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Temporal Stability of DSM-5 Posttraumatic Stress Disorder Criteria in a Problem Drinking Sample

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Abstract

The Diagnostic and Statistical Manual-5 (*DSM-5*) reformulated Posttraumatic Stress Disorder (PTSD) based partially on research showing there were four main factors that underlie the symptoms of the disorder. The primary aim of this study was to examine the temporal stability of the *DSM-5* factors as measured by the Posttraumatic Stress Disorder Checklist for *DSM-5* (PCL-5; Weathers et al., 2010). Confirmatory factor analyses were conducted to examine the structure of *DSM-5* PTSD, and temporal stability over three time points was examined to determine if the measure reflects a consistent construct over time. Our sample was 507 combat-exposed veterans of Iraq and Afghanistan who enrolled in an online intervention for problem drinking and combat-

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related stress (masked for review). We administered the PCL-5 at baseline, 8-week post intervention, and 3-month follow-up assessments. The *DSM-5* model provided an adequate fit to the data at baseline. Tests of equality of form and equality of factor loadings demonstrated stability of the factor structure over time, indicating temporal stability. This study confirms the results of previous research supporting the *DSM-5* model of PTSD symptoms (Elhai et al., 2012; Miller et al., 2012). This is the first study to demonstrate the temporal stability of the PCL-5, indicating its use in longitudinal studies will measure the same construct over time.

Keywords

PTSD; CFA; DSM-5; problem drinkers; longitudinal invariance

Posttraumatic Stress Disorder (PTSD) as defined in The *Diagnostic and Statistical Manual, Fourth Edition* (DSM-IV; American Psychiatric Association, 2000) included symptoms organized into three symptom clusters: Reexperiencing, Avoidance/Numbing, and Hyperarousal. Two decades of research on the disorder and its symptom structure demonstrates that four dimensions or factors better account for PTSD symptoms than three factors or other proposed factor structures (King, Leskin, King, & Weathers, 1998; King, Orazem, Lauterbach, King, Hebenstreit, & Shalev, 2009; Yufik & Simms, 2010; Biehn, Elhai, Fine, Seligman, & Richardson, 2012; Mansfield, Williams, Hourani, & Babeu, 2010; Krause, Kaltman, Goodman, & Dutton, 2007; Palmieri, Weathers, Difede, & King, 2007). Four factor models using differing measures of the DSM-IV criteria were replicated across populations (e.g., King et al., 2009; Marshall, 2004; McDonald, Beckham, Morey, Marx, Tupler & Calhoun, 2008) and across time (Krause, Kaltman, Goodman, & Dutton, 2007; Mason, Lauterbach, McKibben, Lawrence, & Fauerbach, 2013; Wang, Elhai, Dai, & Yao, 2012; Baschnagel, O'Connor, Colder, & Hawk, 2005; King, Taft, King, Hammond, & Stone, 2006). Consequently, the reformulation of PTSD for The *Diagnostic and Statistical Manual, Fifth Edition* (American Psychiatric Association, 2013; Friedman, Resick, Bryant, & Brewin, 2011) incorporated the research literature by organizing PTSD symptoms into four clusters, with the new symptom cluster reflecting general distress (see Table 1). The *DSM-5* PTSD criteria consist of four symptom clusters: Intrusions (i.e., re-experiencing; B1–B5), Avoidance (C6, C7) Negative Alterations of Cognitions and Moods (D8–D14), and Hyperarousal (E15 – E20). In the reformulation, new symptoms were included or expanded; three fall on the Negative Alterations in Mood and Cognition factor and one on the Hyperarousal factor (see Table 1).

Miller, Wolf, Kilpatrick, Resnick, Marx, Holowka, et. al (2012) and Elhai, Miller, Ford, Biehn, Palmieri, & Frueh, (2012) both reported that the *DSM-5*'s symptom clusters for PTSD provide a good fit to data collected on a national online sample of adults, a national sample of veterans, and college students, but there is not yet an evaluation of the stability of the factors over time using the *DSM-5* criteria. This study fills that gap by evaluating the stability of the *DSM-5* proposed factor structure over time.

