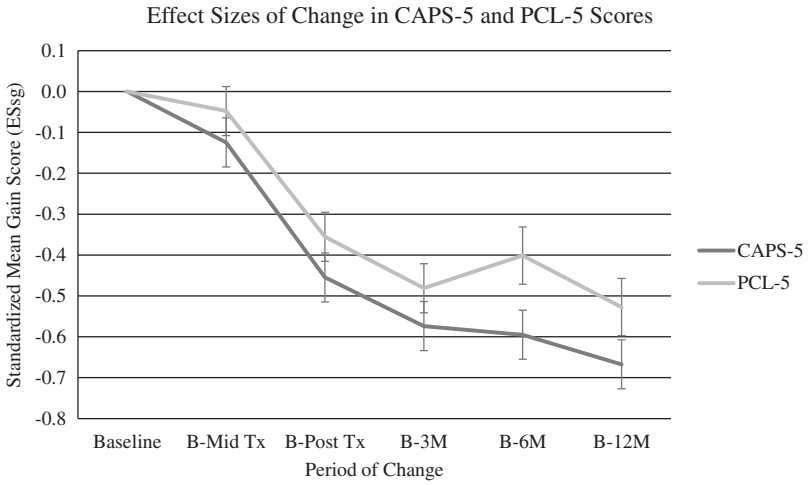
the 12-month posttreatment assessment, effect sizes were less divergent but not identical: The effect size for change in CAPS-5 scores indicated a medium-to-large-magnitude symptom decrease (ESsg = −.67), whereas the effect size for change in PCL-5 scores indicated a medium-magnitude symptom decrease (ESsg = −.53). As visualized in Figure 1, differences in estimated change were significant at the 6- and 12-month posttreatment assessment points.

We present fit statistics for all growth curve models in Table 2 and parameter estimates for all models in Supplemental Tables 1–5. All parallel process growth curve models provided good fit to the data. In the CAPS-5—PCL-5 model, the slopes of the two measures were strongly associated (see Table 3; $r = .878$, $p < .001$) indicating strong concordance in change between measures over time. Parallel process growth curve models indicated that decreases in CAPS-5 scores were strongly associated with decreases in BDI-II scores ($r = .903$, $p < .001$) and increases in SF36-SF scores ($r = -.574$, $p < .001$). Similarly, parallel process growth curve models indicated that decreases in PCL-5 scores were strongly associated with decreases in BDI-II scores ($r = .809$, $p < .001$) and increases in SF36-SF scores ($r = -.660$, $p < .001$).

Discussion

Our results suggest that CAPS-5 and PCL-5 scores change over time in a highly similar manner, as evidenced by generally parallel repeated-measures effect sizes, highly correlated slopes of change, and similar associations with improvements in measures of depression and psychosocial functioning. These results indicate that the PCL-5 is a robust means by which clinicians can quantify PTSD symptom improvement. Although similar the measures did not produce identical estimates of symptom change. Divergence in estimated symptom change increased slightly with greater time

Figure 1
Effect Sizes of Change in CAPS-5 and PCL-5 Scores During and After Treatment



Note. CAPS-5 = Clinician-Administered PTSD Scale for *DSM-5*; PCL-5 = PTSD Checklist for *DSM-5*.

Table 2
Parallel Process Growth Curve Model Fit Statistics

Model	χ^2	*df*	*p*	RMSEA	90% CI	CFI	TLI
CAPS-5—PCL-5	78.099	50	.005	.054	.030–.076	.984	.980
CAPS-5—BDI-II	57.683	50	.212	.028	<.001–.056	.996	.994
CAPS-5—SF36-SF	66.764	50	.057	.041	<.001–.065	.988	.984
PCL-5—BDI-II	87.621	50	.001	.062	.039–.083	.982	.976
PCL-5—SF36-SF	81.513	50	.003	.056	.033–.078	.978	.972

Note. CAPS-5 = Clinician-Administered PTSD Scale for *DSM-5*; CFI = comparative fit index; PCL-5 = PTSD Checklist for *DSM-5*; RMSEA = root-mean-square error of approximation; SF36-SF = 36-Item Short-Form Health Survey, Social Functioning scale; TLI = Tucker–Lewis index; BDI-II = Beck Depression Inventory, 2nd edition.

since baseline and with greater symptom change. Relative to changes in PCL-5 scores, changes in CAPS-5 scores indicated significantly greater symptom improvement 6- and 12-month post-treatment. Collectively, results indicate that CAPS-5 and PCL-5 scores produce similar but not identical estimates of PTSD symptom change.

