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Synthesis of the Psychometric Properties of the PTSD Checklist (PCL) Military, Civilian, and Specific Versions

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Abstract

The Posttraumatic Stress Disorder Checklist is a commonly used measure, with military (PCL-M), civilian (PCL-C), and specific trauma (PCL-S) versions. This synthesis of the psychometric properties of all three versions found the PCL to be a well-validated measure. The PCL shows good temporal stability, internal consistency, test-retest reliability, and convergent validity. The majority of structural validity studies support four factor models. Little is available on discriminant validity and sensitivity to change. Strengths, limitations, and future research directions are discussed. Understanding the PCL's psychometric properties, strengths (e.g., items map on to DSM-IV diagnostic criteria), and limitations (e.g., may overestimate PTSD prevalence) will help clinicians and researchers make educated decisions regarding the appropriate use of this measure in their particular setting.

Keywords

PTSD; PTSD checklist; psychometrics; assessment; reliability; validity

Awareness of posttraumatic stress disorder (PTSD) is growing due to recent events such as wars and natural disasters. Psychometrically sound measures are essential to effectively identify PTSD and quantify its symptoms. The PTSD Checklist (PCL)[1] is one of the most commonly used self-report measures of PTSD[1,2]. For example, the Veterans Administration (VA) requires PCL administration to Veterans with PTSD in active treatment as part of an effort to establish national PTSD outcome measures[3]. The 17 Likert items correspond to Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)[4] PTSD symptoms. Respondents are asked to rate the degree to which they were bothered by symptoms in the past month [1 (not at all) to 5 (extremely)]. Three PCL versions exist and differ with regard to the event they are anchored to and the wording describing the event. The PCL-military (PCL-M) anchors items to "stressful military experiences."[5] The PCL-civilian (PCL-C) anchors items to "stressful experiences."[6] The PCL-specific (PCL-S) is anchored to a specific traumatic event.[7]

McDonald and Calhoun[8] reviewed eighteen studies concerning the diagnostic utility of the PCL. They noted that the PCL's operating characteristics (as seen in the vastly divergent cut-scores of 30–60 that have been recommended) demonstrate significant variation across

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populations, settings, and research methods. The authors caution against using the three versions of the PCL interchangeably and note the need for research that synthesizes findings within and across versions of the PCL. Changing even minor aspects of an assessment item, such as wording differences across PCL versions, can result in changes in study outcomes.[9] As such, it is important to examine not only the psychometric properties of each version but also the psychometric properties across all three versions. While McDonald and Calhoun (2010) accomplished this synthesis of results in regard to diagnostic accuracy, there is no review of the PCL's psychometric properties in regard to validity, reliability, and sensitivity to change within or across versions of the PCL. Thus, it is necessary to review multiple articles to gain psychometric information critical for research and clinical use. This study sought to address this gap in the literature by synthesizing research evaluating the psychometric properties of one or more versions of the PCL. Our goal was to provide a summary of the literature evaluating the psychometric properties of each PCL version and a discussion of the strengths and limitations of the measure.

Method

A search of peer reviewed journals in PsychInfo, Medline, and PILOTS using “PTSD Checklist,” “PCL,” “PCL-M,” “PCL-C,” and “PCL-S” yielded 265 studies. PsychInfo was searched using the “Anywhere” setting. PubMed was searched using the default “All Fields” setting. PILOTS was searched using the default “Anywhere” setting. The first author of this summary conducted the initial search and exclusion. Senior author S.N. reviewed and discussed any articles that did not clearly fall into inclusion or exclusion categories. Evaluations of translations, abbreviated, or modified versions (70 studies) were excluded because such versions have different psychometrics; 115 studies were excluded because they did not report psychometrics; 8 studies examining diagnostic utility only are discussed elsewhere[8] and were thus excluded. A final group of 72 studies published 1993 to 2010 were reviewed.

If the version was not specified, we contacted authors and checked the National Center for PTSD's (NCPTSD) PCL webpage[10]. Thus, versions for all except two studies are known. Studies that reported modifying the measure to query about a specific event were considered PCL-S, even if authors reported using the PCL-C (denoted in tables).

Reliability (Table 1), validity (Table 2), measure structure (Table 3) and sensitivity to change are discussed by version.