This temporal stability, or longitudinal invariance, is important in establishing that the measure in question is measuring the same latent constructs over time. If the factor structure

of the measure changes from one time point to the next then changes in scores may be due to inconsistencies in measurement rather than true change in the construct in question (Brown, 2006, pp. 252-3).

The primary aim of this study was to test the temporal stability of the *DSM-5* factor structure. Longitudinal studies of PTSD symptom change (Bolton, Gray, & Litz, 2006) as well as PTSD treatment trials (Evans, Cowlishaw, Forbes, Parslow, & Lewis, 2010; Monson et al., 2006; Ready et al., 2012) frequently use the PCL to demonstrate change over time, therefore it is important to demonstrate that the PCL-5 is consistently measuring the construct over time. Replicating the factor structure across populations is also necessary to ensure that the PCL-5 is measuring the same construct across groups. Thus, this sample of returning veterans who are drinking in a problematic manner with varying levels of PTSD symptoms will inform the understanding of the PCL-5's fidelity to the *DSM-5*'s diagnostics criteria across time and, to the extent that this group is different than other samples, across populations.

Problem Drinkers as a Significant Sub-Group of People with PTSD Symptoms

Epidemiologic studies demonstrate that problem drinking is highly comorbid with PTSD symptoms in general. The percentage of people with a PTSD diagnosis who also have an Alcohol Use Disorder can range from 24 to 52% (e.g. Kessler, 1995; Mills, Teeson, Ross & Peters, 2006). PTSD symptoms are also associated with an increased risk for drinking in OEF/OIF/OND Veterans returning from Afghanistan (Operation Enduring Freedom; OEF) and Iraq (Operation Iraqi Freedom; OIF; Operation Enduring Freedom; OND). Jacupcak and colleagues (Jakupcak et al., 2010) found that OIF and OEF soldiers with a PTSD diagnosis were more likely to engage in new onset problem drinking behaviors and have alcohol problems compared to soldiers without PTSD. Seal et al (2011) studied OEF/OIF/OND veterans receiving VA care. She found that 63% of veterans diagnosed with PTSD were also diagnosed with either an alcohol use disorder or a drug use disorder; 76% of veterans with PTSD had both disorders. Since problem drinkers encompass an even wider spectrum of people who are drinking in an unhealthy manner, but do not yet meet criteria for a diagnosis, it is likely that this group makes up a substantial minority or even majority of veterans with PTSD symptoms. A review of the literature did not reveal other studies of the factor structure of PTSD specifically in problem drinkers, although it is likely that other studies include participants with problematic drinking.

In order to achieve our primary aim, we first investigated the *DSM-5* factor structure in a sample of OEF/OIF/OND veterans who participated in an online intervention for problem drinking and PTSD symptoms. Second, we hypothesized that the *DSM-5* factor structure would be stable over three time points. To our knowledge, this is the first study to examine the temporal stability of the factor structure of the PCL-5, and the first in OIF/OEF/OND veterans.

Methods

Overview

The present study represents a secondary analysis of data from a randomized clinical trial testing an eight module, cognitive behavioral web-based intervention (*VetChange*) to reduce problem drinking and combat-related stress symptoms in OEF/OEF/OND veterans (for details of the full trial, please see (masked for review). The design was a delayed intervention control with a 2:1 randomization scheme, balanced on gender. Both groups completed the baseline assessment at Time 1. The Initial Intervention Group (IIG) immediately received the eight-week intervention. At the end of the eight weeks (Time 2), IIG completed a post-intervention assessment and the Delayed Intervention Group (DIG) completed a "repeated" baseline assessment at the same time. Thus both groups were assessed again at the same time point with the same measures. The PCL for IIG at Time 1 (baseline) was combined with the PCL at Time 2 (repeated baseline) of the DIG. Both groups then followed the same pattern in that both groups had the same assessments at the same intervals, but DIG was assessed eight weeks later than IIG at each point. The Institutional Review Boards of (masked for review) approved this study.