Table 3
Parallel Process Growth Curve Model Standardized Parameter Estimates

Parameter	CAPS-5 intercept	CAPS-5 slope	PCL-5 intercept
CAPS-5 intercept	—	—	—
CAPS-5 slope	.161	—	—
PCL-5 intercept	.745*	.152	—
PCL-5 slope	.075	.878*	−.016

Parameter	CAPS-5 intercept	CAPS-5 slope	BDI-II intercept
CAPS-5 intercept	—	—	—
CAPS-5 slope	.208	—	—
BDI-II intercept	.669*	.289*	—
BDI-II slope	−.114	.903*	.148

Parameter	CAPS-5 intercept	CAPS-5 slope	SF36-SF intercept
CAPS-5 intercept	—	—	—
CAPS-5 slope	.196	—	—
SF36-SF intercept	−.553*	−.180	—
SF36-SF slope	−.302	−.574*	−.091

Parameter	PCL-5 intercept	PCL-5 slope	BDI-II intercept
PCL-5 intercept	—	—	—
PCL-5 slope	.010	—	—
BDI-II intercept	.687*	.274*	—
BDI-II slope	−.097	.809*	.125

Parameter	PCL-5 intercept	PCL-5 slope	SF36-SF intercept
PCL-5 intercept	—	—	—
PCL-5 slope	.038	—	—
SF36-SF intercept	−.644*	−.054	—
SF36-SF slope	−.117	−.660*	−.087

Note. BDI-II = Beck Depression Inventory, 2nd edition; CAPS-5 = Clinician-Administered PTSD Scale for *DSM-5*; PCL-5 = PTSD Checklist for *DSM-5*; SF36-SF = 36-Item Short-Form Health Survey, Social Functioning scale; all parameter estimates are standardized.
* $p < .05$.

Observed concordance in change over time in this study suggests that change in PCL-5 scores meaningfully approximate symptom change estimated by CAPS-5 scores. Accordingly, the PCL-5 may be an efficient assessment option to meaningfully quantify symptom change. However, observed differences between measures in the magnitude of symptom change suggest that, relative to the CAPS-5, change in PCL-5 scores may not provide the level of precision in quantifying symptom change sought in many contexts.

These differences in estimated symptom change raise the question of which assessment modality should be relied on to evaluate treatment outcome in both research and clinical care (e.g., VHA measurement-based care initiative). The case for relying on the CAPS-5 is often made based on the differences described previously (e.g., greater detail in assessment, ensuring respondent comprehension), whereas time and resource constraints typically weigh in favor of the PCL-5. Although results from this study support the use of the PCL-5 to meaningfully estimate symptom change relative to CAPS-5 scores, observed differences between changes in CAPS-5 and PCL-5 scores suggest that the measures should not be treated as interchangeable.

This study has two significant limitations. First, the sample consisted entirely of male veterans, most of whom identified as White, and therefore results may not generalize to nonveterans, women, or more racially diverse veteran samples. Second, the treatments examined resulted in moderate improvement in PTSD symptom severity, and therefore results may not generalize to large-magnitude decreases in CAPS-5 or PCL-5 scores.

Future research on concordance between PTSD measures may benefit from including other assessment modalities. For instance, although collateral reporting is common in child assessment, corroborative assessment is used only infrequently in PTSD assessment (Ennis et al., 2021). Research on concordance between self-estimated and other-estimated symptom improvement may provide valuable insights into how to best capture symptom change. Likewise, future work may study concordance in change between interview or questionnaire data and other assessment modalities, such as behavioral measures (e.g., change in physiological reactivity to trauma reminders; Wangelin & Tuerk, 2015) to determine how self-reported symptom change relates to objective measures.

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