The present evaluation of reliability (Table 1) included test-retest reliability and internal consistency. Test-retest reliability evaluates a measure's temporal stability and examines score consistency across administrations. Coefficients range from 0.0 (no relationship) to 1.0 (perfect consistency)[11] with a recommended level of .70[12]. Even in the presence of high correlations, decreases in mean score across administrations detract from test-retest reliability support. Internal consistency measures correlations among scale items, with high intercorrelations suggesting items measure the same domain[13]. Internal consistency is often measured by Cronbach's coefficient alpha, ranging from 0 to 1 with higher values indicating higher correlations. It is recommended that a scale have an alpha ≥.80 during scale development and ≥.75 thereafter[12]. Item-total correlations examine the relationship between each item and all the other items on the scale. During scale development, item-total correlations of ≥.40 are recommended[12].

The evaluation of validity included convergent and discriminant validity. Convergent validity is the degree to which two scales measure the same construct. To establish convergent validity, the PCL should correlate significantly and positively with other

measures of PTSD[11], such as the Clinician Administered PTSD Scale (CAPS)[14]. Discriminant validity is evidenced by lack of strong correlations with measures of constructs dissimilar to PTSD[11]. There is no specific rule regarding how high or low a correlation needs to be to evidence convergent or discriminant validity. In studies assessing both, correlations for convergent measures should be higher than discriminant measures. Findings related to measure structure were also reviewed. Structural validity evaluates whether a measure's internal structure, the factor structure returned in exploratory and/or confirmatory factor analyses, parallels the external structure of the target construct[15], in this case the three-symptom factor structure of PTSD (i.e., re-experiencing [cluster B], avoidance/numbing [cluster C], and hyperarousal [cluster D])[16]. Of note, the three-factor structure of PTSD has been called into question by theorists and empirical findings[17–19]. It has been repeatedly suggested that a four-factor model may best represent the latent structure of PTSD[17–19]. Sensitivity to change was also examined to determine the degree to which the PCL-M, C, and S are able to measure symptomatic change as a function of treatment.

Results

Forty of the 72 studies reviewed had the specific goal of evaluating the psychometric properties of a PCL version. The remaining 32 studies had alternative goals but included at least one finding related to psychometric properties of the PCL (e.g., internal consistency, correlations with other measures). Findings from all 72 studies are presented (results and Tables 1–4) and taken into consideration in concluding remarks and discussion.

PCL-M

Test-Retest—Test-retest reliability with Vietnam Veterans was above the recommended level .70 after 2–3 days[1] but change in mean scores was not reported. It is unknown if total score or categorical values (i.e., PTSD screen positive/negative) were used.

Internal Consistency—The original investigation of the PCL-M in Vietnam and Persian Gulf Veterans reported total score values above .80[1]. A later study of female Iraq and Afghanistan Veterans reported total score values above .75[20]. Item-total correlations were over .40 in Vietnam and Persian Gulf Veterans[1].

Convergent and Discriminant Validity—The PCL-M had a kappa of .64 with the PTSD section of the SCID in Vietnam Veterans in PTSD treatment[1]. Table 2 shows further evidence of convergent validity with both clinician and self-report measures in Vietnam and Gulf War Veterans.

No studies were found with the goal of assessing the PCL-M's discriminant validity. However, one study examined correlations between the PCL-M and non-PTSD mental health symptoms without the specific goal of examining discriminant validity[20]. As these measures were used to assess discriminant validity in other versions of the PCL (i.e., PCL-S), they are discussed briefly here (Table 2). A study with Veterans in PTSD treatment[21] reported correlations with measures of depression, anger, and guilt (.13–.49). The authors did not include other measures of PTSD, thus it is unclear if correlations support discriminant validity (i.e., if correlations with other PTSD measures would have been stronger). When looking across studies of Veterans in PTSD treatment, these correlations are generally lower than correlations between the PCL-M and other measures of PTSD (Table 2). However, studies assessing both discriminant and convergent validity in the same sample are needed to draw firm conclusions regarding discriminant validity.

Structure—The initial PCL-M investigation of Persian Gulf Veterans[1] used a principal component analysis with varimax rotation. Results suggested one large factor accounting for 59% and one smaller factor accounting for 7% of the variance. Reexperiencing, avoidance, and hyperarousal items loaded onto the larger factor with numbing and other hyperarousal items on the smaller factor. A confirmatory factor analysis, in a sample of Gulf War Veterans and non-deployed controls failed to replicate initial findings, instead supporting a four-factor model of re-experiencing, avoidance, hyperarousal, and dysphoria[22].