Participants

Participants were 507 male (n = 442) and female (n = 65) veterans representing a subset of the 600 *VetChange* participants enrolled in the eight-module protocol. Seventy-six participants from the delayed intervention control group did not return for assessment at Time 2, leaving 524 participants for analysis. Of these 524, 17 did not endorse any combat-related experience at baseline. Since the PCL-5 asked about stressful military experiences and did not record a particular traumatic event, we excluded these 17 individuals to ensure there was at least one stressful military experience to which they were responding. Eligibility criteria included: (a) self-reported status as OEF or OIF veteran, (b) age between 18 and 65 years, (c) score on the *Alcohol Use Disorders Identification Test* (AUDIT; Babor, de la Fuente, Saunders, & Grant, 1992; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Bradley, Bush, Epler, Dobie, Davis, Sporleder et. al, 2003) between 8 and 25 for men and 5 and 25 for women, (d) drinking above guidelines for safer drinking during the 30 days prior to screening based on the *Quick Drink Screen* (QDS; Sobell, Agrawal, Sobell, Leo, Young, Cunningham, & Simco, 2003) (no more than 4 drinks per occasion or 14 drinks per week for men and no more than three drinks per occasion or seven drinks per week for women); (Dawson, Grant, & Li, 2005; USDHHS & USDA, 2010), (e) willing to provide an email address for reminders and incentives, (f) willing to allow collection of the IP address from which they registered.

Procedures

Participants were randomized on a 2:1 basis to receive access to *VetChange* immediately (*n* = 404) or following an 8-week waiting period (*n* = 196). Participants in each group received the same module content and assessments once provided access to *VetChange*; hence, the only difference in participation was the eight-week delay imposed upon DIG. Although drinking and PTSD measures in the delayed intervention group (masked for review) declined somewhat during the eight-week waiting period, subsequent participation in the

program (rate of module and assessment completion) and post-intervention changes in drinking and in drinking goal selection were similar between the two groups. We combined these groups for the current analyses.

Measures

The PTSD Checklist (PCL-5)—The PCL-5 (Weathers et al., 2010) is a 20-item self-report measure of PTSD symptoms. Items correspond to the newly published symptom criteria for PTSD in the *Diagnostic and Statistical Manual of Mental Disorders-Fifth Version* (American Psychiatric Association, 2013). Participants anchor responses to "stressful military experiences" on a scale of 0 to 4 (an item score of 2 or greater is considered a positive symptom). The original PCL, a 17-item self-report measure corresponding to the *DSM-IV* criteria for PTSD (Weathers, Litz, Herman, Huska, & Keane, 1993) demonstrated excellent reliability and validity of scores across trauma populations (Weathers & Ford, 1996). Across two studies (one with returning combat Veterans and a second with combat Veterans from all conflicts), total PCL and PCL-5 scores were highly correlated (r = 0.87 and 0.95, respectively), and the PCL-5 demonstrated high levels of internal consistency (alphas = 0.94 and 0.97, respectively. Further, evidence for convergent validity of PCL score interpretations (r = 0.81 with the Clinician Administered PTSD Scale) was found in a study with combat Veterans from all eras (B. Marx, personal communication, November 5, 2012). The PCL-5 used in this study is an earlier version of the most current version recently made available (B. Marx, personal communication, August 29, 2013). In addition to anchoring responses to stressful military experiences in general as in the original PCL, there are slight wording differences from the latest version in three items. For instance, the PCL-5 version we used asked, "Feeling irritable or angry or acting aggressively?", whereas the current version asks, "Irritable behavior, angry outbursts, or acting aggressively?"

The **Combat Experiences Scale** of the Deployment Risk and Resilience Inventory (CES-DRRI). The CES-DRRI (King, King, & Vogt, 2003; Vogt, Proctor, King, King, & Vasterling, 2008), assessed at baseline, is a 15-item self-report scale that measures exposure to combat experiences in a yes/no format. The Kuder-Richardson 20 coefficient alpha for the scale was .85 in a study with troops representing Army, Navy, Air Force, Marines and Coast Guard branches of the military who had served in Gulf War I (Vogt, King, & King, 2004).

Alcohol Use Disorders Identification Test (AUDIT; (Babor et al., 1992) is a 10-item self-report measure of alcohol use and alcohol-related problems. Items are scored from 0 to 4, and summed to yield a composite score ranging from 0 to 40. The AUDIT cutoff scores yield a sensitivity of .71 and specificity of .85 based on a Veteran sample (Katharine A. Bradley et al., 1998). Across 18 studies, Reinert and Allen (2007) calculated a median reliability coefficient of 0.83.