Sensitivity to Change—Two studies examined the PCL-M's ability to measure symptomatic change as a function of treatment. Forbes and colleagues[22] compared the PCL-M to the CAPS pre-treatment and 9-months post-treatment in Vietnam Veterans. Effect sizes showed a CAPS (.84) advantage over the PCL-M (.59) with 17.5% change on the CAPS versus 8.4% change on the PCL-M. Thus, the PCL provided a more conservative estimate of change. Monson and colleagues[23] examined two treatment studies, one using the PCL-M (Vietnam Veterans) and one the PCL-S (male and female Veterans), both compared to the CAPS. The CAPS and the PCL-M differed in level of change reported. Patients reported greater change on the PCL-M than clinicians on the CAPS; every standard deviation change in total PCL-M was paralleled by a .75 change in total CAPS score. However, there were no differences in the percentages of agreement between clinicians and patients in improvement and exacerbation when comparing categorization of clinically significant change on the CAPS and PCL. This suggests that the two measures were in fact capturing change consistently.

PCL-C

Test-Retest—Acceptable reliability was found after one week using computerized PCL-C total scores with a civilian community population with slightly lower reliability found using mixed administration (computer administration then paper or vice versa)[24]. Average PCL-C scores were reported for the computerized administration only and did not differ by a meaningful amount (i.e., 1.5 points).

Internal Consistency—Internal consistency was found in 14 studies examining psychometrics in military samples, adults with severe mental illness, dually diagnosed patients with HIV, women with substance use disorders, women treated for breast cancer, adults with recent limb loss, female undergraduates, and community adults. All reported total score values above .75 (Table 2).

Item-total correlations were over the recommended level of .40 in male Veterans[25]. No other studies investigated this property.

Convergent and Discriminant Validity—In a sample of male Veterans in PTSD treatment, correlations were .79 with the CAPS and .90 with the Mississippi PTSD Scale[25]. Correlation with the CAPS was .63 in a sample of 57 HIV+ patients[26] (Table 2). Cuevas and colleagues[27] reported moderate to high correlations with anxiety, depression, hostility, and physical and emotional functioning. Authors reported these correlations as evidence of convergent validity as these are measures of psychological constructs often related to PTSD. Given that they did not give any measures of PTSD other than the PCL, it is not possible to assess whether the PCL-C would have been more highly correlated with other PTSD measures (evidence of convergent validity) than measures of related but separate psychological constructs (evidence of discriminant validity). Several studies have reported correlations for reasons other than evaluation of discriminant validity.[28–30] Correlations with measures of other mental health symptoms and quality of life were generally moderate to high. These results raise concern regarding whether the PCL discriminates well between

PTSD and other constructs related to affect/distress. Studies assessing both types of validity in one sample are needed to draw conclusions.

Structure—Investigations using the PCL-C differ from initial PCL-M findings. In both primary care[31] and older adult[32] samples, four-factor models of re-experiencing, avoidance, hyperarousal, and numbing were supported.

PCL-S

Test-Retest—Test-retest reliability values for total PCL-S score were found in three investigations. Results were above the recommended level at immediate[33] and one week re-testing[33,34] but slightly below at 2 weeks[33] with undergraduates. One study reported change in mean PCL-S scores after one week; the means did not differ meaningfully (decreased 3.3).[34] There was modest agreement in the presence vs. absence of presumptive PTSD at two weeks in adults with severe mental illness.[35] A correlation of .66 (slightly below the recommended cutoff) was found for PCL-S total score. Change in mean scores between administrations decreased by 7. This change may be due to the longer time between administrations or to greater symptom fluctuation, which could occur in individuals with severe mental illness.

Internal Consistency—Nineteen studies examined total score internal consistency and all returned values above .75. Populations included Veteran samples, victims of interpersonal violence, patients with cancer, patients with severe mental illness, and community adults (Table 1).

Item-total correlations were over .40, with the exception of one study reporting item 13 (trouble falling or staying asleep) correlated below .40[36] and another reporting a range of .28–.72 but failing to specify which items were problematic.[34]

Four investigations evaluating psychometrics calculated inter-item correlations (i.e., examining consistency across item responses, with more homogenous domains having higher inter-item consistency[11] ranging from .16 to .70 with the exception of item 13, which correlated at .1 or less with seven other items in one investigation.[37]

Convergent and Discriminant Validity—High convergent validity with the CAPS was shown with motor vehicle accident and sexual trauma survivors[38], and patients with severe mental illness.[35] Additional evidence of convergent validity using self-report scales with undergraduates, peacekeepers, and older adults can be found in Table 2. Two studies assessed convergent and discriminant validity.[33,34] In both, the PCL-S correlated significantly more highly with measures of PTSD than with measures assessing depression, other domains of psychopathology or physical pain. Adkins and colleagues[34] found that the PCL-S correlated significantly more highly with the CAPS than PTSD measures that were not anchored to DSM-IV PTSD symptom criteria, which they considered further evidence of discriminant validity.

Structure—Investigations with WWII POWs[39], cancer patients and survivors[40–42], undergraduates[43], victims of intimate partner violence[44], female victims of sexual harassment[45], and adults exposed to Ground Zero[46] most often supported a four-factor model of re-experiencing, avoidance, hyperarousal, and dysphoria *or* re-experiencing, avoidance, hyperarousal, and numbing.

Sensitivity to Change—Monson and colleagues[23] compared the PCL-S to the CAPS. As with the PCL-M, the two measures differed in level of change, but percentages of

agreement regarding change did not differ significantly. Patients again reported greater change than did clinicians; for every standard deviation change in total PCL-S there was a . 82 change in total CAPS.

Discussion

The goal of this review was to summarize the psychometric properties of the PCL, a commonly used measure of PTSD symptoms. In general, the measure is psychometrically sound. The PCL shows good temporal stability and internal consistency. Test-retest correlations diminish somewhat with longer intervals between administrations, but this is unsurprising. Convergent validity is strong, but little is available on discriminant validity. The PCL tends to correlate moderately-highly with measures of anxiety, depression, quality of life, and a number of other constructs that capture aspects of negative affect or comorbidity common in PTSD.

Questions remain regarding how well the PCL can discriminate PTSD symptoms from similar symptoms of other disorders as discriminant validity has thus far only been evaluated in the PCL-S. We conjecture that the three versions may differ in this regard. The PCL-S, by being anchored to a specific trauma, may be more likely to capture PTSD than the other versions, which may be interpreted more broadly by respondents. Of note, Adkins and colleagues[34] showed that relative to six other self-report measures of PTSD, the PCL-S was among the strongest in discriminating PTSD from depression, social phobia and anxiety. Discriminant validity may be a challenge for self-report PTSD measures due to the overlap in symptoms and high rates of comorbidity between PTSD and both depression and other anxiety disorders. The majority of structural validity studies have supported four factor models. Discrepancies in factor structures could be due to sample differences, methodological differences, and/or random error; however, the inconsistency in the factor structure of the PCL is consistent with literature questioning the three-factor PTSD structure of DSM-IV.[19].

Only three studies have investigated the PCL's ability to detect symptom change. These have provided conflicting results, all were done in Veterans, and none used the PCL-C.[22,23] This is an important area for future research, particularly given the VA's selection of the PCL as a national outcome measure.[47] The lack of such work using the PCL-C may reflect the version's lack of a specified anchor. Without an anchoring event, respondents may reference a different event in subsequent administrations.

In their review of the diagnostic accuracy of the PCL, McDonald and Calhoun[8] drew several conclusions regarding selecting a cut-off and best uses of the PCL. Specifically, the range of recommended cut-offs reported in their review underscores that the use of the PCL cannot be separated from the population in which it will be used or the need that it addresses. A universal cut-off will not exist as the score used depends on the base rate of PTSD in the population being measured (e.g., a treatment-seeking combat veteran sample would likely have a higher cut-off score than a community based sample with lower prevalence of PTSD) and the needs of a given setting (e.g., selecting a low cut-off for high sensitivity if the goal is not to miss anyone who may have PTSD). With the PCL, it appears the highest recommended cut-offs are generally in treatment seeking populations, ones with high base rates of PTSD such as veterans, and ones in treatment for comorbidities that may elevate distress (HIV, substance use). Lower cutoffs are useful with populations with lower base rates of PTSD, when it's important that no PTSD case be missed, and when there is likely to be symptom underreporting.[8] A clinician or researcher needs to evaluate their needs (e.g., maximizing sensitivity or specificity) and go back to relevant literature to select a value. The authors emphasized that the PCL was not intended as a diagnostic instrument,

so should be supplemented with additional assessment to establish diagnosis. In circumstances where diagnostic assessment is not feasible (e.g., epidemiological studies), multiple forms of assessment are still recommended.[48]. These findings, together with the results of the present review, suggest that the PCL has several strengths but also limitations that should be considered.

Strengths of the PCL

The PCL appears to be a psychometrically sound measure of PTSD symptoms. Because it is one of the most commonly used measures of PTSD, clinicians and researchers are assured comparability of their data with other findings.