The Quick Drink Screen (QDS; (Sobell et al., 2003) is a four-item self-report measure of alcohol consumption focused on quantity and frequency of drinking in the last 30 days. The scale is considered a valid and expedient method for collecting data on alcohol use. The QDS and TimeLineFollowBack intraclass correlation coefficients over one year range from .

65 to .82 (Sobell et al., 2003). All alcohol consumption variables in this study are derived from the QDS.

Data Analyses

Confirmatory factor analyses were performed using the Mplus statistical software, version 6.1 (Muthén & Muthén, 1998–2010). Because some items of the PCL-5 were infrequently endorsed and substantially positively skewed, a robust maximum likelihood estimator (MLR) was employed to account for the non-normal distributions. Not all participants provided data at each assessment and missing cases were modeled under maximum likelihood estimation. The maximum amount of missing data was 50% (n = 256) of PCL-5 assessments for those who did not return for 3-month follow-up. As in many totally automated interventions, there was a fairly high rate of attrition across time points (Bennett & Glasgow, 2009; Eysenbach, 2005). Differences between dropouts and those who returned at each time point are reported below. There were no differences based on PCL scores.

Table 2 shows the models representing the *DSM-5* factor structure of PTSD symptoms at baseline, post-intervention, and three month follow-up. The scales of the latent variables were identified by designating one item of each factor to be a marker indicator (i.e., fixing the loading of that item to 1); the items hypothesized to be most strongly related to the latent variable were selected as marker indicators, following recommendations by Brown (2006). For the re-experiencing, avoidance, and hyper-arousal factors, the first item was designated the marker indicator; however, for the negative alterations in mood and cognitions factor, the fourth item was designated the marker indicator because the psychogenic amnesia symptom typically loads poorly on this factor (Miller et al., 2012).

Model fit was evaluated using the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Well-fitting models have CFI and TLI values ≥ 0.95, RMSEA values ≤ 0.06, and SRMR values ≤ 0.08 (Hu & Bentler, 1999). The model was tested hierarchically in the order recommended by (Brown, 2006), imposing increasing levels of constraints to determine at which point the model becomes invariant. Test statistics for the freely estimated and constrained models can be found in Table 2.

The *DSM-5* proposed factor structure was tested for temporal stability by evaluating equality of form, equality of factor loadings, and equality of intercepts (Chan, 1998). Equality of form requires that the factor structure provide an acceptable fit to the data at all time points (Table 2) while factor loadings, intercepts, and error variances are free to vary across time. Equality of loadings constrains the factor loadings to be equal across time points while intercepts and error variances are free to vary. Equality of intercepts further constrains intercepts to be equal across time while error variances are free to vary. These latter models are nested in the equality of form model and thus can be compared using the nested chi-squared test (in this case, the Satorra-Bentler scaled chi-squared difference test; Satorra, 2000). A non-significant difference in the chi square value in the nested model compared to the parent one indicates that the nested model is preferred as it provides equivalent model fit with fewer estimated parameters and is thus more parsimonious. We chose not to test invariance in residual variances because this type of invariance is rarely demonstrated in

applied datasets due to the stringency of the equality constraints (Brown, 2006) and (b) it is not as paramount to the central question of whether the relationship between the latent construct and the measure is consistent over time(Chan, 1998).

Results

Participant characteristics

At baseline, participants were mostly white (79.9%) and male (87.2%). The average age of participants was 31.9 years (*SD* = 7.7, range: 20–60). Participants reported drinking an average of 6.9 drinks per drinking day (*SD* = 3.7) and 26.9 drinks per week (*SD* = 19.9). Sixty-one percent of participants reported having treatment for mental health and/or substance use in the past 3 months.