What are the best uses of the PCL? The PCL follows DSM-IV PTSD diagnostic criteria, and self-report measures that map directly onto DSM criteria generally outperform those that do not with regard to convergent and discriminant validity.[34] It can be useful as a guide to diagnostic assessment. With three versions, the PCL can be used to assess military trauma, traumatic events in general, or a specific event of the assessor or participants' choosing. Ease of administration is another strength; completion takes approximately 5–7 minutes.

Limitations of the PCL

The PCL may overestimate PTSD prevalence. Using the PCL-C, Del Ben and colleagues[45] found that prevalence rates decreased when criteria A1,A2, and F were added. Thus, studies basing PTSD prevalence solely on the PCL may be reporting overinflated rates of PTSD. The PCL-C correlates highly with measures of depression and general anxiety, suggesting that without the anchor to a specific trauma, it may pick up negative emotionality rather than PTSD in specific.[46] Given the apparent importance of anchoring the measure to a specific event, it may be useful to develop guidelines for anchoring the measure. We found considerable variability in administration of the PCL. Investigators referenced an event when administering the PCL-C, administered the PCL-C to military populations, changed item wording, pre-specified events using the PCL-S, and/or allowed the participant to fill an the event on the PCL-S. This variability raises potential problems. For example, even minor changes to an instrument can affect study outcomes[9]. Additionally, allowing a participant to fill in the trauma may result in the individual using an event that is not traumatic as defined in criterion A or selecting a different event during subsequent administrations. In the factor analysis of Smith and colleagues,[41] who modified items to reflect a traumatic event, it appears that items grouped by wording. Their factors one and three consisted of items not directly referencing the trauma, factor two included all items where the trauma was termed “cancer treatment,” and factor four included all items where the trauma was termed “cancer experience.”

The PCL is linked to DSM-IV criteria. Although this has advantages as described, it is also a disadvantage when substantive DSM revisions occur, such as those proposed for DSM-V.[47] Such changes necessitate revision and revalidation of the measure and create difficulty in comparing data across measures.

Another limitation is that the reading level of the PCL may be above the ability of some adults. One study suggested the PCL is appropriate for someone with a 10th grade education[49] while another suggested it was appropriate for someone with 13.2 years of schooling.[50]

Key Issues for Future Research

- Evaluation of the PCL's ability to assess treatment related change. Many studies and clinical programs rely on the PCL as an outcome measure, but there is little evidence regarding its sensitivity to change.
- Evaluation of the PCL's ability to discriminate PTSD from other disorders, particularly those characterized by negative emotionality such as anxiety and depression.
- Many studies have used male veteran samples. Validation in female military, veteran, and civilian populations is needed.
- Evaluation of the impact of the way in which the measure is anchored and guidelines for selecting a version and for anchoring the PCL-S.
- Reporting PCL version used in future studies.

Limitations—The primary limitation of this review is the variability in available data. For example, test-retest reliability is commonly reported using correlation coefficients, but change in mean scores is not always reported. There is good information supporting convergent validity but little regarding discriminant validity. Differences in time elapsed since trauma may affect findings. Many studies do not include sample information regarding comorbidities (e.g., depression, substance use) leaving the possibility of unrecognized comorbidity affecting the results. There are only two studies of sensitivity to change which provide conflicting results regarding whether the PCL provides a lenient or conservative estimate of change. We were not always certain which measure was used and may have misclassified some studies.

Conclusions

Overall the results of this review indicate that the PCL is a well-validated measure, but that caution should be used if it is expected to differentiate PTSD from similar disorders or when it is the primary outcome assessing treatment-related change. Understanding the measure was designed as a screening rather than diagnostic tool, knowledge of factors such as psychometric properties, strengths, and limitations will help clinicians and researchers make educated decisions regarding the appropriate use of the PCL in their particular setting. This knowledge will allow for the reliable and valid measurement of PTSD symptoms vital to effectively studying and treating PTSD.

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Table 1

Reliability

Measure	Study	Sample	Test-retest			Internal Consistency				
			Interval	r	k	Total (α)	B (α)	C (α)	D (α)	Item
PCL-M	Owens et al., 2009[16]	50 female Veterans				.98				
	Weathers et al., 1993[1]	123 male Veterans	2–3 days	.96		.97	.93	.92	.92	.62–.87
		1006 Veterans				.96	.90	.89	.91	.52–.80
PCL-C	Bollinger et al., 2008[26]	57 dually diagnosed HIV positive patients				.94	.90	.86	.82	
	Booth-Kewley et al., 2010[1]	1,569 Marines				.95				
	Campbell et al., 1999[24]	66 adults	1 week	.88[a]						
			1 week	.75[b]						
	Carter-Visscher, 2010[52]	522 US US Army & National Guard				.92				
	Cuevas et al., 2006[27]	224 dually diagnosed HIV-positive patients				.92	.85	.81	.80	
	Cusack et al., 2006[53]	142 adults with SMI				.93	.86	.84	.82	
	Harrington & Newman, 2007[54]	44 women with SUD				.92				
	Keen et al., 2008[25]	114 male Veterans				.96	.94	.91	.92	
						.65–.88[c]	.86–.93[c]	.72–.88[c]	.85–.88[c]	
	Lang et al., 2003[55]	419 female Veterans				.96	.94	.90	.87	
	Morril et al., 2008[56]	161 women with breast cancer				.96				
	Phelps et al., 2008[30]	83 adults with limb loss				.92–.93				
	Salters-Pedneault et al., 2009[57]	160 female undergraduates				.83[d]				
	Smith et al., 2007[58]	470 military personnel				.94				
	Stoppelbein & Greening, 2007[59]	99 mothers of children with cancer/diabetes				.95				
	Wilson et al., 2008[60]	681 UK military personnel				.92				
PCL-S	Adkins et al., 2008[34]	239 undergraduates (≥ 1 criterion A)	1 week	.87		.91				.28–.72
	Andrykowski & Cordova, 1998[e][61]	84 females treatmented breast cancer				.90				
	Andrykowski et al., 2000[e][62]	62 patients treated for breast cancer				.87–.92	.73–.77	.71–.91	.69–.86	

Measure	Study	Sample	Test-retest			Internal Consistency				
			Interval	r	k	Total (α)	B (α)	C (α)	D (α)	Item
	Blanchard et al., 1996[38]	40 motor vehicle accident and sexual assault victims				.94	.94	.82	.84	
	Butler et al., 2005[63]	1505 adults				.91				
	Cook, Elhai, Cassidy et al., 2005[e][36]	35 older male Veterans				.87				
	Cook, Elhai, & Arean, 2005[e][37]	187 older adults				.85				>.50[f]
	Cordova et al., 2000[e][39]	142 female breast cancer survivors				.93	.86	.85	.81	
	Hyre et al., 2007[e][64]	391 hemodialysis patients				.93	.85	.85	.81	
	Krause et al., 2007[e][17]	801 victims of intimate partner violence				.93				
	Mager & Andrykowski, 2002[e][65]	60 women with breast cancer				.93				
	Mueser et al., 2001[e][35]2	30 clients with SMI	2 weeks	.66[g]	.60[h]	.93–.94	*i*	*i*	*i*	
	Piotrkowski & Brannen, 2002[66]	124 NYC residents after 9/11				.91				
	Ruggiero et al., 2006[67]	233 NYC residents after 9/11				.90				.47–.70[j]
										.16–70[k]
	Ruggiero et al., 2003[33]	392 undergraduates	Immediate	.92						
			1 week	.88						
			2 weeks	.68						
						.94	.85	.85	.87	
						.40–.74[j]	.60–.74[j]	.39–.74[j]	.63–.76[j]	
						.22–.69[k]	.47–.67[k]	.28–.69[k]	.47–.69[k]	
	Schnider et al., 2007[68]	123 undergrads reporting unexpected death of loved one				.95				
	Sherman et al., 2005[69]	141 orofacial pain patients				.92	.90	.86	.95	
	Smith et al., 1999[41]	111 cancer patients				.89	.74	.76	.78	
	Vernon et al., 2009[70]	182 female undergraduates				.91				
Unknown	Grubaugh et al., 2007[71]	44 adults with SMI				.87	.75	.81	.65	
	Monnier et al., 2004[72]	191 female Veterans				.95				

Note. NYC= New York City. SMI=Severe mental illness. Cook, Elhai, & Arean, 2005 reported moderate interitem correlations, exclusive of 13. Krause et al., 2008 reported average inter-item *r*=.44.

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[a] Computer based.

[b] Computer and paper based.

[c] Item scale.

[d] Cluster B only.

[e] Instructions modified for specific event.

[f] Item 13 lower.

[g] Interclass Correlation.

[h] 80% agreement.

[i] Alphas for presence or absence of symptoms and symptom severity (.72–.87).

[j] Corrected item.

[k] Interitem.