Participants who did not return for the post-intervention assessment were more likely to be slightly older ($F(1,505) = 4.26$, $p < .05$, Cohen's $d = .18$), have higher average weekly drinking ($F(1,505) = 4.07$, $p < .05$, Cohen's $d = .18$), and one less combat exposure experience ($F(1, 505) = 5.82$, $p < .05$, Cohen's $d = .21$), but did not show differences on the PCL-5 ($F(1,505) = 0.89$, $p = 0.347$, Cohen's $d = .08$). Participants who did not return for the three month follow-up were more likely to have a history of treatment at post intervention ($\chi^2(2, N = 267) = 7.03$, $p < .05$, Cohen's $d = .33$), but did not show differences on the PCL-5 ($F(1,265) = 2.37$, $p = 0.125$, Cohen's $d = .14$).

Confirmatory factor analysis of *DSM-5* four-factor model

The PCL-5 total score was approximately normally distributed at each assessment. The average PCL-5 total score was 40.7 (*SD* = 19.6) at baseline, 34.2 (*SD* = 21.0) at post intervention, and 31.8 (*SD* = 20.7) at 3 month follow-up. Fit statistics for the *DSM-5* model at baseline can be found in the first row of Table 2. All indicators had strong (i.e. >= .59) and significant (i.e., all $p < .001$) loadings on their respective factors. The weakest loadings were found for "psychogenic amnesia" (.59) and for "recklessness/self-destructive behavior" (.61), although they were still moderate to high.

Temporal stability of *DSM-5* model

Fit statistics for the freely estimated (equal form) and constrained (equal factor loadings and equal intercepts) *DSM-5* models at all assessment points can be found in Table 2. The freely estimated model provided an adequate fit to the data at each time individually. In addition, good model fit was achieved when all time points were evaluated in a single model in the evaluation of equal form, confirming that the *DSM-5* proposed factor structure was an acceptable model of PTSD symptoms at each time point. Constraining the factor loadings to equality did not yield a significant change in model fit as determined by the corrected chi-squared difference test, and overall model fit was still adequate in terms of RMSEA, CFI, TLI, and SRMR. Constraining intercepts to equality, however, yielded a significant change in model fit according to the chi-squared difference, though model fit was still adequate. We did not proceed to test equality of error variances, as applying further constraints would increase the model chi-square.

Table 3 shows completely standardized factor loadings, standard errors, and factor correlations for the constrained *DSM-5* model. To explore whether these results were biased due to dropout, we repeated these analyses in a subsample of participants who completed all assessments (n = 234) and found that the results were consistent in this subsample with complete data (details available from first author). We also attempted to determine if results were biased by study arm. Repeating analyses for the IIG only also yielded results consistent with the complete sample; however, we were unable to repeat these analyses for the DIG group as there were not enough observations to estimate all parameters (details available from first author).

Discussion

This study is the first to demonstrate the temporal stability of *DSM-5* symptoms of PTSD using the newly revised PCL-5. At post-intervention and three-month follow-up, the *DSM-5* model still demonstrated adequate fit, even though PTSD symptoms were improving in this sample as a result of the intervention (masked for review). If the relationship between the items and the factors changed over time, then it would be impossible to determine if reductions in PTSD symptoms on the PCL-5 were due to true score change and symptom reduction or simply the fluctuating relationship of the items to the construct. This would amount to a form of test bias, as the same score on the PCL at two different time points would have a different meaning. The finding of temporal stability of the PCL-5 in terms of equal form and equal factor indicates that the latent constructs stay the same while the scores on those constructs can change over time. Therefore, researchers can have some confidence that changes in PCL-5 scores during a treatment study or a longitudinal observation study reflect change in the severity of symptom clusters, and are not due to measurement error (Brown, 2006).

This study adds to the research of Miller et al. (2012) and Elhai et al. (2012) supporting the four symptom clusters of the DSM-5 as mapping onto the four factor model. Although different measures were used across these studies, the four DSM-5 factors of Intrusions, Avoidance, Negative Alterations of Cognitions and Mood, and Hyperarousal were all found to have adequate fit. Further, the model suggests that PTSD symptoms are influenced by underlying latent dimensions, that the new PTSD symptoms in DSM-5 load strongly on their respective factors, and all the PTSD factors are strongly correlated with each other. This suggests that the new symptoms (e.g., strong negative beliefs, distorted blame,) may reflect additional manifestations of the disorder that were not captured in the DSM-IV version. In addition, the diverse group of participants in these three studies – a nationally representative sample of U.S. adults and a clinical sample of Veterans (Miller et. Al, 2012), a nonclinical sample of college students (Elhai et al. 2012), and this sample of returning veterans with problem drinking and PTSD symptoms - suggest that the model applies across populations who have varying levels of PTSD and perhaps comorbid disorders.