Table 2

Validity

Measure	Goal to assess validity?	Study	Sample	Convergent			Discriminant	
				Measure	r	k	Measure	r
PCL-M	No	Creamer et al., 2003[73]	274 Veterans	IES-R	.84***			
	No	Forbes et al., 2001[22]	97 male Veterans	CAPS baseline/ 9-month	.30***/.62***			
				Item to item	.06ns–.57***			
	No	Owens et al., 2008[18]	99 Veterans					(pre/post)
							BDI-II	.49***/.43***
							CDS	.17ns/.47***
							STAXI2	.36***/.35***
							TRGI	−.13/.29**
	Yes	Weathers et al., 1993[1]	123 male Veterans	SCID		.64[a]		
				IES	.90[a]			
				MS	.85–.93[a]			
				PK	.77[a]			
PCL-C	Yes	Bollinger et al., 2008[26]	57 dually diagnosed HIV patients	CAPS	.63***			
	No	Carter-Visscher et al., 2010[52]	522 soldiers					(men/women)
							BDI-II	.76*/.71**
	Yes	Cuevas, et al., 2006[27]	224 dually diagnosed HIV-positive patient				BPRS-A/D	.55***
							BPRS-H	.48***
							SF-36-MH	−.52***
							SF-36-RE	−.52***
	No	Dobie et al., 2006[74]	2,578 female Veterans				MH-5D	.78[a]
	Yes	Keen et al., 2008[25]	114 male Veterans	CAPS	.79***			

				Convergent			Discriminant	
Measure	**Goal to assess validity?**	**Study**	**Sample**	**Measure**	**r**	**k**	**Measure**	**r**
				MS	.90***			
	No	Kornblith et al., 2003[28]	153 breast cancer survivors				BSI-A	.58***
							BSI-D	.51***
							EORTC-P	−.25**
							EORTC-R	−.17
	No	Mirabeau-Beale et al., 2009[29]	100 breast cancer survivors				MHI-17	−.73***—.76***
	No	Phelps et al., 2008[30]	83 adults with limb loss	PTGI	.07[a]–.20[a]		PHQ-9	.70**–.77**
PCL-S	Yes	Adkins et al., 2008[34]	239 undergraduates (≥ 1 criterion A)	CMS	.68**		BAI	.48**
				IES-R	.70**		BDI-II	.63**
				PDS	.78**		CCL-A	.56**
				Penn	.66**		CCL-D	.52**
				PK	.58**		FNE	.34**
				CAPS	.65**		SAD	.40**
				DTS	.74**		SIAS	.45**
							SPS	.41**
							STAI-S	.57**
							STAI-T	.58**
	Yes	Blanchard et al., 1996[38]	40 motor vehicle accident and sexual assault victims	CAPS	.93***			
	No	Bolton, Gray, Litz, 2006[b][75]	522 U.S. peacekeepers	MS		.81**–.85**		
	Yes	Cook, Elhai, Cassidy et al., 2005[b][37]	35 older male Veterans	MS	.70***			
	No	Mager et al., 2002[65]	60 women with breast cancer				HADS-A	.87**
							CES-D	.79**
	Yes	Mueser et al., 2001[35]	30 clients with SMI	CAPS		.67**–.85***		

				Convergent			Discriminant	
Measure	**Goal to assess validity?**	**Study**	**Sample**	**Measure**	**r**	**k**	**Measure**	**r**
	Yes	Ruggiero et al., 2003[33]	392 undergraduates	CMS	.82***		CES-D	.67***
				IES	.77***		SCL-90-R	.70***
							STAI-S	.41***
							STAI-T	.60***
	No	Schnider et al., 2007[68]	123 undergrads reporting unexpected death of loved one				ICG-R	.81***