“Psychogenic amnesia” had a weaker, albeit still significant, factor loading than other items. This is consistent with the findings of other researchers (e.g., Baschnagel et al., 2005; Palmieri et al., 2007; King et al., 1998; Miller, et.al, 2012). Further study of psychogenic amnesia’s utility in helping to define the PTSD construct is needed. The item assessing

"recklessness/self-destructive behavior" also had a weaker loading than the majority of the other items. This new item may not be as indicative of core PTSD as other symptoms. For both items, further exploration of whether they should remain as a core part of the PTSD construct or be considered as characteristics of a subtype or stage of the disorder is warranted.

Limitations

This study has some limitations. The majority of the sample was white and male, which precluded testing invariance across subgroups and limits generalizability of the results, although the sample was broadly representative of the active duty military population except for African Americans (masked for review; (Department of Defense, 2012).

In this sample, heavier drinkers with higher AUDIT scores were more likely to drop out, but PTSD symptoms as measured by PCL-5 scores did not differ between those who dropped out and those who did not. Participants who did not return for the three-month follow-up were more likely to have a history of treatment at post intervention. We evaluated this concern by comparing the results to those with complete data, and found no differences.

It is possible that minor wording differences between the version of the PCL-5 we used and subsequent revisions to the measure may have affected the analyses (Elhai & Biehn, 2011). We used the version of the PCL-5 that was current at the time of the study and are unable to examine how subsequent slight wording changes affect the factor structure or its longitudinal invariance. However, it seems unlikely that a minor difference in item wording would affect the broader factor structure, given evidence that the basic DSM-5 structure replicates across other measures of PTSD (Miller et al., 2012; Elhai et al., 2012).

Conclusions

This study lends support to the implied factor structure incorporated into the *DSM-5*'s diagnostic criteria: Intrusions, Avoidance, Negative Alterations in Cognition and Mood, and Hyperarousal (Elhai et al., 2012; Miller et al., 2012). Building on past investigations into the temporal stability of PTSD symptoms, especially as measured by the PCL (e.g., Krause et al., 2007; Mason et al., 2012; Wang et al., 2012), we also found that the PCL-5 consistently measures those four symptom clusters over three time points, even though the PTSD symptoms in this sample were decreasing over time. Thus the PCL-5 is a stable measure of the DSM-5 PTSD symptoms, and can be used with confidence in longitudinal studies. In addition, we used a novel sample of Veterans participating in a randomized controlled trial and who presented a wide range of PTSD symptoms. The use of this sample suggests the generalizability of the four-factor structure of PTSD to the population of problem drinking OEF/OIF/OND veterans.

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Table 1

PCL-5[a] items arranged according to DSM-5 proposed factor structure

Intrusions	1.	Intrusive memories
	2.	Nightmares
	3.	Flashbacks
	4.	Emotional reactivity
	5.	Physical reactivity
Avoidance	6.	Avoidance of internal reminders
	7.	Avoidance of external reminders
Negative alterations in mood and cognitions	8.	Amnesia
	9.	*Negative beliefs
	10.	*Distorted blame
	11.	*Negative emotions
	12.	Loss of interest
	13.	Distant or cut off
	14.	Lack of positive emotions
Hyper-arousal	15.	Irritable or angry
	16.	*Recklessness/self-destructive behavior
	17.	Hypervigilance
	18.	Exaggerated startle
	19.	Difficulty concentrating
	20.	Difficulty with sleep

Note.

*Items added or revised to measure new DSM-5 criteria (9, 10, 11, 16).

[a]The PCL-5 is available from the National Center for PTSD, Veterans Health Administration: http://www.ptsd.va.gov/professional/pages/assessments/ptsd-checklist.asp

Table 2

Fit Statistics for CFA Models

	χ^2	*df*	CFI	TLI	RMSEA	SRMR	BIC	Δ *df*	Δ χ^2	*p*
DSM-5 BL	577.60	164	.93	.92	.07	.04	26,922.69			
DSM-5 Post	356.96	164	.95	.94	.07	.03	13,307.37			
DSM-5 3-Mo	371.09	164	.94	.93	.07	.04	13,015.95			
DSM-5 Equal Form	2,794.14	1584	.93	.92	.04	.04	52,252.41			
DSM -5 Equal Factor Loadings	2,842.84	1616	.93	.92	.04	.04	52,088.51	32	44.58	.06
DSM -5 Equal Intercepts	2932.62	1648	.93	.92	.04	.05	51982.16	32	98.89	<.001

Note. CFA = confirmatory factor analysis; χ^2 = χ -squared; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; BIC = Bayesian information criteria; Δ *df* = difference in degrees of freedom; Δ χ^2 = difference in χ^2 using the Satorra-Bentler Scaled Chi-Square method; DSM-5 BL = CFA of DSM-5 model at baseline; DSM-5 Post = CFA of DSM-5 model at post intervention assessment; DSM-5 3-Mo = CFA of DSM-5 model at 3 month assessment.

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Table 3

DSM-5 Model[a] at Baseline, Post-Intervention, and 3-Month Assessments

	Intr			Avoid			Neg Alt			Hyper		
Item	**Baseline**	**Post**	**3-month**	**Baseline**	**Post**	**3-month**	**Baseline**	**Post**	**3-month**	**Baseline**	**Post**	**3-month**
						Factor Loadings (and Standard Errors)[b]						
1	.87 (.01)	.91 (.01)	.85 (.02)									
2	.83 (.02)	.86 (.02)	.84 (.02)									
3	.81 (.02)	.83 (.02)	.80 (.02)									
4	.84 (.02)	.89 (.01)	.86 (.02)									
5	.85 (.01)	.89 (.02)	.87 (.02)									
6				.90 (.01)	.89 (.02)	.92 (.02)						
7				.90 (.02)	.87 (.02)	.90 (.02)						
8							.59 (.03)	.65 (.03)	.63 (.03)			
9							.73 (.02)	.81 (.02)	.80 (.03)			
10							.69 (.03)	.78 (.02)	.76 (.02)			
11							.76 (.02)	.83 (.02)	.84 (.02)			
12							.83 (.03)	.85 (.02)	.85 (.02)			
13							.84 (.03)	.87 (.02)	.82 (.02)			
14							.79 (.03)	.86 (.02)	.82 (.02)			
15										.78 (.02)	.82 (.02)	.83 (.02)
16										.61 (.03)	.68 (.03)	.68 (.03)
17										.80 (.02)	.85 (.02)	.87 (.02)
18										.83 (.03)	.86 (.02)	.89 (.02)
19										.81 (.03)	.84 (.02)	.85 (.02)
20										.70 (.02)	.74 (.03)	.76 (.03)
						Factor Correlations[c]						
Intr	1.06	1.08	0.87	1.07	1.09	0.96	0.89	1.08	0.94	0.83	1.01	0.93
Avoid	0.90	0.93	0.90	1.35	1.29	1.33	1.02	1.22	1.17	0.90	1.11	1.11
Neg Alt	0.79	0.87	0.88	0.81	0.89	0.89	1.19	1.44	1.31	0.94	1.22	1.15
Hyper	0.82	0.89	0.89	0.79	0.90	0.86	0.87	0.93	0.91	0.97	1.19	1.24

Note. Intr = Intrusions; Avoid = avoidance; Neg Alt = negative alterations in moods and cognitions; Hyper = hyper-arousal; Baseline = baseline assessment; Post = post intervention assessment; 3 Month = 3 month follow-up assessment;

[a] Factor loadings and correlations derived from the equality of loadings test, factor loadings were constrained to equality at each time point;

[b] Completely standardized factor loadings, all loadings were significant at the $p < .05$ level;

[c] Values on diagonal are factor variances, values below diagonal are factor correlations, and values above diagonal are factor covariances; all factor variances, covariances, and correlations were significant at the $p < .05$ level.