Note. For measure references contact corresponding author. BAI=Beck Anxiety Inventory (Beck & Steer, 1990); BDI-II=Beck Depression Inventory-Second Edition (Beck et al., 1996); BPRS-A/D=Brief Psychiatric Rating Scale-Anxiety/Depression Subscale (Van der Does et al., 1993); BPRS-H=Brief Psychiatric Rating Scale-Hostility Subscale (Van der Does et al., 1993); BSI-A=Brief Symptom Inventory-Anxiety Subscale (Derogatis & Melisaratos, 1983); BSI-D=Brief Symptom Inventory-Depression Subscale (Derogatis & Melisaratos, 1983); CAPS=Clinician Administered PTSD Scale (Blake et al., 1995); CCL-A=Cognition Checklist Anxiety Subscale (Beck et al., 1987); CCL-D=Cognition Checklist Depression Subscale (Beck et al., 1987); CDS=Cognitive Distortions Scale Subscales (Briere, 2000); CES-D=Center for Epidemiological Studies-Depression Scale (Radloff, 1977); CMS=Civilian Mississippi Scale (Vreven et al., 1995;); DTS=Davidson Trauma Scale (Davidson, 1996); EORTC-P=European Organization for Research and Treatment of Cancer-Physical Subscale (Aaronson et al., 1993); EORTC-R=European Organization for Research and Treatment of Cancer-Role Subscale (Aaronson et al., 1993); FNE=Fear of Negative Evaluations (Watson & Friend, 1969); HADS-A=Hospital Anxiety & Depression Scale-Anxiety Subscale (Zigmond & Snaith, 1983); ICG-R=Inventory of Complicated Grief-Revised (Prigerson & Jacobs, 2001); IES=Impact of Events Scale (Horowitz et al., 1979); IES-R=Impact of Events Scale-Revised (Weiss, 2004); MH-5 D=Mental Health Index 5 Depression Scale (Berwick et al., 1991); MHI-17= items assessing anxiety, depression and positive affect (Ware et al., 1979); MS=Mississippi Scale for Combat Related PTSD (Keane et al., 1988); PDS=Posttraumatic Stress Diagnostic Scale (Foa, 1995); Penn=Penn Inventory for Posttraumatic Stress Disorder (Hammarberg, 1992); PHQ-9=Patient Health Questionnaire-9 (Spitzer et al., 1999); PK=PK scale of the MMPI (Keane et al., 1984); PTGI=Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996); SAD=Social Avoidance and Distress (Watson & Friend, 1969); SCID=Structured Clinical Interview for DSM-III-R (Spitzer et al., 1992); SCL-90-R=Symptom Checklist 90-Revised (Derogatis, 1983); SF-36-MH=SF-36-Mental Health Subscale (Ware & Kosinski, 2001); SF-36-RE=SF-36-Role-Emotional Subscale (Ware & Kosinski, 2001); SIAS=Social Interaction Anxiety Scale (Heimberg et al., 1992); SMI=Sever mental illness. SPS=Social Phobia Scale (Heimberg, 1992); STAI-S=State-Trait Anxiety Inventory-State (Spielberger, 1983); STAI-T=State-Trait Anxiety Inventory-Trait (Spielberger, 1983); STAXI-2=State-Trait Anxiety Expression Inventory-2 Anger Expression Index (Spielberger, 1988); TRGI=Trauma-Related Guilt Inventory (Kubany et al., 1996).

[a] p-value not available.

[b] Instructions modified for specific event.

* p < .05.

** p < .01.

*** p < .001.

Table 3

Structure

Measure	Study	# of Models Tested	Best Fitting Model
PCL-M	Weathers et al., 1993[1]	NA[a]	Factor 1: 9 items, Factor 2: 7 items
	Simms et al., 2002[19]	Six 1–4 factor models	Four-Factors: Intrusion, Avoidance, Hyperarousal, Dysphoria
PCL-C	Asmundon et al., 2000[31]	Four 3–4 factor models	Four-Factors: Reexperiencing, Avoidance, Numbing, Hyperarousal
	Schinka et al., 2007[31]	Nine 1–4 factor models	Four-Factors: Reexperiencing, Avoidance, Numbing, Arousal
PCL-S	Cordova et al., 2000[b][39]	Second-order model, three first-order factors vs. first-order model, one factor	Second order model
	Duhamel et al., 2004[b][40]	Seven 1–4 factor models	Four-Factors: Reexperiencing, Avoidance, Numbing, Arousal
	Elhai et al., 2007[42]	Two 3–4 factor models	Four-Factors: Reexperiencing, Avoidance, Numbing, Hyperarousal
	Krause et al., 2007[b][17]	Six 2–4 factor models	Four-Factors: Intrusion, Avoidance, Hyperarousal, Dysphoria
	Palmieri & Fitzgerald, 2005[b][18]	Seven 1–4 factor models	Four Factors: Reexperiencing, Avoidance, Numbing, Hyperarousal
	Palmieri et al, 2007[43]	Five 1–4 factor models	Four-Factors: Reexperiencing, Avoidance, Hyperarousal, Dysphoria
	Shelby et al., 2005[b][3]	NA[c]	Four-factors: Reexperiencing, Avoidance, Numbing, Arousal
	Smith et al., 1999[41]	NA[c]	(see text)

Note. Confirmatory Factor Analysis unless noted.

[a] Principal component analysis.

[b] Instructions modified for specific event.

[c] Exploratory Factor Analysis.